Groven, Connie (ECY)

From: OEC <oec@olympus.net>
Sent: Friday, March 13, 2020 11:00 AM
To: Groven, Connie (ECY); Lawson, Rebecca (ECY); Pendowski, Jim (ECY); Doenges, Rich (ECY)
Subject: OEC correction on western Port Angeles Harbor comments
Attachments: Comments revised final.docx

The date of OEC's comments on the earlier copy read 2002. It should have read 2020. Please make note of this.

I've corrected that on this Word document.

Thank you,

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From: OEC <oec@olympus.net>
Sent: Tuesday, March 10, 2020 11:45 AM
To: Groven, Connie (ECY); Lawson, Rebecca (ECY); Pendowski, Jim (ECY); Doenges, Rich (ECY)
Subject: OECC comments on western Harbor Draft RI/FS -- Facility ID 18898-Site Cleanup ID 11907
Attachments: Comments revised final.pdf

PLEASE CONFIRM RECEIPT OF THIS EMAIL

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Attached please find OECC's comments for the western Harbor Draft RI/FS -- Facility ID 18898-Site Cleanup ID 11907.

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Comments on the Western Harbor Remedial Investigation/Feasibility Study
Prepared for the Olympic Environmental Council Coalition
March 9, 2002
ESC LLC
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Glossary

aBHC-alpha-Hexachlorocyclobenzene
Dioxins- also TCDDs or tetrachlorodibenzodioxins
IHS- Indicator Hazardous Substances
LEKT- Lower Elwha Klallam Tribe
PAH- polynuclear aromatic hydrocarbons
PCBs-polychlorinated biphenyls
RI/FS-Remedial Investigation / Feasibility Study
RPD- redox potential discontinuity
SCU- Sediment cleanup unit
SMU- Sediment management unit
TEQ- Toxic equivalent

Summary of Comments

Several problems arise with the Remedial Investigation and Feasibility Study (RI/FS) that include the interpretation of data for sediment toxicity and assumptions regarding remedies. These problems are discussed in more detail below in the appropriate sections.

The document portrays a general assumption that on-going sources from the on-land, human made features on the harbor shore cannot and will not be controlled. These sources present contamination problems that are not being addressed at present, according to the RI report on nature and extent of contamination. This approach is unacceptable, especially because these sources are at the harbor and not regional or global in nature.

Executive Summary

The Executive Summary states that the “in-water” dredging will cause release of sediment bound chemicals, but modern techniques and equipment will reduce such releases to a minimal amount, far less than even 10 years ago. Such new techniques include sediment/silt curtains, environmental bucket dredges, suction dredges, and GPS guided dredge heads.

The metals will not breakdown ever; natural recovery is useless for metals**,**
PCBs and especially dioxins that breakdown so slowly and under such conditions as to be not treatable, rendering natural recovery also useless for these compounds.

The RI used all the previous investigations that could be obtained and were conducted during recent investigations of harbor contamination, notably the Rayonier, K Ply, Nippon, among others.

The first 5 sections of the RI/FS report are basic materials that collect summaries of what work has been done previously, a description of the harbor, the well-known information to begin the investigation. The RI/FS itself is intended to provide an analysis of the nature and extent of contamination and the sources. The document then goes on to examine the options for cleaning up the contamination.

Section 1 is an introductory and background description of the harbor area
Section 2 Description of the harbor
Section 3 Historical and Current Uses of the Harbor
Section 4 Previous Investigations
Section 5 RI/FS Activities conducted for this report

Section 6 This part evaluates the results of the investigations to estimate the risks and potential harm to humans and ecological receptors in the harbor, not just the Western Harbor for humans and ecological resources.

Section 6.1.1.1 summarizes the human health risks from eating seafood, evaluating health risks to subsistence fishers, Lower Elwha Klallam Tribe members and recreational users. The section notes: "*Therefore, the preliminary human health IHSs identified included: arsenic, cadmium, copper, selenium, mercury, zinc, alpha-BHC, cPAHs, PCBs, and dioxins/furans TEQ."*

Section 7 presents the nature and extent of the distribution of hazardous substances and wood debris in the Western Harbor.

The introductory points on page 7-0, key findings, suggest that the benthic toxicity is small and of no real concern, while the previous section makes a different conclusion, based on chemical concentrations and wood debris distribution and abundance. Wood debris harms benthic marine habitats and organisms.

Data are primarily from 2008 and 2013, 12 and 7 years ago, respectively. No current data from the past two years is used in this analysis.

Page 7- 7 makes a telling comment that the earlier result of bioassay toxicity tests, using harbor sediments, indicate more widespread toxicity in a much greater number of samples. The reduction in toxicity would indicate improvement in sediment quality, as noted:

- "These improved results primarily reflect use of the resuspension protocol (Kendall et al. 2012) that addressed possible larval entrainment/negative bias, but also may reflect improved sediment quality over the 5-year period between 2008 and 2013."

Section 7.2.4, page 7-7. This section seeks to use the survey information to make the case that benthic habitat is not impacted by chemical contamination or wood debris. The

logic here is faulty and the information and data do not fully support the explanation given as the prime explanation and certainly not as the sole explanation. The successional stage of the benthic assemblage may equally as likely be limited and is not higher due to a depressive impact from chemicals and wood combined.

The document fails to account for the impact of the combined toxicity of both wood debris and the contaminating chemicals, as well as naturally occurring chemicals that exhibit innate toxicity. These two types of contamination act in concert on the benthic assemblage.

Table 7.7 This table gives biological successional stage (the progression from simple to more complex and abundant biological communities), and aRPD (redox potential discontinuity) do not give confidence that natural recovery is working effectively and quickly. The depths for the aRPD are not close to the standard 10cm considered the standard depth for oxidized habitat that supports a healthy benthic community. The 15 years, from 1998 to 2013, shown in the table that elapsed between the two surveys should have been enough time to see greater recovery. And those data are now an additional 7 years out of date/not current. Given the extent and nature of the wood debris, large sizes of the wood debris, there is no evidence that recovery is proceeding at a sufficient pace.

Section 8 presents information on hazard indices and cleanup options

The introduction to the section explains a feature that is an inherent flaw in the analytical system because the toxic chemicals are assessed individually. The toxicity occurs collectively for all the exposures that occur simultaneously, including multiple metals, organic chemicals, and gases (ammonia, sulfurous gases). Failure to evaluate cumulative effects is a major flaw.

Section 8.1.1.1
On page 8.2, the inherent flaw in the analytical system is apparent in how chemicals are dropped from further consideration by assessing individual chemicals according to a single benchmark number. In this case, if a chemical is present at a concentration fractionally less than the screening number (i.e. at 75% of the screening number), and is not carried forward for analysis, and other chemicals have a similar pattern, then all such chemicals are dropped, although the combined, cumulative effects and exposures may well cause harm, or least increase risk. This problem is most serious when the chemical act on a common biological endpoint, such as the nervous system, a sensitive tissue for most, if not all metals. An excellent example is mercury, lead and cadmium, all of which target the developing central nervous system. This inherent flaw is present in the analysis of these data and unfortunately is imbedded in agency procedures and regulation.

Section 8.3.1
Page 8-9 The text admits that land-based sources are not considered in the control or remedial efforts, unlike the situation in CERCLA sites, such as the Lower Duwamish River. In Port Angeles, the remedy does not consider what can and should be implemented to address ongoing sources of contamination. The text does

Section 8.3.2 on page 8-9 and 8-10. This text uses a MTCA provision as an excuse to not clean up on the basis of temporarily displacing natural resources in the harbor. The argument is that cleaning up the contamination will harm the system more than leaving the contaminants in place forever. The metals and PCBs and dioxins/furans will remain in the harbor forever if not removed or treated in place and this section seeks to make the excuse that cleaning up the harbor will cause more harm than good. The flaw in this logic is that the long term harm from leaving contaminating chemicals in place is not toxic forever. These assumptions are false and should be rejected. An analysis will show that the loss of resource use over the next 100 years alone is greater than any short term financial gain to the company.

Section 9.0 Page 9-0 lists bulleted items that are information items from the Remedial Investigation. The last item on the list, the *" determination that wood debris, although widespread, does not pose a toxicity concern within the SCU (sediment cleanup unit)"* is not fully supported by the evidence and, indeed, evidence in the Remedial Investigation contradicts this statement for the following reasons:

1) The sediment toxicity tests do indicate toxicity for this limited battery of tests;
2) The redox potential and thus indication of lack of oxygen, a lethal and biologically limiting condition, is not in the full normal range and the aRPD is not at the depth point to indicate support of a balanced and population of infaunal benthic species;
3) The benthic community successional stage analysis does not indicate that all of the areas with wood debris have the normal and appropriate assemblage of benthic species, especially considering that Puget Sound as a source of larvae and immigration is immediately available, and decades have passed since the input of wood debris has ceased from Rayonier and others, providing time for recovery. Recovery is not occurring at a sufficiently fast pace to conclude "no toxicity." Wood debris is known to produce toxic chemicals (both acute and chronic effects, such as sterol exposure) and these effects must be considered in evaluating wood debris as source materials.

Section 9.2
page 9-6. The last conclusion of this section describes a benthic community that is little impacted by wood debris and the text makes little to no comment about the effects of the combined exposures of wood debris and toxic chemicals. Nor does the section admit or recognize the alternative explanation of the data that the wood debris continues to impair the benthic community and limit growth and recruitment. The alternative interpretation must be given equal credence and credibility, based on the existing evidence.

Section 10. Feasibility Study
This section presents a range of options for addressing the problems of contamination in the area described in the previous sections. One of the options must be the one of doing nothing or also called the "No Action Alternative." This option must describe how risks and conditions can be expected to progress over the coming years if no active cleanup is undertaken. Few methods have been used to address toxic chemicals in sediments: remove, cover up, add something to bind the chemicals or leave it to the system to cover with sediment or wash away. An abundance of evidence from other sites over many years (note the James River, Hudson River, Housatonic River, Columbia River)

demonstrate that PCBs and similar chlorinated organic chemicals will not breakdown, or otherwise leave the system.

The FS also presents the objectives of the cleanup in terms of achieving specific objectives, such as protecting human health from exposure due to consuming contaminated seafood from the harbor. These objectives are presented on Page 10-1.

Section 11 presents information on where the sediment cleanup will take place, the cleanup levels and specifics about sediment remediation. The harbor is divided into three cleanup areas: SMA -1; SMA-2 and SMA -3.

Section 11.2.1 page 11-6 Here the document explains that some areas present logistical restrictions on what work can be conducted in the harbor in terms of cleanup. The major issue is the presence of over-water structures such as docks that cannot be moved and many remain in active use.

The remedy will address sediment cleanup on an area-wide basis so that the areas that cannot be cleaned up are “averaged” with areas that will be cleaned up. This method is standard in approaching this type of sediment cleanup.

Section 12 Remedial Technologies Screening
This section discusses various methods that might be or could be used to cleanup the different parts and contaminated areas.

For the most part, such a presentation is straightforward, but may have a one-sided presentation or a “bias” in terms of limiting applicability of one method or technology.

Page 12-4 for example discusses the limitations of environmental bucket dredges or the sort that have been used in the Lower Duwamish River and in Newark Bay. In the former case, contaminated sediments from an Early Action were removed by an environmental bucket dredge designed and operated for just such a purpose as contaminated sediment removal. And in Newark Bay NJ, the similar situation existed, except that the depth was much greater, up to 50 feet, with an overdredge. The discussion on page 12-4 discounts the option for environmental bucket dredges. This text despite the fact that in at least Newark Bay, if not several other cases, the use of modern technologies and approaches was able to reduce dredge residuals to a mere fraction of other operations and historical residuals.

Section 12.2.4 presents the information on nearshore confined disposal facilities in which the dredged material is placed in a barriered /diked structure that is engineered for such containment. The cleanup at Commencement Bay has such a unit and the community needs to discuss the option of this type of facility in the harbor. At present, the RI/FS does not contemplate such a confined facility, but leaves open the option, should conditions arise.

Section 12.3 explains the general aspects and general methods for an engineered cap to cover sediments that cannot be removed, or are lightly contaminated, or for some other reason must be isolated from the environment.

Section 12.4 This part has some information on treating contaminated sediment in place, referred to as *in situ* treatment. Such treatment is not considered appropriate for metals that do not breakdown, and for some chlorinated organic chemical that have a breakdown so slow as to be imperceptible. A few new technologies are under development or have been used in limited cases for *in situ* treatment, mostly in upland soils. This treatment also includes additives that can bind the chemicals and prevent them from moving into the food web; organic carbon is one such additive and is considered briefly in the feasibility report. Once the chemicals are bound, no additional changes occur.

Section 12.5, page 12-12 and13 presents some material and assessment of Enhanced Monitored Natural Recovery (EMNR), which is a combination of adding a layer or material and then monitoring the situation. This approach, specifically or generally, can work with organic chemicals that breakdown through the action of microbial activity (either natural microbes or added ones). As in the text above for section 12.4, this method does not work with chemicals that do not break down, such as metals and dioxins and some other chlorinated organic chemicals.

Section 12.6, page 12-15. This piece on Monitored Natural Recovery does explain that several different processes are involved in and considered MNR: physical cover, chemical breakdown, and biological digestion. The most toxic chemical contamination problems in Port Angeles Harbor will not be addressed by MNR at all, especially because the natural sedimentation rate is low in the harbor, as explained in this section. MNR for metals and chlorinated organic chemicals that do not breakdown is ineffective.

Section 12.7 Source Control.
The text of the document observes that upland sources should be addressed:
“As stated in the AO, “this Order requires investigation of sediments and identification of ongoing upland sources of contamination that have the potential to result in sediment recontamination at levels greater than prospective sediment cleanup standards. Any such upland sources identified under this Order will be addressed under separate actions, agreements, permits or orders” (State of Washington 2013a).” The problem with the nice sounding language is that the wording does not require that all of the upland sources will be eliminated with certainty.

Section 13 Development of Remedial Alternatives

This section explains and discusses the combination of methods that might be used to clean up the contamination in the three major areas, management areas 1, 2 & 3. The options include maximum removal, medium removal and minimum removal for the three major sediment management areas (SMAs).

One of the alternatives for each area includes no removal of sediment and instead reliance on natural recovery of some description.

One notable aspect of this section is that the FS includes and proposes no action for the largest area, SMA 3. The explanation for no active remediation for the majority of the harbor is that active remediation is too difficult and too expensive.

Section 14 Alternatives
All of the alternatives were evaluated according to a series of criteria:

1- Protectiveness
2- Permanence
3- Long term effectiveness
4- Short term risk
5- Technical and administrative issues
6- Consideration of community public concerns

The final selections for cleanup are presented in this section, specifically, the RI/FS identifies the following alternatives as the preferred ones for the three sediment management areas:

Alternative 1-D: Partial Intertidal Excavation and Capping with Subtidal Capping for SMA 1;
Alternative 2-E: Intertidal Capping with Subtidal EMNR for SMA 2;
Alternative 3-B: Year 10 EMNR with MNR for SMA 3.

These options do not present the most effective long term options. The better options maximize removal of the contaminants from the intertidal zone in SMA 1 intertidal areas, with subtidal removal.
In SMA 2, the better option is intertidal removal with some subtidal removal and EMNR.
And in SMA 3, the option should include removal and EMNR, with limited MNR.

Summary
In summary, the FS assumes that the benefit of a cleaner harbor, which accrues to the entire community is not great enough to balance against the cost to the companies responsible for the cleanup. As a result, the FS proposes to leave more contamination in place than alternatives that can remove more contamination. The alternatives with maximum removal will provide much better long term, permanent protection and will be more cost effective for the Port Angeles community.

• Cumulative effects of all contaminants simultaneously need to be considered
• The on-going and land based sources, both soil-based and water-based, must be controlled by requirement and with certainty
• The most recent data are 5 years old and must be updated before a decision is finalized
• The most up to date methods are not included (removal methods used in the US) and the FS is incomplete without these methods
• The impacts of woody debris are far greater than noted in the RI/FS.