



RESPONSIVENESS SUMMARY

Western Port Angeles Harbor

March 20 – April 18, 2013 Public Comment Period

Agreed Order

RI/FS Work Plan

Prepared by
Washington State Department of Ecology
Southwest Regional Office
Toxics Cleanup Program
300 Desmond Drive
Olympia, Washington 98504-7775

May 2013

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Format of the Responsiveness Summary

Ecology reviewed all comments received. Comments from different reviewers often covered the same or similar topics. We grouped and responded to common concerns, as well as many other comments and questions. The rest of this responsiveness summary is organized into the following sections:

- Changes to the Agreed Order and RI/FS Work Plan
- Summary of Public Involvement
- List of Commenters
- Acronyms and Abbreviations
- Responses to Concerns about the Agreed Order
- Responses to Concerns about the RI/FS Work Plan
- Appendix A: Comment Letters

Changes to the Agreed Order and RI/FS Work Plan

Based on comments we received, Ecology is not making changes to the Agreed Order and made the following changes to the RI/FS Work Plan:

- Changed the text in section 3.1 to clarify the purpose of the evaluation and explain what data is being used to characterize current conditions.
- Changed the text in section 4.3.1 to show that Ecology will make the final decisions on whether benthic community analysis will be required at locations with conflicting evidence.
- Removed discussions of black carbon sampling from data quality objective (DQO) 1 and included these discussions only under DQO 5 where it may provide an additional line of evidence in the feasibility study.
- Added two more full suite bioassay locations along the inside of Ediz Hook to provide an understanding of sediment toxicity in these subtidal areas.
- Changed references to “Preliminary screening levels” to “Preliminary sediment cleanup objectives”. This correctly describes the numerical values Ecology is planning to develop using the terminology in the newly revised Sediment Management Standards (SMS). Text referencing “prospective SMS rule revisions” was changed to “SMS rule revisions effective on September 1, 2013”.
- Updated text under DQOs 2 and 3 to provide information about why no additional data is being collected under these DQOs.
- Added the requirement to include a plan for addressing cultural resources, including a plan for unexpected discoveries.
- Updated Table 2 with the required sampling for the Port of Port Angeles Marine Trades permit.

Summary of Public Involvement

The Model Toxics Control Act (MTCA) mandates public involvement in the site cleanup process. The public comment period for the Agreed Order and RI/FS Work Plan ran March 20 through April 18, 2013. The public involvement process included a public meeting and presentations, a fact sheet and other outreach materials.

Fact Sheets and Other Outreach

Ecology used the following notices to advertise the comment period:

- Fact sheet mailer – Sent to about 410 neighboring residents and stakeholders.
- Email announcement – Sent to about 250 interested residents and stakeholders.
- News release
- Website - <https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=11907>.
- Other - Notices on Ecology's Public Involvement Calendar and Site Register. Legal ads in the Peninsula Daily News.

Public Meetings and Presentations

Ecology hosted a public open house and presentation on March 28, 2013 at the Olympic Medical Center. About 30 people attended the event.

Contacts

Connie Groven, Site Manager
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List of Commenters

Date	Name	Affiliation
4/17/2013	Erika Shaffer	WA Department of Natural Resources
4/18/2013	Gretchen Kaehler	WA Department of Archaeology and Historic Preservation
4/18/2013	Darlene Schanfald	Olympic Environmental Council
4/18/2013	Peter DeFur	Environmental Stewardship Concepts/Olympic Environmental Council

Acronyms and Abbreviations

Ecology	Washington State Department of Ecology
DAHP	Department of Archaeology and Historic Preservation
DO	Dissolved Oxygen
DQO	Data quality objective
EPA	United States Environmental Protection Agency
MTCA	Model Toxics Control Act
NPDES	National Pollution Discharge Elimination System
NOPRB	North Olympic Peninsula Regional Background Sediment Characterization
PAHs	Polycyclic aromatic hydrocarbons
PCBs	Polychlorinated biphenyls
PSEMP	Puget Sound Ecosystem Monitoring Program
PLPs	Potentially liable persons
RI/FS	Remedial investigation and feasibility study
SAP	Sampling and Analysis Plan
SMS	Sediment Management Standards
SPI	Sediment profile imaging
TOC	Total organic carbon
WAC	Washington Administrative Code

Responses to Concerns about the Agreed Order

Cultural Resources

Several commenters expressed concerns about how archaeological finds would be handled if discovered. One commenter recommended developing a plan to address cultural resources and define methods for identifying their presence during sampling and cleanup. Another commenter recommended developing a schedule of actions to take place if human remains/archaeological objects are found at the site during cleanup.

Ecology Response: The PLPs will include a description of plans for cultural resource monitoring in the sampling and analysis plan. An inadvertent discoveries plan will also be included. The Department of Archaeology and Historic Preservation (DAHP), the Lower Elwha Klallam Tribe, and the Department of Ecology will participate in reviewing and approving the plan. The RI/FS Work Plan was updated to require this information be included in the Sampling and Analysis Plan.

We have reviewed information about previous marine cultural resources investigations within or near Port Angeles Harbor. Based on the low probability of encountering cultural resource during this sampling and the nature of the sampling proposed (marine surface sampling only and no nearshore or intertidal sampling), monitoring by an archaeologist will not be needed on the boat. In case cultural resources are inadvertently discovered, an inadvertent discoveries plan will define a plan and schedule for notifying appropriate contacts, handling the artifact, and documenting the discovery.

Agreed Order Language

Two commenters recommended adding more detailed language to the agreed order to more fully define when the agreed order would need to be amended and what Ecology considers minor and substantial changes. One commenter recommended discussing what items can be considered in cost estimates and how waste will be handled, as well as detailing when the PLPs must take specific actions and when Ecology would enforce penalties for non-compliance. Another commenter recommended spelling out abbreviations the first time they are used.

Ecology Response: Ecology has spent considerable time with the Office of the Attorney General developing standard agreed order language. The language was carefully chosen to give the right balance of direction and still allow some flexibility for site-specific decisions. For these reasons Ecology is reluctant to make changes to the standard language. Issues such as how waste will be handled are detailed in work plans and sampling and analysis plans, which become enforceable parts of an agreed order after Ecology approves them. We have reviewed the agreed order for correct usage of abbreviations.

Financial Assurances

One commenter recommended including a financial surety clause to ensure that cleanup continues if one or more of the PLPs goes bankrupt.

Ecology Response: The Model Toxics Control Act (MTCA), Washington State's cleanup law, only requires financial assurance mechanisms at sites where the cleanup action selected includes engineered or institutional controls (WAC-173-340-440(11)). Ecology does require certain facilities to have financial assurance mechanisms in place, including dangerous waste recyclers, used oil processors, and dangerous waste treatment, storage and disposal facilities. For more information, visit Ecology's Hazardous Waste and Toxics Reduction Program website at <http://www.ecy.wa.gov/programs/hwtr/index.html>. Sometimes, financial assurance is also required when a site is undergoing cleanup of accidental spills or contamination caused by activities at the facility. Since none of these currently apply at the Western Harbor site, we are not now requiring financial assurances.

The PLPs are jointly and severally liable. This means that they are financially responsible individually as well as jointly. If one PLP becomes bankrupt or unable to pay, other PLPs will be responsible for cleanup costs. Ecology also does not decide how much any particular PLP pays for a cleanup. Rather, PLPs come to a cost sharing arrangement amongst themselves.

Other Potentially Liable Parties

Two commenters expressed concern that other entities may be liable for contamination at the Western Harbor site. They enquired whether Ecology would name additional parties and how that would be handled since they are not signing this agreed order.

Ecology Response: Ecology has notified the parties that we identified as liable for sediment contamination at the Western Harbor site based on known credible evidence. It is in the best interest of the public and the environment to move forward with remedial actions working with the PLPs identified.

Ecology is not required to exhaustively search for every possible PLP. Because of the joint and severally liable policy included in MTCA (see response above), active PLPs may pursue compensation from others responsible for contamination. If additional evidence is presented to Ecology providing credible evidence of additional PLPs, Ecology will work to name them also. Additional PLPs could become parties to the agreed order through an amendment or become involved at a later stage of the remediation process.

Signage

Two commenters expressed concern that the agreed order should require signage when there is property that is not legally accessible to the public.

Ecology Response: Sometimes, we request that property owners place fencing or signage around a site as an institutional control when we have concerns about health or safety. The Port Angeles

Harbor sediments investigation found that contamination in the harbor may increase long-term health risks for people eating fish and shellfish from the harbor. There is a much lower health risk from coming into contact with the sediments. You can read more about the sediments investigation on our website at

http://www.ecy.wa.gov/programs/tcp/sites_brochure/portAngelesHarborSed/study.html.

Clallam County Health and Human Services maintains signs around the harbor related to shellfish closures due to bacterial contamination. Please contact Clallam County Health and Human Services at (360) 417-2258 if you have questions about the shellfish closure or related signage.

Based on this, we do not believe that it is needed or practical to fence or place signs around the entire harbor. Please contact site manager Connie Groven at Connie.Groven@ecy.wa.us if you see particular locations where signs would be helpful for this cleanup site.

Responses to Concerns about the RI/FS Work Plan

Cleanup Methods

One commenter asked why the RI/FS Work Plan did not mention cleanup methods other than activated carbon. The commenter also expressed concern that activated carbon is only proposed for testing at two locations.

Ecology Response: The PLPs will evaluate and discuss accepted sediment cleanup methods during the feasibility study if cleanup is needed. The cleanup alternatives to be evaluated in the feasibility study are not included in the work plan because they will be chosen based on the characteristics and complexity of the site as identified in the RI.

Activated carbon testing is described in the work plan because it requires samples that can be most efficiently and effectively handled during sediment sampling. The two locations were chosen because their concentrations of and different profiles for polychlorinated biphenyls (PCBs) and dioxin/furans will provide basic information about whether the treatment may be useful at this site. The PLPs will do more testing at a future time if it is needed for remedial design.

Bioassays

One commenter wanted more information about the re-suspension method the PLPs proposed using. He wondered how the new test results will be evaluated in comparison with older test results. The commenter also wondered if using the new bivalve bioassay is different from the larval and polychaete bioassays used in the Port Angeles Harbor sediments investigation.

Ecology Response: The potential “false positives” from the older larval bioassays are due to larvae being trapped in the flocculent surface layer of the test sediment and not being accurately

counted; this type of layer is frequently observed in samples from areas with significant wood debris. Federal and state agencies including Ecology recognized the poor performance of the larval test in sediments containing flocculent material such as fine wood debris, and supported the developing a revised testing protocol (D. Kendall et al. 2012). The modified resuspension method allows for a more accurate larvae count. Therefore, all locations where larval bioassays failed are being retested to ensure any positive results are due to sediment toxicity and not undercounting.

Five different species are currently approved for use in larval bioassays. Ecology is choosing to use the bivalve (blue mussel) instead of the echinoderm (sand dollar) larvae previously used because the resuspension method has been approved using the bivalve larvae. Testing for approval of the resuspension method using the echinoderm has not yet been completed.

Other bioassay results from previous studies, including the amphipod and polychaete bioassays, are not being questioned and will not be retested. Stations being sampled without previous bioassay testing will be tested using amphipod, larval (using the bivalve resuspension method), and polychaete bioassays.

Benthic Conditions

Two commenters expressed concerns about the proposed process for collecting benthic community data. One of the commenters was also concerned that the 10 cm sampling depth will not provide full information about the area most used by marine life.

Ecology Response: The RI/FS Work Plan does not include doing a full benthic community analysis because, in the absence of conflicting lines of evidence, the sediment profile imaging (SPI), toxicity, and chemistry data will provide enough information for cleanup decisions. Benthic community analysis is one option provided in the SMS for confirming sediment conditions, but it is not required. Also, the costs for conducting benthic community analysis at all locations would be disproportionate to the benefits.

Ecology will determine whether there is significant conflicting data after reviewing and discussing the data with the PLPs. An example for conflicting lines of evidence might be if no toxicity was observed in laboratory testing, but the SPI imagery showed the benthic habitat quality is adversely impaired. If Ecology determines that there is significant conflicting data, the PLP group will have the option of proceeding with benthic community analysis, as defined in the Sediment Management Standards, or including that area as part of a remedial action.

Over 95% of invertebrates that live at the bottom of the ocean live in the top 5-10 cm of sediment. Thus, 10 cm is considered the biologically active zone for marine sediment and sampling to the top 10 cm is standard for sediment cleanup sites in Puget Sound. This is consistent with most data previously collected in Port Angeles Harbor.

Hypoxia/Low Oxygen

Two commenters expressed concerns that because low oxygen has been observed in Port Angeles Harbor, the PLPs should conduct tests under low oxygen conditions. One commenter also expressed concern that Section 2.1 of the RI/FS Work Plan referenced historical low oxygen conditions in the harbor and stated that the investigation and cleanup should not assume that the low oxygen conditions are naturally occurring. The commenter stated that the situation is likely a result of natural and human-caused conditions.

Ecology Response: The cleanup investigation is focused on sediment contamination, not overlying water quality. The tests the PLPs will use have only been approved for normal oxygen conditions. They are designed to look at how toxic sediment is, not the effects of low oxygen conditions. Sediments reflect environmental conditions over time. Dissolved oxygen (DO) concentrations vary seasonally in Port Angeles Harbor. Measuring DO concentrations at one point in time would not help evaluate benthic impacts because it would not capture annual variability or extremes.

Hypoxia (low oxygen) and anoxia (no oxygen) conditions in western Port Angeles Harbor sediments are largely caused by excess wood debris. The presence of wood debris causes the depletion of oxygen at the sediment water interface and within sediment porewater, eventually degrading the benthic community habitat by the formation of hydrogen sulfide and ammonia. Habitat impacts, such as hypoxic/anoxic sediments, potentially due to wood debris and poor overlying water quality will be evaluated through SPI imagery or benthic community analysis (see page 10 for more about benthic community analysis).

Conceptual Site Models

One commenter was concerned that existing conceptual site models for Port Angeles Harbor were not presented in the RI/FS Work Plan. The commenter asked about how they will be used and refined.

Ecology Response: This focused work plan builds upon previous work without restating it. The RI/FS report will present conceptual site models. The PLPs may refine existing conceptual site models in the RI report if the new data indicate changes are needed.

Data Collected for DQOs 2 and 3

One commenter expressed concern that DQOs 2 and 3 in the RI/FS Work Plan say that the PLPs will collect no new risk assessment data.

Ecology Response: We acknowledge that the language in DQOs 2 and 3 is confusing. Ecology published screening level ecological and human health risk assessments as part of the Port Angeles Harbor Sediment Investigation Report (E&E, 2012). This information was used to identify data gaps to be filled in the RI. The PLPs are not planning to complete new risk assessments. The PLPs

found there was adequate data to answer the questions posed in DQOs 2 and 3 or that the data they collect for DQO 1 will address these DQOs. They are not planning to collect more data solely to address DQOs 2 and 3. They may provide revised conclusions to the risk assessments if changes are supported based on the new data. Clarifying text was added to DQOs 2 and 3.

Data

One commenter asked for more information about chemicals that will be analyzed for and specific analyses that will be run.

Ecology Response: This information will be provided in the RI/FS Sampling and Analysis Plan (SAP). We will post this plan to the site webpage when we have approved it.

Historical Data

Two commenters asked why data from studies done before 2002 will not be used in the RI/FS.

Ecology Response: The RI/FS report will present a summary of the history of the harbor. The PLPs will use data from before 2002 to discuss the history of the harbor. However, more recent data has been collected in those locations. Since, the purpose of a RI is to characterize current condition at the site, the PLPs will use data from 2002 through the present to discuss current conditions. Changes in SPI data between the Western Harbor investigation and the 1999 SAIC survey of wood waste will be used to evaluate the benthic habitat and potential for habitat recovery (DQO 1, Step 5).

Source Control

One commenter asked about how Ecology would, if necessary, work with parties to control any ongoing sources of hazardous substances. The commenter asked what authorities Ecology would use and if this would require amending the agreed order. Another commenter asked what other agencies Ecology would work with and exactly what steps would be taken with the PLPs to stop adding pollution to the harbor.

One commenter had questions about several of the National Pollutant Discharge Elimination System (NPDES) permits and the required sampling under those permits listed in Table 2. In particular, it was noted that the city of Port Angeles is not currently required to sample and that this would need to be done right away to determine baseline data before harbor remediation begins. Also the sampling required by the Port of Port Angeles Marine Trades area is listed as unknown. These also need to be determined and regularly tested for.

Ecology Response: Ecology believes that most of the existing sediment contamination is due to historical sources. This work plan required the PLPs to identify potential ongoing sources. These

will be evaluated and classified as either a potential concern for recontamination or unlikely to pose a recontamination risk. Ecology will follow-up on the potential upland ongoing sources through cleanup actions by the Toxics Cleanup Program under MTCA. Ecology will pursue separate legal agreements with identified responsible parties to address the ongoing sources. The Water Quality Program oversees the NPDES permits and can require water quality limits in its permits. These actions will occur outside of this agreed order and work plan.

Monitoring by the city of Port Angeles, starting August 1, 2013, is adequate for baseline sampling. The permit listed for the Port of Port Angeles Marine Trades area in Table 2 was issued to the port for a proposed wash-down facility that was never built. Discharges from the facility would have gone to the city's wastewater treatment facility and required sampling for flow, pH, total suspended solids, oil and grease, and metals. This information will be added to Table 2.

Data About Ongoing Sources

One commenter stated that a specific definition for when sediment is near a source evaluation area should be developed before data is assessed, which would help with finding any trends of decreasing contaminant concentration in the sediments. The commenter stated that, rather than being DQO 4, evaluating ongoing sources should be DQO 1 since controlling sources is the most important and first step in cleanup.

The commenter recommended that the PLPs should analyze discharges from stormwater, wastewater treatment plants and CSOs for all chemicals that might be discharged, such as PCBs, dioxins/furans, metals, and polycyclic aromatic hydrocarbons (PAHs). The commenter stated that groundwater quality must also be considered if non-aqueous phase liquids are present in the nearshore areas.

The commenter also suggested that, since so little new data collection happening related to ongoing sources of contamination, Puget Sound Ecosystem Monitoring Program (PSEMP) surface sediment chemical data should be used in the RI/FS. Another commenter questioned how data considered during the evaluation of ongoing sources from other media (stormwater, water quality, soils, atmospheric deposition) and other studies would be judged as acceptable for use.

Ecology Response: The evaluation of spatial trends of decreasing contaminant concentrations in sediment will use surface and subsurface data from locations as close to the possible to the potential source. This range may vary as the environmental conditions in different parts of the harbor vary. The order of the DQOs does not indicate the order of importance or the order in which they will be addressed.

The work plan includes sampling and evaluation for a comprehensive list of hazardous chemicals in sediment. This data will help identify source areas. Evaluation of available data from existing upland investigations, discharges to the harbor, bank conditions, nature of nearshore and overwater operations, and atmospheric deposition will also help identify source areas. Evaluation of available data from existing investigations will include groundwater data in areas where non-aqueous phase liquid is present. Since discharges typically release mixtures of chemicals, it is not

necessary to have complete suites of monitoring data at every discharge point to identify potential sources. Additional sampling could be done if needed during future studies at potential source areas.

Substantial new data is planned for collection. The PSEMP data likely won't have the rigorous data quality objectives decided on for the RI/FS. Provided it is available by the time the RI is drafted, the 2013 PSEMP data will be evaluated. In evaluating ongoing sources, data from other studies will be used to supplement data collected in this study. Many studies provide peer-reviewed and validated data. An evaluation of each data set and the analyses used, quality controls, quality assurances, validation processes, and peer-review status will determine if data is acceptable. Professional judgement is used when evaluating whether data has passed adequate quality checks to be acceptable for use. For data from the peer-reviewed literature, which is not available in its raw form, information describing the data (e.g., how samples were collected, analytical methods) is reviewed and a determination regarding its usability is made based on professional judgment.

Ecological Risks

Two commenters had questions and concerns about risks to fish, shellfish, and other wildlife. They expressed concern about the conclusions in section 4.3.3 under DQO 3 of the RI/FS Work Plan, which are based on Ecology's Port Angeles Harbor Sediments Investigation screening level risk assessment.

One commenter questioned whether different fish or shellfish would be more susceptible to contaminants, and recommended that other wildlife also be tested. The other commenter was concerned that the RI/FS Work Plan did not contain enough detail about the screening level risk assessment. He also stated that the potential risks to wildlife from arsenic should not be disregarded. The commenter also stated that the PLPs should study the presence and abundance of key marine plants/microalgae species.

One commenter was also concerned about the cumulative effects from multiple contaminants, hypoxia, and habitat loss due to wood debris. He stated that the work plan needs to assume that the affects of these will be additive, if not greater. The commenter also felt that the PLPs specifically need to look at whether PCBs are affecting aquatic animals.

Ecology Response: Ecology published screening level ecological and human health risk assessments as part of the Port Angeles Harbor Sediment Investigation Report (2012). The focused RI/FS Work Plan builds upon previous work without restating it.

Studying other species: Some fish are more susceptible to certain chemicals, English Sole, for example tend to be more sensitive to PAHs than other fish. However, the potential risks to benthic health and human health risk were greater at lower contaminant concentrations than the risks to fish, shellfish, wildlife, or plants. Therefore, the Western Harbor RI/FS is proceeding to evaluate these more sensitive endpoints (benthic and human health). Remedial decisions protective of these more sensitive endpoints will therefore also be protective of fish, shellfish, wildlife, and plants.

Cumulative effects: The data from DQO1, including the SPI survey, will be invaluable in identifying habitat degradation caused by wood debris. Under the state's Sediment Management Standards, if a biological test conducted under very strict parameters, shows no toxicity even in the presence of chemicals of concern, then that sediment is considered to cause no harm to the benthic community. Ecology acknowledges that physical and chemical factors can act in concert to degrade ecosystems and habitats. The SPI survey will provide another line of evidence in identifying degraded habitat. The Apparent Effects Threshold concept, which the SMS was based on, recognized the potential for this to occur which is why the SMS uses multiple tests with species from multiple phyla and endpoints to identify toxic or deleterious sediments.

If the SPI survey finds habitat degradation (whether as a result of wood debris or other deleterious substance) that does not agree with chemical or biological results, a benthic community survey would be required to determine the cause and extent of the degraded community. The presence of multiple chemicals, whether acting together to produce an effect greater than their effect separately (synergistically) or counteracting each other to produce an effect less their effect separately (antagonistically), is often evident in the benthic community structure and function. Ecology recognizes that there are also areas in the harbor that appear to have healthy communities of marine plants.

Human Health Risks

One commenter notes that Ecology plans to develop regional background levels. The commenter believes developing regional background has the potential to delay the feasibility study and remediation beyond the current schedule if the regional background study is delayed. If the regional background study is delayed, the commenter wants Ecology to still move forward with determining a remediation plan. The commenter also wants to know if the United States Environmental Protection Agency (EPA) or the public will get the review the sampling plan. Another commenter asked if total organic carbon (TOC) and grain size would be considered when collecting background samples since these characteristics can affect accumulation and bioavailability of contaminant chemicals.

Commenters also asked if they could review the preliminary screening levels under development by Ecology mentioned in Section 4.3.2, and if the prospective SMS rule revisions would apply to this work.

Another commenter asked if cumulative risks were being addressed.

Ecology Response: The new SMS rules allow for consideration of regional background levels when selecting a cleanup screening level. Risk based levels and laboratory practical quantitation limits are also considered. The draft North Olympic Peninsula Regional Background Sediment Characterization (NOPRB) SAP (Ecology, 2013) was available to the public for review from March 26 to April 24. Ecology is currently reviewing those comments and revising the SAP. The sample collection is scheduled for early summer 2013, and the report is planned to be completed before the RI/FS so that the schedule will not be delayed. Section 4.3.2 of the RI/FS Work Plan

states that Ecology and the PLPs will work cooperatively on a solution if regional background values are not available prior to November 1, 2013. An objective of the NOPRB SAP is to collect background samples over a range of TOC and grain size to reflect the range found at the site.

The preliminary sediment screening level document mentioned in the RI/FS Work Plan referred to is the Preliminary Sediment Cleanup Objective report which Ecology is finalizing. This document defines the lowest tier of the calculations that must be completed to select sediment cleanup levels for the harbor. This document follows the process outlined by the new SMS rules revision approved on February 22. The rule revisions become effective on September 1, 2012. The PLPs are aware of these rule revisions and the work plan is already compliant with them.

Cumulative risks were addressed as part of the Screening Level Human Health and Ecological Risk Assessments conducted during Ecology's sediment investigation and included in Appendix G of the Port Angeles Harbor Sediment Characterization Study Sediment Investigation Report (E&E, 2012)

References

Ecology 2013. Preliminary Sediment Cleanup Objective for Port Angeles Harbor, Port Angeles, WA. Prepared for the Washington State Department of Ecology Toxics Cleanup Program, Lacey WA by Newfields. March 2013

Ecology 2013. North Olympic Peninsula Regional Background Sediment Characterization Sampling and Analysis Plan: Port Angeles-Port Townsend, WA. Prepared for the Washington State Department of Ecology Toxics Cleanup Program, Lacey WA by Newfields. May 2013.

E & E (Ecology and Environment, Inc.). 2012. Port Angeles Harbor Sediment Characterization Study, Port Angeles, WA: Sediment Investigation Report. Prepared for the Washington State Department of Ecology Toxics Cleanup Program, Lacey WA by Ecology and Environment, Inc. December 2012.

E & E 2012. Port Angeles Harbor Sediment Characterization Study, Port Angeles, WA: Sediment Investigation Report. Screening Level Human Health and Ecological Risk Assessment (Appendix G). Prepared for the Washington State Department of Ecology Toxics Cleanup Program, Lacey WA by Ecology and Environment, Inc. December 2012

Kendall D, McMillan R, Gardiner B, Hester B, and J D Word. 2012. Bioassay Endpoint Refinements: Bivalve Larval and Neanthes Growth Bioassays. Clarification paper at the May 2012 Sediment Management Annual Review Meeting, Seattle, WA. Prepared by U.S. Army Corps of Engineers, Washington State Department of Ecology, and NewFields, LLC. 28 August



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APR 22 2013

WA State Department
of Ecology (SWRO)

April 17, 2013

Connie Groven
Toxics Cleanup Program
Washington State Department of Ecology
P.O. Box 47775
Olympia, WA 98504-7775

Re: Western Port Angeles Harbor Agreed Order and Work Plan

Dear Ms. Groven:

The Washington State Department of Natural Resources (DNR) would like to thank you for the opportunity to comment on the Agreed Order and Work Plan for the Western Port Angeles Harbor site.

DNR's comments are based on principles of stewardship and proprietary management derived from our legislative defined goals to protect State-Owned Aquatic Lands (SOAL) and preserve them for the public's benefit. We appreciate Ecology's consideration of these and any future comments related to sediment cleanup in Port Angeles Harbor.

In regards to the work plan, DNR has the following comments.

DQO 1: (section 4.3.1) If benthic community abundance studies are undertaken, dissolved oxygen conditions should be measured and considered since seasonal low DO is a known condition in PA Harbor.

DQO 2: (section 4.3.2) Will area background conditions be developed considering TOC and grain size conditions in the background sample areas versus those in the site? TOC and grain size can affect the accumulation and bioavailability of contaminant chemicals.

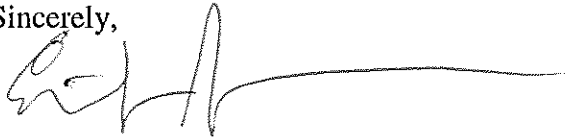
DQO 3: (section 4.3.3) Since marine plants and macroalgae may be compromised due to the presence of wood debris in the harbor, a study of the presence/abundance of key marine



Connie Groven
April 17, 2013
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plant/macroalgae species would be prudent both to determine impact on this ecological receptor as well as for consideration of potential impacts from proposed remedies (ie, are there areas where marine plants/macroalgae are relatively abundant that could be affected by sediment removal or clean material placement?)

Sincerely,

A handwritten signature in black ink, appearing to read 'Erika A Shaffer', with a long horizontal flourish extending to the right.

Erika A Shaffer, MS
Sediment Specialist



April 18, 2013

Ms. Connie Groven
Site Mgr/Enviro Engr
Dept of Ecology
MS: 47775

CAMPUS MAIL

In future correspondence please refer to:

Log: 041813-26-ECY

Property: Western Port Angeles Harbor Site Remediation

Re: Archaeology-More information required

Dear Ms. Groven:

Thank you for contacting the Washington State Department of Archaeology and Historic Preservation (DAHP). The above referenced project has been reviewed on behalf of the State Historic Preservation Officer. The project area and vicinity contains multiple precontact and historic archaeological sites which are protected under state law. Several of the archaeological sites are documented to contain human burials. Archaeological resources and human remains may be present on the floor of the harbor due to natural and historic development processes. These resources may be identified or impacted during testing and sampling. There are no procedures, or processes for archaeological resources apparent in the agreement and it is not clear whether archaeological resources were considered. A plan for encountering cultural resources is essential in this project area and should be part of the agreement and future sampling and cleanup work.

We recommend a plan be developed to address cultural resources define appropriate methods for identifying their presence during sampling and cleanup.

Thank you for the opportunity to review. Please feel free to contact me if you have any questions.

Sincerely,

Gretchen Kaehler
Assistant State Archaeologist
(360) 586-3088
gretchen.kaehler@dahp.wa.gov

cc. Bill White, Archaeologist, LEKT
Derek Beery, Archaeologist, City of Port Angeles



From: [Darlene Schanfald](#)
To: [Groven, Connie \(ECY\)](#); [Groven, Connie \(ECY\)](#)
Subject: Comments from OEC on Western Harbor AO and RI/FS Work Plan
Date: Thursday, April 18, 2013 12:01:02 PM
Importance: High

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Connie:
Please confirm receipt of these comments on the Western Harbor Agreed Order and Plan
First, though, are both these addresses valid? Connie.Groven@ecy.wa.gov ,
cgro461@ecy.wa.gov?

Our Technical Advisor, Peter deFur of Environmental Stewardship Concepts, LLC will be submitting extensive comments on behalf of the Olympic Environmental Council. I'm also submitting the few below.

* Western Harbor AO
Spell out abbreviations within the text the first time they are used. E.G. EIM.

* P. 15, B.3. "*minor or substantial changes to the work* " What is Ecology's definition of "minor" and "substantial?"

*Where there is property not legally accessible to the public, yet able to be accessible (there always is, somehow), regardless, there should be a clause in the AO about signage and the actual sign language

* All the PLPs along Ediz Hook are not included. It is understood that the "willing" signed on to the AO. Nevertheless, there are other PLPs in the Western Harbor. For instance, the floating penned fin fish operation needs to come to the table. If not in this AO, then on its own. It is well established that these operations damage sea life below and to an extent in surrounds beyond the pen facilities. What is Ecology's plans to involve other Western P.A. Harbor PLPs that are not included in this AO?

Final WPAH WP 0314013

3.1 PREVIOUS INVESTIGATIONS

"A number of investigations of the Harbor sediments have occurred beginning in the early 1970s.

For the purpose of the Agreed Order, historical data from 2002 to present will be used in the RI/FS to document current environmental conditions."

*Ecology did an underwater camera study of mat conditions on the sediment of Port Angeles Harbor in 1999. This superb underwater study should be included in your "historical data." You reference it in RI/FS Work Plan Figure 10: Sediment Profile Imaging and Bioassay Station Locations and in 7.0 References.

Also, DQ03 Step 1 supports this: *"Overall, the study concluded that wood debris (refer to DQO 1) appeared to be the most significant stressor to ecological receptors in the Harbor."*

*What is the rationale for using 2002 as "historical data" and not earlier data?

*Fish. The risk assessment considered 10 chemicals found in fish tissue. Arsenic in rock sole was the only chemical to exceed a tissue residue risk-based concentration. Ecology concluded *"fish in Port Angeles Harbor are unlikely to be adversely affected by current levels of most contaminants, except perhaps by arsenic."*

Aren't some fish more susceptible to certain contaminants than other fish?

What about shell fish vs non shell fish?

The cumulative affect of all contaminants together should be considered. There now are quick analytical methods for doing this kind of analysis.

Wildlife. Marbled Murrelets also feed in these waters. It is hard to believe that over time the wildlife studied are not affected by the myriad of toxins in the Harbor. More testing of wildlife should be done, or at least other relevant studies should be considered.

DQ04 How will you handle, if at all, pollutants from new sources or existing sources that could affect sediment? Yes, you will seek help from other agencies that have oversight of air deposition, such as ORCAA for Nippon, but this doesn't inform how you will stop/limit new sources. What exact steps will be taken with the PLPs to stop adding pollution to the Harbor?

Step 6: This is not sufficient..."*professional judgment will be used.*"

Wouldn't the Regional SMP be better?

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4.18.13

Environmental Stewardship Concepts, LLC

**Comments on Western Port Angeles Harbor Agreed Order and
Remedial Investigation/Feasibility Study Work Plan**

Agreed Order Comments

- Inclusion of a Financial Surety Clause in the event of bankruptcy of one or more PLPs would be a beneficial addition to ensure proper payment continues throughout the cleanup.
- Inclusion of language outlining the schedule of actions that would need to take place in the event that human remains/archeological objects are found at the site during remediation.
- Large penalties do exist within the current Agreed Order for non-compliance (see following inset), but more detailed language pertaining to the specific actions and their penalty time-table can be found in other Agreed Orders and more specific language may be necessary for enforcement of the remediation schedule.

“X. ENFORCEMENT

Pursuant to RCW 70.105D.050, this Order may be enforced as follows:

- A. The Attorney General may bring an action to enforce this Order in a state or federal court.
- B. The Attorney General may seek, by filing an action, if necessary, to recover amounts spent by Ecology for investigative and remedial actions orders related to the Site.
- C. A liable party who refuses, without sufficient cause, to comply with any term of this Order, will be liable for:
 - a. Up to three (3) times the amount of any costs incurred by the State of Washington as a result of its refusal to comply; and
 - b. Civil penalties of up to twenty-five thousand dollars (\$25,000) per day for each day it refuses to comply”

- The Agreed Order needs to address what items may be considered in cost estimates, and how waste will be addressed.
- Where there is property not legally accessible to the public, yet able to be accessed, there should be a clause in the Agreed Order about appropriate signage and the actual language required on the sign for protection of the public.
- What plans are in place to involve other PLPs along Ediz Hook that are not currently included in this Agreed Order; are these to be addressed in separate Amendments?



- Language concerning Amendments to the Agreed Order need to be clearer and more strongly defined. A previously agreed to set of parameters regarding extensions and substantial changes to the Work Plan by the PLP's that require Amendments, versus the smaller changes that do not require Amendments, may prevent disagreements that will have to be addressed through dispute resolution procedures, delaying remediation actions.

Remedial Investigation/Feasibility Study Work Plan

General Comments

This RI/FS Work Plan will need a more robust citizen summary to provide a better context from which the public can comment and respond to the actions in this Work Plan.

Document Summary

This document is a Work Plan that describes the work to be conducted in western Port Angeles Harbor in order to complete a Remedial Investigation and Feasibility Study for that area. The work provides context and some historical background for the Western Harbor area that has led the Department of Ecology to carry out these steps. The rationale and description of additional field data collection and analysis of existing data are provided.

This investigation expands on previous work in the Western Harbor related to the investigations on the Rayonier mill site, but west of the Rayonier site. The work plan addresses issues with wood waste accumulation and toxic chemical releases and accumulation in sediment and in animal tissues.

The work plan builds on and does not duplicate or replicate the analyses for risk assessments concerning either ecological systems or human health.

A conceptual site model will be developed from the new data and analysis, building on the previous conceptual site models in the earlier documents prepared for the Western Harbor.

The organization and presentation of the work plan are clear and logical, particularly using tabular formats for the Data Quality Objectives.

Specific Comments

Section 2.1 Pre-Industrial Harbor Conditions

- This section describes the site and provides an abbreviated history. According to the Work Plan, the historical record indicates hypoxic (low oxygen) conditions have



occurred historically, but little to no documentation or description of harbor hypoxia are provided. The reference to FSM and Evans (2002) is likely a summary document, rather than an investigation. Earlier investigations do indicate hypoxia dating back to the 1970s, but not necessarily prior to that time. The point needs to be demonstrated as to whether the natural conditions in the harbor result in hypoxia independently of human activities prior to the 20th century. Such naturally occurring hypoxic conditions have been described in other coastal systems, following investigations that include geologic records. Several publications by Scott Nixon have addressed this point, but neither the work plan nor the resulting remedial activities should assume that hypoxia is strictly naturally occurring. The situation is likely more complicated, resulting from a combination of natural conditions and anthropogenic influences that exacerbate the hypoxia by extending the duration and extent of the oxygen decline.

This point about the natural conditions and historical investigations comes up again in section 3.1 when the work plan states that background investigations from 2002 to present form the basis of the site background. Further comments on section 3.1 are given below.

2.5 Current Facilities and National Pollutant Discharge Elimination System Permit Holders

- Table 2 states that the City of Port Angeles is not currently required to conduct water sampling or other testing and only effective August 1, 2013, monitoring will be required. Determination of change in conditions over time would require a set of baseline data to be collected previous to remediation activities. Monitoring should begin immediately and likely under the Regional Stormwater Management Program to have usable and comparable data sets to compare across time.
- Table 2 also states that the analytes are unknown for the Port of Port Angeles Marine Trades facility under an “Industrial to Publicly Owned Treatment Works/Private State Waste Discharge Limit Individual Permit.” The analytes need to be determined as well as regularly tested for in the case of an NPDES.
- See comments under FS for recommendations of chemical monitoring of discharges into the Harbor.

Section 3.1 Summary of Previous Investigations

- This section provides a single paragraph about previous investigations published since 2002. Work prior to 2002 is not considered, according to this text. The work plan provides no explanation or justification for the 2002 cutoff. Prior work on the conditions in the harbor provide important historical perspective, and yet, the most pertinent information for current conditions is represented in current reports. The



Work Plan needs to explain why the 2002 date is applied and should also give some commentary on the nature and significance of investigations prior to 2002. This section is not sufficiently explanatory.

4.1 Remedial Investigation Approach

- This section notes that no additional risk assessment data collection is proposed. However, section 4.3 Data Collection Objectives and Design Rationale notes that a final defined data collection effort is anticipated to fill remaining RI data gaps. As the RA data will inform the RI, please specify the differences in the data collection and what will not be considered for more data collection.

4.2 Conceptual Site Models

- Notwithstanding the existence of conceptual site models in previous documents, it is not at all clear why the work plan did not present these previous models here.
- Please outline how the previous CSMs will be refined as part of the remedial investigation process.

4.3 Data Collection Objectives and Design Rationale

- Table 3 should indicate a more specific list of metals, PCBs (as Arochlors, congeners, or totals?), which SVOCs, specifically what organisms were used and in what bioassays, and if there are any appropriate studies that looked at VOCs.
- DQO 4: “Evaluate ongoing sources of hazardous substances to sediments” should be listed as DQO 1 as this is the most important, and first step, of the remediation action.

4.3.1 Evaluate Benthic Conditions

- The echinoderm larval assay has apparently produced false positive results based on “entrainment of larvae by flocculent particulate material in tested sediment” with “widespread failures including in areas with an absence of SMS chemical exceedances and wood debris, as well as in samples collected from reference areas.” The stated solution is an improved laboratory resuspension method using bivalve larvae, which will be used to re-test areas that had false positives echinoderm bioassay results. However, how is it to be determined which areas are false positives and which are not? Why is there not a new testing effort being put in place to re-test the site area? Picking and choosing sites for re-testing with a new bivalve bioassay test based on a failed echinoderm bioassay test is not logical. This is especially important as those areas that pass the bivalve bioassay under the SMS framework will not require consideration in the FS to address SMS chemicals.



- The information collected under this section addresses previous results of toxicity tests in earlier investigations. The issue with the problem statement is that the explanation suggests that the earlier results were either not easily explicable or that the Western Port Angeles Harbor Group did not like the results of the earlier toxicity tests. Neither option is acceptable. If the echinoderm assay is not reliable, or could not be conducted reliably, then Ecology needs a new assay.
- The problem statement needs to acknowledge and note the interaction between hypoxia, caused by wood waste decomposition, and toxic effects of organic and inorganic chemicals in the sediments. This section also needs to clearly state that accumulation of excess organic debris, such as wood waste, can cause an increase in biological oxygen demand and result in oxygen depletion.
- Under “New Data To Be Collected in the RI,” why not also use the newly approved bivalve bioassay instead of the amphipod, larval, and polychaete bioassays, or in addition to? This would allow for consistency in testing across the site.
- Collecting benthic community data is a major aspect of evaluating the benthic conditions and should not be relegated to a last data step in the event of “significant conflicting lines of evidence regarding benthic conditions.”
- In “Sample Type,” the surficial sediment sampling of the top 10 cm is not deep enough and does not adequately characterize the biologically active layer. The NOAA Mussel Watch Program sediment sampling took place at 0-30 cm (Table 3), and The Puget Sound Assessment and Monitoring Program conducted macroinvertebrate taxonomy sediment testing at 0-17 cm (Table 3).
- Step 3 of this Objective, on page 15 needs two additional components. First, all field data collections need to include water quality measures of oxygen, temperature, salinity and pH. Next, the laboratory bioassays need to consider ambient conditions, especially oxygen. At present, the assays are designed to only consider chemical components of the sediments, and not the conditions in the overlying water column. This omission of conducting the toxicity assays under real-world conditions means that interactions between toxic chemicals and low oxygen will be missed. The work plan does not indicate how chemical toxicity and hypoxia will be addressed in combination.
- The last bullet of this section on page 4-4 indicates that benthic community composition from field data will only be collected to resolve “significant conflicting lines of evidence” among the results of “...chemical, bioassay, and SPI data that need resolution for preparation of the FS...” The work plan needs to provide detailed criteria by which the evidence will be considered “significant” and “conflicting” and explain what the statement means. Does this statement mean that all evidence must agree, or two of the lines of evidence, or something else? The work plan needs to indicate who will make the call on whether this additional line of evidence will be collected.



- The work plan would be greatly improved if the benthic community composition data were collected and incorporated regardless, not only if there are disagreements among the other lines of evidence.

4.3.2 Evaluate Risk to Human Health

- Page 4-8 gives two objectives: are chemicals present at levels posing unacceptable human health risks, and are the levels above background, continuing on the next page, 4-9 with plans that Ecology will develop regional background levels to incorporate into the Feasibility Study.
- This plan has the potential to delay the FS and remediation beyond the current schedule if the background contaminants investigation is at all delayed. Should the process be delayed, Ecology needs to make the decision to proceed with determining a remediation plan and take formal public comments.
- When the preliminary screening levels for the Harbor are under development by Ecology, will they be available for public comment? If so, it needs to be stated here what document the public can review those.
- Under “New Data Needed for the RI/FS,” the work plan needs to address the “prospective SMS rule revisions”.
- Also, Ecology intends to develop regional background concentrations for specific chemicals within specific geographic areas. As Ecology will determine the appropriate sampling design, statistical analyses, and analytical methods, will this process come under review by EPA or the public? Background data values are important to determining cleanup levels, so this should be done before determining cleanup levels for the RI/FS.

4.3.3 Evaluate Risks to Ecological Receptors

- The conclusions developed from the previous SLERA to determine risks to ecological receptor groups are poorly constructed with little usable detail from the SLERA.
- Although a SLERA is intended as a conservative assessment of risk to wildlife, an HQ > 1 (NOAEL) should not be disregarded for arsenic, as it may also be a chemical of concern for fish, also noted in the SLERA.
- Relegating risk to ecological receptors to only the wood debris under DQO1 Benthic Conditions ignores the rest of the ecosystem affected by other contaminants not tested for.
- Consistent with DQO 1 comments above, the proposed lines of evidence do not account for the combined cumulative effects of multiple chemicals and multiple chemicals with hypoxia and other systemic alterations such as habitat loss because of burial by wood debris.



- The same point made under DQO 1 about the combined effects of hypoxia and toxic chemicals applies here to ecological risks. The work plan needs to act on the assumption that the combined effects of hypoxia and toxic chemicals are at least additive, if not greater. New data in the peer reviewed literature need to be examined to determine if PCBs are now or may be affecting aquatic animals.

4.3.4 Evaluate Ongoing Sources of Hazardous Substances to Sediments

- This section notes that Ecology will use state regulatory authorities outside of the RI/FS Agreed Order to follow up with appropriate parties to control those sources. What other authorities will Ecology need to utilize, and what do these authorities oversee? Is an amendment to the Agreed Order a potentiality to incorporate enforceable source control language? What enforcement can Ecology leverage to accomplish this without explicit language written into the Agreed Order or a Record of Decision (ROD)?
- With so little new data collection to take place, the Puget Sound Ecosystem Monitoring Program surface sediment chemical data collection should be part of the RI/FS.
- In Step 5, a more specific definition of “near a source evaluation area” should be pre-determined before assessment of subsurface data for the purpose of finding a trend of decreasing concentration of COCs in the sediment.
- Also in Step 5, if non-aqueous phase liquid is present in nearshore area(s), groundwater quality MUST be considered.
- The text in this table, pages 4-13 and 4-14 and in Table 2 indicate that the current monitoring information will form a significant component of the evaluation. The data described in these sections do not indicate measurement of a comprehensive list of hazardous chemicals. Discharges from stormwater, wastewater treatment plants and CSOs typically contain elevated levels of a wide range of toxic chemicals, especially PCBs, PCDDs/PCDFs, metals and PAHs. All of these chemicals need to be measured in a sampling program in the RI phase of this work for all discharges into the Harbor, if these data are not already in the monitoring reports.

5.0 Feasibility Study Approach

- The Work Plan makes no mention of alternative methods of remediation, other than activated carbon, and should include other binding agents, or use of methods other than dredging or capping. The Work Plan needs to indicate that the Western Port Angeles Harbor Group will conduct pilot studies for implementing alternative treatment methods.
- The only treatability testing mentioned, i.e. the granulated activated carbon, should occur at more than two locations to successfully measure the effect of activated carbon



addition on porewater concentrations of PCBs and dioxins/furans congeners and the bioaccumulation of these chemicals by test organisms.

This product was funded through a grant from WA State Department of Ecology. While these materials were reviewed for grant consistency, this does not necessarily constitute endorsement by the Department.