FACT SHEET FOR NPDES PERMIT WA-0039039

Washington State Department of Transportation
310 Maple Park Ave SE
PO Box 47331
Olympia, WA 98501

SUMMARY

This permit authorizes discharges from maintenance washing (low pressure washing) and discharges from preparation for painting (high pressure washing) of bridges and ferry terminals in Washington State. This is activity is low volume (18 gallons/minute maximum) and intermittent. Maintenance washing occurs in the winter or spring at time of high river flows. Preparation washing occurs in the summer at times of low river flows.

The effluent from maintenance washing has not been characterized for pollutants but is expected to be of low pollutant concentration. The effluent from preparation washing contains concentrations of the metals copper, zinc, lead and chromium that exceed water quality standards. This effluent was also demonstrated to be acutely toxic to aquatic organisms at approximately 2% effluent.

An analysis of treatment options for the preparation washing demonstrated that a filter tarp slung below the bridge to catch paint chips and debris met the cost test for all known, available and reasonable treatment (AKART of Chapter 90.48 RCW, case-by-case of 40 CFR Part 125.3).

The effluent concentrations from the filter tarps were used to make a determination of reasonable potential after allowance for a mixing zone. The analysis was not used to develop effluent limits, as typical, but rather to derive flows at which the effluent would not cause a violation of water quality standards. This analysis was conducted in an engineering report entitled *Treatment Evaluation for WSDOT Bridge Washing Effluent* (Herrera Environmental Consultants, October 2003).

The permit contains multiple conditions ranging from "no discharge" to surface waters at flows of 55 cfs or less to a requirement for tarps only at flows of 4200 cfs. The permit also contains many best management practices developed by a multi-agency workgroup to prevent degradation of water quality. The permit conditionally authorizes discharge to ground for projects with no discharge to surface waters. This authorization also has a compliance schedule for confirming the ground discharge has no reasonable potential to violate ground water standards.

Because the flows between 55 and 4200 cfs showed reasonable potential for violating water quality standards using standard EPA methodology, these discharges are covered by a compliance schedule for the term of the permit. The compliance schedule requires the permittee to evaluate each project, modify practices if necessary, and collect data to allow modification of the reasonable potential determination.

The permit requires submittal of a proposed project list for preparation washing and an annual summary report of projects and water quality data. The permit requires notification to Ecology and the Department of Fish and Wildlife when washing projects are conducted.

The permit contains General Conditions which come directly from law and regulation.

TABLE OF CONTENTS

INTRODUCTION 1

BACKGROUND INFORMATION 2
- DESCRIPTION OF THE WASTEWATER DISCHARGE 2
- PERMIT STATUS 3
- WASTEWATER CHARACTERIZATION 4
- SEPA COMPLIANCE 5

PROPOSED PERMIT LIMITATIONS 5
- TECHNOLOGY-BASED EFFLUENT LIMITATIONS 6
- SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS 6
  - Numerical Criteria for the Protection of Aquatic Life 6
  - Numerical Criteria for the Protection of Human Health 6
  - Narrative Criteria 6
  - Antidegradation 7
  - Critical Conditions 7
  - Mixing Zones 7
  - Description of the Receiving Waters 7
  - Surface Water Quality Criteria 8
  - Consideration of Surface Water Quality-Based Limits for Numeric Criteria 8
  - Whole Effluent Toxicity 11
  - Human Health 13
  - Sediment Quality 13
- GROUND WATER QUALITY LIMITATIONS 13

MONITORING requirements 13
- LAB ACCREDITATION 14

OTHER PERMIT CONDITIONS 14
- REPORTING AND RECORDKEEPING 14
- GENERAL CONDITIONS 14

PERMIT ISSUANCE PROCEDURES 14
- PERMIT MODIFICATIONS 14
- RECOMMENDATION FOR PERMIT ISSUANCE 14

REFERENCES FOR TEXT AND APPENDICES 15

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION 16

APPENDIX B--GLOSSARY 17

APPENDIX C--TECHNICAL CALCULATIONS 21

APPENDIX D--RESPONSE TO COMMENTS 30

INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

This fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments, the response to each comment, and any changes to the permit resulting from comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Washington State Department of Transportation (WSDOT)
Facility Name and Address	P.O. Box 47331 Olympia, WA 98504-7991
Type of Discharge	Bridge and Ferry Transfer Span washing and pressure washing water
SIC Code	NA
Discharge Location	Multiple Discharges Statewide
Water Body ID Number	NA

BACKGROUND INFORMATION

DESCRIPTION OF THE WASTEWATER DISCHARGE

WSDOT conducts two types of bridge and ferry transfer span washing activities: 1) routine maintenance washing, and 2) surface preparation for painting. Typically, routine maintenance washing is conducted by WSDOT maintenance crews, while painting and associated washing are conducted by contractors. The procedures used for each of these washing activities are described in more detail in the subsections to follow.

Maintenance Washing

Bridges

Routine maintenance washing of bridges typically occurs on a one to five-year cycle and involves the following steps:

- Establish traffic control – traffic control is typically set up and taken down on a daily basis to reduce traffic congestion during peak travel times.
- Establish fall protection systems (scaffolding, rigging, ropes and other equipment).
- Remove dry debris, such as dust and bird feces, by hand and vacuum (vactor truck)
- Wash steel with clean water using a high-volume, low-pressure system.

To reduce pollutant discharge to receiving waters below, dry debris is disposed of at an upland location. In some cases, a vacuum is applied during washing to capture some of the loosened material. Maintenance washing activities are typically performed during high river flows (late fall, winter, and early spring), also reducing the potential impact on receiving water quality. Approximately 400 to 600 gallons of water is used to clean a typical bridge structure (625 tons of steel). Filter tarps are not used during bridge maintenance washing.

Marine Transfer Spans

Routine maintenance washing of marine transfer spans does not use filter tarps and typically occurs on a monthly to semi-annual cycle. Routine maintenance washing involves the following steps:

- Dry debris, such as bird feces, is removed by hand or vacuum and subsequently disposed of upland.
- When necessary, a biodegradable degreaser (e.g., Simple Green) is applied to the marine span surfaces. Surfaces are typically not washed after a degreaser is applied, but washing may occur in some instances depending upon the activity.
- Approximately 200-600 gallons of water are used to clean marine transfer spans.
- Steel structures are washed with clean water using a high-volume, low pressure system.

Paint Preparation Washing

Bridges

Bridge washing in preparation for painting differs from maintenance washing. Paint preparation washing uses a low-volume, high-pressure washing system to more thoroughly remove debris and loose paint material from the steel surfaces. Maintaining paint coatings in good condition extends the service life of the bridge by reducing corrosion. Bridge painting occurs on a schedule dictated by the rate at which paint systems deteriorate. Most bridges are inspected every one to

two years and evaluated according to paint system condition. One of three paint system condition levels is identified at each bridge based on the following criteria:

Condition level 1: Paint is in like new condition

Condition level 2: Paint is peeling or deteriorating, but no steel is exposed

Condition level 3: Paint is peeling or deteriorating exposing the underlying steel.

When a bridge is identified in the later stages of condition level 2 or at condition level 3 and has 2 percent or more steel exposed, it is added to the statewide painting list. Due to varied bridge settings and environmental conditions, the frequency of bridge painting varies and is typically greater than 15 years. The following steps are conducted during bridge painting:

- Establish traffic control.
- Establish fall protection systems.
- Construct tarp systems around and beneath the work area. Under current standards, filter tarps must have a minimum apparent opening size (AOS) of 425 micrometers, equivalent to a #40 sieve.
- Remove dry debris by hand and vacuum.
- Wash steel surfaces with a low-volume, high pressure (3,200 pounds per square inch) system – effluent passes through a filter tarp to remove particulate material before discharge to the environment below.
- After the steel surfaces have dried, spot blast with metal slag (Blastox or Kleenblast) to remove flaking/chipping paint and oxidized steel.
- Blow down surfaces to remove residual dust and debris from the steel – all material from spot blasting activity is contained and stored on site.
- Apply zinc-based primer coat to spot-blasted areas.
- Apply an intermediate coat and top coat of moisture cure urethane to all steel surfaces.

In some cases, full containment of washing activities has been conducted at WSDOT bridge painting sites. In these cases, effluent in the past was often disposed of by discharging to land areas near the bridge site or to storm sewer systems. If effluent from the bridge pressure washing activities exceeds disposal limits for local municipal sanitary sewer systems and treatment is not an option, the effluent is designated as a hazardous waste and subsequently disposed of at a licensed facility.

Marine Transfer Spans

Marine transfer spans are painted at a frequency of 15 or more years. In preparation for painting, the span surfaces are cleaned using the same methodology described above for bridges. Filtration tarps are also currently used during paint preparation washing of marine transfer spans.

PERMIT STATUS

This is a new, previously unpermitted activity. The activities described here were previously covered by an interagency agreement under authority of RCW 90.48. Many of the permit conditions were taken from that agreement.

An application for a permit was submitted to the Ecology on October 6, 2003 and accepted by Ecology on November 6, 2003.

WASTEWATER CHARACTERIZATION

Data Sources for Effluent Characterization

Only limited data are available that specifically characterize effluent characteristics from WSDOT's bridge pressure washing activities. At present, the primary source of data is four separate studies that WSDOT conducted on steel bridges located within Western Washington (Herrera 2003). The specific location and dates for these studies are as follows:

Stillaguamish River bridge (No. 532/2) near Stanwood, Washington –August 2001 (two water quality monitoring events)

Skykomish River bridge (No. 2/030) near Gold Bar, Washington – May2002

Cowlitz River bridge (No. 432N) near Kelso, Washington – June 2002.

Nooksack River bridge (539/860) near Lynden, on SR539 – August 17, 2003.

The data from these studies included effluent flow rates and pollutant concentrations. All of these studies used similar data collection methodologies. Effluent from the bridge washing operations was collected after it passed through a filter tarp system. Sampling was conducted using U.S. EPA approved sampling and monitoring techniques/methodologies (i.e., "clean hands/dirty hands"). Both grab and representative composite effluent samples were collected during critical discharge times. Samples were subsequently submitted to Department of Ecology certified laboratories for analyses of dissolved and total metals and other selected pollutants. Field measurements of pH, dissolved oxygen, and conductivity were also recorded. A record of water quantities used to clean the bridge structures were obtained from the contractor and used to calculate average discharge rates. A detailed description of the sampling and analytical procedures used in these studies is provided in the field reports prepared by WSDOT and included in the report by Herrera (2003).

The bridge pressure washing wastewater is characterized for the following regulated parameters:

Table 1: Wastewater Characterization (µg/l)

Parameter	Concentration range (µg/l)
Copper dissolved (total recoverable)	22-178 (81.5-2050)
Zinc dissolved (total recoverable)	1020 – 2100 (1650 – 4470)
Lead dissolved (total recoverable)	70 – 130 (122 – 10500)
Chromium dissolved (total recoverable)	<10 – 22.7 (368 – 993)

Some volatile organic chemicals were detected at low concentrations in one sample but are not expected to be from the bridge pressure washing operations.

The metals in the effluent are expected to be primarily from bridge paint that is removed during the high pressure washing and from other roadway debris and substance accumulations on the bridge structure.

The effluent from the bridge maintenance washing (low pressure) has not been characterized but is expected to be low in pollutant concentration. The permit requires analysis of this wastewater during the course of the permit.

SEPA COMPLIANCE

The Department of Transportation has determined that the activity covered by this permit are exempt from SEPA under WAC 468-12-800(1)(u) which exempts "all repair, maintenance, and minor alteration of ...physical features and structures within the jurisdiction of the transportation department" and under WAC 197-11-800(3) which exempts "the repair, remodeling, maintenance, or minor alteration of existing private or public structures...".

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations are based upon the treatment methods available to treat specific pollutants. Technology-based limitations are set by regulation or developed on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

The applicant was required to produce an engineering report which evaluated several possible treatment options for the pressure wash effluent. The treatment options included full containment, recycle, and the current practice of filter tarps. The current treatment was considered to be AKART based on cost of treatment in relation to project cost and cost per quantity of pollutant removed. No technology-based effluent limits were developed because the preferred treatment has no operational controls. The preferred treatment is a best management practice, so the permit imposes conditions on the use of the tarps.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Surface water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The U.S. EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

ANTIDEGRADATION

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070. This permitted activity is not expected to cause the loss of beneficial uses in the receiving waters.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses. In determining reasonable potential for the pressure wash wastewater in freshwater, the ten year low flows were used. In marine waters, the time of low current velocity was used.

MIXING ZONES

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100. This discharge is a short term intermittent discharge and therefore was only evaluated for acute criteria and toxicity. An acute mixing zone of 2.5% was authorized for flowing fresh waters. An acute mixing zone of 20 feet around the point of discharge was authorized for marine waters. Because mixing zones are areas of dilution, no mixing zone may be authorized for receiving waters already exceeding the water quality criteria.

DESCRIPTION OF THE RECEIVING WATERS

This activity results in discharges to fresh and marine waters in the State. The specific waters are to be listed each year in the Annual Proposed Project List Report (see S3.B). Characteristic uses may include all of the following:

Class AA (Extraordinary)water supply (domestic, industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses.

Class A (Excellent)water supply (domestic, industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

Class B (Good)water supply (industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; secondary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall meet or exceed the requirements for most uses.

Class C (Fair)water supply (industrial); stock watering; fish migration; secondary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall meet or exceed the requirements of selected and essential uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Aquatic life criteria which are applicable for the significant pollutants in this discharge are summarized below:

Copper acute criteria	3.74 µg/l @ 20 mg/l hardness, 4.80 µg/l marine
Zinc acute criteria	29.27 µg/l @ 20 mg/l hardness, 90.0 µg/l marine
Lead acute criteria	10.79 µg/l @ 20 mg/l hardness, 210.0 µg/l marine
Chromium acute	146.9 µg/l @ 20 mg/l hardness, no criteria marine

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

Freshwater flowing water acute – 2.5% of receiving water volume
Marine – 20 feet from the point of discharge at lowest 10th percentile flow

The dilution factors of effluent to receiving water that occur within these zones have been determined by the use of volume to volume relationship based on statewide data for river low flows. The dilution factors vary with the river flow. The marine dilution factor was derived using CORMIX2 model. The predicted dilution factor was approximately 100.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of surface water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the rivers in this analysis was determined to be the summer time low river flow. The ambient background data used for this permit was taken from a State-wide data base for data around the time of low flow. Ambient background values which exceeded the criteria were excluded from the analysis.

The analysis for this permit was not typical. Instead of deriving limits that would be protective of water quality standards at design conditions (lowest flow, highest expected effluent concentration, etc.), the data was used to derive flows that would be protective.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge at concentrations of concern: copper, zinc, lead, and chromium. A reasonable potential analysis (See Herrera 2003) was conducted on these parameters to determine the flows at which the water quality criteria might violate water quality criteria.

The determination of the reasonable potential to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the time of summer low flow, although the analysis was adjusted in this case to find the minimum flow necessary to meet water quality criteria with the design conditions. The design conditions were as follows:

Effluent flow – Six pressure washers operating at a time = 0.04 cfs (18 gallons/minute)

Effluent concentrations – Estimated 95th percentile concentrations using EPA statistical estimator of the 95th percentile concentration:

Copper – 413 ug/l, Zinc – 4870 ug/l, Lead – 302 ug/l, Chromium – 53 ug/l

Estimated 90th percentile background concentrations from a state-wide data base at time of low flow:

Freshwater =Copper – 1.4 ug/l, Zinc – 5.30 ug/l, Lead – 0.7 ug/l, Chromium – 5.0 ug/l

Marine = Copper – 2.2 ug/l, Zinc – 16.0 ug/l, Lead – 10.0 ug/l, Chromium – na

Estimated 10th percentile hardness of receiving waters at time of low flow:

Eastern WA – 20.0 mg/l, Western WA – 14.0 mg/l

Translators (estimated fraction of total recoverable converting to dissolved in the receiving water):

Freshwater =Copper – 0.996, Zinc – 0.996, Lead – 0.466, Chromium – 0.993

Marine =Copper – 0.830, Zinc – 0.946, Lead – 0.951, Chromium – na

Mixing zone allowance:

Freshwater -2.5 % of river flow

Marine – Mixing at 20 feet from point of discharge at the lowest one hour velocity.

This analysis showed a potential to violate water quality criteria for metals in river flows below 7928 cfs (4260 cfs Eastern Washington). The analysis with the same design conditions but with only one pressure washer operating showed a reasonable potential at flows below 1322 cfs (Western Washington) and 711 cfs (Eastern Washington).

The permittee believes that the translators used in this analysis are inappropriate for this wastewater because the total recoverable fraction is not likely to convert to dissolved in the receiving water. An analysis using only the dissolved concentrations of metals in the effluent showed a potential to violate water quality criteria for metals at flows below:

Eastern Washington – 325 cfs (55 cfs)
Western Washington – 532 cfs (89 cfs)

The numbers in parenthesis above are the flows that meet reasonable potential with one pressure washer operating but other design conditions applied. Appendix C contains a summary of the calculations. The actual formulas for calculating "reasonable potential" are found in an spreadsheet named TSDCALC and can be found at:
(http://www.ecy.wa.gov/programs/wq/wastewater/index.html#npdes%20spreadsheets)

The proposed permit contains a compliance schedule for meeting the water quality-based limits for copper, zinc, lead and chromium. Prior to authorizing this compliance schedule the Department required the Permittee to evaluate the possibility of complying with the limitations by changes other than construction.

The proposed permit contains interim limits for copper, zinc, lead, and chromium as required by Chapter 173-201A WAC. The limits are in the form of best management practices based on existing multiagency agreement.

Water quality criteria for metals in Chapter 173-201A WAC are based on the dissolved fraction of the metal. As noted, the permittee believes the total recoverable metal in their effluent will not partition as typical of other wastewater. The compliance schedule allows the permittee to demonstrate the partitioning of the total recoverable fraction in the receiving water by conducting water quality studies over the time of the permit.

Metals criteria may also be adjusted using the water effects ratio (WER) approach established by USEPA, as generally guided by the procedures in USEPA Water Quality Standards Handbook, December 1983, as supplemented or replaced and Ecology (1994). The permittee may elect to conduct WER studies as they believe are appropriate and as approved by Ecology.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

In accordance with WAC 173-205-040, the Permittee's effluent has been determined to have the potential to contain toxic chemicals. The proposed permit contains requirements for whole effluent toxicity testing as authorized by RCW 90.48.520 and 40 CFR 122.44 and in accordance with procedures in Chapter 173-205 WAC. The proposed permit requires the Permittee to conduct toxicity testing once per year in order to characterize the acute toxicity of the effluent. Because of the intermittent and short-term nature of the discharge, chronic testing is not required.

The permit contains restrictions for discharge which were based, in part, on toxicity. The effluent data from two bridge projects follows:

DOT Bridge Washing Toxicity Tests

Effluent flow = 6 washers = 18 gallons/min = 0.04 CFS

Table . Bridge washing acute toxicity data.

	Cowlitz		Skykomish	
	Ceriodaphnia	Fathead Minnow	Ceriodaphnia	Fathead Minnow
NOEC =	<6.25%	12.5%	<6.25	25%
EC05 =	1.6%	11.8%	~2%	13.5%

NOEC is the no observed effect concentration, EC05 is the concentration affecting 5% of the test population.

The estimated concentration at which there is no toxicity to *Ceriodaphnia* is approximately 2% effluent.

The minimum river flow required to meet the no effect concentration (with 2.5% mixing allowance) is 80 CFS.

The minimum flow to meet the NOEC with one pressure washer operating would be approximately 13 cfs. EPA recommends a 2X safety factor to toxicity data to account for the possibility of more sensitive organisms so the minimum flow to protect from toxic effects is 160 cfs with 6 washers or 26 cfs with one washer.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC_{50}, EC_{50}, IC_{25}, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance*

and Whole Effluent Toxicity Test Review Criteria which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center 360-407-7472 for a copy. Ecology recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

HUMAN HEALTH

Washington's water quality standards include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge does not contain chemicals of concern for human health based on existing data or knowledge. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

SEDIMENT QUALITY

Ecology has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

Ecology has determined through a review of the discharger characteristics and effluent characteristics (see Herrera 2003) that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITATIONS

The permit authorizes a discharge to ground for pressure wash water in situations where there is no authorized discharge to surface waters. The effluent is required to be filtered with a #100 sieve tarp prior to discharge to ground. The effluent after filtering with a #100 sieve tarp has not been evaluated because this is a more restrictive requirement than previously required. A compliance schedule requires the permittee to evaluate effluent passing through a #100 sieve filter and to evaluate ground attenuation at these concentrations. In the interim, soil infiltration will be determined on a project basis in the Project Notification Report.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting of bridge and ferry transfer span pressure wash water are required (WAC 173-220-210 and 40 CFR 122.41) on one project a year to verify that the treatment process is functioning correctly and verify effluent concentrations.

Monitoring for bridge and transfer span low pressure wash water (maintenance washing) is being required on one project a year to further characterize this effluent. Receiving water data is also required to be collected at this time.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.*

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210). The permit requires an annual Proposed Project List Report to be submitted 90 days before projects are expected to begin. The permit also requires an annual Project Completion Report which summarizes preparation-washing activities for that season.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual industrial NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards for Surface Waters, Sediment Quality Standards, or Water Quality Standards for Ground Waters, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. Ecology proposes that this proposed permit be issued for 5 years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Herrera Environmental Consultants

2003. Treatment Evaluation for WSDOT Bridge Washing Effluent.

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Washington State Department of Ecology.

Laws and Regulations(http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information (http://www.ecy.wa.gov/programs/wq/wastewater/index.html

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to issue an NPDES permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

A combined public notice of application and public notice of draft was published on December 5 and December 8, 2003. The notice was published in the Spokane Spokesman-Review, The Yakima Herald-Republic, the Seattle Times and the Vancouver-Columbian.

Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the Ecology office listed below. Written comments should be mailed to:

Gary Bailey
Department of Ecology
PO Box 47600
Olympia, WA 98504-7600.

Documents may be reviewed at:

Department of Ecology
Water Quality Program
300 Desmond Dr. NE
Lacey, WA 98503

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6433, or by writing to the address listed above.

This permit and fact sheet were written by Gary Bailey.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Responsible Corporate Officer-- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

The technical calculations to support the requirements of this permit were performed in the supporting engineering report (Herrera 2003). The calculations were based on procedures in EPA (1991) and Ecology (1994).

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on Ecology's Internet site at (http://www.ecy.wa.gov/programs/wq/wastewater/index.html#npdes%20spreadsheets) . The summary calculations are shown here. Bold type indicates an exceedence of water quality standards.

DOT BRIDGE WASH-NUMBER OF WASHERS AND RESULTANT WATER QUALITY CRITERIA, DISSOLVED, W.WA.

Effluent Characteristics				
No. Pressure Washers:	1	1	1	1
Effluent Discharge per Washer (gal/min):	3	3	3	3
Total Effluent Discharge (gal/min):	3	3	3	3
Total Effluent Discharge (cfs):	0.007	0.007	0.007	0.007
	Cr	**Cu**	**Pb**	**Zn**
Sample Size:	5	5	5	5
Maximum Dissolved Metal Conc. (mg/L):	0.023	0.178	0.130	2.10
Multiplier:	2.32	2.32	2.32	2.32
Estimated 95% Effluent Dissolved Metal Conc. (mg/L):	0.053	0.413	0.302	4.87

Stream Characteristics				
Stream Hardness (mg/L as $CaCO_3$):	14	14	14	14
	Cr	**Cu**	**Pb**	**Zn**
Stream Background Dissolved Metal Conc. (mg/L):	0.0050	0.0014	0.0007	0.0053

Water Quality Standards				
	Cr	**Cu**	**Pb**	**Zn**
Acute Water Quality Standard (mg/L):	0.1097	0.00267	0.0072	0.0216

Impact Analysis - Total dissolved metals concentrations by stream discharge rate					
Stream Discharge (cfs)	Dillution Factor	Cr (mg/L)	Cu (mg/L)	Pb (mg/L)	Zn (mg/L)
88.0	330.1	0.005	**0.003**	0.002	0.020
89	333.9	0.005	0.003	0.002	0.020
531	1987.1	0.005	0.0016	0.001	0.008
532	1990.8	0.005	0.00164	0.001	0.008

DOT BRIDGE WASH - NUMBER OF WASHERS AND RESULTANT WATER QUALITY CRITERIA - DISSOLVED, E.WA.

Effluent Characteristics				
No. Pressure Washers:	1	1	1	1
Effluent Discharge per Washer (gal/min):	3	3	3	3
Total Effluent Discharge (gal/min):	3	3	3	3
Total Effluent Discharge (cfs):	0.007	0.007	0.007	0.007
	Cr	**Cu**	**Pb**	**Zn**
Sample Size:	5	5	5	5
Maximum Dissolved Metal Conc. (mg/L):	0.023	0.178	0.130	2.10
Multiplier:	2.32	2.32	2.32	2.32
Estimated 95% Effluent Dissolved Metal Conc. (mg/L):	0.053	0.413	0.302	4.87

Stream Characteristics				
Stream Hardness (mg/L as $CaCO_3$)[d]:	20	20	20	20
	Cr	**Cu**	**Pb**	**Zn**
Stream Background Dissolved Metal Conc. (mg/L)[d]:	0.0050	0.0014	0.0007	0.0053

Water Quality Standards				
	Cr	**Cu**	**Pb**	**Zn**
Acute Water Quality Standard (mg/L)[e]:	0.1469	0.0037	0.0108	0.0293

Impact Analysis - Total dissolved metals concentrations by stream discharge rate					
Stream Discharge (cfs)	Dillution Factor	Cr (mg/L)	Cu (mg/L)	Pb (mg/L)	Zn (mg/L)
54.0	203.0	0.005	0.003	0.002	**0.029**
55	206.7	0.005	0.003	0.002	0.029
324	1212.8	0.005	0.002	0.001	0.0094
325	1216.6	0.005	0.002	0.001	0.0093

DOT BRIDGE WASH -NUMBER OF WASHERS AND RESULTANT WATER QUALITY CRITERIA - TOTAL, W.WA.

Effluent Characteristics				
No. Pressure Washers:	1	1	1	1
Effluent Discharge per Washer (gal/min):	3	3	3	3
Total Effluent Discharge (gal/min):	3	3	3	3
Total Effluent Discharge (cfs):	0.007	0.0066840	0.007	0.007
	Cr	**Cu**	**Pb**	**Zn**
Sample Size:	2	3	3	3
Maximum Total Recoverable Metal Conc. (mg/L):	0.993	2.05	10.5	4.47
Translator:	1	0.996	0.466	0.996
Multiplier:	3.79	3.00	3.00	3.00
Estimated 95% Effluent Dissolved Metal Conc. (mg/L):	3.76	6.125400	14.68	13.36

Stream Characteristics				
Stream Hardness (mg/L as $CaCO_3$):	14	14	14	14
	Cr	**Cu**	**Pb**	**Zn**
Stream Background Dissolved Metal Conc. (mg/L):	0.0050	0.0014	0.0007	0.0053

Water Quality Standards				
	Cr	**Cu**	**Pb**	**Zn**
Acute Water Quality Standard (mg/L):	0.1097	0.0027	0.0072	0.0216

Impact Analysis - Total dissolved metals concentrations by stream discharge rate					
Stream Discharge (cfs)	Dillution Factor	Cr (mg/L)	Cu (mg/L)	Pb (mg/L)	Zn (mg/L)
1,321	4941.9	0.006	**0.003**	0.004	0.008
1,322	4945.6	0.006	0.003	0.004	0.008
7,927	29650.2	0.005	0.00164	0.001	0.006
7,928	29653.9	0.005	0.0016	0.001	0.006

DOT BRIDGE WASH - NUMBER OF WASHERS AND RESULTANT WATER QUALITY CRITERIA - TOTAL METAL - E.WA.

Effluent Characteristics				
No. Pressure Washers:	1	1	1	1
Effluent Discharge per Washer (gal/min):	3	3	3	3
Total Effluent Discharge (gal/min):	3	3	3	3
Total Effluent Discharge (cfs):	0.007	0.007	0.007	0.007
	Cr	**Cu**	**Pb**	**Zn**
Sample Size:	2	3	3	3
Maximum Total Recoverable Metal Conc. (mg/L):	0.993	2.05	10.5	4.47
Translator:	1	0.996	0.466	0.996
Multiplier:	3.79	3.00	3.00	3.00
Estimated 95% Effluent Dissolved Metal Conc. (mg/L):	3.76	6.13	14.68	13.36

Stream Characteristics				
Stream Hardness (mg/L as $CaCO_3$):	20	20	20	20
	Cr	**Cu**	**Pb**	**Zn**
Stream Background Dissolved Metal Conc. (mg/L):	0.0050	0.0014	0.0007	0.0053

Water Quality Standards				
	Cr	**Cu**	**Pb**	**Zn**
Acute Water Quality Standard (mg/L):	0.1469	0.0037	0.0108	0.0293

Impact Analysis - Total dissolved metals concentrations by stream discharge rate					
Stream Discharge (cfs)	Dillution Factor	Cr (mg/L)	Cu (mg/L)	Pb (mg/L)	Zn (mg/L)
710	2656.6	0.006	**0.004**	0.006	0.010
711	2660.3	0.006	0.0037	0.006	0.010
4,260	15934.6	0.005	0.0018	0.002	0.006
4,261	15938.3	0.005	0.0018	0.002	0.006

DOT BRIDGE WASH-NUMBER OF WASHERS AND RESULTANT WATER QUALITY CRITERIA, DISSOLVED, W.WA.

Effluent Characteristics				
No. Pressure Washers:	6	6	6	6
Effluent Discharge per Washer (gal/min):	3	3	3	3
Total Effluent Discharge (gal/min):	18	18	18	18
Total Effluent Discharge (cfs):	0.040	0.040	0.040	0.040
	Cr	**Cu**	**Pb**	**Zn**
Sample Size:	5	5	5	5
Maximum Dissolved Metal Conc. (mg/L):	0.023	0.178	0.130	2.10
Multiplier:	2.32	2.32	2.32	2.32
Estimated 95% Effluent Dissolved Metal Conc. (mg/L):	0.053	0.413	0.302	4.87

Stream Characteristics				
Stream Hardness (mg/L as $CaCO_3$):	14	14	14	14
	Cr	**Cu**	**Pb**	**Zn**
Stream Background Dissolved Metal Conc. (mg/L):	0.0050	0.0014	0.0007	0.0053

Water Quality Standards				
	Cr	**Cu**	**Pb**	**Zn**
Acute Water Quality Standard (mg/L):	0.1097	0.00267	0.0072	0.0216

Impact Analysis - Total dissolved metals concentrations by stream discharge rate					
Stream Discharge (cfs)	Dillution Factor	Cr (mg/L)	Cu (mg/L)	Pb (mg/L)	Zn (mg/L)
88.0	55.9	0.006	**0.009**	0.006	**0.092**
89	56.5	0.006	**0.009**	0.006	**0.092**
531	332.0	0.005	**0.0027**	0.002	0.020
532	332.6	0.005	0.00267	0.002	0.020

DOT BRIDGE WASH - NUMBER OF WASHERS AND RESULTANT WATER QUALITY CRITERIA - DISSOLVED, E.WA.

Effluent Characteristics				
No. Pressure Washers:	6	6	6	6
Effluent Discharge per Washer (gal/min):	3	3	3	3
Total Effluent Discharge (gal/min):	18	18	18	18
Total Effluent Discharge (cfs):	0.040	0.040	0.040	0.040
	Cr	**Cu**	**Pb**	**Zn**
Sample Size:	5	5	5	5
Maximum Dissolved Metal Conc. (mg/L):	0.023	0.178	0.130	2.10
Multiplier:	2.32	2.32	2.32	2.32
Estimated 95% Effluent Dissolved Metal Conc. (mg/L):	0.053	0.413	0.302	4.87

Stream Characteristics				
Stream Hardness (mg/L as $CaCO_3$)[d]:	20	20	20	20
	Cr	**Cu**	**Pb**	**Zn**
Stream Background Dissolved Metal Conc. (mg/L)[d]:	0.0050	0.0014	0.0007	0.0053

Water Quality Standards				
	Cr	**Cu**	**Pb**	**Zn**
Acute Water Quality Standard (mg/L)[e]:	0.1469	0.0037	0.0108	0.0293

Impact Analysis - Total dissolved metals concentrations by stream discharge rate					
Stream Discharge (cfs)	Dillution Factor	Cr (mg/L)	Cu (mg/L)	Pb (mg/L)	Zn (mg/L)
54.0	34.7	0.006	**0.013**	0.009	**0.146**
55	35.3	0.006	**0.013**	0.009	**0.143**
324	203.0	0.005	0.003	0.002	**0.0293**
325	203.6	0.005	0.003	0.002	0.0292

DOT BRIDGE WASH -NUMBER OF WASHERS AND RESULTANT WATER QUALITY CRITERIA - TOTAL, W.WA.

Effluent Characteristics				
No. Pressure Washers:	6	6	6	6
Effluent Discharge per Washer (gal/min):	3	3	3	3
Total Effluent Discharge (gal/min):	18	18	18	18
Total Effluent Discharge (cfs):	0.040	0.0401040	0.040	0.040
	Cr	**Cu**	**Pb**	**Zn**
Sample Size:	2	3	3	3
Maximum Total Recoverable Metal Conc. (mg/L):	0.993	2.05	10.5	4.47
Translator:	1	0.996	0.466	0.996
Multiplier:	3.79	3.00	3.00	3.00
Estimated 95% Effluent Dissolved Metal Conc. (mg/L):	3.76	6.125400	14.68	13.36

Stream Characteristics				
Stream Hardness (mg/L as $CaCO_3$):	14	14	14	14
	Cr	**Cu**	**Pb**	**Zn**
Stream Background Dissolved Metal Conc. (mg/L):	0.0050	0.0014	0.0007	0.0053

Water Quality Standards				
	Cr	**Cu**	**Pb**	**Zn**
Acute Water Quality Standard (mg/L):	0.1097	0.0027	0.0072	0.0216

Impact Analysis - Total dissolved metals concentrations by stream discharge rate					
Stream Discharge (cfs)	Dillution Factor	Cr (mg/L)	Cu (mg/L)	Pb (mg/L)	Zn (mg/L)
1,321	824.5	0.010	**0.009**	**0.019**	0.022
1,322	825.1	0.010	**0.009**	**0.019**	0.022
7,927	4942.5	0.006	**0.00267**	0.004	0.008
7,928	4943.2	0.006	0.0027	0.004	0.008

DOT BRIDGE WASH - NUMBER OF WASHERS AND RESULTANT WATER QUALITY CRITERIA - TOTAL METAL -E.WA.

Effluent Characteristics				
No. Pressure Washers:	6	6	6	6
Effluent Discharge per Washer (gal/min):	3	3	3	3
Total Effluent Discharge (gal/min):	18	18	18	18
Total Effluent Discharge (cfs):	0.040	0.040	0.040	0.040
	Cr	**Cu**	**Pb**	**Zn**
Sample Size:	2	3	3	3
Maximum Total Recoverable Metal Conc. (mg/L):	0.993	2.05	10.5	4.47
Translator:	1	0.996	0.466	0.996
Multiplier:	3.79	3.00	3.00	3.00
Estimated 95% Effluent Dissolved Metal Conc. (mg/L):	3.76	6.13	14.68	13.36

Stream Characteristics				
Stream Hardness (mg/L as $CaCO_3$):	20	20	20	20
	Cr	**Cu**	**Pb**	**Zn**
Stream Background Dissolved Metal Conc. (mg/L):	0.0050	0.0014	0.0007	0.0053

Water Quality Standards				
	Cr	**Cu**	**Pb**	**Zn**
Acute Water Quality Standard (mg/L):	0.1469	0.0037	0.0108	0.0293

Impact Analysis - Total dissolved metals concentrations by stream discharge rate					
Stream Discharge (cfs)	Dillution Factor	Cr (mg/L)	Cu (mg/L)	Pb (mg/L)	Zn (mg/L)
710	443.6	0.013	**0.015**	**0.034**	**0.035**
711	444.2	0.013	**0.0152**	**0.034**	**0.035**
4,260	2656.6	0.006	**0.0037**	0.006	0.010
4,261	2657.2	0.006	0.0037	0.006	0.010

APPENDIX D--RESPONSE TO COMMENTS

Comment No.

1. Washington Department of Fish and Wildlife (WDFW) - NO OBJECTION. I do request an explanation of the reason that the US Fish and Wildlife Service comments omit Bull Trout (Salvelinus confluentus) as proposed for critical habitat in Ferry County in their responses FWS reference 1-9-04-SP-076 and FWS reference 1-9-04-SP -077.

   Response. No permit changes. US Fish and Wildlife Service did not comment on this draft permit.

2. Washington State Dept. of Transportation (WSDOT) - (Page 5, Section Sl) - The first paragraph under Discharge Limitations should further clarify that "Routine Bridge and Deck Cleaning" (e.g. street sweepers) are exempt from this permit and are covered in the Water Quality Implementing Agreement. Some of our field staff did not see the differentiation because these sweeper trucks also use pressure water on the deck of the bridge as part of the debris removal and sweeping activity. This section was also covered separately under Appendix A of the GHPA and the structural maintenance washing "which the NPDES permit addresses" is covered under Appendix B of the GHP A. The intent here is to ensure clarity between the two different categories of work.

   Response. The draft permit is changed to clarify that the permit does not pertain to street sweeper operations.

3. WSDOT - (Page 6, Section Sl, B1) - We would like to eliminate the last sentence regarding project notification. Washington State Ferries field staff does not feel it is practicable to prenotify before they conduct maintenance washing of ferry structures because this activity is conducted on a very routine and frequent basis and is necessary to ensure safe public access to and from the vessels.

   Response. The draft permit is changed to omit routine washing of ferry transfer spans from notification requirements. This was not required in the original multi-agency agreement.

4. WSDOT - (Page 7, Section Sl, C) - Some of these conditions (e.g. #'s 7 and 8) originated from the general HPA permit developed by the programmatic subcommittee. These conditions are also found in other sections of the permit (e.g. ferry transfer span washing etc.). We are concerned that these conditions are not directly applicable to the NPDES permit. The purpose behind these conditions were relative to compliance with HPA rules. We would like you to consider removing these.

   Response. Ecology believes that Conditions S1.C.7, S1.C.8, S1.B.3, S1.B.4, S1.D5 and S1.D.6 are appropriate for preventing water pollution during the permitted activity.

5. WSDOT - Another condition of concern is the need to modify the "no pollution shall enter state waters" in sections Sl A 10, Sl B 12, and Sl C 28. The beginning statement of the condition should read "BMP's will be implemented to prevent pollutants from entering waters of the state".

   Response. The suggested language from the multiagency agreement has been incorporated. The permittee must recognize, however, a fundamental legal principle of NPDES permits is that the permit only authorizes the discharge of those substances identified in the application as being present or expected from the type of operation being permitted. Discovery of other polluting substances not identified in the application or obvious from the type of operation must be reported and may result in permit modification. The discharge of any polluting substances not identified in the application is an enforceable condition.

6. WSDOT - (Page 14, Section S3, A.) - Under Project Notification eliminate reference to notifying the WDFW Regional Habitat Program Manager. (Page 15, Section S3 R) - Second paragraph please eliminate reference to WDFW.

   Response – The permit has been changed. Ecology understands this requirement is included in the Hydraulics Permit.

7. WSDOT - (Page 11) - Regarding toxicity tests, "The WAC says use test organisms that represent taxonomic families native to the state. Fathead minnows do not meet that criteria." Could you consider adjusting the criteria so that it is consistent with the legal requirements.

   Response – Fathead minnows belong to the taxonomic family Cyprinidae (minnow family) which has a large number of species in the State of Washington.