DEPARTMENT OF
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State of Washington

Economic Impact Analysis

Draft Boatyard General Permit

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Economic Impact Analysis

Draft Boatyard General Permit

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Executive Summary

The Department of Ecology (Ecology) proposes to issue a draft Boatyard general permit so dischargers operating under coverage of the final general permit will comply with the Federal Clean Water Act (CWA) and with the Washington Water Pollution Act (Revised Code of Washington (RCW) 90.48.080). Ecology's Waste Discharge General Permit Program rule (Washington Administrative Code (WAC) 173-226-120) requires an economic analysis of any draft wastewater general permit intended to directly cover small businesses. This analysis is required to include:

- A brief description of the compliance requirements of the draft general permit.
- The estimated costs for complying with the draft general permit, based on existing data for facilities to be covered under the draft general permit.
- A comparison, to the greatest extent possible, of the cost of compliance for small businesses, with the cost of compliance for the largest ten percent of businesses to be covered under the draft general permit.
- Discuss what mitigation the draft general permit provides to reduce the effect on small businesses (if a disproportionate impact is expected), without compromising the mandated intent of the draft general permit.

The Regulatory Fairness Act (RCW 19.85.020(3)) defines a small business as any business entity, including a sole proprietorship, corporation, partnership, or other legal entity, that is owned and operated independently from all other businesses, and that has fifty or fewer employees.

Requirements of the draft general permit

Permit requirements include:

- Discharge limitations
- Mandatory best management practices
- Monitoring and sampling requirements
- Create and maintain a Stormwater Pollution Prevention Plan
- Reporting and recordkeeping

Estimated cost of compliance

The costs for boatyards to comply with the draft boatyard general permit depend on the size of the boatyard. While it seems appropriate to assume that boatyards that are smaller in geographic size will be those with fewer employees, from comments received on previous versions of the permit, this is not always the case. In this chapter, Ecology estimated ranges of costs for most requirements - a low cost and a high cost.

The low cost estimate is for small boatyards and the high cost estimate is for large boatyards. Some requirements have the same cost for small and large boatyards, while other costs are presented as a range.

Table 1: Total Compliance Costs

	Small	Large
Annualized Totals	**$29,514 - $71,754**	**$54,174 - $148,914**

Proportionality

The purpose of the economic impact analysis is to provide a comparison of the cost of compliance for small businesses and large businesses. Table 2 below summarizes the estimated costs per employee for both small and large businesses.

Table 2: Estimated Cost per Employee by firm size

Employees	Average Employees	Cost per Employee
50 or Fewer	41	$770 - $1,800
More Than 50	171	$330 - $883

While the capital costs are based on geographic scale of the boatyard, which is not universally associated with the number of employees, it is likely that the costs of compliance with the draft permit are disproportional.

Mitigation

The general permit rule (WAC 173-226-120) requires that disproportionate economic impacts of general permits on small businesses be reduced, when it is both legal and feasible to do so. Ecology has determined there is no opportunity to significantly reduce the costs of this permit to small businesses.

Chapter 1 Overview

1.1 Purpose of the analysis

The Department of Ecology (Ecology) proposes to issue a draft Boatyard general permit so dischargers operating under coverage of the final general permit will comply with the Federal Clean Water Act (CWA) and with the Washington Water Pollution Act (Revised Code of Washington (RCW) 90.48.080). Ecology's Waste Discharge General Permit Program rule (Washington Administrative Code (WAC) 173-226-120) requires an economic analysis of any draft wastewater general permit intended to directly cover small businesses. This analysis is required to include:

- A brief description of the compliance requirements of the draft general permit.
- The estimated costs for complying with the draft general permit, based on existing data for facilities to be covered under the draft general permit.
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- Discuss what mitigation the draft general permit provides to reduce the effect on small businesses (if a disproportionate impact is expected), without compromising the mandated intent of the draft general permit.

The Regulatory Fairness Act (RCW 19.85.020(3)) defines a small business as any business entity, including a sole proprietorship, corporation, partnership, or other legal entity, that is owned and operated independently from all other businesses, and that has fifty or fewer employees.

Under WAC 173-226-120, reductions in compliance costs for small businesses may be achieved by:

- Establishing different compliance and reporting requirements for small businesses
- Clarifying, consolidation, or simplification of compliance and reporting requirements
- Establishing performance standards instead of design standards
- Exempting small businesses from parts of the draft general permit

This analysis does not include benefits or environmental impacts. It only estimates the additional costs borne by expected permittees resulting from compliance with the requirements of the draft general permit.

1.2 Permit history

The type of work done in boatyards (build, repair, and paint boats) creates pollutants that are carried by stormwater into surface waters. This wastewater contains copper, zinc, and lead which are very harmful to the environment. The Boatyard General Permit regulates stormwater discharges from boatyards to groundwater and surface water bodies.

Task P-20 of the Puget Sound Water Quality Authority Plan, directed Ecology to carry out a program to detect and identify unpermitted discharge sources. Under this program, the Elliott Bay and Lake Union Urban Bay Action Teams found a significant unpermitted point source discharge - the boatyard industry.

1.2.1 Memorandum of Agreement with the Environmental Protection Agency

In 1990, Ecology signed a Memorandum of Agreement with the Environmental Protection Agency (EPA) agreeing to develop and issue a general permit for small shipyards. During the development of the permit, Ecology decided to describe facilities in this segment of the Ship and Boat Building and Repairing industry as boatyards. Shipyards receive individual permits. A general permit for boatyards was issued in 1992, reissued in 1997 and again in December 2005, and most recently in March 2011 (current permit). The 2005 permit was modified in 2006 to correct an error.

1.2.2 Appeal of 2005 and 2006 permit modification

The Northwest Marine Trade Association (NMTA) and the Puget Soundkeeper Alliance (PSA) appealed the 2005 and 2006 permit modification. The Pollution Control Hearings Board (PCHB) heard the appeal in July 2006, and they issued a decision in January 2007. The NMTA and PSA then appealed the PCHB decision to Superior Court.

1.2.3 Draft permit submitted by NMTA and PSA

In 2008, environmental consultants ARCADIS performed a general economic analysis to estimate the cost of installing the treatment devices. In August 2008, the NMTA and PSA sent a draft permit to Ecology that they said was mutually acceptable. The draft permit was released for public comment in November 2008. The draft contained benchmarks for copper and zinc that were based on the pilot study performance of multimedia filtration in the treatment of boatyard stormwater. Ecology believes the benchmarks in the draft permit are achievable only with stormwater treatment.

1.2.4 Definition of boatyard

A boatyard, as defined for the purposes of this permit, is a commercial business engaged in the construction, repair, and maintenance of small vessels, 85 percent of which are 65 feet or less in length, or revenues from which constitute more than 85 percent of gross receipts. This definition includes mobile boatyards.

Services typically provided in a boatyard include, but are not limited to:

- Pressure washing hulls
- Painting and coating
- Engine and propulsion systems repair and replacement
- Hull repair
- Joinery
- Bilge cleaning
- Fuel and lubrication systems repair and replacement
- Welding and grinding of hulls
- Buffing and waxing
- Marine sanitation device (MSD) repair and replacement
- Other activities necessary to maintain a vessel

There are currently in Washington State approximately 72 boatyard facilities covered by the boatyard general permit.

Chapter 2 Requirements of the Draft General Permit

2.1 Discharge limitations in the draft permit

Discharging pressure wash wastewater to a non-delegated publicly owned treatment works
Boatyards may discharge treated pressure wash wastewater to a municipal sanitary sewer, in accordance with effluent limitations and a monitoring schedule and upon acceptance of the municipality. The boatyard cannot introduce into the publicly owned treatment works (POTW) any pollutant(s), which cause Pass Through, Upset, or Interference[1]. In addition, there is a list of 11 other restrictions in the permit that cannot be introduced into the POTW. Boatyards cannot dilute the wastewater discharge with stormwater or attempt to dilute an effluent as a substitute for adequate treatment.

Discharging stormwater to a POTW
Boatyards may discharge stormwater to a POTW only with special approval from Ecology. They must also demonstrate:

- There is no other feasible option.
- The POTW has excess wet season hydraulic capacity.
- The POTW is willing to accept the discharge.
- How the hydraulic loading to the POTW will be reduced by eliminating clean water.
- All applicable Best Management Practices (BMPs) are practiced routinely.

Discharge limits and monitoring requirements are the same for stormwater and pressure wash wastewater discharged into a sanitary sewer, unless the POTW has more stringent requirements.

Discharging treated pressure wash wastewater or stormwater to a delegated POTW
Boatyards may discharge pressure wash wastewater or stormwater to a sanitary sewer system operated by a municipality with a delegated pretreatment program provided they receive discharge authorization from the municipality. The municipality will determine limitations, monitoring, and reporting requirements, which are expected to be at least as stringent as the requirements of the draft permit. Boatyards must also comply with any applicable sewer use ordinances adopted by the municipality.

Discharging stormwater to waters of the state
All boatyards must manage stormwater discharges to prevent:

- The discharge of synthetic, natural, or processed oil.

[1] **Pass Through**- A discharge to a POTW which exits the POTW into waters in quantities or concentrations in violations of the POTW's permit.
Upset- An incident where there is an unintentional and temporary noncompliance with technology based effluent limitations because of factors beyond the reasonable control of the boatyard.
Interference- A discharge which inhibits or disrupts the POTW and is therefore a cause of or contribution to a violation of any requirement of the POTW's permit or of the prevention of sewage sludge use or disposal.

- The discharge of floating materials.
- A visible change in turbidity or color in the receiving water.

Boatyards have specific limitations and/or benchmarks listed in the draft permit depending on location or status. They are:

- Boatyards discharging stormwater to Lake Union or the Lake Washington Ship Canal.
- Boatyards discharging stormwater to other fresh and marine waters.
- Boatyards discharging stormwater to an infiltration basin lined with absorptive media.
- New and existing dischargers discharging stormwater to impaired waters before a total maximum daily load (TMDL) study and allocation.

These limitations for surface discharges are more stringent than the current permit. The specific limitations are discussed below in the monitoring section.

Boatyards must comply with:

- Washington State surface water quality standards (Chapter 173-201A WAC)
- Sediment management standards (Chapter 173-204 WAC)
- Ground water quality standards (Chapter 173-200 WAC)
- Human health-based water quality criteria in the National Toxics Rule (40 CFR 131.36)

2.2 Mandatory best management practices

Boatyards must prepare a handout describing the following best management practices (BMPs) and provide copies to boatyard customers. These BMPs must be posted and incorporated into the boatyard's stormwater pollution prevention plan (SWPPP). The BMPs include:

- Use of vacuum sander and grinders
- Tidal grid restriction
- In-water vessel maintenance and repair
- Upland vessel maintenance and repair
- Solids management
- Paint and solvent use
- Oils and bilge water management
- Sacrificial anode (zincs) management
- Chemical management
- Wash pad decontamination
- Sewage and gray water discharges

2.3 Monitoring and sampling requirements

The monitoring requirements outlined in the table below are the same as the current permit. Samples must be collected from location(s) affected by boatyard related activities.

Table 3: Monitoring and Sampling Requirements

Category	***Parameter***	***Minimum Sampling Frequency***
Pressure washer wastewater to sanitary sewer	Total copper, zinc, lead, and pH	One time in each of the months of June, July, August, and September
Stormwater discharges to waters of the state	Total copper, zinc, and lead (a)	One time in each of the months of October, November, January, April, and May
	Visual monitoring	Once a week
Non stormwater miscellaneous discharges	Parameters, frequency, and location as directed by Ecology order.	
(a) Monitoring of total lead is required by only those boatyards that discharge to Lake Union or the Lake Washington Ship Canal.		

Boatyards must sample stormwater according to the permit instructions unless the boatyard is approved by Ecology for an alternative plan. The boatyard must follow the sampling requirements below but is not required to sample outside regular business hours or when it is unsafe. These sampling requirements are the same as the current permit.

- The boatyard may take a grab sample, a time-proportionate sample, or a flow proportionate sample.
- All samples are to be taken as reasonably practical and which can be achieved safely.
- The storm event sampled is at least 0.1 inches of rain in a 24-hour period or has an intensity equal to 0.1 inches or greater in a 24-hour period preceding sample collection.
- The storm event sampled is preceded by at least 24 hours of no greater than trace precipitation.
- Sampling is conducted to capture stormwater with the greatest exposure to significant sources of pollution. If offsite discharging points are likely to result in different concentration or types of pollutants, each point must be separately sampled and analyzed. If discharge points do not vary, sampling may occur only at the discharge point with the highest concentration.
- Besides visual monitoring, a boatyard is only required to sample once per month and use its best efforts to achieve the storm event sampling criteria.

2.4 Required analytical procedures

Sampling and analytical methods used to meet the water and wastewater monitoring requirements specified in the permit must conform to the latest version of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136.

2.5 Laboratory accreditation

All monitoring data required by Ecology in the permit or by order must be prepared by a laboratory registered or accredited under the provisions of, *Accreditation of Environmental Laboratories*, Chapter 173-50 WAC.

2.6 Stormwater Pollution Prevention Plan

New and existing owners of every boatyard covered by the boatyard general permit must prepare and maintain a Stormwater Pollution Prevention Plan (SWPPP) specifically designed for their boatyard. The SWPPP must be:

- Consistent with permit requirements.
- Fully implemented before operating.
- Updated as necessary to maintain compliance with permit conditions.

The SWPPP must include BMPs necessary to meet the indicated benchmarks.

The SWPPP must document the:

- Technical basis for how stormwater BMPs were selected.
- Pollutant removal performance expected from the BMP selected.
- Technical basis that support the performance claims for the BMPs selected.

The SWPPP must also provide an assessment of how each of the selected BMPs will:

- Comply with state water quality standards.
- Satisfy the state all known, available, and reasonable methods of prevention, control, and treatment (AKART) requirements and the federal technology-based treatment required under 40 CFR Part 125.3.

At minimum, the SWPPP must include:

- Facility assessment
- Detailed site map
- Monitoring plan
- BMPs
- Measures taken to identify and eliminate illicit discharges

Operational Source Control BMPs are common to all boatyards and the categories listed below are a minimum set of BMPs that must be included in the SWPPP:

- Pollution prevention team
- Good housekeeping
- Preventive maintenance
- Spill prevention and emergency cleanup plan
- Employee training
- Inspections and recordkeeping

2.7 Reporting and recordkeeping

The draft general permit sets requirements for reporting and recordkeeping.

Reporting
Boatyards must submit monitoring results according to the minimum sampling frequencies specified in the permit. All data collected must be submitted to Ecology. Electronic submittal is strongly encouraged. Data collected during the previous month or sample period must be summarized and reported using the Discharge Monitoring Report form provided by Ecology.

Records retention
Boatyards must retain records of all monitoring information for a minimum of five years. Such records shall include:

1. All calibration and maintenance records.
2. All original recordings for continuous monitoring instruments.
3. Copies of all reports required by the general permit.
4. Records of all data used to complete the application to be covered under the general permit.

Recording of results
For each measurement or sample taken, the boatyard must record all of the following:

1. Date, exact place, method, and time of sampling.
2. The individual who performed the sampling or measurement.
3. Dates the analyses were performed.
4. Name of the person(s) who performed the analyses.
5. The analytical techniques or methods used.
6. The results of the analysis.

Results from additional monitoring
If the boatyard monitors any pollutant with more frequency than required using test procedures that conform to the latest version of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136, then the results must be included in the data submitted in the discharge monitoring report.

Discharges to a delegated municipal sanitary sewer system
Boatyards who discharge treated pressure wash wastewater to a delegated municipal sanitary sewer system must maintain records of their contractual agreement with the municipality, including conditions of discharge. These records must be available for inspection.

2.8 Bypass

Bypass is the intentional diversion of waste streams from any portion of a treatment facility. It is illegal to use this practice for stormwater events unless it meets the approved design criteria for stormwater management. Ecology may take enforcement action unless one of the following circumstances applies:

1. Bypass is consistent with the design criteria and part of an approved management practice.
2. Bypass is essential for maintenance, and it does not have the potential to violate permit limits or conditions.

3. Bypass is unavoidable, unanticipated, and results in noncompliance with this permit. If a planned action that would cause bypass of stormwater and has the potential to result in noncompliance with this permit during a stormwater event, the boatyard must notify Ecology at least ten days before the planned action and possible date of bypass.

2.9 Solid waste management

The boatyard must manage all solid waste materials to prevent release of leachate into waters of the state. Leachate is defined as water or other liquid that has been contaminated by dissolved or suspended materials due to contact with solid waste or gases.

2.10 Reporting for zebra mussel control

A boat or vessel identified as a carrier of zebra mussels must be quarantined and the appropriate Washington Fish and Wildlife Regional Office notified within 24 hours. The boat or vessel must not be released, re-launched, pressure washed, or have its bilge pumped until it has been cleared by the U.S. Fish and Wildlife Services of the Washington State Department of Fish and Wildlife.

Chapter 3 Overview of Analysis

This Economic Impact Analysis (EIA) estimates the costs of complying with the draft boatyard general permit. It also compares the costs of complying with the draft boatyard general permit for small businesses, to the costs of compliance for large businesses, to determine whether the requirements of the draft boatyard general permit disproportionately impacts small businesses.

The scope of the analysis deals only with the direct compliance costs imposed by the draft boatyard general permit to the boatyard industry. Ecology is not required in an Economic Impact Analysis to evaluate benefits and therefore will not do so in this document.

3.1 Small and large businesses

RCW 19.85.020(4) defines a small business as any business entity, including a sole proprietorship, corporation, partnership, or other legal entity, that is owned and operated independently from all other businesses, and that has fifty or fewer employees. There are both small and large businesses in the boatyard industry. Overall, boatyards average 41 employees. Among the small boatyards, the average is 13 employees, and the large boatyards average 171 employees.

The following table shows the number of facilities covered under the current boatyard general permit with 50 or fewer employees, and with more than 50 employees. This table also displays small and large business information by firm, because there are some firms within the boatyard industry that operate multiple facilities.

Table 4: Small and Large Facilities and Businesses

Employees	Number of Facilities	Number of Firms	Average Employees
50 or Fewer	55	55	41
More Than 50	17	12	171

Ecology must compare the cost of compliance for small businesses with the cost of compliance for the 10 percent of boatyards that are the largest businesses required to comply. Ecology was able to obtain data on 74 percent of the boatyards. Ecology has employment data on 47 small boatyards and 6 large boatyards. These 6 large boatyards are ten percent of the 53 boatyards we have data on.

3.2 Compliance costs included in the EIA

According to WAC 173-226-120, the EIA must estimate the costs of the following:

- Minimum treatment technology
- Monitoring
- Reporting
- Recordkeeping
- Plan submittal
- Equipment
- Supplies
- Labor
- Administrative costs

3.3 Compliance costs excluded from the EIA

The cost of complying with the following laws and rules as they relate to complying with general permit conditions are not included in the EIA's analysis of compliance costs:

1. State Groundwater Quality Standards (WAC 173-200)
2. State Surface Water Quality Standards (WAC 173-201)
3. State Sediment Management Standards (WAC 173-204)
4. Wastewater Discharge Permit Fees (WAC 173-224)
5. Federal law and regulations, in particular the Clean Water Act and federal NPDES regulations.

The justification for excluding compliance costs related to these laws and rules is that permit holders cannot be exempt from these laws through the permit process and, therefore, any cost impacts of these laws and regulations cannot be mitigated. Permit holders must comply with existing regulation independent of permit requirements.

Existing boatyards under the current 2011 boatyard general permit are already expected to comply with much of the draft general permit's requirements. They have already incurred most of the costs of complying with the draft general permit. However, even though a certain compliance cost has been incurred in the past, it is still a cost of compliance.

3.4 State and federal water pollution rules

The federal Clean Water Act (CWA) requires those that discharge to surface waters obtain a National Pollutant Discharge Elimination System (NPDES) permit. NPDES rules establish technology-based effluent standards. At a minimum, Ecology's boatyard general permit must impose a level of pollution control that is at least as strict as that set by federal laws and rules.

Ecology must also ensure that AKART are implemented to control pollution by the permittees covered by the boatyard general permit. AKART is a State technology-based requirement (see

RCW 90.48.010). AKART may be stricter than federal effluent standards; however, it cannot be less strict.

In addition, all permits issued by Ecology must ensure dischargers do not violate the state:

- Water quality standards for surface waters of the state (WAC 173-201A)
- Water quality standards for ground waters of the state (WAC 173-200)
- Sediment management standards (WAC 173-204)
- Wastewater discharge fees (WAC 173-224)

Chapter 4 Estimated Costs of Compliance with Draft Permit

The costs for boatyards to comply with the draft boatyard general permit depend on the size of the boatyard. While it seems appropriate to assume that boatyards that are smaller in geographic size will be those with fewer employees, from comments received on previous versions of the permit, this is not always the case. In this chapter, Ecology estimated ranges of costs for most requirements - a low cost and a high cost. The low cost estimate is for small boatyards and the high cost estimate is for large boatyards. Some requirements have the same cost for small and large boatyards, while other costs are presented as a range.

Most of the major assumptions used to estimate compliance costs are in this chapter. In particular, assumptions used to estimate capital costs are included. Capital costs and their associated operation and maintenance (O&M) costs are annualized to compare them to the services boatyards provide annually.

It is necessary to annualize costs because some costs are annual (incurred every year), while other costs are capital costs (incurred once). For example, installing a stormwater treatment technology is a one-time capital cost, while recordkeeping includes annual costs that must be incurred every year. In addition, some of the treatment options have different project life expectations and therefore it is necessary to annualize costs to compare them.

4.1 Meeting discharge benchmarks and limits

The draft general permit proposes benchmarks or limits for copper, lead, and zinc in stormwater discharges to waters of the State. To meet these benchmarks or limits, each boatyard will need to install a stormwater treatment technology[2]. For a detailed discussion of the costs associated with implementing these technologies, please see Ecology publication no. 10-10-018[3].

Ecology estimates the range of annualized costs for installing stormwater treatment technology at $21,165 to $56,730 for small boatyards and $42,331 to $113,464 for large boatyards.[4]

[2] While current permittees will have already installed the necessary technology, these costs are included because potential new permittees will have to incur them in order to comply.

[3] *Economic Impact Analysis AKART Analysis: Draft National Pollutant Discharge Elimination System (NPDES) Wastewater Discharge General Permit for Boatyards* Washington State Department of Ecology, Publication no. 10-10-018. https://fortress.wa.gov/ecy/publications/summarypages/1010018.html

[4] Values taken from Ecology publication no. 10-10-018 and adjusted by inflationary factor of 9.1% for period of 2009 to 2015 based on the GDP deflator.

4.2 Monitoring and analysis costs

Monitoring requirements are specific to the type of wastewater treatment and disposal methods used by the permit holder. Samples must be monitored and analyzed according to the boatyard general permit. There is no difference in the monitoring costs for small and large boatyards. The draft general permit requires boatyards to monitor:

- Wastewater discharges to a POTW from pressure washing.
- Stormwater discharges to waters of the state.

Wastewater discharged to sanitary sewers from pressure washing

Monitoring pressure washer wastewater discharged to a POTW is a federal pretreatment requirement and therefore is exempt from analysis in this permit.

Stormwater discharged to waters of the state

Stormwater discharged to waters of the state must be monitored at all boatyards. Samples must be collected from a location or locations affected by boatyard related activities. Based on comments received of the skill level of employees and public yards having to pay the prevailing wage, Ecology assumes a wage rate of $40.19 per hour[5]. The costs for monitoring and analyzing stormwater are the same for small and large businesses and are shown in the following table:

Table 5: Total Costs for Stormwater Monitoring

Category	Parameter	Hours	Minimum Monitoring	Cost of Analysis	Annual Cost
Stormwater	Copper, Zinc, Lead, Total	5	1/month	$76 for 3 metals	$1,385
Stormwater	Visual Monitoring	0.5	1/week	$0	$1,045
Non Stormwater Misc Discharges	Copper, Total Zinc, Total	Nobody is currently reporting they have these	1/month		$0
Total Costs					**$2,430**

4.3 Stormwater Pollution Prevention Plan

Every boatyard covered by the draft boatyard general permit must prepare a Stormwater Pollution Prevention Plan (SWPPP) specifically designed for their boatyard. Each SWPPP must include the BMPs necessary to meet the benchmarks or limits in the draft general permit. The SWPPP is a requirement of EPA Multisector Stormwater General Permit and therefore exempt from this analysis as a federal requirement. Additionally, the BMPs listed in the EPA's

[5] Washington State Department of Labor & Industries- Prevailing Wage Rates for Public Works Contracts for Shipbuilding & Ship Repair in King County https://fortress.wa.gov/lni/wagelookup/prvWagelookup.aspx

Multisector Stormwater General Permit are exempt from analysis. However, the additional BMPs that are mandatory for all boatyards in Washington, but are not required by EPA, must be included in this analysis.

Exempt BMPs

1. Pollution prevention team
2. Good housekeeping
3. Preventive maintenance
4. Spill prevention and emergency cleanup
5. Employee training
6. Inspections and recordkeeping

BMPs Included in Analysis

1. **Use of a vacuum sander**- A vacuum sander or rotary tool meeting minimum performance standards shall be used for all paint removal where a sander is appropriate. Ecology has reported that boatyards may recover the costs of this equipment by renting the units to people refinishing their own boats.

2. **Tidal grids**- Tidal grids are only used for emergency repair and marine surveying. Tidal grids cannot be used for surface preparation, painting, routine maintenance, or other non-emergency uses. This requirement has zero cost.

3. **In-water vessel maintenance repair**- Cleaning, repair, modifications, surface preparations, or coating of a vessel's hull is prohibited while the vessel is afloat. Repairs, modifications, surface preparation, or coating of topside or superstructure is limited to an annual total of 25 percent of the topside or superstructure surface. Equipment required: drop cloths, tarpaulins, drapes, shrouding or other protective devices.

4. **Upland vessel maintenance repair**- Material from maintenance and repair must be collected and managed to prevent their release into the environment and entry into waters of the state. Equipment required: drop cloths, tarpaulins, structures, drapes, shrouding, or other protective devices.

5. **Solids management**- Cleanup of debris and paint should be collected a minimum of once a day when solids-generating activity is occurring. Sediments traps are required to be installed in all storm drains to intercept and retain solids before being discharged.

6. **Paint and solvent use**- Paints and solvents should be used in a manner that prevents their release into the environment and entry into waters of the state. Equipment required: drip pans, drop cloths, tarpaulins, or other protective devices.

7. **Oils and bilge water management**- Hydraulic fluids, oily wastes, and petroleum products may not be discharged to waters of the state. Bilge water discharges must not

cause any visible sheen in waters of the state. Large boatyards typically use an oil water separator[6], while small boatyards will let bilge water settle in a large drum for separation.

8. **Sacrificial anode (zincs) management**- Zincs must not be disposed into the water and spent zinc must be stored in a covered container.

9. **Chemical management**- All chemicals must be stored under cover on an impervious surface.

10. **Wash pad decontamination**- Before discharging any stormwater from pressure wash pads, the pad must be cleaned. The pad must then be pressure washed into the collection sump and the sump cleaned of all debris. Depending on how busy the boatyard is and the time of year, this may occur as much as daily or as little as twice a year. This requirement is all labor costs. Ecology assumes a wage rate of $40.19 and that it takes 30 minutes. We assume large boatyards do this twice as often.
    - Small boatyards range: twice a year to every other day (2 to 183/year)
    - Large boatyards range: four times a year to once a day (4 to 365/year)

11. **Sewage and gray water discharges**- Sewage and gray water may not be discharged from boats to surface waters. This is a requirement of existing state and federal law and therefore, the compliance cost is zero.

[6] Ecology estimates oil water separators cost $5,000 and last about 15 years. The annualized cost using a 3.19% interest rate is about $400 a year.

The cost estimates for some of these BMPs are taken from the analysis from the original permit and brought up to date by applying a 56.54 percent inflationary factor for 1992-2015.[7] The following table shows the total costs for BMPs.

Table 6: Total Costs for Best Management Practices (BMPs)

BMP	Small Boatyards		Large Boatyards	
	Low	High	Low	High
1. Vacuum sander[8]	$2,980-	$2,980	$2,980-	$2,980
2. Tidal grids	$0-	$0	$0-	$0
3. In-water vessel maintenance repair	$63-	$314	$157-	$1,256
4. Upland vessel maintenance repair	$63-	$314	$157-	$1,256
5. Solids management	$2,308-	$5,134	$5,134-	$19,264
6. Paint and solvent use	$63-	$314	$157-	$1,256
7. Oils and bilge water management	$100-	$100	$400-	$400
8. Sacrificial anode (zincs) management	$50-	$50	$100-	$100
9. Chemical management	$157-	$157	$157-	$157
10. Wash pad decontamination	$34-	$3,130	$70-	$6,250
11. Sewage and gray water discharges	$0-	$0	$0-	$0
Total	**$5,817-**	**$12,493**	**$9,312-**	**$32,919**

4.4 Reporting and recordkeeping costs

4.4.1 Reporting

Boatyards must submit monitoring results in accordance with the minimum sampling frequencies specified in the draft boatyard general permit. All data must be collected and submitted to Ecology. Electronic submission is strongly encouraged.

Costs for reporting include labor costs to summarize monitoring results. Ecology assumes that all monitoring done at the same frequency can be reported at the same time. Ecology assumes it takes 30 min at $40.19 per hour wage rate to summarize and prepare the results for reporting.

[7] U.S. Department of Commerce: Bureau of Economic Analysis. Gross National Product: Implicit Price Deflator. http://research.stlouisfed.org/fred2/data/GNPDEF.txt

[8] See Appendix A of Ecology publication no. 10-10-018 for vacuum sander calculations taken from the 1997 Fact Sheet for NPDES General Permit for Boatyards. Costs were brought up to date by applying a 40.5% inflationary factor for 1997-2015.

The following table shows the costs for reporting:

Table 7: Total Costs for Monitoring Results Reporting

Total Costs for Monitoring Results Reporting			
Type of Monitoring Reported	**Hours**	**Frequency**	**Annual Cost**
Stormwater	0.5	5/year	$101
Total			**$101**

4.4.2 Records retention

Boatyards must retain records of all monitoring information for a minimum of five years. The cost of complying with this provision is the cost of storing records. This cost is likely very low or close to zero.

4.4.3 Total compliance costs

This section presents the total costs of compliance for boatyards under the draft boatyard general permit.

Table 8: Total Compliance Costs

Requirements	**Small**	**Large**
STORMWATER TREATMENT TECHNOLOGY	$21,165 - $56,730	$42,331 - $113,464
MONITORING		
Stormwater- Copper, Zinc Lead	$1,385	$1,385
Stormwater- Visual Monitoring	$1,045	$1,045
BEST MANAGEMENT PRACTICES		
Vacuum sander	$2,980	$2,980
Tidal grids	$0	$0
In-water vessel maintenance repair	$63 - $314	$157 - $1,256
Upland vessel maintenance repair	$63 - $314	$157 - $1,256
Solids management	$2,308 - $5,134	$5,134 - $19,264
Paint and solvent use	$63 - $314	$157 - $1,256
Oils and bilge water management	$100	$400
Sacrificial anode (zincs) management	$50	$100
Chemical management	$157	$157
Wash pad decontamination	$34 - $3,130	$70 - $6,250
Sewage and gray water discharges	$0	$0
REPORTING		
Stormwater	$101	$101
ANNUALIZED TOTALS	**$29,514 - $71,754**	**$54,174 - $148,914**

Chapter 5 Proportionality and Mitigation

5.1 Comparison of compliance costs for large and small businesses

The purpose of the economic impact analysis is to provide a comparison of the cost of compliance for small businesses and large businesses. Table 7 below summarizes the estimated costs per employee for both small and large businesses.

Table 9: Estimated Cost per Employee by firm size

Employees	Average Employees	Cost per Employee
50 or Fewer	41	$770 - $1,800
More Than 50	171	$330 - $883

While the capital costs are based on geographic scale of the boatyard, which is not universally associated with the number of employees, it is likely that the costs of compliance with the draft permit are disproportional.

5.2 Mitigation

The general permit rule (WAC 173-226-120) requires that disproportionate economic impacts of general permits on small businesses be reduced, when it is both legal and feasible to do so. Ecology has determined there is no opportunity to significantly reduce the costs of this permit to small businesses.

Legality and feasibility are determined by the legal context of existing state and federal regulations, such as the State Water Pollution Control Act (Chapter 90.48 RCW) and the federal Clean Water Act. Cost impacts on small businesses are reduced by modifying the conditions of the permit.

Mitigation involves one or more of the following:

- Establishing differing compliance or reporting requirements or timetables for small businesses.
- Clarifying, consolidating, or simplifying the compliance and reporting requirements under the general permit for small businesses.
- Establishing performance rather than design standards.
- Exempting small businesses from parts of the general permit

Mitigation measures must comply with state and federal requirements. The general permit condition requiring Economic Impact Analysis (WAC 173-226-120) states that mitigation only needs to be undertaken when it is legal and feasible in meeting the stated objectives of the:

- Federal Clean Water Act
- State Water Pollution Act - Chapter 90.48 RCW.

This condition is an important restriction. If a proposed mitigation measure violates a federal or state law or rule, then it cannot be undertaken.

The conditions of the draft general permit are based on requirements of federal laws and rules. Significant mitigation of these conditions would be a violation of federal NPDES program rules, which establish effluent standards. Because these conditions are a consequence of federal law, they cannot be mitigated, and the compliance costs associated with them cannot be reduced. The draft general permit must contain effluent limits that are at least as strict as federal effluent standards, to mitigate their impact on small businesses.

Ecology also places conditions in general permits to ensure discharges do not violate the state:

- Water quality standards for surface waters of the state (WAC 173-201A)
- Water quality standards for ground waters of the state(WAC 173-200)
- Sediment management standards (WAC 173-204)
- Wastewater discharge fees (WAC 173-224)

These conditions are legal requirements that Ecology cannot allow permit holders to violate. Compliance costs associated with these conditions of the draft general permit cannot be mitigated.

The above circumstances severely limit Ecology's ability to reduce cost impacts on small businesses. Legally, we can only mitigated costs imposed by permit conditions that are stricter than those required by the above rules. For the most part, the draft general permit contains conditions needed to comply with these requirements, usually only minor mitigation measures can legally be undertaken. The cost reductions that result are usually small.

5.2.1 Impact of mitigation on effectiveness of general permit

In general, the impact of the draft general permit on small boatyards cannot be mitigated significantly. Because most boatyards are small businesses, the economic impact of the draft general permit on small boatyards cannot be reduced without reducing the effectiveness of the permit in controlling water pollution

5.2.2 Mitigation

Ecology has determined there is no opportunity to significantly reduce the costs of this permit to small businesses.

References

RCW 34.05.272 directs agencies taking significant actions in the Water Quality Program to categorize citations as follows in bold headings, with citations for this analysis categorized into each section.

(i) Independent peer review: Review is overseen by an independent third party;

(n/a)

(ii) Internal peer review: Review by staff internal to the department of ecology;

(n/a)

(iii) External peer review: Review by persons that are external to and selected by the department of ecology;

(n/a)

(iv) Open review: Documented open public review process that is not limited to invited organizations or individuals;

WA Department of Ecology (2010) Economic Impact Analysis AKART Analysis: Draft National Pollutant Discharge Elimination System (NPDES) Wastewater Discharge General Permit for Boatyards, Publication no. 10-10-018.
https://fortress.wa.gov/ecy/publications/summarypages/1010018.html

WA Department of Ecology (2011). Water quality program permit Writer's Manual. Publication no. 92-109.

(v) Legal and policy document: Documents related to the legal framework for the significant agency action including but not limited to:
(A) Federal and state statutes;

(n/a)

(B) Court and hearings board decisions;

(n/a)

(C) Federal and state administrative rules and regulations; and

(D) Policy and regulatory documents adopted by local governments;

(n/a)

(vi) Data from primary research, monitoring activities, or other sources, but that has not been

incorporated as part of documents reviewed under the processes described in (c)(i), (ii), (iii), and (iv) of this subsection;

US Census Bureau (2014). North American Industry Classification System. http://www.census.gov/eos/www/naics/

U.S. Department of Commerce: Bureau of Economic Analysis. Gross National Product: Implicit Price Deflator. http://research.stlouisfed.org/fred2/data/GNPDEF.txt

Washington State Department of Labor & Industries- Prevailing Wage Rates for Public Works Contracts for Shipbuilding & Ship Repair in King County https://fortress.wa.gov/lni/wagelookup/prvWagelookup.aspx

(vii) Records of the best professional judgment of department of ecology employees or other individuals; or

(n/a)

(viii) Other: Sources of information that do not fit into one of the categories identified in this subsection (1)(c).

(n/a)