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DEPARTMENT OF ECOLOGY

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Ecology Position on Wood Waste in Marine Sediment

The following is Ecology's position on wood waste in marine sediment provided for clarity in the Blakely Harbor MTCA cleanup.

Applicability

The Model Toxics Control Act (MTCA), Chapter 70A.305 RCW, authorizes Ecology to regulate the investigation and cleanup of a release of a hazardous substance. This is detailed in the general MTCA regulations at WAC 173-340 and sediment MTCA regulations at WAC 173-204 (also known as the Sediment Management Standards or SMS). The SMS aims to reduce and ultimately eliminate adverse effects on biological resources, such as shellfish, aquatic worms, and crustaceans, as well as threats to human health from surface sediment contamination. The sediment cleanup decision process governs the cleanup of contaminated sediment sites, including the identification, investigation, cleanup, and monitoring of these sites. The SMS provides Ecology with uniform procedures and requirements for managing contaminated sediments. The sediment quality standards of SMS correspond to a sediment quality that will result in no adverse effects, including no acute or chronic adverse effects on biological resources and no significant health risk to humans.

Key Concepts

Aquatic Environment Impacts

Wood waste, particularly in large quantities, has a physical, chemical, and biological impact on the aquatic environment (Ecology, 2013 [Wood Waste Cleanup Guidance]). Just 20% wood waste by volume can negatively impact the benthic community. These impacts can be from the decomposition by-products, such as sulfides, ammonia, and phenols, which can cause or contribute to toxicity. (Ecology 2013 [Wood Waste Cleanup Guidance]; *Port of Anacortes v. Frontier Indus., Inc.*, 9 Wn. App. 2d 885, 894, 447 P.3d 215 [2019]).

Surface-to-Volume Ratio

Wood particles decay from the outside surface inward. As larger wood particles decay in water, they break into smaller pieces, creating greater surface areas on which bacteria feed. As wood particle sizes decrease, decomposition rates increase, and as decomposition rates increase, the release of decomposition byproducts increases (Ecology 2013 [Wood Waste Cleanup Guidance]). Additionally, smaller, degraded wood particles mix into sediment, making them more difficult to remove from the environment than larger solid wood pieces such as logs (Ecology 2013 [Wood Waste Cleanup Guidance]).



What This Means for the Blakey Harbor MTCA Cleanup Site

The following items are provided to clarify Ecology's expectations for how Wood Waste should be included and discussed in site documents (RI, FS, etc.). These items should be reflected in the draft RI.

- "Wood waste" is a term used by Ecology to discuss different types of wood, including but not limited to: sawdust, wood scraps, bark/ chips from logs, whole logs, and dimensional lumber (Ecology's Wood Waste Guidance). Wood waste from industrial processes such as log rafting and milling differs from the wood naturally found in the environment.
- Wood waste in a marine environment inevitably results in a release of hazardous substances. Wood waste in an aquatic environment is degraded and broken down by insects, bacteria, and fungal digestion, which releases certain compounds as byproducts of decomposition. Those compounds (e.g., ammonia, hydrogen sulfide, benzoic acid) are designated hazardous substances under MTCA. Additionally, certain types of wood waste naturally contain toxic substances that leach from the wood when exposed to water (e.g., phenols and resin acids). These substances are designated as hazardous substances under MTCA. Therefore, wood waste either results in the release of a hazardous substance or establishes a threatened release of a hazardous substance.
- As wood waste is an indicator of where a release of hazardous substances has or will occur, the investigation and cleanup work may be driven by the presence of that wood waste.
- Wood waste adversely impacts sediment chemically, physically, and biologically. Wood waste at volumes observed at Blakey Harbor presents an adverse physical impact on sediment, in addition to the release/threatened release of hazardous substances.
- At this Site, characterization of biological response remains a data gap in some areas with the highest wood waste compositions that did not have bioassay sampling. Further biological testing at the site targeting these areas is necessary to characterize site conditions (The late September 2025 bioassay sampling, following bioassay sample locations approved by Ecology, will close this gap). Biological testing results apply on an individual station-by-station basis [WAC 173-204-560(7)(c)]. This means that (1) chemistry or biological testing results from one sampling station cannot be used to infer impacts at a different sampling station and (2) bioassay results from a sampling station cannot override chemistry results from a different sampling station.
- Leaving wood waste in place is a source control issue for the Site, as the source of hazardous substances has not been addressed. While degradation of wood materials occurring between Blakey Harbor historical operations and the present time may seem relatively "slow", degradation rates of wood waste increase over time. As degradation rates increase, just 20% wood waste by volume can negatively impact the benthic community (Ecology 2013 [Wood Waste Cleanup Guidance]).

