

FINAL Meeting Summary
EPA (with support from DEQ and the CAG) Portland Harbor Superfund Site Public Forum
Wednesday, September 11, 2019

The Environmental Protection Agency (EPA) held its sixth quarterly Portland Harbor Superfund Site Public Forum, with support from the Portland Harbor Community Advisory Group (CAG) and the Oregon Department of Environmental Quality (DEQ), at the Immigrant and Refugee Community Organization (IRCO) in Portland, Oregon. The public forum took place from 7:00 – 9:00 p.m. and was divided into sections as follows:

- Welcome and Overview
- EPA Presentation #1 – [Alternative Technologies & the Superfund Process](#)
- EPA Presentation #2 – [Designing Resilience for Flood Rise, Seismic Events and Climate Change](#)
- Wrap-up

Public Forum: Welcome and Overview

The meeting started with Hunter Young, EPA Region 10 Remedial Project Manager, leading a moment of silence for 9/11 and sharing words for remembrance. Following the moment of silence, Hunter welcomed the participants and thanked them for their attendance at the meeting.

The Facilitator introduced (b) (6), Occupy St. Johns & Willamette River Advocacy Group, to provide a Willamette River water acknowledgment and a Tribal lands acknowledgment. (b) (6) asked for attendees to be transparent, earnest, and hopeful as the cleanup continues and to acknowledge the Native lands and to honor Native communities.

The Facilitator introduced EPA and the DEQ staff present at the meeting. They also acknowledged Tribal Elders and Members and Congressional representatives in the audience. The Facilitator clarified the purpose of the meeting: **to provide a forum for members of the public to receive updates regarding the Portland Harbor Superfund Site and the opportunity to ask questions of the Potentially Responsible Parties (PRPs)**. The Facilitator then provided an overview of the meeting agenda and thanked the participants for their attendance.

The Facilitator explained the responsibilities of Triangle Associates (Triangle) as a neutral third-party contractor to the EPA to help clarify the facilitation role of Triangle for the Portland Harbor Superfund Site project.

(b) (6), Portland Harbor Community Advisory Group (CAG), shared brief remarks about the Portland Harbor Superfund Site. (b) (6) focused on the potential of preventive healthcare that could occur after the river is cleaned up.

Presentation #1 – Alternative Technologies & the Superfund Process

The Facilitator introduced Sean Sheldrake, EPA Region 10 Remedial Project Manager, and Kira Lynch, EPA Region 10 Superfund Technology Liaison, to provide a presentation on Alternative Technologies and the Superfund Process. Kira presented information regarding the process used during the feasibility study phase to select a technology for Superfund cleanups. Kira explained that EPA screens technologies before making final cleanup decisions using general characteristics including effectiveness, implementation, and relative cost. Kira stated that EPA needs to be able to understand the technology, have documented information on past performance, and understand an estimated cost before selecting a technology to use.

Sean presented information about the technologies that were selected for the cleanup of the Portland Harbor Superfund Site. These technologies were chosen to help remove sediment, contain sediment, and implement monitored natural recovery (MNR) and enhanced natural recovery (ENR). Sean explained that the technologies

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chosen for the Portland Harbor cleanup will consist of combinations of dredging, capping, in-situ treatment, and natural recovery (MNR and ENR).

Kira and Sean both presented on other remedial technologies that were considered but not selected for the Portland Harbor cleanup. These are technologies that were screened out by EPA for site-wide application due to technology effectiveness, implementability, and relative cost. One key aspect of why many of these technologies were screened out for further consideration was that they are not effective for the full range of site contaminants of concern. Kira and Sean noted that many of these technologies could be applied to upland river sites even though they were screened out during the feasibility analysis for sediment remedial options. EPA considered tradeoffs and impacts in the short- and long- term regarding:

- land farming/composting;
- biopiles;
- fungal biodegradation, includes dredging and then treating in the uplands;
- slurry-phase treatment, includes sediment going through treatment over time;
- solvent extraction, using liquid solvent;
- incineration, burning sediment;
- high-temperature thermal desorption (heat and extract materials over time); and
- vitrification (transformation of a substance into a glass).

. Following the Alternative Technologies presentation, the Facilitator opened the meeting for questions regarding this topic. The following were comments, suggestions, and questions asked by the attendees and responses provided by EPA:

- **Comment:** One meeting attendee shared the need for ongoing advocacy for the use of bioremediation as a cleanup technology.
- **Suggestion:** EPA should explore the potential to work with business owners who have property near the Superfund Site.

Q1: Can EPA explain what data is needed for a remedial technology to be considered for a Superfund cleanup?

A1: Some of the fundamental data that EPA needs to understand are what kinds of contaminants a technology targets, how the technology performs regarding contaminant reduction/treatment, and what kind of performance can be expected from the technology over time. EPA does not always have enough information on the performance of a technology. A few other considerations include whether the technology will be impacted by site specific conditions, whether the technology works with certain mixtures of contaminants, and the cost associated with the technology.

Q2: What is the process that EPA uses to examine different sites when there are several different sediment layers that have built on top of each other?

A2: In the process for remedial designs, EPA combines options for MNR, capping, and dredging to look at sediment movement and dynamics on a site-specific basis. There is an understanding that over time the sediments will recover and that concentrations will reduce over time. EPA collects individual sediment samples and pore water to determine what the sediment concentrations are.

Q3: What is the concern with scouring at the Superfund Site?

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A3: Scouring (when water moves sediment) is a concern at the Portland Harbor Superfund Site that was raised by the Yakama Nation. One of the goals from the ROD is to reduce the pounds per day of contaminant loading to the surface waters of the Willamette to the Columbia River (the mass of contamination that passes a particular point of a river in a specified amount of time) and EPA is working to reduce the loading over time in the cleanup. The most contaminated areas are selected for remediation, not just natural recovery.

Q4: How many of the alternative technologies have been suggested by local Tribal Elders?

A4: EPA has worked with the Tribes over the last 20 years and values their perspective on every stage of the process. However, the contamination at the Portland Harbor Superfund Site was caused due to relatively modern industrial practices, so local tribal knowledge for alternative technologies to handle this kind of contamination is not generally available.

Q5: Is EPA Region 10 aware of the study done at the Ashland site on use of biochar as a potential cap amendment?

A5: Yes, EPA is aware and interested in the Ashland study and noted that a lot of technology advancements on the use of various amendments to cap materials have been made in the last 10 years.

Q6: Does the EPA have cost estimates for dredging and land farming?

A6: Yes, EPA has cost estimates for several of the technologies. These analyses also include evaluation of implementation and effectiveness; a detailed analysis is available in the feasibility study (FS).

Q7: Is it possible to use brownfields for land farming?

A7: Potentially. However, some of the brownfields are brownfields because they have their own levels of contamination.

Q8: Is vitrification a process to create cement blocks?

A8: No, vitrification is a process that transforms substances into glass.

Q9: Can the EPA provide comments about bioremediation?

A9: Bioremediation approaches can be effective for some contaminants, however, bioremediation would not be effective for every chemical contaminant at the Portland Harbor Superfund Site.

Q10: Does the EPA have any historic science that could be referenced or an oral history of remedies for the river?

A10: No, mainly because the contamination at the Portland Harbor Superfund Site was caused by relatively modern industrial practices, so older remedies for alternative technologies to handle this kind of contamination are not generally available.

Q11: What is the easiest chemical to clean up and what is the most difficult chemical to clean up?

A11: It is difficult to label chemicals as the “easiest” and “most difficult” to clean up. The level of effort to clean up a chemical depends on the chemical. Some chemicals bind well to the sediment and some do not bind well to the sediment. Understanding how chemicals mix in different combinations and where the chemicals are within the river helps with cleanup.

Q12: Will the presentations shared today be made available online?

A12: Yes.

Q13: If one type of technology is selected for cleanup at one site, is there any expectation that the technology will be used for cleanup at different sites?

A13: There are a lot of variables to consider at each site. The final decision will be made by designers in their plans which are reviewed by EPA.

Q14: Is there any reason to not clean up the river more?

A14: EPA will not be changing cleanup levels or remedial action levels that trigger cleanup at this point.

Presentation #2 Designing Resilience for Flood Rise, Seismic Events, and Climate Change

The Facilitator introduced Josie Clark, EPA Region 10, Remedial Project Manager, to provide a presentation on EPA design guidelines for Superfund Remedial Design. Josie briefly discussed the purpose of design guidelines and considerations that go into designs in order to conduct active cleanup in the river. Josie explained that the presentation will focus on flood rise, seismic events, and climate change resiliency.

Josie discussed design guidelines for flood rise. Josie explained that EPA will follow the Federal Emergency Management Agency (FEMA) process for certifying that any remedy will not result in flood rise. This is referred to as a “no rise certification”. This requirement applies to any work done within the federally regulated floodway. Josie provided a map that shows the floodway boundaries, which takes up most of the Willamette River channel through the site. Although some areas that require active cleanup are outside the floodway, most are within it. Designers will be required to model the before and after conditions for their proposed remedy under a 100-year storm scenario to show that their design will not result in flood rise above existing conditions.

Josie also explained EPA design guidelines for seismic stability. EPA evaluates against the 475 year “return period” which is a large seismic event that has a probability of occurrence once in a 475-year period. Josie explained that liquefaction (when the sturdiness and stiffness of soil is weakened by shaking) is an issue that may affect the site. The impact of liquefaction could cause the soil and sand to move which could impact and/or destroy a cap.

Josie presented EPA design guidelines for climate change. EPA is asking designers to use available climate predictions and update existing models to predict conservative but reasonable climate conditions in 2100. We expect flow rates to be higher, and water levels to be higher. Designers will need to consider the effects of these changed conditions on the stability of their remedy.

After each segment of the presentation, the Facilitator opened the meeting for additional questions regarding this topic. The following were comments and questions asked by meeting attendees and responses provided by EPA:

- **Comment:** One attendee requested more acknowledgement that there are active efforts to create solutions to natural disasters while the cleanup of the river continues.
- **Comment:** Another meeting participant stated that climate change applies to a rising temperature as well as an increase in the frequency of severe weather patterns.

Q1: Are the chemicals and materials stored along the riverbanks being considered as part of the design considerations?

A1: The EPA does not have authority under Superfund cleanup law to influence the storage of contaminants, fuel, and other items upland along the river.

Q2: Would filled areas be susceptible to this liquefaction as well?

A2: It depends on the area. Each site will be analyzed and liquefaction prevention could become part of the design.

Q3: Does EPA also plan for events that are not caused by natural hazards?

A3: In the design process, Potentially Responsible Parties (PRPs) will develop plans for the cleanup of incidents that are not caused by natural hazards. In the cleanup plans, PRPs plan for design and maintenance.

Q4: Who has the responsibility and authority to respond to spills of large vats of chemicals and petroleum along with the site?

A4: The responsibility and authority depend on the disaster and whether it happens in-water or upland.

Q5: Does the selected remedy preclude EPA from utilizing other alternative technologies?

A5: Not completely. While there are alternative technologies that were screened out for site-wide use by EPA (as discussed by Sean and Kira in the previous presentation), there is some flexibility in what technologies can be used as the cleanup continues at specific areas and as technology advancements are made so long as they are consistent with the decision tree, e.g. treatment of materials on their way to the landfill is very consistent as a supplement to the decision tree.

Q6: Why are tank farms next to the Superfund sites not being moved?

A6: FEMA is the federal agency tasked with disaster mitigation work. EPA Superfund authority does not include mitigation and therefore EPA cannot move the tank farms; however, EPA does require that petroleum storage facilities conduct routine inspections and corrosion tests to prevent tank failures.

Q7: Can EPA explain the status of other Superfund Sites after climate change disasters?

A7: The focus on climate resiliency planning for Superfund Sites began in the 1990s; however, EPA did not start designing for climate change until at least 2009. EPA is actively engaged in climate change planning for superfund sites now.

Q8: Are individual designers and individual remedies being designed for different climate models?

A8: It should be noted that design groups are not conducting their own climate studies/models. EPA's guidance asks designers to use existing, well-developed models to evaluate the effects of climate change on the remedy. Specifically (and as discussed in the presentation on slide 15) this includes the following process:

1. Using a reasonably conservative forecast of temperature from the Intergovernmental Panel on Climate Change or other models, as appropriate;
2. Then utilizing this temperature estimate to predict (a) likely rainfall in Western Oregon by running a model from the Climate Impacts Group at the University of Washington and (b) projecting sea level rise by utilizing modeling done by the National Oceanic Atmospheric Administration and U.S. Army Corps of Engineers;
3. Then plugging these likely rainfall and sea level rise predictions into a hydrodynamic model of the Willamette River from the U.S. Geological Survey (USGS) to determine flowrates and water elevation to inform design plans. The USGS model was run through 2040, so designers may have to extend the model to 2100.

Wrapping Up and Next Steps

The Facilitator thanked the presenters for sharing information and thanked attendees for their time, questions and thoughtful participation. The next Portland Harbor Public Forum is scheduled for Wednesday, December 11, 2019 (location TBD).