PORT ANGELES
WASHINGTON, U.S.

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Port Angeles, WA
98362

August 7, 2025

Marian Abbett, Site Manager
Washington Department of Ecology
PO Box 47775
Olympia, WA 98504-7775

Dear Ms. Abbett,

The City of Port Angeles thanks you for the opportunity to comment on the Consent Decree, Draft Interim Action Plan, and SEPA Determination of Non-Significance for the Rayonier Mill Site in Port Angeles, WA. On July 22, 2025, City Council voted unanimously to direct staff to request a complete, timely, and high-quality cleanup of the Rayonier Mill Site, urging the Washington Department of Ecology to select alternative five (SL-5). The comments below reflect this decision.

The current selected soil remedy in the Interim Action Plan proposed by Rayonier and presented by the Department of Ecology is unacceptable. The consolidation of contaminated soils and sediments would result in a 10-acre, seven-foot-tall mound of contaminated land, subject to ongoing monitoring and maintenance of a protective cap. The selected location of these contaminated soils and sediments is in the site's most suitable location for future development opportunities. The location also directly adjoins the boundary for shoreline protection and will intrude into this protection area once necessary restoration of the fill, dock and jetty are remedied in accordance with the State Department of Natural Resources lease. This proposed method of remedy is inconsistent with the planned future land use of the site that is being adopted in the 2025 City of Port Angeles Comprehensive Plan Update. The upshot of the combination of these factors means there is not one bit of permanency in this remedy. It will have to be physically altered at some point in the future, and we in the City of Port Angeles hope that point comes sooner, not later.

For several years now, the City has planned for mixed-use development of the site, with a focus on a mix of commercial, residential, recreational and conservation related uses. SL-3 not only significantly reduces the amount of usable space available for future development, it also does not meet cleanup standards to "protect human health and the environment for current and *potential future* site and resource use" as required by the Model Toxics Control Act. A full cleanup including the complete removal of all contaminated soils is the only permanent, practicable solution to allow for any potential future development opportunities to occur.

Attached you will find a Summary of Technical and Legal Flaws regarding the Interim Action Plan as well as an Interim Action Plan Soil Remedy Evaluation memorandum provided by Nicole Ott of Integral Consulting highlighting the cost estimates and disproportionate cost analysis having artificially inflated the favorability of SL-3 over SL-5. Through incorrectly assessed indirect costs, construction costs, failure to consider the costs for sediment dredging, and the underestimated operation and maintenance costs associated with long-term ecological monitoring, the actual cost difference between SL-3 and SL-5 is unlikely to be $27 million. Ecology should prepare a more careful consideration of costs that reflects the uncertainties, complexities, and lack of permanence of SL-3. The City has made a substantial investment in these comments with a desire to aid and equip Ecology with the information necessary to re-evaluation the current recommendation.

Based on the above details it is imperative that you to reconsider your decision on the selected soil remedy of SL-3 and move to a more permanent and stringent cleanup of the site using soil remedy SL-5. This is the only path forward to allow for the complete and final cleanup of the site so that it may be used to its fullest extent by generations to come.

Thank you,

Nathan A. West
City Manager

8/7/2025
Date

Summary of Technical and Legal Flaws on Rayonier Interim Action Plan

Inaccurate Cost Estimates and Benefit Valuation

The attached technical memorandum by Integral Consulting identifies and analyzes the technical flaws in the soil remedy selection under the February 2025 draft Interim Action Plan (IAP). These technical flaws are briefly summarized below:

- SL-5, which involves offsite disposal of contaminated soil, is undisputedly the most permanent and protective solution and thus the preferred remedy unless its costs are "disproportionate" to its benefits. Because of problems with the estimations of remedy costs and valuation of benefits, the City does not believe the SL-5 costs are disproportionate.
- The selected remedy, SL-3, does not align with the City's 2025 Comprehensive Plan, which designates for mixed-use development the area that SL-3 would use for a contaminated-soil landfill. SL-3 would likely hinder such future redevelopment opportunities by increasing engineering challenges and cost constraints.
- The justification behind SL-3 relies heavily on long-term institutional controls (like an environmental covenant, fencing, and signage) and engineered caps. Unlike SL-5's more permanent solution, these controls are vulnerable to future failures, erosion, and climate impacts.
- The SL-3 cost estimate is almost certainly too low. It does not account for additional contaminated material that may be found and removed from the shoreline. It also fails to account for the complexity of design, engineering, operation, and long-term maintenance for SL-3. And the estimated costs for long-term monitoring and maintenance are unrealistically low and do not meet regulatory standards for ensuring long-term protectiveness.
- In contrast, SL-5 costs are likely overestimated. In particular, indirect costs for SL-5 are likely overestimated, as the calculation method is not representative of how straightforward excavation and off-site disposal is as a remedy.
- The benefit scoring for SL-3 is likely inflated, particularly regarding technical and administrative implementability, while SL-5's straightforward approach is undervalued. To take one example, SL-3 could pose future risks if hazardous or dangerous wastes are discovered, and the current plan lacks contingencies for such discoveries.

For these reasons, the City encourages Ecology to reassess both the benefit scoring and cost estimates for SL-3 and SL-5 and consider the long-term effectiveness and redevelopment potential offered by SL-5.

Ecology Authority to Select Remedy that is PMEP

Where, as here, Ecology has ordered a remedial action under an Agreed Order, it has broad authority to select and enforce the remedial action. WAC 173-340-510, -530. Even after doing so, it "may require additional remedial actions should it deem such actions necessary." WAC 173-340-530(1).

Ecology has statutory authority to "give preference to permanent solutions to the maximum extent practicable and . . . provide for or require adequate monitoring to ensure the effectiveness of the remedial action." RCW 70A.305.030(1)(b). A performing party must follow the remedy-selection requirements in the cleanup rule, including the stepwise disproportionate cost analysis (DCA) process for selecting the remedy that is permanent to the maximum extent practicable (PMEP). "The estimation and comparison of benefits and costs may be quantitative, but will often be qualitative and require the use of best professional judgment." WAC 173-340-360(5)(c)(i)(A).

2025 DCA Guidance: Ecology recently issued guidance on using the DCA process to select a remedy that is PMEP. Ecology TCP, *Guidance for Determining if a Cleanup Action uses Permanent Solutions to the Maximum Extent Practicable using Disproportionate Cost Analysis*, Pub. No. 25-09-059 (Feb. 2025). Relevant to selecting a soil remedy for the Rayonier Study Area, this guidance emphasizes the use of best professional judgment and sensitivity analysis when conducting a PMEP evaluation. *Id.*, ch. 9. The guidance is precise regarding methods for performing a sensitivity analysis. *Id.,* § 9.3.

The guidance emphasizes that "Ecology retains all authority to determine compliance with state cleanup law requirements." Id., § 9.4. This includes "[w]hether an alternative meets cleanup action requirements, including whether it is PMEP." *Id.* (citing WAC 173-340-130(9)). It states:

> When conducting a PMEP evaluation, . . . Ecology may use best professional judgment to:
>
> - Weight the benefit criteria.
> - Estimate the costs and degrees of benefits of each alternative.
> - Favor or disfavor qualitative benefit and cost estimates in the analysis.
> - For each iteration of the DCA in Step 4 of the PMEP evaluation, determine whether the baseline alternative is practicable (more cost-effective) compared to the next most permanent alternative on the ranked list.

*Id. "*The benefit criteria may be weighted, but *any unequal weights need to be justified.*" *Id.*, § 9.3 (emphasis added).

Ecology must follow its own guidance in selecting a remedy. *See* Draft IAP, § 6.4 ("The "relevant and appropriate requirements" include regulatory requirements and guidance that have been determined to be appropriate for use by Ecology.").

Perhaps because of how recently the guidance was issued, Ecology and Rayonier do not appear to have considered it in the draft IAP. **In revising the draft IAP, Ecology should take the opportunity to implement the new PMEP guidance**, including applying its best professional judgment to the estimated costs and benefit scores assigned by Tetra Tech in the DCA (*see* Agreed Order Task 4e Deliverable Interim Action Report Volume III: Alternatives Evaluation, § 6 (Sept. 1, 2021)), justifying the unequal weights used in the DCA, and performing a sensitivity analysis.

In short, Ecology has express regulatory authority to re-examine and revise the cost and benefit determinations and procedural deficiencies in the IAP's DCA, particularly in this supervised cleanup where the agency retains ultimate decision-making responsibility. RCW 70A.305.030.

Sea-level rise (assuming uplands remediation is in shoreline jurisdiction): Ecology is required to ensure that remedial actions comply with substantive requirements of the SMA and regulations and shoreline master programs issued pursuant to the SMA. See RCW 70A.305.090(1). Ecology is in the process of revising its rules governing shoreline master program guidelines. See preliminary draft revisions to ch. 173-26 WAC. The final rules will require that any construction within SMA jurisdiction account for sea-level rise impacts.

In addition, the MTCA rule revisions in 2023 specified that **a cleanup action must "[p]rovide resilience to climate change impacts that have a high likelihood of occurring and severely compromising its long-term effectiveness." -360(2)(a)(v)**. It is not clear that this requirement has been accounted for given the proximity that the contaminated landfill under SL-3 will have to Port Angeles Harbor. (NOTE: Sea level rise was analyzed in IAP, Vol. III (2021) for the sediments cleanup, but not the uplands work.)

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MEMORANDUM

To:	Nathan West and Calvin Goings, City of Port Angeles
From:	Nicole Ott and Elena Downs, Integral Consulting
Date:	August 4, 2025
Subject:	Interim Action Plan Soil Remedy Evaluation: Port Angeles Rayonier Mill Study Area, Port Angeles, Washington
Project No.:	CF935A

Integral Consulting Inc. (Integral) is pleased to submit this memorandum providing comments for the City of Port Angeles (City) to incorporate into its formal public comment letter to the State of Washington Department of Ecology (Ecology). A public comment period is open from June 12 to August 12, 2025. Ecology is considering public input on its version of the Interim Action Plan for the Rayonier Mill site, drafted in February 2025. Integral's comments relate only to the analysis of the proposed alternative for soil remediation in the upland portion of the site. The Interim Action Plan also addresses groundwater and sediment remedial alternatives. Ecology held a public meeting presenting the plan and addressing public questions on July 8, 2025.

This memorandum discusses adjustments to the Disproportionate Cost Analysis (DCA) that would align it with Ecology's recent guidance[1] and lead toward identification of SL-5 as the selected soil remedy (as opposed to the currently-selected remedy: SL-3).

SOIL SELECTED REMEDY

Ecology has selected soil remedy SL-3, which involves excavation of soil exceeding unrestricted land use criteria and consolidating that soil within a 10-acre fenced area on the western side of the Rayonier Mill site. The consolidation area shall also receive and store in perpetuity impacted sediment dredged from the nearshore areas around the mill. The pile of contaminated soil and sediment would be approximately 5 feet (ft) tall and covered with a 2-ft thick cap.

[1] Ecology 2025. Guidance for Determining if a Cleanup Action uses Permanent Solutions to the Maximum Extent Practicable using Disproportionate Cost Analysis. Public Comment Draft. February 2025, Publication 25-09-059.

In the Interim Action Plan, Ecology uses a DCA to identify a selected remedy for each medium. The DCA relies on analyses in the 2019 *Interim Action Report Volume III: Alternatives Evaluation Report* to identify soil remedy SL-5 (which involves excavation and offsite/landfill disposal of impacted soil) as the most protective, permanent remedy, i.e., SL-5 had the greatest benefit score of the soil alternatives evaluated. However, Ecology estimated the cost of SL-5 ($37 million) to far exceed the cost of the next-highly scored remedy (SL-3; cost = $10 million). And so, Ecology determined that the added benefit of SL-5 relative to SL-3 (1.1; shown in table below) does not outweigh the added cost.

Ecology is required by the Model Toxics Control Act (MTCA) to select the most permanent solution to the maximum extent ***practicable***. The term "practicable" introduces the comparison of estimated costs when evaluating remedial alternatives.

Ecology chose SL-3 as the selected remedy based on the DCA, which envisions a $27 million cost difference between SL-3 and SL-5 relative to only a 1.1 incremental benefit (as shown in this table).

Soil Remedial Alternative	Cost	Benefit Score
SL-3	$10 million	7.8
SL-5	$37 million	8.9
Increment SL-3 to SL-5	$27 million	1.1

If these numbers fully reflect the remedy to eventually be constructed, clearly $27 million is not a proportionate cost to add 1.1 point more benefit. But the estimated cost for SL-3 is lower than the expected future cost, and the benefit for SL-3 is scored too high, as noted in these comments. Integral Comments on the Selected Soil Remedy (SL-3).

Integral has prepared the following comments on the soil remedy, comparing the selected remedy SL-3 to the more protective and permanent soil remedy SL-5.

The selected remedy does not appropriately reflect future land uses.

Ecology's selection of SL-3 uses, as support, the current land use zoning distinction of heavy industrial and the lack of any current redevelopment plans for the Rayonier Mill site.

However, the City of Port Angeles 2025 Comprehensive Plan Volume 1 (May 2025 draft version) designates the proposed soil and sediment consolidation area as Mixed Use, intended to include a variety of commercial, retail, and residential land uses. This

designation is established due to factors including economic potential, public shoreline access, and housing needs. The Comprehensive Plan notes an ongoing community conversation regarding the Rayonier Mill site and whether, given its unique context and opportunity, the Rayonier Mill site should have a specific land use designation.

The law[2] requires that both cleanup standards and cleanup actions must "protect human health and the environment for current and potential future site and resource use." Any selected remedy must be designed and implemented to not impede future land use options at the site, which would likely include buildings and improvements. The 10-acre capped area proposed in SL-3 would be a fenced private landfill estimated to raise the ground level by 7 ft across its span (5-ft height of impacted material covered with a 2-ft thick cap). This remedy is inappropriate for the future land uses described in the Comprehensive Plan.

The consolidation area is slated to contain both soil and sediment. Some of the sediment areas subject to dredging have been delineated. However, the sediment remedy also specifies removal of the jetty and wharf structure, along with reshaping of the northerly shoreline back to no longer lie on state-owned land. If sampling of sediment under the removed structures and of the soil/beach material to be removed from the shoreline reveals contamination, that material may also be subject to storage within the consolidation area. Such additional material will affect the design, schedule, and costs of soil remedy SL-3.

The proposed placement of approximately tens of thousands of cubic yards of contaminated sediment beneath the cap is also likely to cause significant engineering and cost constraints that would restrict future land use of the Rayonier Mill site.

The selected remedy relies heavily upon institutional controls to satisfy the selection criteria set forth within the Model Toxics Control Act.

Development of the capped area will be limited by numerous legal and logistical challenges. Remediation through the selected remedy (SL-3) would require a restrictive environmental covenant limiting land use over the capped area and requiring approval by Ecology, and a public notice and comment period for uses inconsistent with the covenant. As required in WAC 173-340-600(14)(c), whenever a cleanup action plan proposes a restrictive covenant, Ecology must provide notice to and seek comments from the City of Port Angeles, and potentially from Clallam County, regarding the restrictive covenant.

[2] WAC 173-340-702(4)

MTCA provides requirements for cleanup actions and delineates a decision-making framework for selecting and evaluating alternatives.[3] According to MTCA, an essential factor for selecting a remedial alternative centers around the permanence and long-term effectiveness of the action and requires that the selected remedy "uses permanent solutions to the maximum extent practicable.[4]" Excavation and offsite disposal of impacted soil, as proposed in SL-5, is the most permanent solution for the Rayonier Mill site and inherently provides a high level of protectiveness and effectiveness over the long term.

The long-term effectiveness of SL-3 depends upon maintaining the integrity of the cap. Institutional controls, area restrictions, long term monitoring, and maintenance of damaged features will be required into perpetuity, or until the land is redeveloped, will be required to ensure the cap remains sound and the contaminated soil and sediment consolidated onsite remain isolated from human and ecological receptors.

This is counter to MTCA requirements[5] that state that the cleanup should "not rely primarily on institutional controls and monitoring at a site, or portion thereof, if it is technically possible to implement a more permanent cleanup action." Within the Interim Action Plan, Ecology states that SL-3 does not rely primarily on institutional controls for "large portions of the property." However, the fact remains that under SL-3, a 10-acre area of consolidated, contaminated soil and sediment would remain onsite with an engineered cap sustained only through institutional controls, monitoring, and maintenance.

The failure of institutional controls could lead to human and ecological receptors coming into direct contact with contaminated soil and sediment, particularly given the fact that fencing is significantly limiting as a long-term, effective protective measure for a facility that is not actively managed. If the integrity of the cap is compromised, there is a risk of erosion and stormwater runoff carrying contamination outside the boundaries of the consolidation area. Cleanup action requirements set forth in MTCA also highlight climate change as an important component in assessing the long-term viability of a cleanup action.[6] The proposed capped area will be directly adjacent to the shoreline, set back approximately 200 ft. Factors such as sea level rise and inclement weather compounded by climate change significantly reduce the long-term viability and technical and administrative implementability of SL-3.

As noted during the July 8 public meeting, Ecology envisions extensive modeling and engineering during the remedial design phase to ensure that the cap over the

[3] WAC 173-340-360(3).
[4] WAC 173-340-360(3)(a)(x).
[5] in WAC 173-340-360(3)(a)(vii).
[6] WAC 173-340-360(3)(a)(v).

consolidation area is resilient and properly designed. However, this assumption places a lot of certainty into the eventual design, for which public comments will likely not be sought. Further, this extensive modeling and design is not fully factored into the cost estimate or implementability score for SL-3.

The cost estimates and disproportionate cost analysis inflate the favorability of the consolidation alternative (SL-3).

In accordance with MTCA, the Interim Action Plan employs a DCA as a primary mechanism to select a cleanup remedy.[7] The inputs to the DCA, cost estimates and benefits scores, were developed in the 2019 *Interim Action Report Volume III: Alternatives Evaluation Report* and have not been updated to support the 2025 Interim Action Plan. Further, they do not reflect recent (February 2025) guidance for selecting a remedy using a DCA.[8]

Although the off-site alternative (SL-5) was scored the highest for benefits (8.9), the DCA inputs discount the full benefits of that alternative and inflate the benefits of the capping-based alternative (SL-3, with a benefit score of 7.8).

This section discusses how the cost estimate underestimates the costs of SL-3 by reflecting upon line items in the cost estimates. It also discusses elements of the benefits scoring that are rated too high for SL-3.

The discussion does not include the costs (additional to the design, construction, and maintenance of the consolidation area) inherent within the SL-3 remedy, which encumbers the property from redevelopment potential, limits future property tax income for the City, and places a strain on a waterfront property because it is resigned to a derelict use as a fenced-off landfill.

Indirect Costs

Cost estimates typically include direct construction costs (e.g., the price to excavate soil, the cost to dispose of material in a landfill) as well as indirect planning, design, and maintenance costs. Typically, indirect costs are calculated as percentages of the total capital (direct construction) costs. So when the same percentages are used for different types of remedial alternatives, they don't allow for the individual cost items to reflect any nuances or complexities that would be a part of those items in the future.

[7] WAC 173-340-360(5)(c)(iv).
[8] Ecology 2025. Guidance for Determining if a Cleanup Action uses Permanent Solutions to the Maximum Extent Practicable using Disproportionate Cost Analysis. Public Comment Draft. February 2025, Publication 25-09-059.

For each remedial alternative, the cost estimate used as the basis of the DCA applies the same percentage (relative to the construction cost) for each of these professional and technical services: 12% for remedial design; 5% for permitting coordination/fees; 2% for contractor submittals; 8% for construction management; 10% for project management; and 2% for Ecology oversight. These percentages, although based upon professional judgement and EPA's Guide to Developing and Documenting Cost Estimates During Feasibility Study, EPA 540-R-00-002, don't account for the complexity and long-term commitments inherent in SL-3. Because the indirect costs are calculated as a straight percentage of the construction costs, SL-3 indirect costs ($2.65 million) are too low to account for the complexity of the work and the maintenance needed after construction to maintain the consolidation area. For comparison, the indirect costs for SL-5 (which is a more standard/straight forward excavation and offsite disposal [dig and haul] remedy with no post-construction maintenance needed) are too high at $8.9 million.

Because the $27 million difference in cost between SL-3 and SL-5 forms the basis for Ecology's selection of SL-3 over SL-5, the estimated costs need to clearly and accurately reflect the work involved. Looking at indirect costs alone, there is a $6.25 million difference between SL-3 and SL-5. As described below, SL-3 is more complex and more subject to re-work than SL-5. Therefore, the indirect costs for SL-3 should actually be higher than those for SL-5. The apparent $6.25 million lesser cost for SL-3 than SL-5 does not reflect the real cost savings likely to be realized if SL-3 is implemented.

Keeping with the general principle of economies of scale, the fraction of costs of professional and engineering services, relative to the construction costs generally decrease as the cost/size of that construction increases. SL-5, the excavation and offsite disposal option, is a fairly routine remedial technology, which is certainly less involved from an engineering standpoint than construction of a consolidation area managed into perpetuity. Thus, the cost for professional aspects of SL-5, such as project management, construction management, design, and Ecology oversight, would not represent the same proportion of the construction costs as they do for the more involved complicated remedy (SL-3).

The indirect costs for SL-5 are additionally over-estimated because they are estimated as a proportion of capital costs inclusive of the transportation and disposal costs. The inclusion of transportation and disposal infuses a large sum into the basis without a corresponding increase in the complexity or needs in professional and technical services.

Additionally, the relative percentage assigned for elements such as contractor submittals, remedial design, and permitting and coordination should be higher for SL-3 than for SL-5 due to the higher inherent complexity of designing, constructing, and ensuring the longevity of the SL-3 engineered cap than managing the SL-5 offsite transportation and disposal. Many complex elements associated with the submittals for SL-3 are discussed only in passing within the Interim Action Plan. The plan instead punts these complexities

to the engineering design phase. The areas of increased complexity for SL-3 relative to SL-5 include, but are not limited to:

- **Pre-Design Investigation**: Within the cost estimate, pre-construction soil investigation is set at a lump sum price of $250,000 for SL-3 as compared to $500,000 for SL-5. However, soil investigations for either alternative will require large scale testing for excavation area delineation, waste characterization, and import material suitability. The investigation costs for SL-3 are set too low.

- **Design and modeling**: Both SL-3 and SL-5 involve design and planning for excavation and backfill. In addition to that aspect, SL-3 includes the more technically involved task of design for consolidation and capping of a structure that must withstand inclement weather and must align with the eventual reconfiguration of the shoreline. Additional investigations and modeling will be required to ensure the stability of the capped area during inclement weather, earthquakes, or sea level rise. These costs need to be considered in the SL-3 cost estimate.

- **Coordination with sediment investigation and remediation:** The volume that will be included in the consolidation and capping area is contingent upon the results from both the soil and sediment pre-design investigations. The capped volume could also include sediment dredged from under the jetty and wharf structure following removal and sampling activities. Design and modeling for the capped area cannot be completed until the volume and character of both the soil and sediment are investigated, and therefore the true costs of the consolidation (SL-3) remedy are not accounted for.

- **Restrictive Covenants Preparation:** Both SL-3 and SL-5 include a lump sum cost of $75,000 for preparation and filing of restrictive covenants on the Rayonier Mill site. However, because the SL-5 remedy uses excavation and offsite disposal of all soil contaminated over the unrestricted land use criteria, the property will not be encumbered with any restrictions. Thus, there is no need for any restrictive covenants under the SL-5 remedy, and therefore the indirect cost subtotal for SL-5 is at least $75,000 too high.

Construction Costs

The only transportation and disposal related cost included in the cost estimate for SL-3 is for the disposal of demolition debris related to the removal of concrete pads at a rate of $18.80/cy ($9.40/ton). The rate provided for demolition debris disposal (used in all SL-1 through SL-5) is substantially lower than the $80.00/ton transportation and disposal for soil going to a non-hazardous Subtitle D landfill in SL-5. The Volume III report does not clarify the location of disposal for the SL-3 construction debris, stating only that the debris

will be "disposed of in a RCRA Subtitle D solid waste landfill or, in certain circumstances, in a demolition debris landfill."

In the event that future sampling reveals contaminant concentrations that exceed Washington dangerous waste regulations thresholds[9], offsite disposal in a Subtitle C hazardous waste facility will be necessary. State and federal land disposal restrictions prohibit onsite disposal of certain hazardous or dangerous wastes[10] such as dioxins/furans exceeding 0.01 ug/kg (ppb) toxic equivalents or soil or sediment material found to be a characteristic dangerous waste under WAC 173-303-090 (e.g., fails Toxicity Characteristic Leaching Procedure testing).

An additional consideration is the federal and state prohibitions on dilution[11] meaning that hazardous or dangerous waste cannot be mixed with or consolidated into nonhazardous material to dilute and avoid designation. The Applicable or Relevant and Appropriate Requirements (ARAR) within the Interim Action Plan note that soil and sediment managed by upland disposal will comply with disposal site criteria. There is no mention or contingency present within the cost estimate for SL-3 considering the possibility of offsite disposal or segregation of any material that fails the dangerous waste designations.

Coordination with Sediment Remedy

The cost estimates for the soil and sediment remedial alternatives are separate and evaluated in a vacuum within the Interim Action Plan. However, because SL-3 includes consolidation and capping of dredged sediment, the sediment soil remedies are inextricably linked and have the potential to complicate one another.

Further, the chemical character of the sediment underlying the jetty and wharf is currently unknown. Any future sampling may reveal additional sediment (beyond the nearshore dredging already scoped) to be dredged and disposed in the consolidation area (SL-3). This would grow the footprint and complicate the design, scheduling, construction, and long-term maintenance of the soil remedy SL-3.

The DCA must consider the additional costs, contingencies, complications, and schedule and design implications that selecting SL-3, which includes dredged sediment, would involve.

[9] WAC 173-303
[10] WAC 173-303-140(4); 40 CFR Part 268.
[11] 40 CFR § 268.3, WAC 173-303-150(1).

Operation and Maintenance (O&M) Costs

Although SL-3 leaves a consolidation pile of capped and contaminated soil and sediment on the Rayonier Mill site in perpetuity, the total cost for all post-construction activities for SL-3 is estimated to only be $127,896. This very low estimate significantly ignores or under-values several necessary post-construction activities. As noted in Section 7.1.2 of *Guidance for Determining if a Cleanup Action uses Permanent Solutions to the Maximum Extent Practicable using Disproportionate Cost Analysis*[12], the following post-construction costs should be included in any cost estimate supporting a DCA:

- Operation and maintenance activities necessary to maintain the effectiveness of a constructed cleanup action component.
- Waste management and disposal
- Replacement or repair of equipment (including labor, equipment, and materials)
- Permit renewal
- Compliance monitoring (including sampling and analysis)
- Maintaining institutional controls
- Financial assurances
- Periodic reviews
- Post-construction management
- Regulatory oversight.

Generally, in engineering cost estimation, operation and maintenance (O&M) costs are calculated on an annual basis, with additional periodic costs (e.g., five-year reviews, some proportion of remedy replacement/repair) considered and calculated outside of base annual expenses. Within the life-cycle cost estimate for SL-3, annual cap monitoring, maintenance, and reporting costs are provided on a per acre basis and reporting is assumed to only occur 11 times over the lifetime of the pile (years 1, 2, 3, 4, 6, 8, 10, 15, 20, 25, and 30). Within the cost estimate, the total direct O&M costs are projected to be an undiscounted cost of $161,700 calculated using a rate of $1,500 per acre (over 9.8 acres) and a flat frequency multiplier of the 11 events corresponding to the 11 reporting years. This very low estimate is then subject to a net present value calculation that values the O&M costs at only $127,896. The Ecology oversight is then only 15% of that cost at $15,000 for the life of the project. This amount of money is insufficient for professional services for the review of even one report, yet that cost ($15,000) is meant to represent the cost of Ecology review of 11 reports.

In addition to the cost estimate severely underestimating the costs to monitor conditions, prepare reports, and review reports over the 11 envisioned events, the cost estimate also

[12] Ecology 2025. Guidance for Determining if a Cleanup Action uses Permanent Solutions to the Maximum Extent Practicable using Disproportionate Cost Analysis. Public Comment Draft. February 2025, Publication 25-09-059.

very much underestimates the number of monitoring events that will be necessary to ensure SL-3 remains protective of human health and the environment over the long term. That is, the cost estimate for SL-3 does not fully consider all of the post-construction elements in the list above.

Within the Interim Action Plan, Ecology states that long term monitoring to evaluate continued compliance of areas where contaminants will be left within caps will include "continued physical and chemical monitoring of soil or sediment at sampling frequencies sufficient to evaluate continued performance trends," and that "special monitoring could be undertaken after severe storms or other events that could potentially damage a cap." Confirmational monitoring is an essential part of cleanup implementation as prescribed in WAC 173-340-410. A set frequency of 11 monitoring, maintenance, and reporting events over a period of 30 years is not nearly adequate to meet the standards set forth within MTCA or within the Plan itself. And the scheduled events don't include additional contingency activities responsive to weather events.

As described above, the integrity of the engineered cap and the preservation of the institutional controls that protect the cap are the only factors employed in SL-3 to protect the environment and human and ecological receptors from the consolidated contaminated material over the long-term. The direct and percentage based indirect (project management and Ecology oversight) costs associated with a more realistic and protective O&M plan would increase the cost of SL-3 substantially.

Benefit Scoring

Benefits scoring within the DCA uses the following parameters and weights: protectiveness (30%); permanence (20%); long-term effectiveness (20%); management of short-term risks (10%); technical and administrative implementability (10%); and consideration of public concerns (10%). Alternative SL-5 received the highest total benefits score of 8.9 out of 10, followed by SL-3 with 7.8. While there is some degree of subjectivity that must be employed when assigning values such as these on a scale of 1 through 10, the assigned values overestimate the benefits of SL-3, placing it on a similar scale as SL-5, even though SL-5 is fully protective and allows the property to return to productive use while SL-3 does not.

Generally, SL-5 excels in parameters relating to protectiveness, permanence, and long-term effectiveness with SL-3 trailing closely, according to the DCA scoring. However, the supposed benefits for SL-3 are closely linked with the use of fencing and other institutional controls. And any future land re-use would have to undo the "remedy" constructed under SL-3.

One example of unrepresentative benefit scoring is seen in the technical and administrative implementability score. SL-3 requires extensive modeling and design to be technically implementable and requires institutional controls and environmental covenants to be administratively implementable. Yet, despite SL-3's technical and administrative challenges, the DCA over-scored SL-3 on this aspect (at a 9 out of 10), citing well-established construction methods for excavation and covers. Conversely SL-5, which is a simple dig and haul, was only scored a 6, even though its engineering and design is less intensive than that for SL-3 and even though it requires no administrative burdens. However, as discussed above, the technical implementability for SL-3 in terms of design, modeling requirements, and coordination with sediment investigation and remediation is lower than that of SL-5. The environmental covenant institutional control required for SL-3 should also lower its administrative implementability score. SL-3's technical and administrative implementability score should be lowered (from its current 9).

Further, Section 8.1.5 of *Guidance for Determining if a Cleanup Action uses Permanent Solutions to the Maximum Extent Practicable using Disproportionate Cost Analysis*[13] discusses the need to consider post-construction challenges when scoring technical and administrative implementability.

"The evaluator needs to consider not only the implementability of construction activities, but also post-construction activities, including:

- Operation and maintenance activities necessary to maintain the effectiveness of a constructed cleanup action component
- Replacement or repair of equipment (including labor, equipment, and materials).
- Waste management and disposal.
- Permit renewal.
- Compliance monitoring (including sampling and analysis).
- Maintaining institutional controls.
- Financial assurances.
- Periodic reviews.
- Postconstruction management and regulatory oversight."

For SL-3, the technical and administrative implementability score of 9 is too high because it does not account for these postconstruction considerations nor the engineering and

[13] Ecology 2025. Guidance for Determining if a Cleanup Action uses Permanent Solutions to the Maximum Extent Practicable using Disproportionate Cost Analysis. Public Comment Draft. February 2025, Publication 25-09-059.

modeling elements that have to be considered to appropriately design and build SL-3. Ecology should reconsider lowering the benefits score applied to SL-3 in light of the modeling and design work, property encumbrances, and postconstruction activities that will be required to implement SL-3.

CONCLUSION

As noted in Sections 9.3 and 9.4 of the *Guidance for Determining if a Cleanup Action uses Permanent Solutions to the Maximum Extent Practicable using Disproportionate Cost Analysis*[14], Ecology has discretion to use its best professional judgment to evaluate the uncertainty around and revise the cost estimates and benefits scores used in the DCA. An adjustment to these inputs is particularly relevant because they were developed several years ago for the 2019 *Interim Action Report Volume III: Alternatives Evaluation Report*.

Ecology should prepare a more careful consideration of all costs for SL-3, as well as its benefits reflective of the uncertainties, complexities, difficulty to implement, and lack of permanence in the absence of institutional controls. Ecology should also consider the incongruence of SL-3 with the City's Comprehensive Plan and factor in the hurdles that SL-3 places in front of future land redevelopment opportunities.

[14] Ecology 2025. Guidance for Determining if a Cleanup Action uses Permanent Solutions to the Maximum Extent Practicable using Disproportionate Cost Analysis. Public Comment Draft. February 2025, Publication 25-09-059.