

## RESPONSE TO COMMENTS

### BOATYARD GENERAL PERMIT

The Washington State Department of Ecology (Ecology) received public comments on the draft Boatyard General Permit (BYGP) that was released for public comment on March 3, 2021. Ecology also accepted oral testimony provided by participants at the two (2) workshops and hearings that were held virtually. Public comments were submitted by a wide range of stakeholders and interested parties, prior to the close of the public comment period on April 16, 2021.

Ecology has assembled summaries and excerpts from public comments into this document, and organized them by topic and/or permit condition. Ecology has provided a written response to comments on proposed permit conditions, and indicated where revisions were made to the BYGP. Underlined language is used to indicate new final BYGP language compared to the draft 2021 BYGP. When multiple parties commented on the same subject matter, Ecology grouped the summarized and/or excerpted comments into a “Summary of the Range of Comments.” This allowed Ecology to respond to the range of comments collectively.

Copies of all public comment letters are posted on [ecomments](#)<sup>1</sup>.

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<sup>1</sup> <https://wq.ecology.commentinput.com/?id=MYQsb>

**Ecology received oral testimony from the following:**

Peter Evans, StormwaterRx

**Ecology received written comments from the following:**

Anonymous

Brent Moore, Seattle Yachts International

Brian D. Gouran, Port of Bellingham

Doug Dixon, Pacific Fishermen Shipyard

Eron Berg, Port of Port Townsend

Isaac Oczkewicz, La Conner Maritime Service

Jane Dewell, Port of Seattle

Jesse Waknitz, Port of Port Angeles

Paul Nelson, Canal Boatyard

Peter Riise, Seaview Boatyard & Yacht Service

Peter Schrappen, Northwest Marine Trade Association

Port of Edmonds

Puget Sound Shipbuilders Association

Richard A. Smith, Puget Soundkeeper Alliance

Tami Applebee

Thomas Rodgers, Commencement Bay Marine Services

West Sound Marina, Inc.

Zittel's Marina, Inc.

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## ADA ACCESSIBILITY

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For document translation services, call Water Quality Reception at 360-407-6600. Por publicaciones en español, por favor llame Water Quality Reception al 360-407-6600.

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<sup>2</sup> <https://ecology.wa.gov/About-us/Accessibility-equity/Accessibility/>

# COMMENTS ON THE SPECIAL CONDITIONS OF THE DRAFT BOATYARD GENERAL PERMIT

## GENERAL

### FINANCIAL SUPPORT

**Commenter:** Peter Evans, StormwaterRx (oral testimony); Eron Berg, Port of Port Townsend

**Summary of Comments:** The changes in this BYGP draft to stormwater benchmarks will require significant financial investments at many facilities. Ecology should provide some form of financial support for boatyards to implement these changes. Peter suggested the state provide funding such as low interest loans out of a state revolving fund.

**Ecology's Response:** Ecology currently offers stormwater grant funding to public entities such as Port districts. Public entities may use these grants for design and construction of certain stormwater BMP improvements. Interested parties should contact Jessica Schwing (contact info below) for more information on this grant program. However, at this time Ecology is not able to offer low interest loans or grants to private businesses.

Jessica Schwing

Stormwater Grant Coordinator

[jessica.schwing@ecy.wa.gov](mailto:jessica.schwing@ecy.wa.gov)

360-407-6216

### FACT SHEET

**Commenters:** Brent Moore, Seattle Yachts International; Peter Riise, Seaview Boatyard & Yacht Service; Port of Edmonds; Eron Berg, Port of Port Townsend

**Summary of the Range of Comments:**

- The fact sheet contains insufficient details

**Ecology's Response:** Ecology believes the fact sheet meets all regulatory requirements found in WAC 173-226-110. Ecology is willing to provide additional information and explanation to specific questions or requests.

### MORE RESTRICTIVE THAN THE ISGP

**Commenters:** Brent Moore, Seattle Yachts International; Peter Riise, Seaview Boatyard & Yacht Service; Port of Edmonds; Eron Berg, Port of Port Townsend

**Summary of the Range of Comments:**

- The BYGP contains conditions that are more restrictive, “onerous”, and “stringent” than the conditions in the ISGP

**Ecology's Response:** General Permits regulate different industries or facilities. While permits may share some similar conditions, the BYGP is not intended to duplicate any other general permit. Different types of facilities are commonly subject to different types of permits and the Department of Ecology created the BYGP specifically to regulate Boatyard discharges. As such, the BYGP and the ISGP permits differ. The unique conditions and requirements contained in the BYGP are necessary to protect state water quality from the pollution generated at and discharged from boatyard facilities.

#### **COST AND DIFFICULTY OF COMPLIANCE**

**Commenter:** Anonymous; Brent Moore, Seattle Yachts International; Paul Nelson, Canal Boatyard; Doug Dixon, Pacific Fishermen Shipyard; Brian D. Gouran, Port of Bellingham; Eron Berg, Port of Port Townsend; Isaac Oczkewicz, La Conner Maritime Service; Jane Dewell, Port of Seattle; Jesse Waknitz, Port of Port Angeles; Peter Riise, Seaview Boatyard & Yacht Service; Peter Schrappen, Northwest Marine Trade Association; Port of Edmonds; Thomas Rodgers, Commencement Bay Marine Services; Zittel's Marina, Inc.

**Comment:** Ecology received comments regarding concerns over cost of compliance with the permit conditions

**Ecology's Response:** We recognize that implementing all permit requirements may incur expenses for facilities. Ecology has tried to minimize the cost and burden of complying with this permit where possible. However, Ecology has the legal responsibility to fulfill requirements of the Clean Water Act and implement the NPDES program. We believe that the requirements and conditions described in the BYGP are necessary to protect water quality and meet water quality standards.

#### **STORMWATER MANAGEMENT MANUALS**

**Commenter:** Tami Applebee

**Comment:** Ecology's Stormwater Management Manuals are referenced throughout the draft permit. Please consider adding a link to the documents for easier reference:

<https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Stormwater-manuals>

**Ecology's Response:** Ecology agrees and has made the suggested change.

#### **APPROPRIATENESS OF THE BOATYARD PERMIT**

**Commenter:** Thomas Rodgers, Commencement Bay Marine Services

**Comment Summary:** The commenter objects to the strategy of regulating pollution dischargers.

**Ecology's Response:** The National Pollutant Discharge Elimination System (NPDES) permit program was created by The Clean Water Act and is specifically designed to regulate point source discharges of pollution. The EPA has delegated NPDES authority in Washington State to the Department of Ecology, except at certain federal and tribal facilities. The Boatyard General Permit is an NPDES permit and as such regulates point sources. Non-point source discharges (e.g., forestry, agriculture, etc.) are regulated through other programs.



## AGREEMENT WITH NMTA

**Commenter:** Puget Sound Shipbuilders Association

**Comment:** “As President of the Puget Sound Shipbuilders Association, it is important to let you know that our association agrees with the concerns outlined in the letter you have received from the NMTA. Thank you,”

**Ecology’s Response:** Thank you for your comment. Ecology responds to NMTA’s comments in this document.

## S1. PERMIT COVERAGE REQUIRED

### S1.A

**Commenter:** Tami Applebee

**Comment:** Page 5 S1.A - The draft permit states “engaged in the construction, repair, and maintenance of small vessels...” Should this be “engaged in the construction, repair, or maintenance of small vessels”?

**Ecology’s Response:** Ecology agrees and has made the suggested change. The permit is intended to apply to a facility that is engaged in any of these activities, not necessarily all of them.

### S1.A BOATYARD ACTIVITIES REQUIRING COVERAGE UNDER THIS PERMIT

**Commenter:** Jane Dewell, Port of Seattle; Richard A. Smith, Puget Soundkeeper Alliance

**Summary of Comments:** The commenters supported the clarification of where the BYGP applies at a facility.

**Ecology’s Response:** Thank you for your comment. Ecology agrees that clarifying the applicability of a permit is important, and has made edits to clarify the geographic scope of coverage at boatyards.

### S1.B.4.

**Commenter:** Tami Applebee

**Comment:** Page 6 S1.B.4 - The indentation of the paragraph beginning “Facilities exempted from this permit may require coverage under the Industrial Stormwater General Permit or an individual permit” makes it read like this paragraph is specifically associated with vessel deconstruction. Assuming it is not specific to vessel deconstruction, it might be clearer if this paragraph was either moved to the beginning of S1.B or if it was numbered separately as 5.

**Ecology’s Response:** Ecology agrees and has made the suggested change.

#### S1.C.2.L

**Commenter:** Tami Applebee

**Comment:** Page 7 S1.C.2.L - The requirement “Submit to on-site facility inspection(s) by Ecology to verify compliance with all ‘no exposure’ conditions” does not make sense when read in conjunction with the introductory statements. When read with the introductory statements, the permit reads:

“To acquire a Conditional No Exposure Exemption, a facility or Permittee must complete the following steps: Certify that none of the following materials or activities are, or will be in the foreseeable future, exposed to precipitation or stormwater runoff: Submit to on-site facility inspection(s) by Ecology to verify compliance with all ‘no exposure’ conditions.”

I think “Submit to on-site facility inspection(s) by Ecology to verify compliance with all ‘no exposure’ conditions” would be more appropriate as a separately numbered requirement. That would make it number 3.

**Ecology’s Response:** Ecology agrees and has made the suggested change.

#### S1.E

**Commenter:** Tami Applebee

**Comment:** Page 8 S1.E - The draft permit states, “New facilities are facilities that begin operation on or after the effective date of this permit, August 1, 2021.” The definition of “New operation” at Washington Administrative Code (WAC) 173-226-030 says “‘New operation’ means an operation that begins activities that result in a discharge, or a potential discharge to waters of the state on or after the effective date of the general permit.” This codified definition seems broader than the version on page 8 of the permit and it would include a facility that changes its operations or discharges and is now subject to regulation. The accompanying Fact Sheet states, “For purposes of this permit, “new operation” and “new facility” have the same meaning.” This is consistent with the definitions section at the end of the draft permit where the definitions for “New facility” and “Existing facility” seem to parallel the definitions of “New operation” and “Existing operation” in WAC 173-226-030.

Please consider rewording the definitions of “Existing facility” and “New facility” on page 8 to match the definitions on pages 49 and 50 which also parallel definitions in WAC 173-226-030.

There is also a distinction between existing facilities and new facilities in S2.E on page 12. Clarification of the definitions for “Existing facility” and “New facility” in the beginning of the permit may help S2.E Boatyards Discharging to Impaired Waters on page 12 be more understandable and enforceable.

**Ecology’s Response:** Ecology agrees and has made the suggested change.

#### S1.E.1.B.II

**Commenter:** Tami Applebee

**Comment:** I believe the reference to WAC 173-226-200(f) should be WAC 173-226-200(3)(f).

**Ecology’s Response:** Ecology agrees and has made the suggested change.

## S1.E.2

**Commenter:** Tami Applebee

**Comment:** Page 8 S1.E.2 - The link after “For more information about the WQWebPortal” requires access to SAW.

The following link may be more helpful for new applicants unfamiliar with WQWebPortal or SAW: <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-quality-permits-guidance/WQWebPortal-guidance>.

Page 8 S1.E.2 - The link after “For additional information about SAW” goes to a technical support feedback form for SAW. The same link referenced above or a link to the YouTube video from the page referenced above might be more helpful.

**Ecology’s Response:** Ecology agrees and has reworded this section.

## S2. DISCHARGE LIMITS

### S2.A.1. BOATYARDS DISCHARGING PRESSURE-WASH WASTEWATER TO A NON-DELEGATED POTW

**Commenter:** Richard A. Smith, Puget Soundkeeper Alliance

**Comment:** S2.A.1. Soundkeeper supports the tightening of the numeric effluent limitations for discharges to non-delegated POTWs.

**Ecology’s Response:** Thank you for your comment. Ecology believes that that numeric limitations for wastewater are necessary to meet federal guidelines and prevent pollutants from passing through non-delegated POTWs.

### TABLE 1

**Commenter:** Tami Applebee

**Comment:** Page 9 Table 1 - The footnotes to the table appear to have a typo and do not match the references in the table. The table includes a footnote reference at Daily Maximum Value (a), Laboratory Quantitation Level a, and Meter c. The footnotes list an “a,” “b,” and “c” but the “b” appears to be a typo. There is no associated footnote for Laboratory Quantitation Level.

**Ecology’s Response:** Ecology agrees and has corrected the typo.

## S2.B

**Commenter:** Tami Applebee

**Comment:** Page 10 S2.B - The draft permit states, “The Permittee must notify Ecology of the more stringent POTW limits” for Boatyards Discharging Stormwater Runoff from Areas with Industrial Activity to a Non-Delegated POTW. There is not a similar requirement for S2.A Boatyards Discharging Pressure-Wash Wastewater to a Non-Delegated POTW. Wouldn’t Ecology also want to be notified of more stringent POTW limits for discharging pressure-wash wastewater?

**Ecology's Response:** Ecology agrees and clarified the requirements in S2.A.1. This was the intent in this section as well. S2A.2.b. requires that any discharges to a POTW comply with 40 CFR 403 which requires discharges to follow local POTW requirements.

## **S2.D COPPER BENCHMARK**

**Commenters:** Brent Moore, Seattle Yachts International; Paul Nelson, Canal Boatyard; Doug Dixon, Pacific Fishermen Shipyard; Anonymous; Isaac Oczkewicz, La Conner Maritime Service; Peter Schrappen, Northwest Marine Trade Association; Peter Riise, Seaview Boatyard & Yacht Service; Brian D. Gouran, Port of Bellingham; Port of Edmonds; Jesse Waknitz, Port of Port Angeles; Jane Dewell, Port of Seattle; Eron Berg, Port of Port Townsend; West Sound Marina, Inc.; Zittel's Marina, Inc.

### **Summary of Comments:**

In general, commenters are concerned about the significantly lower copper benchmark for stormwater discharged to surface waters. Comments include:

- The new copper benchmarks are not based on a valid scientific basis.
- The new copper benchmark is unreasonable and unachievable.
- The dissolved to total copper translator values used in the Monte Carlo analysis are not representative of boatyard stormwater.
- The 10 percent risk threshold is overly restrictive and conservative.
- The dilution factor of 5 is not representative of available dilution at boatyards.
- The mass/quantity of copper discharged from boatyards is insignificant.
- The permit should not change the copper benchmark because the copper paint ban will soon be implemented.
- Ecology should identify and explain what problems existed in the previous copper benchmark.

**Ecology's Response:** Permits need to justify the legal and scientific basis for the conditions they contain. While the previous BYGP contained a technology based effluent benchmark, this type of benchmark is only appropriate when it is also protective of water quality standards (40 CFR 122.44(d)). As described in the 2021 BYGP fact sheet for the draft permit, Ecology compared the technology based benchmark from the previous permit cycle with a water quality based benchmark calculated in the draft 2021 BYGP, and is required to apply whichever is more stringent. In this case, the water quality based benchmarks in both the draft 2021 permit and final 2022 permit are more stringent than the technology based benchmark used in previous permit cycles. RCW 90.48.520 states, "In no event shall the discharge of toxicants be allowed that would violate any water quality standard, including toxicant standards, sediment criteria, and dilution zone criteria." The Clean Water Act, NPDES regulations, State regulations, and applicable case law clearly state that benchmarks must be protective of water quality standards. Please see the information contained in the BYGP fact sheet for an additional explanation.

Some commenters have stated that receiving waters in the state of Washington typically contain levels of copper which are higher than state water quality standards. This claim is not supported by

receiving water monitoring performed across the state. Data on the copper content of water in Washington State is publically available in [Ecology's Environmental Information Management System](#)<sup>3</sup>. Additionally, waterbodies that are regularly found to be out of compliance with state water quality standards are "impaired." Ecology maintains a listing of these waterbodies on the 303(d) list. Information on this list is publically available through [Ecology's Water Quality Atlas database](#)<sup>4</sup>. These water bodies are subject to additional regulations, including those found in S2. E. of this permit. In either case, permittees are required to control the pollutants leaving their site. This is consistent with the Clean Water Act and NPDES regulations, which require dischargers to control pollutants discharged from their facility even if pollutant levels are affected by off-site sources.

Some commenters believe that the BYGP should not reduce copper benchmarks because of the copper paint ban that may soon go into effect. The copper paint ban will only go into effect if a suitable alternative is identified by Ecology. At this point, no such alternative has been clearly identified, nor is it clear that an alternative will be identified. Additionally, if the copper paint ban goes into effect it will likely be years before copper paint is phased out of existing vessels. In either case, stormwater discharged from BYGP facilities have a reasonable potential to violate water quality standards for copper, even if a paint ban goes into effect before the end of the permit cycle. As such, the final permit contains a water quality based effluent limitation that utilizes a water quality based benchmark to drive corrective actions and prevent violation of standards.

#### Translator Values

Translator values are the part of total metals that are in the dissolved fraction. The chemistry of the receiving water will dominate conditions controlling the fraction of metals that will dissolve in receiving waters where the aquatic life criteria (standards) apply. To protect aquatic life in the receiving water we have used translators based on measurements of dissolved and total metals in receiving water, not in stormwater conveyance systems. Using the measured fraction of dissolved to total measured in the receiving water is consistent with guidance in Ecology's Permit Writers Manual. In the absence of measured receiving water values as used in this analysis, the manual recommends a translator value of 0.968.

Translator values represent an equilibrium between dissolved and solid fractions of metals, based on the chemistry of the receiving water. If only the solid fraction enters a receiving water, a fraction of the total metals will dissolve to restore equilibrium. Ecology has used actual measured values of dissolved and total value to estimate translator values. Some commenters proposed using the 30% translator value that was used in the 2005 (and older) permits. This translator value was struck down as unreasonable and not representative of water conditions by the PCHB upon appeal (PCHB 2007).

The purpose of the benchmarks in this permit is to prevent violations of state water quality standards. Ecology considers the 10 percent risk threshold used in the Monte Carlo Analysis as

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<sup>3</sup> <https://ecology.wa.gov/Research-Data/Data-resources/Environmental-Information-Management-database>

<sup>4</sup> <https://apps.ecology.wa.gov/waterqualityatlas/wqa/startpage>

reasonably protective of state waters. This risk threshold was previously reviewed and validated by the PCHB (PCHB 2011) in the ISGP.

### Dilution Factors

Ecology has determined that modest dilution factors are protective and consistent with WAC 173-201A-400. This permit does not authorize any mixing zones. Since a general permit must apply to a number of different sites, precise mixing zones and the resultant dilution factors are not applicable to facilities covered under a general permit. Ecology does not determine mixing zones by simply measuring the size of a receiving water body. Rather mixing zones take into account facility size, method of discharge, receiving water flow, receiving water and discharge temperature, and other site-specific parameters. Any discharger may request a mixing zone through an application for an individual permit in accordance with WAC 173-220-040 or WAC 173-216-070. Additionally, selecting the mean mixing zone dilution factor of facilities under individual permits is not an appropriate way of calculating a dilution factor in a general permit. Individually permitted facilities are not similar to the facilities covered under the Boatyard General Permit. Many of the facilities that commenters proposed as comparable to boatyards are large sewage treatment facilities. These facilities typically discharge treated wastewater via diffusers far from shore and near the ocean floor. Meanwhile, boatyards discharge near shore and at the surface. Additionally, the mean dilution factor would effectively be protective of water quality at only about half of those facilities.

Ecology agrees that an assumed dilution factor of five may not represent available dilution found in receiving waters where boatyards discharge. As a result, Ecology has re-calculated dilution factors to better represent the available dilution at facilities under the BYGP. To calculate reasonable and representative values for available dilution, we divided receiving waters into five categories:

- marine waters,
- tidally influenced streams,
- Eastern Washington streams,
- Western Washington streams, and
- lakes.

This allowed us to examine how dilution varied in different receiving water types and flow conditions and then calculate dilution factors that more closely match conditions at BYGP facilities. The procedures and results of these dilution factors calculations are found in Appendix A of this document. Ecology used these dilution factors as part of the Monte Carlo Analysis described in the fact sheet to calculate five separate stormwater benchmarks.

## S2.D COPPER BENCHMARK

**Commenter:** Richard A. Smith, Puget Soundkeeper Alliance

**Comment:** S2.D. The draft BGP proposes changes to numeric benchmarks for direct stormwater discharges and supporting monitoring requirements. Soundkeeper generally supports these changes, including the significant reduction in the copper benchmark from 50 ug/L to 15 (or 20) ug/L because controlling copper is essential for protection of salmonids. The comparable copper benchmark in the ISGP is 14 ug/L. Please explain how benchmarks at these levels are adequate to protect juvenile coho salmon, which are harmed by copper levels as low as 5 ug/L. While Soundkeeper does not understand in the context of law, equity, or science why the BGP copper benchmark should not also be 14 ug/L, it supports the reduction. Soundkeeper prefers numeric effluent limitations to benchmarks because they are easier to enforce and therefore more effective to ensure that standards are met. While the benchmark/adaptive management approach embodied in this condition will be effective for some boatyard permittees (i.e., to force them to implement measures to consistently meet benchmarks), some permittees will manage to avoid implementing required measures under the permit's benchmark scheme because it ultimately mandates effort instead of results. Soundkeeper hopes that Ecology will keep an open mind about the replacement of benchmarks with numeric effluent limitations in the BGP as we move forward over time and the benchmark approach demonstrably fails at some regulated facilities.

**Ecology's Response:** As described in the permit fact sheet and the response above, the copper benchmarks in this permit are calculated to be protective of state water quality standards.

While the ISGP and BYGP used a similar method to calculate a copper benchmark, the data input into that method was not identical. Much of this difference was due to the use of ambient receiving water data from Ecology's Environmental Information Management (EIM) database, which includes newer data that has become available since the ISGP copper benchmark was calculated in 2009. Please see the response above (S2. D) and the fact sheet for more detailed information on how these benchmarks were calculated.

Ecology is continuing to use narrative effluent limits, with water-quality and technology based benchmarks, as opposed to numeric effluent limits to control the discharge of stormwater to surface waters. Due to the variability of stormwater, it is infeasible for Ecology to collect the site-specific data needed to develop water quality based effluent limits for stormwater discharges in a statewide general permit. Stormwater discharges are highly variable and typically not normally distributed. The tools that exist to calculate numeric effluent limits use assumptions for continuous discharges instead of intermittent discharges into various types of receiving waters.

Under the BYGP and similar permits, stormwater benchmarks have been successful in reducing the discharge of pollutants and in driving permittees to address pollution problems. When combined with appropriately derived benchmark values, adequate sampling frequency, and a benchmark response system that requires solutions and not just effort, stormwater benchmarks can be effective. The

changes in this permit represent significant progress to these goals. Please see the section of this document on revisions to benchmark response system for more information.

## **S2.D STORMWATER BENCHMARKS FOR TURBIDITY, PH, AND PETROLEUM HYDROCARBONS**

**Commenters:** Peter Schrappen, Northwest Marine Trade Association; Jane Dewell, Port of Seattle

**Summary of the Range of Comments:** In general, commenters are concerned about the new stormwater benchmarks. Comments include:

- The permit does not allow enough time to sample for the parameters and manage any pollution problems.
- These new parameters are unnecessary.

**Ecology's Response:** Ecology does not agree that the new benchmarks are unnecessary. The new pollution parameters address contaminants, which are commonly found on industrial facilities including boatyards. Additionally, excessive levels of these parameters are known as harmful to aquatic life. The new benchmarks are set to prevent violations of state water quality standards.

Ecology agrees that achieving the new benchmarks will likely require many boatyards to make significant changes to their operations. The permit already contains a benchmark response system that is designed to allow permittees time to find and fix pollution problems at their facilities without penalizing them. Additionally, the permit allows permittees to request additional time as needed to fix more difficult problems. Please see the section of this document on revisions to benchmark response system for more information.

## **S2.D MONITORING FREQUENCY**

**Commenters:** Brent Moore, Seattle Yachts International; Peter Schrappen, Northwest Marine Trade Association; Peter Riise, Seaview Boatyard & Yacht Service; Port of Edmonds; Port of Seattle; Eron Berg, Port of Port Townsend

**Summary of the Range of Comments:**

In general, commenters object to require additional stormwater sampling in the month of March. Comments include:

- The additional month of sampling is unnecessary

**Ecology's Response:** As mentioned in the fact sheet, Ecology based its decision to require stormwater sampling in March based on its knowledge of boatyard operations and weather patterns. Ecology field inspectors and permit managers have noted boatyards typically show high activity levels during March. Additionally, the State of Washington regularly receives a large amount of precipitation in March. Based on this information, Ecology has used made a determination to require stormwater sampling in March to protect state water quality criteria and designated uses.



## S2.E. BOATYARDS DISCHARGING TO IMPAIRED WATERS

**Commenters:** Peter Schrappen, Northwest Marine Trade Association

### **Summary of the Range of Comments:**

- Ecology should clarify which permittees discharge into a 303(d) impaired waterbody.
- Ecology should allow additional time for boatyards to prepare for these limits

**Ecology's Response:** Ecology maintains a list of impaired (assessed) waterbodies in the state at the [Water Quality Atlas](#)<sup>5</sup>. Ecology will also notify permittees subject to 303(d)-based effluent limits, when the final permit is issued.

Ecology agrees that achieving the new limits will likely require impacted boatyards to make significant changes to their operations. Considering this, Ecology is granting a compliance schedule, not to exceed three years, for existing permittees that discharge into an impaired waterbody. This period will give permittees a full wet season to characterize their effluent, the necessary time to install additional BMPs, and adjust BMPs as necessary in order to meet the numeric effluent limits. Based on our experience and professional judgement, we believe this additional period of time is justified. The affected boatyard(s) are small businesses with limited financial and engineering expertise who will likely need additional time to plan and finance the additional BMPs. In addition, boatyards are nearly universally located on the waterfront, which adds to the complexity and difficulty with installing BMPs (shoreline permits, Model Toxics Control Act (MTCA) clean-ups, etc.). We also acknowledge that the ongoing labor and supply disruptions would likely slow down the implementation of any new BMPs.

The modified permit language in S.2.E.3(a) now states:

“Permittees discharging to a 303(d)-listed waterbody (Category 5), either directly or indirectly through a stormwater drainage system, shall comply with the applicable sampling requirements and numeric effluent limits in Table 4. If a discharge point is subject to an impaired waterbody effluent limit for a parameter that also has a benchmark, the effluent limit supersedes the benchmark. Permittees discharging to a 303(d) – listed waterbody (Category 5) who were not assigned an 303(d) list impaired waterbody limit at the time of 2016 permit coverage shall comply with the applicable sampling requirements and numeric effluent limits in Table 4 as soon as possible, but no later than July 1, 2025.”

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<sup>5</sup> <https://apps.ecology.wa.gov/waterqualityatlas/wqa/map>

### S2.E.3.A ADDITIONAL SAMPLING REQUIREMENTS AND EFFLUENT LIMITS FOR DISCHARGES TO CERTAIN IMPAIRED WATERS AND PUGET SOUND SEDIMENT CLEANUP SITES

**Commenters:** Peter Schrappen, Northwest Marine Trade Association

#### **Summary of the Range of Comments:**

- Ecology should clarify which permittees discharge into a Puget Sound Sediment Cleanup Site.
- Ecology should clarify whether the TSS limit applies to sediment clean-up sites or to 303(d) listed category 5 waters.
- Ecology should allow additional time for boatyards to prepare for these limits.

**Ecology's Response:** Ecology maintains a list of Puget Sound Sediment Cleanup where permittees may learn more about [Puget Sound Sediment Cleanup Sites](#)<sup>6</sup>. Ecology will notify permittees of their coverages when the final permit is issued.

Ecology disagrees that the permit is not clear regarding which facilities are subject to the TSS limit. The permit clearly states that the TSS limit applies to both facilities that discharge into a Puget Sound Sediment Cleanup site(S2.E.3.a.ii) and to facilities that discharge into a 303(d)-listed (Category 5) for sediment(S2.E.3.a.i).

In response to comments, Ecology is granting affected permittees a compliance schedule for this condition. Please see the above response for more information.

### S2.E.3.A.

**Commenter:** Tami Applebee

**Comment:** Page 13 S2.E.3.a - The letter "I" and the indentation before "If a Permittee can demonstrate, based on video inspection, in-line storm drain solids sampling..." makes it unclear what this paragraph is associated with. Is this a formatting error?

**Ecology's Response:** Ecology agrees and has corrected the typo.

### S2.E.3.A. ADDITIONAL SAMPLING REQUIREMENTS AND EFFLUENT LIMITS FOR DISCHARGES TO CERTAIN IMPAIRED WATERS AND PUGET SOUND SEDIMENT CLEANUP SITES

**Commenter:** Jesse Waknitz, Port of Port Angeles

**Comment:** Clarification on TSS Limit, Section S2.E.3

Permit Section S2.E.3 details that permittees that discharge to a Puget Sound Sediment Cleanup Site or a waterbody that is 303(d)-listed (Category 5) for sediment quality must sample for total suspended solids (TSS). This Permit section is not clear or concise and raises the following questions.

1. Is proposed TSS limit a benchmark or an effluent limit?

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<sup>6</sup> <https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanups/Sediment-cleanups>

2. For a permittee that discharges to an embayment that is both a cleanup site and has subsections listed as a 303(d)-listed (Category 5) for unique and distinct assessment units; if a boatyard's discharge is not directly adjacent to the distinct Category 5 assessment unit, is the TSS limit a benchmark?

**Ecology's Response:** Ecology agrees and clarified this section. The section refers to table 4 of the permit which contains limits, not benchmarks.

A permittee that discharges into an assessment unit that is either a Puget Sound Sediment Cleanup Site or a waterbody that is 303(d)-listed (Category 5) for sediment is subject to the TSS limit. If the permittee discharges into an assessment unit that is only near or adjacent to an impaired assessment unit but is not itself impaired nor a designated Puget Sound Sediment Cleanup Site, the permittee is not subject to the limits in table 4.

#### S2.F.4.

**Commenter:** Tami Applebee

**Comment:** Page 15 S2.F.4. - The draft permit states, "Conduct inspections of the pond or tank and in accordance with the Operation and Maintenance Manual and all requirements in S6. E – Visual Inspection Requirements." The current S6.E does not specifically call out these ponds or tanks. Given the potential for environmental harm, I propose specifically adding lined evaporative ponds and above ground tanks to S6.E as elements that must be inspected weekly. This seems especially beneficial since I could not locate any requirement for an updated engineering report at any point in the life of these units.

**Ecology's Response:** Ecology agrees and has added a required assessment of all stormwater conveyances to S6.E.

### S3. MANDATORY BEST MANAGEMENT PRACTICES

#### S3.H.

**Commenter:** Tami Applebee

**Comment:** Page 18 S3.H - The draft permit states, "The Permittee must store spent zincs in a covered container and properly dispose of them." Please consider changing to "properly dispose or recycle them" to encourage recycling.

**Ecology's Response:** Ecology agrees and has made the suggested change.

#### S4. COMPLIANCE WITH WATER QUALITY STANDARDS

#### S5. NON-STORMWATER MISCELLANEOUS DISCHARGES

#### S6. MONITORING REQUIREMENTS

##### S6.A. GENERAL SAMPLING REQUIREMENTS

**Commenter:** Jane Dewell, Port of Seattle

**Summary of Comment:**

- The requirement to sample during the first 12 hours is unnecessary does not provide any value. This requirement also implies that permittees must sample every stormwater event in a sampling month

**Ecology's Response:** The permit requires that sampling be conducted within the first 12 hours of a stormwater discharge event in order to collect accurate data. The pollutant content of any given stormwater discharge event is not constant and changes over time. This requirement is intended to drive permittees to collect a sample early in the stormwater event and capture a sample that is representative.

The permit requires that permittees sample within the first 12 hours of a discharge event during a required sampling month. It does not imply that every discharge event of a sampling month must be sampled. However, any samples must be taken during the first 12 hours of stormwater discharge event.

##### S6.B.

**Commenter:** Tami Applebee

**Comment:** Page 21 S6.B - This section refers the Permittee to "S2.A (Boatyards Discharging Pressure-Wash Wastewater to a Non-Delegated POTW) for the required monitoring frequency." However, the section is entitled "Pressure Wash Effluent to Sanitary Sewer." Could this be either a delegated or non-delegated sanitary sewer? Should the Permittee be referred to S2.A or S2.C, as applicable, instead of only referencing S2.A?

**Ecology's Response:** Ecology agrees and has clarified this section.

##### S6.C.

**Commenter:** Tami Applebee

**Comment:** Page 21 S6.C - The sentence "No possibility exists for stormwater runoff to flow from an industrial area onto the storage area" is immediately following by "The Permittee must collect samples from a location or locations affected by boatyard related activities and as noted on the application for coverage. If stormwater runoff from the industrial areas of a facility occurs as sheet

flow...” With the current formatting this all appears to be a single paragraph; however, based on the context I believe this is a formatting error.

**Ecology’s Response:** Ecology agrees and has corrected the error.

#### S6.C.

**Commenter:** Tami Applebee

**Comment:** Page 23 S6.E.3.a. - The draft permit refers to “assessments required in Condition S6.D (Visual Inspection Requirements)...” This looks like a typo; Visual Inspection Requirements is S6.E.

**Ecology’s Response:** Ecology agrees and has corrected the error.

## S7. RESPONSE TO MONITORING RESULTS THAT EXCEED BENCHMARKS

### S7.

**Commenters:** Brent Moore, Seattle Yachts International; Peter Schrappen, Northwest Marine Trade Association; Peter Riise, Seaview Boatyard & Yacht Service; Port of Edmonds; Jesse Waknitz, Port of Port Angeles; Jane Dewell, Port of Seattle; Eron Berg, Port of Port Townsend

#### **Summary of the Range of Comments:**

In general, commenters believe that the benchmark system doesn’t allow enough time to effectively implement adaptive management strategies. Comments include:

- The time allowed in the benchmark response system wouldn’t allow a facility enough time to solve pollution problems.
- A commenter requested that the time to implement the level 3 engineering report be extended from 12 months to 36 months.
- Some commenters mentioned that the adaptive management system forces boatyards to install treatment systems because it does not annually forgive benchmark exceedances.
- Benchmark exceedances should be based on monthly monitoring periods and not on individual exceedances at each location
- This system forces permittees to install treatment systems instead of source control

**Ecology’s Response:** Ecology agrees that achieving the new benchmarks will likely require many boatyards to make significant changes to their operations. The permit contains a benchmark response system that allows permittees time to find and fix pollution problems at their facilities. Additionally, the permit allows permittees to request additional time as needed to fix more difficult problems.

While Ecology does not agree with all of the suggested changes, we agree that the benchmark response system would benefit from some updates. The goal of this system is to drive facilities, which pose a risk of violating water quality standards, to improve stormwater management and meet

benchmarks in future discharges. Therefore, several changes detailed below have been made in the final version of the permit:

1. We have corrected an error in Table 3 Stormwater Benchmarks and Sampling Requirements for discharges to Surface Waters of the State. The table previously listed the benchmarks as “Maximum Daily Value”. Table 3 now lists “Benchmark Value”. This allows permittees to take multiple samples a month and average the results. As described in S6.A.1(e), permittees who sample more frequently than once per month, must average the results for that month.
2. The exceedance response system allows permittees the opportunity to correct pollution problems by implementing source control solutions during the level 1 and level 2 responses. The level 1 response form, Operational Source Control, is due when the permittee submits the DMR. This response is triggered when a permittee exceeds a parameter for the first or second time during sampling months. This report requires the permittee to inspect the facility, look for the source of pollution and consider remedial actions. The intent of this response level is to allow permittees time to identify problems and implement changes prior to the next sample.
3. The level 2 Structural Source Control BMP Response is required when permittees exceed an applicable benchmark value for any 3 required sampling months during a calendar year. The level 2 response level now response now requires permittees to prepare a structural source control report within 3 months **and** implement the report within an additional 3 months. Permittees may also opt to complete a level 3 response instead of completing a level 2 response.
4. The level 3 Treatment BMP Response is now required after permittees exceed an applicable benchmark value for any 4 required sampling months during a calendar year. The permittee must fully implement this response 15 months after the fourth exceedance is reported. Only after the permittee has attempted (and failed) to resolve the problem through operational and structural source control is the permittee required to implement treatment.
5. The benchmark response system includes time allotted for facilities to perform level three corrective action. Specifically, the permit allows the permittee 3 months after the 4<sup>th</sup> exceedance to submit a treatment engineering report, and 15 months after the 4<sup>th</sup> exceedance to install the selected treatment BMP. This allotted time is adequate in the majority of situations to complete the required exceedance responses. However, the permittee may request additional time to implement level 2 and 3 responses if necessary. Ecology will review such requests for reasonableness.
6. Ecology has also clarified the language in the permit that during the time allotted in the benchmark exceedance response system, the permittee does not accumulate additional exceedances for the parameter they are already responding to.
7. Additionally, the Benchmark exceedances are counted during a given calendar year. In other words, exceedance counts for permittees now reset annually.

Ecology believes that these changes, in coordination with changes elsewhere in the permit (such as additional parameters, reduced benchmarks, and additional sampling month), will better accomplish the goals of the benchmark exceedance response system. These changes better monitor a variety of pollutant parameters, allow permittees adequate time to implement source and structural control BMPs, and ultimately better protect water quality. For example, permittees with serious pollution problems who fail to find a solution with structural or source control efforts, are more quickly required to implement treatment BMPs. However, permittees with occasional problems who are successful at correcting them in a level 1 or 2 response, are annually forgiven exceedances and not forced to implement unnecessary treatment.

#### S7.A.

**Commenter:** Tami Applebee

**Comment:** Page 23 under 1. - The statement “A Level One Response is not required after four, five, or six exceedances” seems confusing. Is this referring to four or more exceedances for the same benchmark (i.e. four zinc exceedances) or is it referring to exceedances of four or more different benchmarks (zinc, copper, lead, and pH). Because of the context, it seems like it might be referring to exceedances of four or more different benchmarks but based on the descriptions for Level Two and Level Three Responses, I suspect it is supposed to be describing exceedances for the same benchmark.

Also, the wording implies that after exceedances seven, eight, etc., a Level One Response will be required. After reading the full permit, I think this is referring to the 15 month timeframe under Level 3 Responses which states “[S]tarting at 15 months after the date of the sixth exceedance, the next benchmark exceedance for that parameter shall count as the first level 1 benchmark exceedance.” However, the wording on page 23 is not specific enough to be clear.

I thought the trigger points were clearly explained under the Level 2 and Level 3 Response section and in the Fact Sheet; but then this statement on page 27 S8.A.2 “[T]his paragraph does not apply to a Level Two or a Level Three Response when four or more benchmark values have been exceeded” is worded so that it again sounds like it is referring to exceedances of four different benchmarks rather than four exceedances of the same benchmark. Is that Ecology’s intent?

**Ecology’s Response:** Ecology agrees and has clarified the statements under S7.A.1 and S8.A.2. This section applies to exceedances of the same benchmark. Please see the section above for additional changes to the benchmark response system.

### S7.A.3.

**Commenter:** Jane Dewell, Port of Seattle

**Comment:** The benchmark response structure is designed for adaptive management during a permit term. Permittees who triggered a Level Two Response under the current boatyard permit should not be held to a different standard than those who are newly permitted. For instance, if a permittee triggered a Level Two Response for copper during the 2016-2021 permit cycle and has two exceedances for copper during the first monitoring month of the 2021-2026 permit cycle, they would be obligated to install treatment for a Level Three Response. This is a probable situation since the copper benchmark has been substantially reduced in the draft permit. Not only does this prevent the permittee from installing source control BMPs to meet benchmarks (per Level One and Level Two Responses), but also negates adaptive management. As the permit states, “Benchmark exceedances are counted during the effective term of the permit” (S7.A) and that conflicts with this approach.

**Ecology’s Response:** Ecology has implemented numerous changes to the benchmark response system. Please see the response above for more information on these changes. One of the new changes includes a clarification that permittees who trigger a level 2 or 3 corrective action while working under the previous permit are still required to complete that corrective action as described in the previous permit, not the corrective actions described in the new permit. S7.B now reads, “In addition to the Corrective Action Requirements of S7, Permittees shall implement any applicable Level 1, 2 or 3 Responses required by the previous Boatyard General Permit(s). Permittees shall continue to operate and/or maintain any BMPs related to benchmark responses implemented prior to the effective date of this permit.”

Additionally, the phrase “Benchmark exceedances are counted during the effective term of the permit” (S7.A), means that the benchmark responses described in this permit are applicable to benchmark exceedances accumulated during the effective term of this permit, not the prior one. In other words, benchmark exceedances from the prior permit term are not added to benchmark exceedances in this term. To clarify this point, S7.A. now reads, “Benchmark exceedances counted under the prior Boatyard General Permit do not count as exceedances during the effective term of this permit.”

### S7.A.3.(A).III

**Commenter:** Paul Nelson, Canal Boatyard

#### **Summary of Comments:**

- S7.A.3.(a).iii requires permittees to continue to count benchmark exceedances and repeat the benchmark response system until benchmarks are achieved. The commenter believes this is unnecessary considering other conditions in the permit, specifically S4.1 and S4.2.

**Ecology’s Response:** The purpose of an NPDES permit is to convert applicable regulations and legal requirements into specific implementable permit conditions. The conditions in S7 and S4 are not duplicative or repetitive, and both are necessary to protect water quality, and are included in the BYGP to conform with state and federal permit regulations. The condition S4.1. requires any



permitted facility not to cause or contribute to a violation of water quality standards in the receiving water. Condition S4.2. is a broad condition that requires any permitted facility to implement all known, available and reasonable methods of prevention, control, and treatment (AKART); this AKART requirement is independent of meeting water quality standards.

The benchmark response system outlined in S7 is designed to gain compliance with the specific water quality-based or technology-based benchmarks in S2 and will therefore bring facilities into compliance with S4.1 and S4.2 i.e., ensuring that corrective actions are done to prevent discharges that may cause or contribute to violations of water quality standards and AKART is applied. The benchmark response system in S7 has been clarified and updated based on public comments. Please see the response to S7 for updates to the benchmark response system and further explanation.

#### S7.A.3.

**Commenter:** Tami Applebee

**Comment:** Page 24 under 3. Level Three Response - The table has a typo in the first paragraph. There is a mismatched parenthesis: “six monitoring results) have accumulated.”

**Ecology’s Response:** Ecology agrees and has corrected the typo.

#### S7.A.3. (B)

**Commenter:** Tami Applebee

**Comment:** The draft permit states, “Ecology may subsequently approve modification of the permit in accordance with Condition S1.C (Modification of Permit Coverage).” Modification of Permit Coverage is S1.F. This incorrect reference is used twice on page 25.

**Ecology’s Response:** Ecology agrees and has corrected the typo.

## S8. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

#### S8.A.4

**Commenter:** Tami Applebee

**Comment:** Page 28 S8.A.4 - The draft permit references the Hazardous Waste Reduction Act, Chapter 70.95C RCW. This chapter has been recodified under Chapter 70A.214 Revised Code of Washington (RCW) Waste Reduction (see <https://apps.leg.wa.gov/RCW/dispo.aspx?cite=70.95C>).

**Ecology’s Response:** Ecology agrees and has corrected the typo.

#### S8.B.1.E

**Commenter:** Tami Applebee

**Comment:** Page 29 S8.B.1.e - The draft permit states, "Sampling and analysis of these discharges is required when directed to do so by an order from an Ecology inspector." Using the word order indicates that a legal administrative order is required. If it is within Ecology's authority, changing the wording to "when directed to do so in writing by an Ecology inspector" might be more helpful to inspectors in obtaining timely analysis.

**Ecology's Response:** General Condition G10. Additional Monitoring clearly establishes Ecology's authority to require additional monitoring. It states, "Ecology may establish specific monitoring requirements in addition to those contained in this permit by administrative order or permit modification." Therefore, to clarify S8.B.1(e), this statement has been removed.

#### S8.B.3.E.III

**Commenter:** Tami Applebee

**Comment:** Page 31 S8.B.3.e.iii - The draft permit states the Permittee must "[I]nspect all equipment and vehicles during monthly site inspections for leaking fluids." This is the only monthly inspection referred to in the permit. Is this supposed to be part of the weekly visual inspection requirement at S6.E or is this a unique monthly inspection?

**Ecology's Response:** Ecology agrees and has corrected this condition to refer to the weekly inspection.

#### S8.B.3.F.II.A

**Commenter:** Tami Applebee

**Comment:** The draft permit states "The Permittee shall: a) Store all hazardous substances, petroleum/oil liquids, and other chemical solid or liquid materials that have potential to contaminate stormwater on an impervious surface that is surrounded with a containment berm or dike that is capable of containing 10% of the total enclosed tank volume or 110% of the volume contained in the largest tank, whichever is greater, or use double-walled tanks." Since the requirement only references tanks, it is not clear how or whether it applies to containers of hazardous substances, petroleum/oil liquids, etc. If this requirement is only intended to apply to tank storage, consider rewording. For example, "Locate tanks storing hazardous substances, petroleum/oil liquids..." If it is Ecology's intention for this requirement to apply to containers, please consider adding a reference to containers.

**Ecology's Response:** Ecology agrees and has corrected this condition to refer to all containers, not specifically tanks.

- S9. REPORTING AND RECORDKEEPING REQUIREMENTS
- S10. BYPASS
- S11. SOLID WASTE MANAGEMENT
- S12. REPORTING FOR INVASIVE SPECIES CONTROL
- S13. TERMINATION OF COVERAGE UNDER THIS PERMIT

# APPENDIX A – DILUTION FACTOR CALCULATIONS

## BOATYARDS IN MARINE WATERS

### DISCHARGE CONDITIONS

To represent the existing range of boatyard sizes, we used the 90<sup>th</sup> percentile (large), median and 10<sup>th</sup> percentile (small) facility acreages of boatyards currently permitted under the general permit. The relationship between facility size and the one-hour maximum stormwater runoff flows (1- hr Qmax) flows, calculated using the [Western Washington Hydrology Model](https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Stormwater-manuals/Western-Washington-Hydrology-Model)<sup>7</sup> (WWHM) is shown in Figure 1. Qmax is the highest daily maximum effluent flow from a facility for the past three years. A one-hour maximum stormwater runoff flow was then estimated for each of these facility size categories (Table 1). The discharge pipe is assumed to be a 12-inch diameter pipe discharging at the surface of the receiving waters.

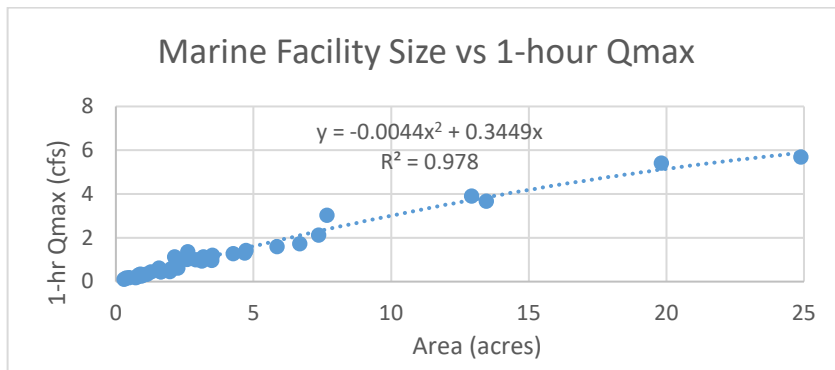


Figure 1: Relationship between marine Facility size of boatyard and max 1-hour flow

Table 1. Flow from selected sizes of marine boatyards

Facility Size	Size (acres)	1-hr Qmax, (cfs)
Large	8.72	2.67
Median	2.13	0.72
Small	0.75	0.26

### AMBIENT CONDITIONS

Hourly current velocities near existing marine boatyard outfalls were extracted from the Salish Sea Model output for the year 2006. At each of these locations the 10<sup>th</sup> and 90<sup>th</sup> percentile current velocities were estimated. Finally, the median of the 10<sup>th</sup> and 90<sup>th</sup> percentile values were then used

<sup>7</sup> <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Stormwater-manuals/Western-Washington-Hydrology-Model>

for each of the facility size categories (large, median and small) of boatyard facilities. Table 2 is a summary of ambient velocities.

**Table 2: Median 10th and 90th percentile current velocities used in the analysis**

Median Percentile	Current Velocities (m/s)
90 <sup>th</sup> Percentile	0.29
10 <sup>th</sup> Percentile	0.04

## DILUTION FACTORS

Ecology determined the dilution factors for each size category using the CORMIX model, with the discharge and ambient conditions described above and a mixing distance of 20 feet (WAC 173-201A-400). The dilution factors (DF) for the range of boatyard sizes discharging to marine waters are listed below. We then calculated dilution factors for both the 90<sup>th</sup> and 10<sup>th</sup> percentile current velocities. The lower of the two resulting dilution factors is the “limiting dilution factor.” For each waterbody category, we selected the lowest reasonable dilution estimated for a median boatyard size. For median sized facilities discharging into marine waterbodies, the limiting dilution factor is 14. This dilution factor was then used in a Monte Carlo simulation as described on page 24 of the Permit Fact Sheet.

**Table 3: Available Marine dilution factors at the different size boatyards under different flow conditions**

Facility Size	Facility Size (acres)	Facility 1-hr Qmax (cfs)	DF at 90 <sup>th</sup> percentile velocity	DF at 10 <sup>th</sup> percentile velocity	Limiting DF
Large	8.72	2.67	14	23	14
Median	2.13	0.72	14	18	14
Small	0.75	0.26	16	13	13

## BOATYARDS ON RIVERS (EASTERN AND WESTERN)

### DISCHARGE CONDITIONS

In order to cover a wide range of boatyard sizes, 90<sup>th</sup> percentile (large), median and 10<sup>th</sup> percentile (small) of boatyard facility acreages of existing facilities were calculated. We then calculated 1- hr Qmax flows using the WWHM or Natural Resources Conservation Service (NRCS) Hydrograph and determined the relationship (Figure 2) between facility size and maximum runoff flow. A one-hour maximum stormwater runoff flow was then estimated for each of these facility size categories (Table 4). The discharge pipe is assumed to be a 12-inch diameter pipe discharging at the surface of the receiving waters.

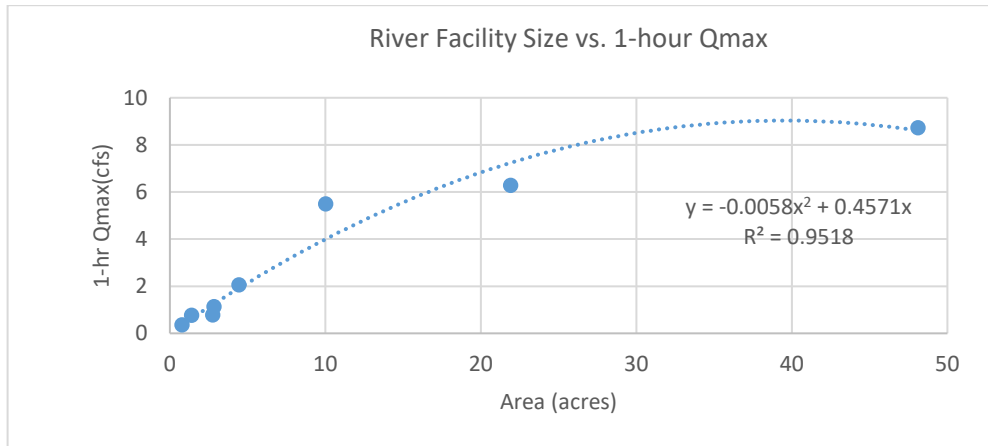


Figure 2: Relationship between size of boatyard and max 1-hour flow

Table 4: Flow from selected size of river boatyards

Facility Size	Size (acres)	1-hr Qmax (cfs)
Large	29.8	8.47
Median	3.6	1.59
Small	1.2	0.55

### AMBIENT CONDITIONS

7Q10 flows in rivers where existing boatyards discharge to, were obtained using USGS StreamStats. The 7Q10 flow is the annual minimum 7-day average streamflow with a 10-year recurrence interval. The associated stream width and depth were taken from either National Oceanic and Atmospheric Administration (NOAA) navigation charts or USGS field data and the resulting current velocities were estimated from these data. The 7Q10 flows tested were the 90<sup>th</sup> percentile, median, and 10<sup>th</sup> percentile. The associated current velocities were obtained from the following plot (Figure 3). Cross sectional area was then calculated from the velocity for a particular flow and then width was

obtained from width to area relationship (Figure 4). Table 5 is a summary of ambient flows and other stream dimensions.

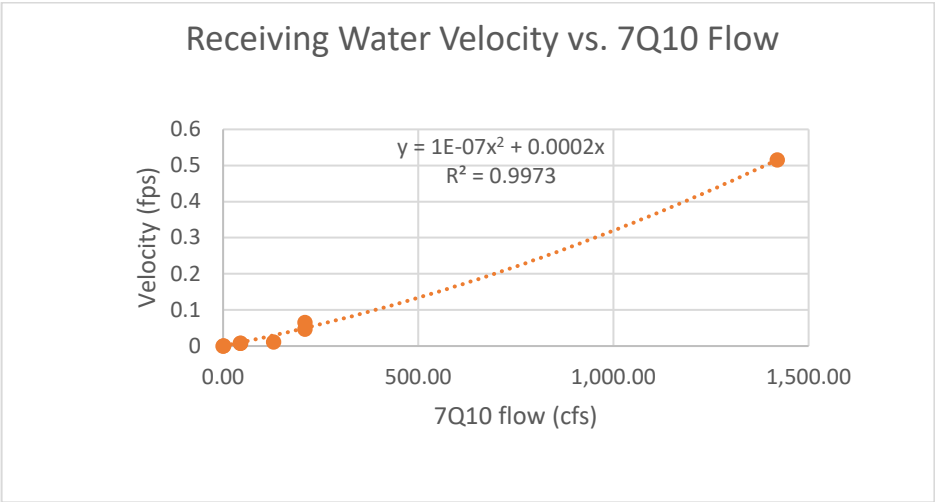


Figure 3: Relationship between velocity and 7Q10 flows

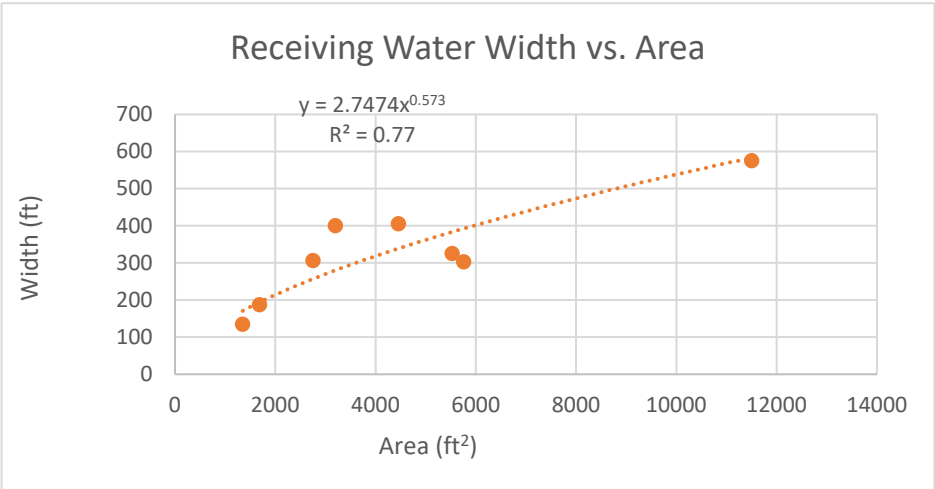


Figure 4: Relationship between velocity and 7Q10 flows

Table 5: 7Q10 flows and associated current velocities and other dimensions used in the analysis

Stream Flows	7Q10 (cfs)	Cross-area (ft <sup>2</sup> )	Width (ft)	Depth (ft)
90 <sup>th</sup>	573	3887	313	12.4
Median	87	4792	353	13.6
10 <sup>th</sup>	1	4998	362	13.8

## DILUTION FACTORS

Ecology determined the dilution factors for each size category using the CORMIX model, with the discharge and ambient conditions described above and a mixing distance of 30 feet (WAC 173-201A-400). The dilution factors for the range of boatyard sizes discharging to rivers are listed below. Dilution factors are calculated for the median, 90<sup>th</sup>, and 10<sup>th</sup> percentile of current velocities to estimate available dilution under different flows. For a median sized facility discharging in to a river (eastern or western), the limiting dilution factor is 16. The lowest flow condition we modeled, the 10<sup>th</sup> percentile of 7Q10 flows, resulted in either very large or very small dilution. These 10<sup>th</sup> percentile flows (1.5 cfs) were extremely small and not representative of boatyards under coverage from the BYGP nor of facilities, which typically occur on waterbodies that contain boats. We do not believe these flow conditions are likely to occur at the boatyard facilities under permit now or in the foreseeable future. This scenario would require a boatyard to experience very high stormwater flows (QMax) at the same time that the receiving water is experiencing very low flows (10<sup>th</sup> percentile 7Q10). The selected dilution factor of 16 was then used in a Monte Carlo simulation as described on page 24 of the Permit Fact Sheet. Note that the Monte Carlo simulations include receiving water hardness and receiving water copper content. These 2 variables vary between eastern and western receiving waters and result in different benchmarks.

**Table 6: Available River dilution factors at the different size boatyards under different flow conditions**

Facility Size	Facility Size (acres)	Facility 1-hr Qmax (cfs)	DF at 90 <sup>th</sup> Percentile 7Q10 (573 cfs)	DF at median 7Q10 (87 cfs)	DF at 10 <sup>th</sup> Percentile 7Q10 (1.5 cfs)
Large	29.8	8.47	15	17	*
Median	3.6	1.59	16	26	*
Small	1.2	0.55	11	16	>32

*\*effluent dominated stream*



## BOATYARDS ON TIDALLY INFLUENCED RIVERS WITH FLOW REVERSALS

### DISCHARGE CONDITIONS

In this analysis, we modeled flow conditions at facilities close enough to marine waters to have tidal influence and experience flow reversals. In order to cover a wide range of boatyard sizes, 90th percentile (large), median and 10th percentile (small) of boatyard facility acreages of existing facilities were calculated. We then calculated 1- hr Qmax flows using the WWHM and determined the relationship (Figure 5) between facility size and maximum runoff flow. A one-hour maximum stormwater runoff flow was then estimated for each of these facility size categories (Table 7). The discharge pipe is assumed to be a 12-inch diameter pipe discharging at the surface of the receiving waters.

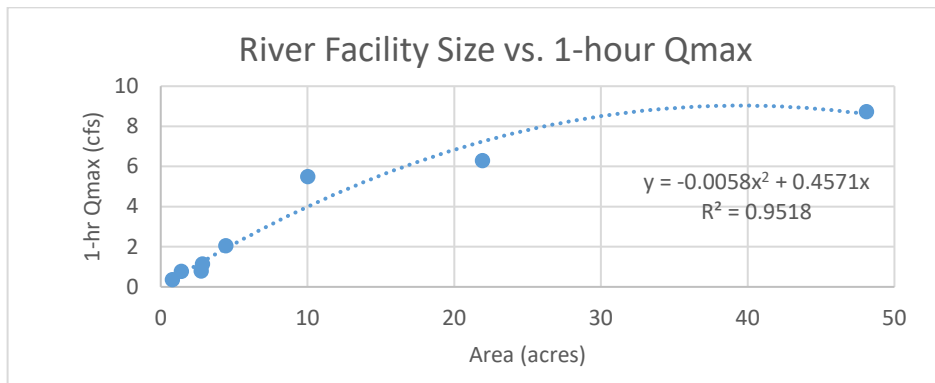


Figure 5: Relationship between size of boatyard and max 1-hour flow

Table 7: Flow from selected size of boatyards

Facility Size	Size (acres)	1-hr Qmax (cfs)
Large	29.8	8.47
Median	3.6	1.59
Small	1.2	0.55

### AMBIENT CONDITIONS

For tidally influenced rivers where flow reverses, the guidance calls for using 90<sup>th</sup> and 10<sup>th</sup> percentile current velocities to establish dilution factors. Since, site-specific data on currents at these locations is lacking, we will use the current data from marine waters.

Table 8: 10th and 90th percentiles of receiving water current velocities used in the analysis

Median Percentile	Current Velocities (m/s)
90 <sup>th</sup> Percentile	0.29
10 <sup>th</sup> Percentile	0.04

## DILUTION FACTORS

Ecology determined the dilution factors for each size category using the CORMIX model, with the discharge and ambient conditions described above and a mixing distance of 20 feet (WAC 173-201A-400). The dilution factors for the range of boatyard sizes discharging to tidally influenced streams are listed below. Dilution factors are calculated for both the 90<sup>th</sup> and 10<sup>th</sup> percentile current velocities to calculate available dilution under different flows. The lower of the two resulting dilution factors is the limiting dilution factor. For a median sized boatyard, the limiting dilution factor is 13. This selected dilution factor was then used in the Monte Carlos simulation as described on page 24 of the Permit Fact Sheet.

**Table 9: Available river dilution factors at the different size boatyards under different flow conditions**

Facility Size	Facility Size (acres)	Facility 1-hr Qmax (cfs)	DF at 90th % velocity	DF at 10th % velocity	Limiting Acute DF
Large	29.8	8.47	20	26	20
Median	3.6	1.59	13	21	13
Small	1.2	0.55	14	17	14

## BOATYARDS ON LAKES

### DISCHARGE CONDITIONS

In this analysis, we will include all the Western WA lake boatyards. In order to cover a wide range of boatyard sizes, 90<sup>th</sup> percentile (large), median and 10<sup>th</sup> percentile (small) of boatyard facility acreages of existing facilities were calculated. We then calculated 1- hr Qmax flows using the WWHM and determined the relationship (Figure 6) between facility size and maximum runoff flow. A one-hour maximum stormwater runoff flow was then estimated for each of these facility size categories (Table 7). The discharge pipe is assumed to be a 12-inch diameter pipe discharging at the surface of the receiving waters.

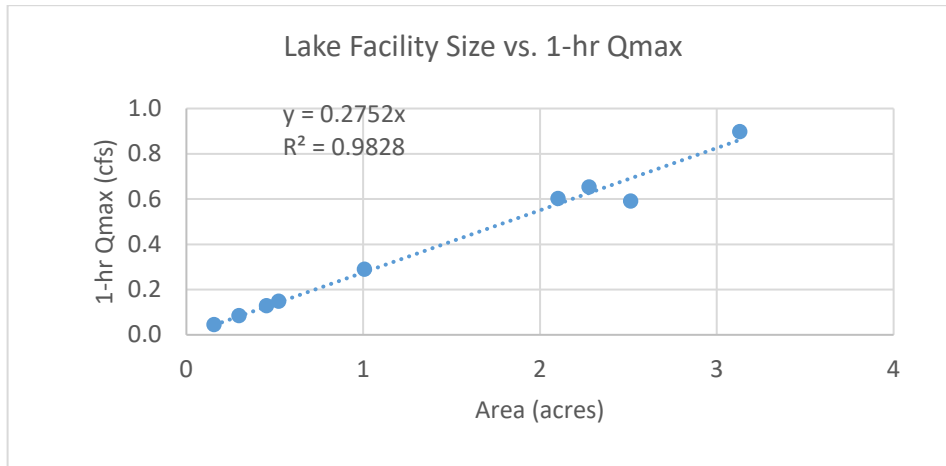


Figure 6: Relationship between size of boatyard and max 1-hour flow

Table 10: Flow from selected size of boatyards

Facility Size	Size (acres)	1-hr Qmax (cfs)
Large	2.7	0.74
Median	1.55	0.43
Small	0.26	0.07

### AMBIENT CONDITIONS

Lake Washington Ship canal extends from Lake Washington to the Ballard Locks via Lake Union and Salmon Bay. We based the mixing zone evaluation for lakes on information from Salmon Bay. Pacific Fishermen operates a shipyard in the shoreline fringe of Salmon Bay (Figure 7).



**Figure 7: Location of Salmon Bay, Lake Union and Lake Washington**

Pacific Fishermen gathered current velocity data in Salmon Bay as part of their mixing zone study and estimated a 90<sup>th</sup> percentile value of 3.16 cm/s and a 10<sup>th</sup> percentile value of 0.45 cm/s during wet weather season. We used these values in our analysis for Salmon Bay. There is no available current data for Lake Union or Lake Washington. As a reasonable assumption, based on the size of Lake Union and Lake Washington with respect to Salmon Bay, Salmon Bay velocities were reduced by half and three-fourths for Lake Union and Lake Washington, respectively.

**Table 11: Estimated current velocities for lake waterbodies**

Lake	90 <sup>th</sup> percentile velocity (cm/s)	10 <sup>th</sup> percentile velocity (cm/s)
Salmon Bay	3.16	0.45
Lake Union	1.58	0.225
Lake Washington	0.79	0.1125

## DILUTION FACTORS

Ecology determined the dilution factors for each size category using the CORMIX model, with the discharge and ambient conditions described above and a mixing distance of 20 feet (WAC 173-201A-400). Listed below are the range of dilution factors for the different boatyard sizes discharging to lakes. Dilution factors are calculated for the 90<sup>th</sup> and 10<sup>th</sup> percentile of current velocities to estimate available dilution under different flows. Our analysis for lake dilution factors yielded three separate sets of dilution factors, one for each lake modeled. For each lake included in this analysis, we selected the lowest dilution factor estimated for the median boatyard size. This gave us available dilution

factors of 10 for Salmon Bay, 12 for Lake Union, and 11 for Lake Washington. In order to calculate a single dilution factor, we averaged the limiting dilution factor for median sized facilities at each lake, resulting in a lakes dilution factor of 11.

**Table 12: Dilution factors at the edge of acute zone for boatyards discharging to lakes**

Lake	Boatyard size	Facility size (acres)	Facility 1-hr Qmax (cfs)	DF at 90th % ambient velocity	DF at 10th % ambient velocity
Salmon Bay	Large	2.7	0.74	12	17
Salmon Bay	Median	1.55	0.43	10	13
Salmon Bay	Small	0.26	0.07	8	12
Lake Union	Large	2.7	0.74	13	23
Lake Union	Median	1.55	0.43	12	18
Lake Union	Small	0.26	0.07	4	14
Lake Washington	Large	2.7	0.74	13	35
Lake Washington	Median	1.55	0.43	11	46
Lake Washington	Small	0.26	0.07	6	16

## ANALYSIS

We selected the dilution factors calculated using the median boatyard size for each waterbody type. There is no clear relationship between facility size and available dilution. This may be counterintuitive for some as there is a direct relationship between facility size and discharge volumes. However, larger discharge volumes do not result in dilution factors that are necessarily more or less protective. Therefore, we used median facility size values in all waterbody categories to ensure a dilution factor that is protective under the most typical on conditions. Additionally, while there are a small number of facilities that are very large or very small, these are not representative of typical boatyard facilities.

For each category, we selected the lowest reasonable dilution estimated for a median boatyard size. Every boatyard facility regardless of size will see a range of flow conditions. The dilution factor needs to be protective under the entire range of flows likely to be seen at these facilities. There was no clear relationship between flow velocity and available dilution. Again, this is likely counter intuitive to the assumption that higher velocities will result in higher dilution. However, as it turns out fast moving waters will often move discharged effluent quickly through a water body without allowing it to mix with the receiving water sufficiently. For all median sized boatyard models, the limiting dilution factor was the high flow condition (90<sup>th</sup> percentile).

The selected dilution factors from the analysis described above are summarized in table 13. These dilution factors were then used in place of the assumed dilution factor of 5 as part of a Monte Carlo simulation as described on page 24 of the fact sheet under, “Discharges to Non-Impaired Surface Waters.” Please see this section of the fact sheet for more information on calculating benchmarks using a Monte Carlo simulation.

**Table 13: Selected Dilution Factors and Calculated Benchmarks**

Waterbody Type	Selected Dilution Factor	Calculated Benchmark (ug/L)
Marine	14	44
Tidally Influenced Rivers	13	36
Eastern Rivers	16	60
Western Rivers	16	45
Lakes	11	32