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Submitted via the Online Public Comment Form

Washington State Department of Ecology
Solid Waste Program
P.O. Box 47600
Olympia, WA 98504-7600

Re: Comments on the New Draft Statewide General Permit for Biosolids Management and Associated SEPA Checklist

Ms. Kijowski,

Thank you for accepting and reviewing comments on the draft general permit for biosolids and septage application. These comments and materials are submitted on behalf of Ed Kenney, a Washington resident with deep concern for water quality, human health, and fisheries in the State.

Please consider these comments to apply both to the draft permit and the associated State Environmental Policy Act (SEPA) checklist and proposed determination of non-significance (DNS). In general, the proposed permit and DNS are inadequate in that they focus solely on regulated metals, nitrogen, and bacteria, without accounting for modern pollutants with significant human health risks: microplastics, PBDEs, PFAS, pharmaceuticals, and other contaminants of emerging concern. This deficiency means that Ecology cannot meaningfully assess environmental impacts of issuance of the general permit for application of biosolids, and that the protections for surface waters and groundwater are insufficiently protective.¹

In a June 24, 2021 public meeting, Ecology stated that 86,000 tons of biosolids were land applied in Washington in 2019. Even under a conservative and unrealistic assumption that the use of biosolids will remain unchanged, that amounts to a total of 430,000 tons (860 million pounds) over the five-year life of the general permit. This staggering quantity mandates caution in regulating biosolids.

At the same meeting, Ecology asserted that it lacks means to regulate pollutants other than the nine metals identified by the United States Environmental Protection Agency (EPA) in 40 CFR § 503.13, and nitrogen. As explained herein, this position is both inaccurate and fails to meet Ecology's statutory duties to protect waters of the State. Given inadequate information and

¹ The term "biosolids" in this letter refers to both biosolids and septage unless specified. See RCW 70A.226.010(1).

reasonable risk of harm to the environment and human health, Ecology must take a precautionary approach, make a determination of significance, and prepare an environmental significance. While Mr. Kenney acknowledges that Ecology faces legislative direction to make beneficial use of biosolids in a manner that minimizes risk to public health and the environment, preparation of an environmental impact statement will allow the agency the time and information needed to balance these dual mandates. Careful consideration of alternatives is essential before approving such an extensive, impactful, and risky program.

A. Biosolids Statutory and Regulatory Criteria

The Department of Ecology is affirmatively responsible for ensuring that permitted activities, including land application of biosolids, protects waters of the State. RCW 90.48.010 states in part that:

It is declared to be the public policy of the state of Washington to maintain the highest possible standards to insure the purity of all waters of the state consistent with public health and public enjoyment thereof, the propagation and protection of wild life, birds, game, fish and other aquatic life, and the industrial development of the state, and to that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state of Washington. Consistent with this policy, the state of Washington will exercise its powers, as fully and as effectively as possible, to retain and secure high quality for all waters of the state.

As part of effectuating that policy, RCW 90.48.080 mandates that:

It shall be unlawful for any person to throw, drain, run, or otherwise discharge into any of the waters of this state, or to cause, permit or suffer to be thrown, run, drained, allowed to seep or otherwise discharged into such waters any organic or inorganic matter that shall cause or tend to cause pollution of such waters according to the determination of the department, as provided for in this chapter.

This provision is broad in scope, covering any mechanism by which “any organic or inorganic matter” pollutes groundwater or surface waters. These broad provisions are reinforced by the State Environmental Policy Act, RCW 43.21C.020, which recognizes that “each person has a fundamental and inalienable right to a healthful environment,” and commands that it is the “continuing responsibility of the state of Washington and all agencies of the state to use all practicable means” to protect a safe, healthful, and productive environment. SEPA further requires that “[t]he policies, regulations, and laws of the state of Washington shall be interpreted and administered in accordance with the policies set forth” in SEPA. RCW 43.21C.030.

With respect to biosolids specifically, RCW 70A.226.005(2) states:

The legislature declares that a program shall be established to manage municipal sewage sludge and that the program shall, to the maximum extent possible, ensure

that municipal sewage sludge is reused as a beneficial commodity and is managed in a manner that minimizes risk to public health and the environment.

This provision presents dual mandates that apply “to the maximum extent possible.” While biosolids must be reused, Ecology may only authorize such reuse in a manner that minimizes environmental and health risk. If Ecology cannot ensure that environmental and health risks are minimized, the agency may not permit biosolids application.

Ecology implements RCW Chapter 70A.226 through the rules promulgated at WAC Chapter 173-308. The regulations detail testing requirements and concentration thresholds for certain pollutants, WAC 173-308-160, require pathogen and vector reduction, WAC 173-308-170 to -180, require screening of manufactured inerts, WAC 173-308-205, and set agronomic rate of application, WAC 173-308-190, among other requirements. Notably, WAC 173-308-190(6) provides that “[w]hen the potential for groundwater contamination due to biosolids application exists, the department may require groundwater monitoring or other conditions in accordance with the provisions of chapter 173-200 WAC. If it is determined that an enforcement criterion may be violated, an evaluation must be conducted to demonstrate compliance with the provisions of chapter 173-200 WAC.” Finally, WAC 173-308-191 mandates that “[b]iosolids may not be applied to the land if they are likely to adversely affect a threatened or endangered species or its critical habitat.”

While the biosolids regulations focus on specific pollutants, this does not mean that those are the only pollutants that are subject to regulation or that may cause contamination. WAC 173-380-030 confirms that “[b]iosolids facilities and sites where biosolids are applied to the land must comply with the requirements of chapter 90.48 RCW and chapters 173-200 and 173-201A WAC,” which are the Water Pollution Control statute and regulations protecting groundwater and surface water. The regulations contain anti-degradation provisions which prohibiting contamination of waters of the State. WAC 173-200-030; WAC 173-201A-300. WAC 173-201A-240 prohibits introduction of toxic substances to surface waters beyond background levels.

The State law requirements are in addition to those imposed by the Federal Clean Water Act and implementing regulations. 40 CFR § 503.5 (“[n]othing in this part precludes a State or political subdivision thereof or interstate agency from imposing requirements for the use or disposal of sewage sludge more stringent than the requirements in this part or from imposing additional requirements for the use or disposal of sewage sludge.”). Where there is land application within the confines of a wastewater treatment facility, a NPDES permit is required. 40 CFR § 122.26(b)(14)(ix).

B. SEPA Procedural Requirements

SEPA requires that Ecology prepare an environmental impact statement (EIS) for major actions having a probable significant, adverse environmental impact. RCW 43.21C.031. In order to determine whether an EIS is required, Ecology must prepare a threshold determination based on a rigorous review of direct, indirect, and cumulative effects of the proposal. WAC 197-11-330. Impacts likely to be significant include impacts “to environmentally sensitive or special areas,

such as loss or destruction of historic, scientific, and cultural resources, parks, prime farmlands, wetlands, wild and scenic rivers, or wilderness,” impacts that “[a]dversely affect endangered or threatened species or their habitat,” actions that “[c]onflict with local, state, or federal laws or requirements for the protection of the environment” and those impacts that “involve unique and unknown risks to the environment, or may affect public health or safety.” WAC 197-11-330(3)(e).

Ecology must make the threshold determination “based upon information reasonably sufficient to evaluate the environmental impact of a proposal,” and may require the applicant to submit more information or conduct independent further analysis if such reasonably sufficient information is not provided by the project proponent. WAC 197-11-335. The reasonably sufficient information requirement is ongoing. The lead agency “shall withdraw” the determination of nonsignificance if “[t]here is significant new information indicating, or on, a proposal’s probable significant adverse environmental impacts” or “[t]he DNS was procured by misrepresentation or lack of material disclosure.” WAC 197-11-340(3).

While SEPA review may reference thresholds and requirements set forth in other statutes and regulations, SEPA compliance is an independent legal duty, and SEPA supplements existing authority. *Polygon Corp. v. Seattle*, 90 Wash. 2d 59, 65, 578 P.2d 1309, 1313 (1978); *Columbia Riverkeeper v. Port of Vancouver USA*, 188 Wash. 2d 80, 95, 392 P.3d 1025, 1032 (2017).

C. The General Permit Fails to Protect Against Dangerous Chemicals

The fundamental failing of the general permit is that, even though Ecology knows and recognizes that biosolids contain dangerous contaminants of emerging concern and microplastics, Ecology requires no testing or control for these substances whatsoever. This is a very significant concern given the capacity of these substances to penetrate to groundwater and enter drinking water and surface waters. There is also concern that biosolids directly applied or in compost will expose farmworkers. Lack of adequate regulation of contaminants is a systemic concern which poses cumulative effects. The issues referenced in this letter should be dealt with at the programmatic general permit level and not deferred until site specific review.

Because the areas that produce the most biosolids tend to be the most populated and affluent urban areas in Washington, and the areas that receive biosolids tend to be less affluent, rural areas, the general permit raises serious environmental justice issues that Ecology has not evaluated.

1. Public health and environmental risk

The proposed general permit poses grave risk of contaminating both surface and groundwaters. Because biosolids derive from our collective waste stream, they contain concentrations of untreated chemicals from household and business use—everything we eat, drink, use for cleaning, and launder. This means that biosolids inherently contains myriad harmful substances, including: dozens of different chemicals derived from detergents, fragrances, and pharmaceuticals, that are collectively referred to as “contaminants of emerging concern,”

including PFAS;² polybrominated diphenyl ethers (PBDEs) and other dioxins;³ phthalates; and biological contaminants such as norovirus and the novel coronavirus.⁴ Many of these substances can cause significant short and long-term ecological and human health impacts at relatively low concentrations, raising significant public health and environmental risks.

Contaminants of emerging concern and dioxins found in biosolids evade treatment in municipal wastewater treatment plants. As such, they tend not to break down in soil, and can be transported by and to water. According to at least one peer-reviewed study of runoff following biosolids application, contaminants in biosolids are transported by runoff and can enter surface waters in dangerous concentrations.⁵ Another peer-reviewed study states that “[r]ecent studies have demonstrated that the application of PFC contaminated biosolids can have important effects on local environments, ultimately leading to demonstrable human exposures,” notes that “relatively high transport from soils to surface and well water is possible,” and describes a case study in Alabama.⁶

Contamination would contribute to an already dangerous level of pollution in many areas. For example, the Nisqually River, Nisqually Reach, and McCallister Creek exceed water quality standards for fecal coliform, and water and sediments contain contaminants of emerging concern. According to a recent Seattle Times article summarizing an EPA study,

The Nisqually estuary was more contaminated than expected with drugs, including cocaine, Cipro and Zantac. The source of the drugs there was unknown, the researchers reported. However, the Nisqually River, Nisqually Reach and McAllister Creek do not meet water-quality standards for fecal coliform. That makes leaking septic systems a possible source of the drugs.⁷

² These chemicals include perfluorinated chemicals (PFOS, PFOA); polychlorinated alkanes (PCAs), polychlorinated naphthalenes (PCNs); organotins (OTs), polybrominated diphenyl ethers (PBDEs), triclosan (TCS), triclocarban (TCC); benzothiazoles; antibiotics and pharmaceuticals; synthetic musks; bisphenol A, quaternary ammonium compounds (QACs), steroids; phthalate acid esters (PAEs) and polydimethylsiloxanes (PDMSs). See Bradley O. Clarke, Stephen R. Smith, Review of ‘emerging’ organic contaminants in biosolids and assessment of international research priorities for the agricultural use of biosolids, *Environment International*, Volume 37, Issue 1, 2011, Pages 226-247, ISSN 0160-4120, <https://doi.org/10.1016/j.envint.2010.06.004>; see also Kinney et al., 2006, Survey of organic wastewater contaminants in biosolids destined for land application. *Environmental Science and Technology*, Vol. 40, No. 23, pp. 7207-7215.

³ Kim et al., 2017, Review of contamination of sewage sludge and amended soils by polybrominated diphenyl ethers based on meta-analysis. *Environmental Pollution*, Vol. 220 Part B, pp. 763-765 (finding consistent presence of PBDEs in biosolids in varying concentrations across 288 samples).

⁴ Viau et al., 2011, Toward a Consensus View on the Infectious Risks Associated with Land Application of Sewage Sludge. *Environmental Science and Technology*, Vol. 45, Issue 13, pp. 5459–5469.

⁵ Yang et al., 2012, Steroid hormone runoff from agricultural test plots applied with municipal biosolids. *Environmental Science and Technology*, Vol. 46, No. 5, pp. 2746-2754, doi:10.1021/es203896t.

⁶ Lindstrom AB, Strynar MJ, Delinsky AD, Nakayama SF, McMillan L, Libelo EL, Neill M, Thomas L. Application of WWTP biosolids and resulting perfluorinated compound contamination of surface and well water in Decatur, Alabama, USA. *Environ Sci Technol*. 2011 Oct 1;45(19):8015-21. doi: 10.1021/es1039425. Epub 2011 Apr 22. PMID: 21513287.

⁷ Seattle Times, Drugs found in Puget Sound salmon from tainted wastewater (Feb. 23, 2016). Available at: <https://www.seattletimes.com/seattle-news/environment/drugs-flooding-into-puget-sound-and-its-salmon/>

If these chemicals are present in leaking septic effluent they are certainly also present in septage and biosolids. When present in water and sediments, the chemicals make their way into salmon and cause adverse health effects and death.⁸

Similarly, testing of sediment in outfall areas near the King County Elliott West CSO treatment plant has exceeded screening levels, including total PCBs, benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzyl butyl phthalate, bis(2-ethylhexyl) phthalate, chrysene, dibenzo(a,h)anthracene, fluoroanthene, indeno(1,2,3-c,d)pyrene, and mercury.⁹ Like leaking septic, overflow sewage likely presents many of the same threats as biosolids.

One contaminant of particular concern is PFAS. According to the Department of Health, Per- and polyfluoroalkyl substances (PFAS) are a family of chemicals used since the 1950s to manufacture stain-resistant, water-resistant, and non-stick products. PFAS are widely used as coatings in common consumer products such as food packaging, outdoor clothing, carpets, leather goods, ski and snowboard waxes, and more. Ecology has recognized the risks posed by these chemicals, and has prioritized regulating them through a chemical action plan (CAP).

Federal and State agencies increasingly recognize PFAS as widespread and a serious health risk. On February 22, 2021, the United States Environmental Protection Agency (EPA) made final determinations to regulate PFOS and PFOA in drinking water. On April 27, 2021, Administrator Regan called for the creation of a new “EPA Council on PFAS” that is charged with building on the agency’s ongoing work to better understand and ultimately reduce the potential risks caused by these chemicals. EPA has recognized that PFAS pose serious health risks that can no longer simply be ignored.

Likewise, the State has acknowledged that PFAS are chemicals of serious public health concern that is likely present in biosolids and wastewater, highly mobile in water and soil, do not degrade, bioaccumulate in humans and other animals, and cause likely human health effects.

Ecology’s website provides a fact sheet for PFAS, reading in part that:

PFAS have become a serious public health concern across our country and state. Over time, some PFAS released from manufacturing sites, landfills, firefighting foam, and other products seep into surface soils. From there, PFAS leaches into groundwater and can contaminate drinking water. PFAS have also been found in rivers, lakes, fish, and wildlife.

...

PFAS do not break down easily and stay in the environment for a long time. As a result, PFAS are widely detected in air, soil, water, and food. Exposure can occur when someone uses certain products that contain PFAS, eats PFAS-contaminated food, or drinks PFAS-contaminated water. When ingested, some PFAS can build

⁸ Seattle Times, Puget Sound salmon do drugs, which may hurt their survival (April 16, 2018). Available at: <https://www.seattletimes.com/seattle-news/puget-sound-salmon-do-drugs-which-may-hurt-their-survival/>

⁹ Fact Sheet for NPDES Permit WA0029181 West Point Wastewater Treatment Plant (WWTP) and Combined Sewer Overflow (CSO) System December 19, 2014.

up in the body and, over time, these PFAS may increase to a level where health effects could occur.

Studies in animals show that exposure to some PFAS can affect liver function, reproductive hormones, development of offspring, and mortality.

Although nearly all of us are exposed to PFAS, their toxicity in humans is not completely understood. Experts investigating the effects on people have found probable links to immune system toxicity, high cholesterol, reproductive and developmental issues, endocrine system disruption, ulcerative colitis, thyroid issues, certain cancers, and pregnancy-induced hypertension.¹⁰

Media accounts and increasing science support these conclusions.¹¹ The Ecology fact sheet for PFAS similarly acknowledges that Ecology is “concerned” because

Certain PFAS are highly mobile in the environment, meaning they can contaminate groundwater. Some PFAS transform into highly persistent perfluorinated chemicals—no natural processes can break these substances down. Once in the environment, PFAS can contaminate water and bioaccumulate in wildlife. The drinking water supplies in several parts of Washington are contaminated with PFAS above Environmental Protection Agency's health advisory level. They are costly to filter out.

Accordingly, the draft chemical action plan recognizes biosolids as potential sources of PFAS contamination to waters of the State, and calls for Ecology to, *inter alia*, “[e]stablish biosolids and soil sample collection and handling methods for PFAS analysis,” “[a]ccredit Washington labs for EPA-validated analysis methods,” “[i]nvestigate land application sites where procedures mimic rates and practices under current state rule (Chapter 173-308 WAC15),” “[e]valuate realistic exposure pathways,” and “[e]valuate risk modeling using realistic input values.”

For wastewater, the draft CAP recommends that “Ecology should evaluate PFAS in WWTP influent and effluent to better understand PFAS discharges in Washington state,” “Ecology should develop a study design to sample PFAS in three different types of plants,” “Ecology should consider additional monitoring requirements for WWTP dischargers...Based on this evaluation Ecology should require possible PFAS monitoring for some or all domestic and industrial WWTPs.”

According to the draft CAP, the Legislature provided Ecology “\$235,000 to conduct a WWTP sampling study by June 30, 2021. This includes costs for sample analysis, which can range from \$1,000 to \$1,500 per sample as well as project staff salaries.”

¹⁰ <https://ecology.wa.gov/Waste-Toxics/Reducing-toxic-chemicals/Addressing-priority-toxic-chemicals/PFAS>

¹¹ See, e.g., <https://www.nytimes.com/2020/09/23/parenting/pregnancy/pfas-toxins-chemicals.html?searchResultPosition=1> “These Everyday Toxins May Be Hurting Pregnant Women and Their Babies”

Despite a long record of Ecology recognizing the risks of PFAS, including those risks specific to wastewater treatment and biosolids land application, the draft general permit has no protections in place for PFAS which Ecology recognizes as a priority-toxic chemical. The same is true for pharmaceuticals and other contaminants of emerging concern. Lastly, pathogens deemed dead may actually be dormant. When applied to land in sewage wastes, dormant pathogens can regenerate when spread on the soil, especially wet soil.

There is also no meaningful discussion of contaminants beyond those specified in regulation in the draft general permit or associated documents, no disclosure of risk, and no indication that Ecology has seriously considered how to address PFAS, PBDE, and other contaminants.

2. Proposed changes to the general permit and SEPA review

Mr. Kenney acknowledges that Ecology has incomplete information and cannot fully know the contents of all biosolids. However, these challenges are not a valid reason to ignore the presence of harmful contaminants. Ecology has a duty to the public to protect waters of the State, and a duty under SEPA to obtain and consider all reasonable available information: “If information on significant adverse impacts essential to a reasoned choice among alternatives is not known, and the costs of obtaining it are not exorbitant, agencies shall obtain and include the information in their environmental documents.” WAC 197-11-080(1).

Ecology’s SEPA obligation requires the agency to consider environmental impacts of all contaminants likely present in biosolids, even if they are not specified under biosolids regulations. *Columbia Riverkeeper*, 188 Wash. 2d at 95.

Accordingly, Mr. Kenney requests that Ecology make the following changes to the general permit documentation and SEPA review to better protect the environment and public health:

- Coordinate internally with Ecology staff working on the PFAS CAP, and coordinate and consult with the Washington Department of Health, the Washington Department of Fish and Wildlife, and Washington tribal governments.
- Given the risk to groundwater and surface waters and limited testing conducted of biosolids available for a variety of contaminants, ban biosolids application on hydric soils and periodically inundated areas, impose greater buffers from surface waters, and require more distance to groundwater for all biosolids application.
- In the SEPA analysis, identify information gaps and obtain information to fill those gaps to the maximum extent feasible. To the extent information truly cannot be obtained, “indicate in the appropriate environmental documents its worst case analysis and the likelihood of occurrence.” WAC 197-11-080(3)(b).
- Disclose and discuss the progress on the WWTP sampling study referenced in the draft PFAS CAP, including the methodology and any initial results.

- Identify and discuss all other States (such as Maine) that monitor, test, and/or regulate PBDEs or PFAS and other chemicals in biosolids. Explain the implications for this information on the Washington regulatory program.
- Prior to making a threshold determination, specifically identify a list of contaminants of priority concern (including PBDEs and PFAS) and: 1) assess their likely prevalence in biosolids, 2) assess their probable human health and environmental impacts given the scale of application in Washington, 3) test biosolids from various WWTPs, 3) test groundwater and runoff at application sites.
- Require as a condition of the general permit that WWTP operators test biosolids for PFAS and other contaminants of emerging concern and report to Ecology. Ecology indicates that these tests are available for \$1,000-\$1,500, which is a reasonable cost to impose on the regulated entity given the risk to public health. If entities profit from land application of biosolids, it is entirely appropriate and reasonable to pass through costs of testing to those companies to gather data. Requiring testing would provide Ecology with a broad data set to effectively regulate PFAS and other chemicals.
- Evaluate and disclose the extent to which biosolids application sites risk becoming contaminated over time in a manner that requires cleanup under State or Federal law (including the Model Toxics Cleanup Act, RCW 70A.305.010, *et. seq.*, and the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 *et. seq.*).

In public meetings and comments on prior applications, the public has rightfully raised concerns regarding lack of testing and monitoring for PBDEs, PFAS and other chemicals in biosolids. In general, Ecology has responded that it is not financially or technically feasible to test for PFAS because there is not a validated testing methodology, and that the more efficient method of regulating PFAS is “upstream” in consumer products.

As an initial matter, many chemicals, such as PBDEs, phthalates, illegal drugs, and pharmaceuticals, are readily tested. To fulfill its statutory mandates and duties to protect the public and environment, Ecology must sample biosolids for these contaminants. Furthermore, as noted, Ecology has received funding to complete testing for PFAS associated with wastewater. This testing effort should be incorporated into permit review. Ecology should also draw from ongoing testing and information gathering from drinking water regulation to inform environmental review of the biosolids program, in consultation with the Department of Health.¹²

Mr. Kenney notes that other states require that WWTPs use an isotope dilution method like Method 537.1, ASTM D7979-19M, or CWA Method 1600 for PFAS analysis of biosolids in the interim and until EPA completes its work. Such methods are reliable for biosolids because they use an isotope-dilution method to measure sample extraction recoveries and correct for matrix

¹² <https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/RegulationandCompliance/RuleMaking>

suppression effects in the LCMSMS. Ecology should allow the use of these methods as do other states.

Mr. Kenney also notes that PFAS is a nationally recognized concern on and around lands used for training by the Department of Defense. In these locations, the DOD regularly tests water using EPA-approved methods for PFAS. For example, testing has been underway for PFAS on Whidbey Island associated with the Naval training area since 2016.¹³ Water sampling at Joint Base Lewis McChord revealed elevated levels of PFAS in 2018, which required cessation of drinking water use to protect public safety.¹⁴ As such it is entirely possible for Ecology to test groundwater and surface water associated with biosolids applications sites.

With respect to consumer product regulation, Mr. Kenney welcomes those efforts. However, even if implemented immediately the benefits would be limited and long-term, given the prevalence of PFAS in widespread consumer products and the global nature of commerce.

D. The General Permit Fails to Protect Against Microplastics

WAC 173-308-205(1) requires that “all biosolids...must be treated by a process such as physical screening or another method to significantly remove manufactured inerts prior to final disposition.” Additionally, “biosolids (including septage) that are land applied...must contain less than one percent by volume recognizable manufactured inerts.” WAC 173-308-205(4).

Biosolids generally contain large volumes of small plastics, referred to as microplastics and nanoplastics. A recent synthesis of literature focused on microplastics in biosolids, titled “An overview of microplastic and nanoplastic pollution in agroecosystems” (Ng et al. 2018),¹⁵ states that “polyethylene, plastic fibres, and polystyrene foam occupied up to 5% w/w in compost from mixed municipal solid waste for all size fractions between 420 µm and 25 mm; with around 0.5 to 0.6% having sizes b2 mm.” Prevailing agronomic rates in the United States suggest maximum potential rate of microplastic inputs from biosolid in the order of 0.5 to 3.2 t·ha⁻¹·yr⁻¹. This unit measurement equates to 0.2 to 1.3 metric tons per acre per year of plastics present in biosolids (one hectare equals 2.471 acres). Plastics are “manufactured inerts.” Extensive study, widespread publicity dedicated to microplastic contamination in soils and waters, and the ability to eliminate microplastics if desired indicates that microplastics are “recognizable.” WAC 173-308-205(4).

The general permit would authorize approximately 430,000 tons of biosolids land application over a five-year period. Even a conservative estimate under which microplastics compose 2.5% of those biosolids would mean that 10,7050 tons of microplastics will be land applied under the

¹³https://www.navfac.navy.mil/navfac_worldwide/pacific/fecs/northwest/about_us/northwest_documents/environmental-restoration/pfas-groundwater-and-drinking-water-investigation/nswi_pfas.html; see also https://www.navfac.navy.mil/niris/SOUTHWEST/FALLON_NAS/N60495_000011.PDF (Naval Air Station Fallon);

¹⁴ https://home.army.mil/lewis-mcchord/application/files/2015/6106/2504/CCR_2018_Lewis_DIGI_FINAL.pdf

¹⁵ Ng et al., 2018, An overview of microplastic and nanoplastic pollution in agroecosystems. *Science of the Total Environment*, Vol. 627, pp. 1377-88.

general permit. Plastics take hundreds of years to break down: “projections indicate that the lifetime of polyolefins on land is in the vicinity of hundreds of years.”¹⁶ This means that microplastics not dispersed into surface or groundwaters (with resulting harm to aquatic species), or ingested and adsorbed by grazing cattle, will bioaccumulate on site and quickly add up. The plastics are harmful in their own right, and also can transport and degrade into a variety of contaminants. The health effects of microplastics are believed to be detrimental but are still poorly understood. According to Ng et al.:

Classical soil ecotoxicological approaches use isolated organisms and standard substrates, with measures taken for survival, growth, reproduction and avoidance behaviour over a period of days and weeks. Such approaches may not capture the full impact of chemical additives in plastics that act as endocrine disruptors in addition to those which bioaccumulate, where long-term exposure at low doses may alter cell functions or cause DNA damage. Such damage manifests later in life or across generations as the damage accumulates.¹⁷

The most recent studies of microplastics suggest that they are highly mobile in water. Crossman et al. (2020) measured microplastics biosolids at various application sites, found high levels of contamination, and determined that 99 percent of the microplastics appeared to be transported by water over time.¹⁸

In short, the proposed application would put cumulatively significant amounts of plastic onto application sites, that would likely enter surrounding waters and organisms and cause uncertain long-term impacts to the native ecosystem and human health.

Despite these risks, the general permit does not specify any means by which to comply with the requirement to remove manufactured inerts. As a result the general permit is deficient and must be conditioned to require rigorous screening for microplastics and nanoplastics.

Accordingly, Mr. Kenney requests that Ecology make the following changes to the general permit documentation and SEPA review to better protect the environment and public health:

- Identify and discuss all other jurisdictions that monitor, test, and/or regulate microplastics in biosolids. Explain the implications for this information on the Washington regulatory program.

¹⁶ Ng et al., 2018, An overview of microplastic and nanoplastic pollution in agroecosystems. *Science of the Total Environment*, Vol. 627, p. 1380.

¹⁷ *Id.* at 1385.

¹⁸ Crossman, Rachel R. Hurley, Martyn Futter, Luca Nizzetto, Transfer and transport of microplastics from biosolids to agricultural soils and the wider environment, *Science of The Total Environment*, Volume 724, 2020, 138334, ISSN 0048-9697, <https://doi.org/10.1016/j.scitotenv.2020.138334> (<https://www.sciencedirect.com/science/article/pii/S0048969720318477>)

- Identify mechanisms to remove microplastics from biosolids, and the viability of these methods.
- In the SEPA analysis, identify information gaps and obtain information to fill those gaps to the maximum extent feasible. To the extent information truly cannot be obtained, “indicate in the appropriate environmental documents its worst-case analysis and the likelihood of occurrence.” WAC 197-11-080(3)(b).
- Require as a condition of the general permit that WWTP operators remove microplastics from biosolids in accordance with WAC 173-308-205.
- Ecology should test runoff and groundwater associated with select recent biosolids application sites after rain and report the results.

As with PFAS, PBDEs, and contaminants of emerging concern, Ecology cannot fulfill its public statutory obligations by simply ignoring microplastics. Mr. Kenney requests that Ecology take reasonable, affirmative steps to address this serious issue and comply with its statutory mandate to protect waters of the state.

E. The General Permit Fails to Protect Threatened and Endangered Species

Biosolids application is not allowed where the application is likely to adversely affect a threatened or endangered species or its critical habitat as listed under Title 232 WAC or section 4 of the Endangered Species Act. WAC 173-308-191. Notably, the regulation prohibits any likely harm to threatened or endangered species or their critical habitat and does not allow for *de minimus* exceptions or mitigation measures. This is a particularly significant issue for southern resident killer whales, which are top tier predators of salmon and marine life and thus bioaccumulate toxins.

Issuance of the general permit without protections for protected species would not only potentially violate State law, it would also likely violate the Federal Endangered Species Act (ESA). The ESA prohibits the “take” of species listed as threatened or endangered on the federal endangered species list. 16 U.S.C. § 1538(a)(1)(B). The ESA defines “take” as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” *Id.* § 1532(19). By regulation, the National Marine Fisheries Service has defined “harm” to include “significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering.” 50 C.F.R. § 222.102; *Babbitt v. Sweet Home Chapter, Communities for Great Ore.*, 515 U.S. 687 (1995).

Under what is known as the “*Strahan* theory,” a governmental entity may be liable under the ESA for authorizing harm carried out by private third parties. *See Strahan v. Coxe*, 127 F.3d 155, 158, 163 (1st Cir. 1997) (state agency caused takings of the endangered right whale because it “licensed commercial fishing operations to use gillnets and lobster pots in specifically the manner that is likely to result in violation of [the ESA]”), cert. denied, 1998 U.S. LEXIS 7103 (Nov. 2, 1998) (No. 97-1485); *Defenders of Wildlife v. Administrator, Env'tl. Protection Agency*,

882 F.2d 1294, 1300-01 (8th Cir. 1989) (federal agency caused takes of the endangered black-footed ferret through its “decision to register pesticides” even though other persons actually distributed or used the pesticides); *Loggerhead Turtle v. Cty. Council of Volusia Cty.*, 148 F.3d 1231, 1251 (11th Cir. 1998) (finding plaintiffs had standing where they alleged harm from county’s failure to regulate artificial beach lighting, which harmed turtles).

An agency may receive authorization from the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service to issue permits that cause harm to listed species, under ESA Section 10. *See* 16 U.S.C. § 1539(a)(2)(B). For example, Washington State Department of Natural Resources has an incidental take permit for authorization of forest practices that cause likely harm to listed species. Ecology lacks such authorization for the biosolids program.

The ESA authorizes citizen suits “to enjoin any person, including the United States and any other governmental instrumentality or agency (to the extent permitted by the eleventh amendment to the Constitution), who is alleged to be in violation of any provision” of the Act. 16 U.S.C. § 1540(g)(1)(A). Agency officials acting in their official capacity are not protected by the eleventh amendment, and so state agencies are functionally subject to suit. Such suits may result in injunctive relief, civil penalties, and an award of costs and attorneys’ fees.

In order to fully protect listed species and protect the State from liability, Mr. Kenney suggests that Ecology consult with the National Marine Fisheries Service and U.S. Fish and Wildlife Service to determine whether an incidental take permit and associated habitat conservation plan is required.

F. SEPA Checklist Specific Comments

The SEPA Checklist and associated threshold determination must fully disclose sufficient information to determine whether a proposal has probable significant adverse environmental impacts. WAC 197-11-335. The determination includes consideration of cumulative effects, WAC 197-11-330(3)(c), and may not weigh purported benefits of the proposal against the adverse impacts, WAC 197-11-330(5). “Significant” means “a reasonable likelihood of more than a moderate adverse impact on environmental quality.”

The general permit authorizes millions of pounds of land application of biosolids over a period of five years, which, as documented above, contain unknown amounts of dangerous chemicals and microplastics. While Mr. Kenney recognizes that there would be phased SEPA review for individual projects, in order to be meaningful SEPA review must be carried out “at the earliest possible time to ensure that planning and decisions reflect environmental values, to avoid delays later in the process, and to seek to resolve potential problems.” WAC 197-11-055(1). Early review is particularly necessary here, where there are significant cumulative effects of biosolids application across the State, and the identified issues are common to all biosolids. PFAS, contaminants of emerging concern, and microplastics exist in all biosolids, and are not site-specific issues well suited for later phased review. The programmatic phase is also the only meaningful opportunity to conduct environmental review of Class A “exceptional quality” biosolids, application of which is not subject to later SEPA review.

The general permit clearly creates “a reasonable likelihood of more than a moderate adverse impact on environmental quality,” and thus is significant and requires preparation of an environmental impact statement. Because application of biosolids can reasonably be anticipated to contaminate both groundwater and surface waters across the State with chemicals already recognized by Ecology to pose a serious threat to human health, the proposal presents cumulative effects to wildlife, “unique and unknown risks to the environment,” and “may affect public health or safety.” WAC 197-11-330(3).

Ecology mainly points to data gaps as the explanation for why it cannot regulate acknowledged risks. Under SEPA regulations, significance depends on context and intensity. “The context may vary with the physical setting. Intensity depends on the magnitude and duration of an impact.” WAC 197-11-794. Here, PFAS are “forever chemicals,” so the duration of the impact is perpetuity. Furthermore, “[t]he severity of an impact should be weighed along with the likelihood of its occurrence. An impact may be significant if its chance of occurrence is not great, but the resulting environmental impact would be severe if it occurred.” The impacts of widespread biosolids application are undoubtedly severe, given the reasonable threat of harm to human health of PFAS, including, according to Ecology, “probable links to immune system toxicity, high cholesterol, reproductive and developmental issues, endocrine system disruption, ulcerative colitis, thyroid issues, certain cancers, and pregnancy-induced hypertension.”

Preparation of a programmatic EIS is the statutorily mandated mechanism by which to address these data gaps and assess associated risks and impacts. Rather than forge ahead in the face of admitted incomplete information, Ecology must carefully assess the likelihood and severity of impacts, reasonable alternatives, and the mechanism to mitigate them.

In addition to the general request for a determination of significance and preparation of an EIS, Mr. Kenney raises the following specific concerns with the SEPA checklist:

- ¶ 1. The checklist improperly excludes consideration of population growth, when Washington is a quickly growing State. The checklist should consider more recent population trends, including during the COVID pandemic.
- ¶ 1. The description of pollutants should distinguish between pollutants that are regulated, and pollutants more broadly, as this section appears to use the terms interchangeably. The SEPA analysis must consider impacts of all pollutants reasonably likely to be contained in biosolids irrespective of their regulation. The general statement that “Generally, pollutants in biosolids occur in very low concentrations, below the level where an adverse effect is expected” is inadequate. This cursory analysis lumps all pollutants together and contains no useful information.

As detailed above, high priority pollutants (including PBDEs and PFAS) should be identified, along with a discussion of their likely presence of the pollutants and risks to

the environment and human health. The one summary sentence dedicated to a serious and complex systemic issue is clearly inadequate.

- ¶ 1. The citation to WAC 173-308-90003 should acknowledge that this is the minimum content of a land application plan, but not necessarily sufficient to protect groundwater or adequate to fulfill Ecology's duties to protect groundwater.
- ¶1. The checklist states that "If the regulation of other pollutants becomes necessary during the course of the permit cycle, that is sufficient cause for Ecology to open the permit for modification." This statement lacks basis or thresholds, and is circular in that it states that if regulation is necessary then it is necessary. In order to be meaningful, mitigation must include specific triggers, criteria, and regulatory responses as part of a robust adaptive management system with public involvement.
- ¶ 2. The general statements regarding "decades of science" are inadequate. Citation must be provided. Emphasis should be placed on recent science, rather than decades-old science, given the concerns regarding PFAS, microplastics and other more recently understood issues.
- ¶ 2. The purported benefits of biosolids are immaterial to the threshold determination.
- ¶ 4. The statement that "Parks, wilderness areas, and wild and scenic rivers are likely too remote to be desirable for the land application of non-EQ biosolids" is inaccurate.
- ¶ 4. Application of biosolids to hydric soils raises high probability of groundwater contamination, which must be analyzed. As a mitigation measure, Mr. Kenney recommends barring biosolids applications from hydric soils and areas that are periodically inundated.
- ¶ 6. The analysis states that "[t]he permit itself will not increase demands on transportation or public services and utilities." This is the incorrect legal standard for SEPA review, which requires consideration of both direct and indirect effects. Ecology must consider the full impacts of biosolids application over time, including emissions and traffic associated with application.

Biosolids Management Comment Letter

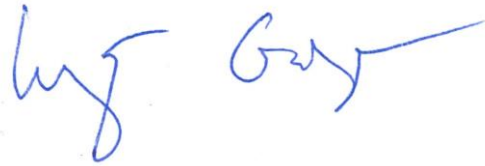
July 12, 2021

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Thank you for your consideration of these comments. Please contact me at wgolding@ziontzchestnut.com with any response to comments or follow up questions or concerns.

Sincerely,

ZIONTZ CHESTNUT

A handwritten signature in blue ink, appearing to read "Wyatt Golding". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Wyatt Golding
Attorney for Ed Kenney