Northwest Indian Fisheries Commission

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Northwest Indian Fisheries Commission

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January 25, 2019

Foroozan Labib
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PO Box 47696
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Re: WSDOT NPDES State Waste Discharge Municipal Stormwater General Permit - NWIFC Formal Comments

Dear Mr. Labib:

Please accept these comments on the above-referenced permit reissuance, on behalf of the Northwest Indian Fisheries Commission (NWIFC).[1] The 20 member tribes of NWIFC have constitutionally protected, treaty-reserved rights to harvest, consume, and manage fish and shellfish in their usual and accustomed areas. The State of Washington is bound by the terms of these treaties with the United States, with a duty to protect and restore fish habitat.[2] These comments are submitted in view of the need to ensure protection and restoration of these and other reserved rights and resources, and to safeguard the health, livelihoods, and well-being of tribal members.[3] NWIFC offers the comments below in the spirit of advancing the shared responsibilities of the co-managers to protect and restore the habitat that supports the fish resource.

Among several concerns, of particular importance is the need to reduce discharge of toxic contaminants through stormwater conveyance, which can be substantially accomplished through soil infiltration pretreatment. These reductions of toxins will benefit the entire food web, from forage fish, to salmonids, orca whales, and the human residents of the watershed. Watershed-scale stormwater retention, infiltration and treatment can reduce pollutant loads, and excessive flows and flooding. Over 1,000 new residents move to the Puget Sound region every week, in part because of abundant water and other natural amenities. Not only will these new neighbors demand clean water, but they will expect that their transportation

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[1] The NWIFC member tribes are the Lummi, Nooksack, Swinomish, Upper Skagit, Sauk-Suiattle, Stillaguamish, Tulalip, Muckleshoot, Puyallup, Nisqually, Squaxin Island, Skokomish, Suquamish, Port Gamble S'Klallam, Jamestown S'Klallam, Lower Elwha Klallam, Makah, Quileute, Quinault, and Hoh.

[2] *See U.S. v. Wash.*, 853 F.3d 946, 966 (9th Cir. 2017), affirmed by *U.S. v. Wash.*, 138 S.Ct. 1832 (2018).

[3] These general comments should not be construed as conflicting with any specific comments from NWIFC member tribes, which the Commission will acknowledge and consider with deference.

infrastructure will be designed and maintained to provide ecosystem services that retain and treat all stormwater resulting from this transportation infrastructure. Ecology's permit conditions, stormwater management manuals, best management practices, and other guidance must incorporate these needs to reduce pollutants and enhance mitigation strategies based on the best available science.[4]

Recent Scientific Studies Underscore the Need to Address Stormwater

"[T]he department of ecology shall in issuing and renewing state and federal wastewater discharge permits review the applicant's operations and incorporate permit conditions which require all known, available, and reasonable methods to control toxicants in the applicant's wastewater."[5] The most recent scientific studies emphasize the link between toxic contamination in our waters and the health of the salmon, humans and orca whales. In many cases, the same toxic contaminants that threaten the recovery of salmon and prey species also pose risks to humans and orcas. Moreover, studies have demonstrated a tight nexus between the complex mix of contaminants in stormwater and the alarming rates of pre-spawn mortality witnessed in adult coho throughout the Puget Sound region. Thus, while various efforts that focus on reducing and cleaning up individual toxic contaminants remain important, it will be crucial to address the harms of stormwater as such. Additionally, when stormwater runoff alters the hydrology, geomorphology, and thermal regime of streams and rivers, it can adversely impact salmon at various life stages.[6]

We highlight a few of these recent findings here, although this is not intended to be an exhaustive account. However, even this brief summary underscores the imperative to address stormwater as a linchpin in reducing the harms of toxic contamination throughout the web of life that sustains all of us.

Toxics in Stormwater Directly Linked to Pre-Spawn Mortality in Coho

Polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and a slew of other toxic pollutants in stormwater runoff are responsible for dramatic pre-spawn mortality rates for coho. "Adult coho salmon are exceptionally sensitive to the harmful effects of toxic urban runoff. Field surveys spanning more than a decade have shown very high rates of mortality in

[4] The WSDOT Highway Runoff Manual and any associated guidance are incorporated in this reference.
[5] RCW 90.48.520.
[6] "Pollution" is defined to include contamination that changes the temperature of surface water. *See* RCW 90.48.020. *See also* State of Wash. Dept. of Ecology, Fact Sheet for the NPDES and State Waste Discharge General Permit for WSDOT's Municipal Separate Storm Sewers 7 (December 2018) ("Stormwater runoff from impervious surfaces can increase the temperature of rain water and pose problems to fish and invertebrates that are sensitive to temperature and cannot survive in overly warm water bodies"). Discharge permits must ensure consistency with the requirements of WAC 173-201A-200-210 (designated uses and criteria), and 600-612 (use designations).

urban streams from the central Puget Sound Basin."[7] Research suggests that these extraordinary mortality rates – as high as 100% of coho exposed to highway runoff – are attributable to the complex mixture of contaminants present in this runoff, rather than to a single contaminant in isolation.[8] The most recent studies provide evidence "for a critical loss of spawners across much of the Puget Sound coho population segment, which is closely correlated with landscape-scale measures of human population density and transportation infrastructure."[9] Point discharge stormwater outfalls are ubiquitous within this municipal and transportation infrastructure. These findings support earlier studies identifying contaminants in stormwater runoff as the likely cause of coho mortality events and led researchers to conclude that "it will be difficult, if not impossible, to reverse historical coho declines without addressing the toxic pollution dimension of freshwater habitats."[10] Scientists now forecast a "substantively increased risk of local population extinction" in 40% of basins throughout the Puget Sound in the foreseeable future, if nothing is done to address these causes of pre-spawn mortality.[11] Fortunately, this coho mortality syndrome can be prevented by soil infiltration pretreatment,[12] which also substantially reduces the harm of stormwater to juvenile coho and invertebrate prey.[13]

Additionally, as you are aware, a recent Ecology report summarizing data collected between 2007 and 2013 from municipal stormwater permittees revealed that across four different land uses (low-density residential, high-density residential, commercial, and industrial), "copper, zinc, and lead were—more often than not—found to exceed (not meet) water quality criteria.... Dissolved zinc and copper in stormwater samples exceeded acute aquatic life criteria in 36% and 50% of the samples, respectively, over the three years of data. Among other harmful effects, coho exposure to copper can diminish olfactory sensitivity in juvenile fish, resulting in failure to initiate predator avoidance responses.[14] Mercury and total PCBs exceeded chronic aquatic life criteria in 17% and 41% of the samples, respectively."[15] The Reissued WSDOT

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[7] Blake E. Feist, et al., *Roads to Ruin: Conservation Threats to a Sentinel Species Across and Urban Gradient,* 27 ECOLOGICAL APPLICATIONS 2382-2396 (2017).

[8] Jennifer K. McIntyre, *Soil Bioretention Protects Juvenile Salmon and their Prey from the Toxic Impacts of Urban Stormwater Runoff*, 132 CHEMOSPHERE 213-19 (2015); see also Eric Wagner, *What Is Killing the Coho?* ENCYCLOPEDIA OF PUGET SOUND (2017), available at: https://www.eopugetsound.org/magazine/is/stormwater-mystery.

[9] Feist, et al., *Roads to Ruin, supra* note 4.

[10] *Id.*

[11] *Id.*

[12] Julann A. Spromberg, et al., *Coho Salmon Spawner Mortality in Western U.S. Urban Watersheds: Bioinfiltration Prevents Lethal Stormwater Impacts*, 53 JOURNAL of APPLIED ECOLOGY 398-407 (2016); Jennifer McIntyre, *Testing the Effectiveness of Bioretention at Reducing the Toxicity of Urban Stormwater to Coho Salmon: Stormwater Action Monitoring Final Report* (March 7, 2017).

[13] McIntyre, et al., *Soil Bioretention Protects Juvenile Salmon and their Prey, supra* note 5.

[14] Jason F. Sandahl, et al., *A Sensory System at the Interface Between Urban Stormwater Runoff and Salmon Survival*, 41 ENVIRONMENTAL SCIENCE AND TECHNOLOGY 2998-3004 (2007).

[15] Washington Department of Ecology, Western Washington NPDES Phase I Stormwater Permit: Final S8.D Data Characterization 2009-2013, at 12–13, available at: https://fortress.wa.gov/ecy/publications/SummaryPages/1503001.html.

Waste Discharge and Municipal Stormwater General Permit must implement effective strategies to measurably reduce these toxicant loads.

Toxics in Puget Sound at Levels that Produce Adverse Effects in Chinook and Pacific Herring

PCBs are currently present in Puget Sound at levels associated with adverse effects in Chinook and Pacific herring.[16] Although there has been some progress in reducing levels of other toxic contaminants, PCB levels have persisted in many Pacific herring stocks; specifically, they are present in herring above thresholds for harmful effects[17] and showed no change in the highly developed and moderately developed basins during a 16- to 21-year period.[18] Similarly, a recent assessment of status and trends regarding PCB levels in Puget Sound found that "[a]dult Chinook salmon from all locations (and juveniles from one basin) exceeded PCB [harmful effects] thresholds."[19]

PAHs[20] are similarly present in Puget Sound at levels that are likely to be harmful to herring (although a precise effects level is in the process of development, "PAH-metabolites in herring will likely be comparable to or above such a threshold in all basins"[21]). While there have been some localized improvements in PAH levels, they remain high and "conditions are not changing" throughout the Puget Sound.[22]

Toxics Identified as One of Three Key Threats to Southern Resident Orca Whale Survival

Ecology acknowledges that stormwater is the leading conveyance pathway for toxins in the waters of Puget Sound.[23] PCBs and other bioaccumulative toxic contaminants were recently cited as one of the three most significant environmental threats to the Southern Resident Orca Whales, whose numbers have declined precipitously in recent years.[24] A recent population

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[16] PCBs were used in lubricants, gasket sealers, paints, adhesives, brake lining and asphalt. State of Wash. Dept. of Ecology, Fact Sheet for the NPDES and State Waste Discharge General Permit for WSDOT's Municipal Separate Storm Sewers 43 (December 2018).

[17] James E. West, et al., *Current Conditions, Time Trends and Recovery Targets for Toxic Contaminants in Puget Sound Fish: the Toxics in Fish Dashboard Indicator* (undated), https://wdfw.wa.gov/publications/01364/ [hereinafter West, et al., *Current Conditions*].

[18] James E. West, et al., *Time Trends of Persistent Organic Pollutants in Benthic and Pelagic Indicator Fishes from Puget Sound, Washington, USA*, 73 ARCH. ENVIRON. CONTAM. TOXICOL. 207-29 (2017).

[19] West, et al., *Current Conditions*, *supra* note 17.

[20] PAH sources include motor oil, tire wear, vehicle exhaust, and coal-tar based sealants. State of Wash. Dept. of Ecology, Fact Sheet for the NPDES and State Waste Discharge General Permit for WSDOT's Municipal Separate Storm Sewers 9, Table 1 (December 2018).

[21] West, et al., *Current Conditions*, *supra* note 17.

[22] *Id.*

[23] Washington Department of Ecology, Puget Sound Toxics Control 36 (September, 2017).

[24] In stressing the "need to restore the ecosystem to one that sustains orcas, salmon and the quality of life for all Washingtonians," the office of Governor Jay Inslee identified toxic pollutants, stormwater, and fish passage

viability analysis singled out three factors – Chinook prey availability, noise and disturbance, and toxic contaminants – as the explanatory factors in the recovery of the Southern Residents.[25] PCBs and other toxic contaminants thus affect a significant dual factor for orca health: Chinook salmon abundance (see discussion above).

Several of the contaminants discussed above are not only harmful to herring, salmon and orca, but to human health as well (e.g., mercury, PCBs, and PAHs), as recognized by Washington's current human health criteria. Tribal members and other people who consume herring, salmon, and other fish are thereby exposed to levels of these contaminants that can cause cancer and other serious health impacts. It is also worth noting that the contaminants addressed in Washington's aquatic life and human health criteria reflect only a fraction of the contaminants that are released to our waters.[26] Many of the standard efforts to monitor and regulate these contaminants proceed one chemical at a time, and so do not account for the synergistic and antagonistic effects of exposures to the mixtures found in the real world – mixtures that include the unregulated contaminants as well. The scientific research on pre-spawn coho mortality has demonstrated the importance of accounting for these interactions – suggesting that the toxicity of real world stormwater may be greater than the sum of its parts. These harmful impacts to species listed under the Endangered Species Act implicate Ecology's obligations to prevent unauthorized take, and advance the conservation of listed species.

This is an Opportunity to Act on the Science

The scientific findings sketched above present a clear imperative. Indeed, although scientists are generally conservative in discussing the implications of their research, the conclusions they have drawn from recent studies are stark:

> The most important water quality threat to aquatic systems now is non-point source pollution. The coho mortality phenomenon is one of the few contemporary examples of urban stormwater causing the overt death of a widely distributed keystone species with high societal value, both economically and culturally.[27]

Fortunately, the permit under review provides an opportunity to act on the science and address stormwater runoff. Moreover, "[i]n cases where adequate information exists to develop more specific conditions or limitations to meet water quality standards, these conditions or limitations are to be incorporated into storm water permits, as necessary and appropriate."[28]

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barriers as contributors to orca population decline. See: https://medium.com/wagovernor/inslees-budget-takes-big-steps-to-save-orcas-and-salmon-14d95ff00305 .

[25] Robert C. Lacy, et al., *Evaluating Anthropogenic Threats to Endangered Killer Whales to Inform Effective Recovery Plans* (2017).

[26] Wagner, *What Is Killing the Coho?, supra* note 5.

[27] Feist, et al., *Roads to Ruin* (internal citation omitted), *supra* note 7.

[28] U.S. EPA, Interim Permitting Approach for Water-Quality Based Effluent limits in Storm Water Permits, September 1, 1996.

Researchers explain that "the common goal is to slow, spread, and infiltrate stormwater, to reduce high flows (i.e., flooding) and filter pollutants."[29] Considering salmon-bearing streams instead as merely stormwater conveyance systems, without adequate retention and without mitigating for increased stormwater volumes, risks displacement of juvenile salmonids from suitable habitat as well as introducing migration barriers when salmonids and other species lack the capacity to swim against these episodic but now frequent stormwater-enhanced velocities. In addition, "[i]mpervious surfaces in urban areas increase the quantity and peak flows of runoff, which in turn cause hydrologic impacts such as scoured streambed channels, in-stream sedimentation and loss of habitat. Furthermore, because of the volume of runoff, mass loads of pollutants carried by stormwater significantly degrade water quality."[30] "Impervious surfaces cause higher winter stormwater flows that erode stream channels and destroy spawning beds. Also, because more water flows offsite rather than seeping into the ground during the wet season, streams lose summertime base flows, drying out habitat needed for salmon rearing."[31] "The State's multimillion dollar shellfish industry is increasingly threatened by closures due to contaminants carried by stormwater."[32]

Simple site-specific mitigation practices should include introduction of complex wood structures, off-channel pools, stream-margin shelter, and similar habitat enhancement strategies. Flow-control best management practices (BMPs) can detain and retain stormwater flows, thereby reducing stream channel erosion.[33] Effective transportation facility design should "protect sensitive areas such as wetlands and riparian areas, and provide buffers along sensitive water bodies" including fish bearing streams, along with the application of BMPs including "filtration practices such as grassed swales, sand filters and filter strips; and infiltration practices such as infiltration basins and infiltration trenches."[34] In the Puget Sound region, studies have demonstrated and documented that bioinfiltration can provide a cost-effective treatment solution: "simple and inexpensive soil columns can be very effective at removing chemical contaminants" and protecting the health of coho and other aquatic species.[35]

The preventable, lethal discharges into fish bearing streams must be addressed in this permit, to prevent bridges and other water-abutting roadways from becoming barriers to habitat access by fish species relied on by the treaty tribes.[36] State agencies may not elect to execute

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[29] Feist, et al., *Roads to Ruin* (internal citation omitted), *supra* note 7.
[30] State of Wash. Dept. of Ecology, Fact Sheet for the NPDES and State Waste Discharge General Permit for WSDOT's Municipal Separate Storm Sewers 7 (December 2018).
[31] *Id.* at 8.
[32] *Id.*
[33] *Id.* at 13.
[34] 40 C.F.R. 122.34(b)
[35] Feist, et al., *Roads to Ruin* (internal citation omitted), *supra* note 5.
[36] *See* WAC 220-660-190 ("A person must design water crossing structures in fish-bearing streams to allow fish to move freely through them at all flows when fish are expected to move. . . . The water crossing design must provide unimpeded passage for all species of adult and juvenile fishes").

their authorities in a manner that blocks or impedes access to, or damages or destroys habitat needed to sustain the treaty fishery.[37] Runoff from road bridges and other water-transportation interfaces needs to be captured and conveyed to soil columns prior to discharge into surface waters. Direct discharges into surface waters should be treated using soil columns. Any project discharging to known or potential salmon streams should be required to treat any stormwater that cannot be infiltrated using enhanced treatment methods, providing stormwater design features addressing toxic runoff "which insures the free passage of salmon of all ages and life stages both upstream and down."[38] Monitoring of stormwater discharges into fish-bearing streams, and the effectiveness of BMPs to treat these discharges, must be required as an utmost priority under this permit, with emphasis on toxicant discharges from bridges and other water-transportation interfaces. Without these stormwater capture, retention, treatment, and monitoring practices, investments in hatchery reproduction and habitat restoration are nullified for coho and other species sensitive to stormwater pollutants. The urgency and insights provided by recent research need to be incorporated into various facets of the municipal permits being reissued by Ecology. Furthermore, WSDOT's Highway Runoff Manual is out of date.[39] Bridges must comply with Minimum Requirements 5, 6, and all other applicable limits on discharges of toxins; and limits on contributors of stormwater-enhanced flows that contribute to erosion not only at bridge sites, but also at downstream locations. Any manuals or guidance from Ecology or WSDOT that fail to address these known harms of stormwater to treaty fisheries are incomplete.[40]

Design standards for stormwater infrastructure based on past rainfall records may be inadequate for future conditions.[41] Observations off the Washington coast indicate a long-term

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[37] *U.S. v. Wash.*, 20 F. Supp. 986, 1022 (W.D. Wash. 2013), *aff'd, U.S. v. Wash.*, 853 F.3d 946, 980 (9th Cir. 2017), *Wash. v. U.S.*, 138 S.Ct. 1832 (2018).

[38] *Id.*

[39] WSDOT, Highway Runoff Manual 2-13 (April 2014).

[40] *See* State of Wash. Dept. of Ecology, Fact Sheet for the NPDES and State Waste Discharge General Permit for WSDOT's Municipal Separate Storm Sewers 32 (December 2018) (noting "instances where because of the size of a project or the sensitivity of a receiving water, or because of some other regulatory need to ensure compliance with standards [when] the appropriate level of treatment will be developed through a basin planning process and the treatment and control of stormwater runoff may be different from what is identified in the Highway Runoff Manual").

[41] Rosenberg, E.A. et al. Precipitation Extremes and the Impacts of Climate Change on Stormwater Infrastructure in Washington State 319-349. Climatic Change (2010). WSDOT will need to ensure that water crossings can accommodate increased flows that may result from climate change. *See* Wash. Dept. of Fish and Wildlife, Incorporating Climate Change into the Design of Water Crossing Structures: Final Project Report (September 2016) ("The expected service life of culverts is roughly 50 to 100 years (NCHRP 2015), and WSDOT (2015) requires an expected minimum service life of 50 years for all culverts. Therefore, culverts designed and constructed today will be subjected to whatever conditions occur decades from now. Consequently, in many parts of Washington State culverts designed for stream flows occurring in 2016 are likely to be undersized for flows occurring several decades from now. Undersized culverts may create barriers to fish passage, degrade fish habitats, damage public infrastructure, and threaten public safety"), available at https://wdfw.wa.gov/publications/01867/ .

increase in sea level rise.[42] Some projections indicate that sea levels in Washington state could increase by a range of 4 inches to 4.6 feet by 2100.[43] The rate of sea level rise varies with location due to vertical land motion, which is not consistent across the state. Sea level rise is likely to cause saltwater intrusion, corrosion, and coastal flooding of stormwater infrastructure.[44] The combination of extreme precipitation and sea level rise will hinder the draining of stormwater from coastal sites.[45]

These well-documented challenges require stormwater retention and treatment at watershed and permit-wide scales.[46] "For external coordination WSDOT must develop mechanisms to increase intergovernmental coordination as a necessary part of a SWMP," especially with affected Indian tribes, "since drainage basins seldom follow jurisdictional boundaries."[47] Furthermore, tribes co-manage fisheries, fish habitat, and other treaty resources in these watersheds, obliging WSDOT accession to this reasonable request.

With 64,000 people moving to the Seattle-Tacoma-Bellevue area between April 2016 and April 2017,[48] Ecology needs to require more ambitious public education and outreach requirements by permittees, to help these newcomers understand the stormwater impacts of the development needed to accommodate their arrival in and occupancy of the watershed. New development and infrastructure must retain and treat all resulting stormwater, at a minimum, with no net increase in stormwater flows. In other words, new development must provide sufficient ecosystem services infrastructure to eliminate any harmful impacts specifically attributable to this new development. Further, permittees should be required to implement projects that provide a net benefit by reducing existing stormwater impacts. Permittees should be required to explain why they missed any opportunity to provide these net benefits.

The larger point is that the science tells us that the situation for salmon is dire (and likely to worsen with increasing human population). A cause for the "overt death" of coho is stormwater, and, happily, there are some solutions that are "simple and inexpensive." Of course, NWIFC recognizes that bioinfiltration will not be the solution to every stormwater problem, and that the WSDOT Waste Discharge and Municipal Stormwater Permit reissuance effort is significant and complex.

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[42] National Research Council. Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future. Washington, DC: The National Academies Press (2012).
[43] *Id.*
[44] Mauger, G.S., et al. State of Knowledge: Climate Change in Puget Sound. 12-1. Prepared for the Puget Sound Partnership and the National Oceanic and Atmospheric Administration. Climate Impacts Group, University of Washington, Seattle, WA (2015).
[45] *Id.* at 12-2 – 12-3.
[46] *See* 40 C.F.R. 122.26.
[47] State of Wash. Dept. of Ecology, Fact Sheet for the NPDES and State Waste Discharge General Permit for WSDOT's Municipal Separate Storm Sewers 30-31 (December 2018).
[48] *See* https://www.thenewstribune.com/news/business/article206326214.html

However, NWIFC urges Ecology to seize this opportunity and be aggressive in addressing the known and documented harms of stormwater in this upcoming permit cycle. This is necessary in fulfillment of its treaty obligations, and its responsibilities under the Clean Water Act to restore and maintain the chemical, physical and biological integrity our nation's waters within the Puget Sound Estuary of National Significance and the surrounding associated waters.[49]

Sincerely,

Justin R. Parker
Executive Director

cc: NWIFC Commissioners

[49] *See* 33 U.S.C. § 1251, 33 U.S.C. § 1342(b), 33 U.S.C. § 1330.