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# Top 10 Reasons I Hate the Rayonier Mill Cleanup Project

I had little familiarity with the Rayonier Mill Cleanup project until the public meeting a month ago. But I found myself subsequently going down various rabbit holes to try to better understand the MTCA process, current project status, and future plans for the project. I chose to focus on the marine portion of the project since everyone else I heard at the public meeting seemed focused on the upland portion of it. So most of my comments are related to the contents of the Interim Action Plan (IAP) and associated Marine Data Summary Report, focusing on the basic foundation of what got us to where we appear to be now and where's this thing going. I suspect that many of the types of comments I have on the marine portion of the project may be similar to concerns others have regarding upland and groundwater remediation including public involvement, outdated site characterization, questionable cleanup criteria, and ludicrous plans to basically leave all the contamination on-site. So without further ado.

1. **Public Meeting.** I was pretty surprised when I started reviewing the IAP and associated documents to see that the plan was not near as straightforward as indicated in Ecology's presentations. Some of this could obviously be written off to having limited time and an audience with unknown familiarity with the project history or technical concepts/jargon. But it also resulted in a false impression of the level of remaining uncertainty and wiggle room around remediation plans after 2-3 decades of development. For the marine sediment plans, probably the biggest examples of this were that
  - a. Ecology did not indicate that 'no-action' was one of the alternatives still under consideration for SMA-3 and SMA-4. The IAP explicitly presents 'no action' as an ongoing alternative.
  - b. Ecology indicated that a thin-layer cap was not really a consideration for any of the marine areas and that all marine remediation would likely either consist of EMNR or dredging/excavation. The IAP explicitly presents the thin-layer cap alternative as an ongoing alternative, and maybe even a likely alternative pending further modeling.
  - c. Ecology indicated that contaminated soils would likely be permanently stockpiled on-site and contaminated sediments would be transported offsite. The IAP clearly presents permanent on-site stockpiling (consolidation) as the intended strategy although it left the door open for some off-site transport.

Since the public meeting occurred months after the IAP was issued, I wanted to believe that these additional protective steps were refinements to the plan outlined in the IAP, but I suspect that hopeful assumption would be foolish.

Also, the Ecology representatives giving the presentations didn't really convey interest in public engagement as the presenters largely just stared at their computers reading their pre-written speeches in a mono-tone voice. But I'll acknowledge 3-4 Ecology representatives enthusiastically expressed how excited they were to get public comments, and then during the Q&A session, Ecology didn't come close to answering the questions asked (most of which I could have answered more completely after only 20 minutes of looking at Ecology's posters just outside the auditorium [kudos to the Ecology rep running around the audience with the microphone for trying to get his coworkers to actually answer the questions asked]). And I left the meeting after 4-5 questions went unanswered as the Q&A session began to quickly degenerate to audience members yelling out questions, frustrated comments, or just yelling. The whole experience came across as a box-checking exercise on the part of Ecology where they had no interest in public engagement, comment, or, dare I say, decision-making. But Ecology has presumably now gone through the motions to fulfill their MTCA 'public' responsibility. I hope this wasn't representative of other MTCA processes.

2. **Outdated Sediment Chemistry.** Ecology's presentations conveyed that extensive sediment chemistry sampling had been conducted to support the IAP, but there was no hint that those studies were collected 17 to 28 years ago. So those results (and thus the current plans) may or may not represent the current chemicals of concern, or their locations, depths, or concentrations. Also, many, if not most, of the sediment chemistry samples for this Site did not include all of the 47 SMS benthic analytes, or at appropriate detection limits for many of the analyses that were conducted. Thus, it is not clear what all locations may have exceeded Washington standards at the time they were sampled, much less 2 decades later. As a result, the concentrations in some area may have gone down (e.g., natural attenuation, dilution, volatilization) while surface contaminant levels in other locations may now be higher (e.g., hydrodynamics resulting in exposure of previously subsurface contaminants or lateral transport from adjacent hot spots). Thus, any proposed remediation should be based on current sediment conditions and/or implement more extensive remediation to address the uncertainty.
3. **What is Going On With 'Total TEQ?'** The IAP and accompanying Marine Data Summary Report do a pretty good job of presenting text, maps, and chemical data summary tables to support the extent and concentrations of project SMS chemical exceedances with one glaring exception ("Total TEQ"). The IAP only mentions the term 'Total TEQ' four times in passing and the 246-page marine report that was prepared to support the IAP does not mention the term a single time. According to the IAP, the Total TEQ is the combined 'toxicity equivalency quotient' for PCBs and dioxins/furans, and indicates the rationale

for using 'Total TEQ' is explained in a 2016 Ecology memo (which does not appear to be available in the Port Angeles library or a Google search). So the IAP presents no information on the basis or implications of its use on this project, nor any info on the potential extent, depth, or concentrations of Total DEQ across the marine habitat. However, the marine report does extensively discuss the individual PCB TEQs and dioxin/furan TEQs in marine sediments ('TEQ' is mentioned over 150 times in the document). Based on the extremely superficial info in the IAP on the topic, it appears that the Total TEQ may consist of simply adding the PCB TEQ and dioxin/furan TEQ together. Thus, the use of a Total TEQ cleanup level would mathematically be much less protective for human health and the environment than using an individual PCB TEQ plus a dioxin/furan TEQ. The reason for going so far down this TEQ rabbit hole is that PCBs and dioxins are more toxic and persistent than most if not all of the other sediment contaminants, and the sparse context on the Total TEQ concept in the IAP makes it impossible to assess whether the use of Total TEQ is more or less protective of human health and the environment. But it appears to be less protective, and possibly much less so, based on the limited info provided.

- a. PCBs and dioxins are the most prevalent, persistent, and toxic contaminants identified in the marine area.
- b. There were more PCBs exceedances than any other SCO chemical in the marine environment (according to the marine report based on Total PCB concentrations). PCBs were detected in every single surface and subsurface sediment sample analyzed.
- c. Dioxins/furans were also measured in all surface and subsurface sediment samples analyzed with the maximum concentration being 5 to 10 times higher in both surface and subsurface sediments than the proposed Total TEQ criteria.
- d. While neither the IAP nor marine report present any text, maps, or data tables of the extent and magnitude of Total TEQ exceedances at the Site, Ecology did show a map of Total TEQ exceedances in the July 8 public meeting. This map depicted Total TEQ exceedances approximately 2-4 times the proposed cleanup criteria beyond the Mill Dock (both north and east) and in the Log Pond area beyond where dredging is currently being proposed. That is, based on Ecology's stated approach to determining appropriate remediation methods, dredging should be expanded to include the Total TEQ exceedance footprint north of the proposed dredging in the Log Pond and north and east of the Mill Dock. While it is not at all clear why Total TEQ was slipped into the remediation approach at such a late date, it seems these contaminants should warrant the most attention in assessing risks and determining appropriate remediation in the marine area, but the IAP seems to give them the least attention or at least the least clarity.

4. **Over-Remediate based on Worst-Case.** Based on the outdated sediment chemistry data and the uncertainty of what may have subsequently happened to the contaminants during hundreds of subsequent storms and 10,000 tidal cycles since they were collected, the choice of remediation alternatives and the extent of those alternatives should be based on the worst-case of what may have reasonably happened to those contaminants over the past 2-3 decades. Thus, if sediment chemistry results indicated 100 yards of intertidal shoreline should be dredged, it is necessary to technically evaluate whether the actual remediation area should be 150 or even 300 yards wide (or more). This should also consider potential erosion/exposure of 'subsurface' contaminants, continued upland inputs (there will be continued inputs from upland for decades if not centuries to come), potential sea-level rise changing where the intertidal zone is located (vertically and horizontally), and what intertidal and subtidal areas may become erosive in the future. Also, it seems there should be EMNR buffers (or thin-layer cap) around all dredging areas to account for mobilization of contaminants during dredging/excavation (e.g., currently there is no remediation proposed immediately west/northwest of the proposed dredging in SMA-2 nor east of potential dredging in SMA-4). Lastly, it seems like a no-brainer but Ecology should implement EMNR or thin-layer capping at all subtidal dredging sites (post-dredging) since dredging will not eliminate all contaminants in those areas but it will remove the surface habitat, potentially expose additional chemicals on the new 'surface,' and otherwise create a pit.
5. **Dredging the Mill Dock Area is a Slam-Dunk.** It appears the basic process for moving forward in SMA-3 and SMA-4 is to collect future sediment chemistry samples pre-structure removal, conduct hydrodynamic modeling of post-structure removal erosion, remove the Mill Dock/pilings and jetty, fill the ship berths with clean sediment, and implement currently undefined remedial activities under the Mill Dock (SMA-3) and Nearshore Areas (SMA-4). And that the future remediation in those areas may include no-action, EMNR, thin-layer cap, and/or dredging/excavation based on the location, depth, and extent of SCO exceedances (or more accurately 1.5x-3x SCOs). I'll pick on the sediment sampling first. The IAP text presents the approximate number, location, total depth, and depth intervals for both physical parameter testing and chemistry analyses (including a long list of analytes) for subsurface sediment sampling under the Mill Dock (SMA-3). The text curiously mentions only that surface sediment sampling will be done (no indication of approximate sample number, location, depth, or analytes). I suspect that there was corresponding text on the surface sediment approach in an earlier draft of the IAP, but it was inadvertently deleted. Similarly, no text is included on the number, location or analytes of any sediment sampling in any of SMA-4. But for the sake of keeping this moving, I'll assume the approximate sample numbers, locations, and analytes for surface sediment samples under the Mill Dock will be identical or similar to

the subsurface approach for that area, and that a similar approach will be used for the Nearshore Areas (SMA-4). So I'll highlight that only collecting surface and subsurface sediments at 8 locations for SMA-3 and even worse in SMA-4 will not be adequate to reasonably support specific remediation alternatives (although dredging would obviously be easiest to justify with little spatially-meaningful data). I'll also highlight that the dock is basically the bulls-eye of significant exceedances of many of the criteria contaminants including cPAH TEQ and Total TEQ (and both PCB TEQ and dioxin/furan TEQ). Also, the collection of chemistry results under the Mill Dock only before piling removal will provide a hugely inaccurate characterization of post-removal contaminant concentrations, depths, and extent since the physical removal of 4,000 creosote-soaked pilings will not only smear petroleum hydrocarbons throughout the depth profile and to the surface, it will also provide a ready pathway for other contaminants to migrate both up and down in 4,000 locations within this area. This also highlights that only sampling to a maximum depth of 8 feet in this area is probably not valid unless you basically don't care what contaminants are deeper. So chemistry sampling and hydrodynamic conditions/modeling should also be thoroughly conducted post-structure removal with the extent of sampling being expanded beyond the Mill Dock and former ship berths depending on refined post-removal hydrodynamic monitoring/modeling. And the sediment chemistry analyte list should comprehensively align with all the benthic and human-health SCOs (e.g., adding phenols, phthalates, and alpha-BHC). With all that said, I'm shocked that Ecology is not already proposing dredging to the Mill Dock (SMA-3) since there is no other valid alternative to address the wide range and extreme concentrations of contaminants already documented at and around the site, which will be spread even further vertically and horizontally during and potentially following piling removal (which makes the lack of any further public transparency even more disconcerting).

6. **On-site Consolidation is Ludicrous.** It sounds like most public discussion about permanently excavated contaminants on-site focused on legal MTCA terms like 'practicable' and 'disproportionate.' While I probably agree with the rest of the public's concerns about Ecology's hiding behind those highly subjective concepts, I'll comment on simpler terms like 'cleanup' or 'permanent.' My understanding is that Ecology's 'permanent solution' to cleaning up the contaminants at the Rayonier Mill site is just to basically pile all of the 128,000 cubic yards of hazardous material on the existing contaminated(?) soil on the west end of the site, cover it with a layer of rocks and dirt and claim permanent success (kids, go clean  $\frac{3}{4}$  of the backyard and just leave all the dog turds in a layer in the remaining  $\frac{1}{4}$  of the yard. Just kick some dirt on it. It will be fine). OK, more usefully, this concept seems ludicrous as it is not a permanent solution.

- a. The consolidation area would apparently not have an impermeable layer below it (lining) or an impermeable cap above it (clay, blue tarp) so rainfall will continue to drain through the clean dirt, clean rocks, and 5+ feet of contamination.
- b. The IAP seems to indicate that less-protective cleanup standards and permanently stockpiling 128,000 cubic yards of contamination on-site are in line with the industrial nature of the site. The only reason that the site still has an industrial nature is because it's been a vacant hazardous waste site for the past 2 decades. There is no adjacent industry and apparently no plans for it. I suspect that virtually everyone that calls Clallam County home would prefer the site be cleaned up in its entirety and the land use be improved to residential, commercial, and/or (preferably) publicly accessible open space in line with the adjacent land uses.
- c. The IAP indicates that cleanup doesn't need to address leaching from contamination to the groundwater, which sounds crazy since virtually all the current contamination has apparently leached/leaked/seeped/percolated/drained/flowed/oozed from the surface through subsurface soils to the groundwater across the entire site. And it will continue to do so from those soils whether the soil remains in its current location or maybe even more so if it is moved, aerated, and mixed with other contaminants.
- d. That doesn't even begin to address disturbance of the stockpile from seismic activity, sea level rise, or climate change. Not only are all these events reasonably foreseeable, they will definitely occur. With a major earthquake, not only could the consolidation pile liquefy but much of the Rayonier site could as well since it is composed of fill material dumped into the ocean over the past century. Tsunamis will occur and they won't need to be very tall to impact the consolidation pile as it appears it is proposed only be a few feet above the current high tide line. Sea level rise and increased storm events in the future will alter the shoreline, and raise the groundwater levels, which will encroach on a consolidation pile located '200 feet' from the current shoreline.

So it is a misnomer to call the IAP a cleanup plan, much less a permanent solution since it is simply rearranging the deck chairs.

- 7. Consolidation of Marine Contaminants is Even More Ludicrous.** As previously mentioned, Ecology stated at the public meeting that contaminated sediments will be transported off-site, but the IAP does not. Much if not all of the criticism in #6 above for consolidation in general would be exacerbated if the consolidation pile includes contaminated marine sediments. Dredging of marine sediments is accomplished by creating a slurry to remove the sediments from the benthic habitat and transport it for

disposal via barge, truck, or just piling upland. While some dredging and dredge spoil removal methods create more liquid slurry than other methods, it would seem that this currently proposed project would include piping the toxic dredge spoils to land, which tends to liquefy the dredge spoils more than other dredging methods. As such, this toxic slurry needs to be contained and confined from spreading out and down. Thus, dredged sediments would likely be significantly even worse candidates for upland stockpiling than upland soils, and even more so without impermeable linings beneath the pile, containment berms around the pile, an impermeable cover on top of the contaminants, or possibly binding agents to try to solidify the slurry or otherwise make the toxins inert.

8. **Long-Term Monitoring.** Obviously the biggest concern is that comprehensive construction, performance, and confirmational monitoring will actually be conducted in an appropriate manner and on an appropriate schedule. There are a lot of reassuring, albeit generic, words in the IAP but not much commitment, and this is further exacerbated by the fact that the pending monitoring plans, and their implementation will apparently be conducted outside public view (No, trust us). Long-term monitoring is probably a much bigger concern for upland and groundwater remediation than marine sediments, or at least subtidal sediments. Although subtidal remediation and subsequent monitoring of marine sediments might be costly, it theoretically should be successful as long as updated site characterization is accurate and remediation activities are implemented appropriately. That isn't because I trust that dredging will completely remove all contaminants or that EMNR actually will accelerate 'natural' attenuation of the contaminants, but because Ecology has selected the subtidal point of compliance to be only the upper 4 inches of the sediment. Almost all of the currently proposed marine subtidal remediation consists of covering the native surface sediments via EMNR, thin-layer cap, and ship berth filling. And hopefully Ecology adds post-dredging EMNR or thin-layer cap to the remaining subtidal dredge areas too to better protect human health and the environment. While the IAP repeatedly indicates that thin-layer capping may consist of adding 6-inches of new sediment, it curiously does not provide a depth for EMNR although federal guidance is apparently between 6 and 12 inches. Assuming the added sediment stays in place, this means that compliance monitoring of sediment chemistry in these areas will only sample the added clean sediment. Thus, remedial success would be achieved simply by adding the sediment and it hopefully staying in place independent of the remaining toxic concentrations in the native sediment below it in 10 years or even 10 centuries. And even if half of the SMA only had 2 inches of clean sediment remaining, that would presumably reduce the 'sediment-weighted average' by 75% even if the contaminant concentrations measured 2-3 decades ago were still present in 2030 or 2050 or beyond. That isn't to say that EMNR and thin-layer capping will consistently provide a layer over 4 inches deep or that long-term monitoring isn't



warranted. It's to point out that Ecology has stacked the deck in their favor for achieving their definition of 'success' even in areas where no actual contaminant reduction occurs.

9. **Future Public Involvement.** It was very disappointing to hear that the July 8 meeting was basically the last chance in the Rayonier Mill cleanup process for the public to be allowed to be informed much less involved in future sediment sampling/modeling plans or results, identification and design of selected remediation alternatives, actual implementation, long-term monitoring plans/results, or planning or implementation schedules. This isn't just an issue with there not being any public review, but it is more disconcerting that the people most affected by these efforts may not know what is going on (or when) with the project until we actually see heavy equipment at the site (or maybe more likely, no evidence of heavy equipment for another 5 or 10+ years or more). There apparently will be an Ecology website that can be monitored to check on the project status, but it sounded like the information provided might be as simple as 'final remediation methods selected,' not what they were much less the rationale or implications to the public or our environment. I hope this isn't representative of other MTCA processes.
10. **Is MTCA Broken?** This is my first MTCA cleanup project, so I have no idea whether the Rayonier Mill Cleanup process and proposed project are representative of other MTCA projects, but it does not appear to be working as intended here. Taking 2-3 decades to get to the draft IAP stage should be an embarrassment to all involved (and if they are not embarrassed, they are obviously part of the problem). The overall process and current plans are in sharp contrast (violation?) of the mission of Ecology and the legislature's purpose in enacting MTCA. Ecology's stated mission is 'to protect, preserve, and enhance Washington's environment for current and future generations.' This proposed cleanup plan clearly does not satisfy that mission now or especially for future generations. The stated purpose of MTCA is to find a 'workable process to accomplish effective and expeditious cleanups in a manner that protects human health and the environment' and 'encourages public and tribal involvement in decision making.' I don't think anyone would consider the Rayonier Mill Cleanup project efficient and effective, and the large majority of the public would not consider it protective, permanent, or even ethically or morally right.

I understand there is a fairly new version of MTCA that newer cleanup projects must adhere to, and hopefully the updated version of MTCA addresses the challenges this project has encountered with adhering to schedules, public engagement, vagaries in language, and loopholes so the Rayonier travesty, especially the delays and the current consolidation plan, is not inflicted on other Washington communities now or for future generations.