



Northwest Indian Fisheries Commission

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November 9, 2018

Abbey Stockwell
Phase II Municipal Permit Writer
Water Quality Program
Washington Department of Ecology
P.O. Box 47696
Olympia, WA 98504

Re: Municipal Stormwater Permit Reissuance Formal Comments

Dear Ms. Stockwell:

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.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. NWIFC offers the comments below in the spirit of advancing the shared responsibilities of the co-managers to protect and restore the environment 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 need to contribute towards it through ecosystem services and infrastructure that retain and treat all stormwater resulting from their new development. 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.

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).

Recent Scientific Studies Underscore the Need to Address Stormwater

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.³

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 urban streams from the central Puget Sound Basin.”⁴ 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.⁵ 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.”⁶ Point discharge stormwater outfalls are ubiquitous within this municipal 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.”⁷ Scientists now forecast a “substantively increased risk of local population extinction” in 40% of basins throughout the Puget Sound in

³ “Pollution” is defined to include contamination that changes the temperature of surface water. See RCW 90.48.020.

⁴ Blake E. Feist, et al., *Roads to Ruin: Conservation Threats to a Sentinel Species Across an Urban Gradient*, 27 *ECOLOGICAL APPLICATIONS* 2382-2396 (2017).

⁵ 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), <https://www.eopugetsound.org/magazine/is/stormwater-mystery>.

⁶ Feist, et al., *Roads to Ruin*, *supra* note 4.

⁷ *Id.*

the foreseeable future, if nothing is done to address the causes of pre-spawn mortality.⁸ Fortunately, this coho mortality syndrome can be prevented by soil infiltration pretreatment,⁹ which also substantially reduces the harm of stormwater to juvenile coho and invertebrate prey.¹⁰

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.¹¹ Mercury and total PCBs exceeded chronic aquatic life criteria in 17% and 41% of the samples, respectively.”¹² The Reissued Phase I and Phase II Municipal Stormwater Permits 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. 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 effects¹³ and showed no change in the highly developed and moderately developed basins during a 16- to 21-year period.¹⁴ 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.”¹⁵

PAHs 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

⁸ *Id.*

⁹ 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).

¹⁰ McIntyre, et al., *Soil Bioretention Protects Juvenile Salmon and their Prey*, *supra* note 5.

¹¹ 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).

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

¹³ 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*].

¹⁴ 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).

¹⁵ West, et al., *Current Conditions*, *supra* note 13.

will likely be comparable to or above such a threshold in all basins”¹⁶). While there have been some localized improvements in PAH levels, they remain high and “conditions are not changing” throughout the Puget Sound.¹⁷

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

Ecology acknowledges that urban stormwater is the leading conveyance pathway for toxins in the waters of Puget Sound.¹⁸ 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. A recent population 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.¹⁹ 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.²⁰ 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

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ Washington Department of Ecology, Puget Sound Toxics Control 36 (September, 2017).

¹⁹ Robert C. Lacy, et al., *Evaluating Anthropogenic Threats to Endangered Killer Whales to Inform Effective Recovery Plans* (2017).

²⁰ Wagner, *What Is Killing the Coho?*, *supra* note 5.

of urban stormwater causing the overt death of a widely distributed keystone species with high societal value, both economically and culturally.²¹

Fortunately, there is an opportunity to act on the science and address stormwater runoff. The Phase I and Phase II permits being reissued by Ecology cover much of the area in western Washington that drains to the waters that support the salmon, and all those who depend on the salmon. These permits will be issued for five-year terms, which will determine the level of effort undertaken in these crucial next years by the public entities charged with managing stormwater. These next five years are of import not only because of the worrisome scientific status and trends data discussed above, but also because of the extraordinary human population growth projected in the region.

Recent studies also suggest opportunity in the form of available solutions. Researchers explain that “the common goal is to slow, spread, and infiltrate stormwater, to reduce high flows (i.e., flooding) and filter pollutants.”²² 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. Simple site-specific mitigation practices should include introduction of complex wood structures, off-channel pools, stream-margin shelter, and similar habitat enhancement strategies.

In the Puget Sound region, studies have demonstrated 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.²³ In this regard, reliance on street sweeping BMPs is insufficient for controlling roadway runoff. Runoff from road bridges 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. Without these stormwater capture, retention and treatment practices, investments in hatchery reproduction and habitat restoration are nullified for coho and other species sensitive to stormwater pollutants. Any manuals or guidance from Ecology that fail to address these known harms of stormwater to treaty fisheries are incomplete.

These well-documented challenges require stormwater retention and treatment at watershed and permit-wide scales. The urgency and insights provided by recent research need to be incorporated into various facets of the municipal permits being reissued by Ecology. To take but one example by way of illustration, Ecology should require a more ambitious “level of effort” for structural stormwater controls from its Phase I permittees. While Ecology’s proposed introduction of a retrofit incentive point system appears a promising step, it seems

²¹ Feist, et al., *Roads to Ruin* (internal citation omitted), *supra* note 4.

²² *Id.*

²³ *Id.*

that asking permittees to meet only the level of effort managed by the “average” achieved during the last permit cycle may aim too low. Permittees in the coming cycle should match the level of effort of their better-performing peers (a level that is not unreasonable, given that some permittees have already been achieving it).

With 64,000 people moving to the Seattle-Tacoma-Bellevue area between April 2016 and April 2017,²⁴ 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 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 municipal permit reissuance effort is significant and complex.

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.²⁵

Sincerely,

A handwritten signature in blue ink that reads "Justin R. Parker". The signature is written in a cursive, flowing style.

Justin R. Parker
Executive Director

cc: NWIFC Commissioners

²⁴ See <https://www.thenewstribune.com/news/business/article206326214.html>

²⁵ See 33 U.S.C. § 1251, 33 U.S.C. § 1342(b), 33 U.S.C. § 1330.