DEPARTMENT OF ECOLOGY
State of Washington

Response to Comments

Agreed Order Amendment

Georgia Pacific West Site
Bellingham, WA

Facility Site ID: 14
Cleanup Site ID: 2279

March 2019

Publication and Contact Information

This document is available on the Department of Ecology's Georgia Pacific West website at: https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=2279

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Washington State Department of Ecology

Northwest Regional Office

Toxics Cleanup Program

Bellevue, Washington

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Public Outreach

From December 10, 2018 to January 23, 2019, the Department of Ecology (Ecology) solicited public comments on an amendment to an agreed order (legal agreement) for the Chlor-Alkali Area of the Georgia Pacific West cleanup site (Site) on the Bellingham waterfront.

Our public involvement activities related to this 45-day comment period included:

- **Fact Sheet:**
  - US mail distribution of a postcard providing information about the legal agreement amendment and public comment period to approximately 2,500 people including neighboring businesses and other interested parties.
  - Email distribution of the postcard to approximately 200 people, including interested individuals, local/county/state/federal agencies, and interested community groups.
- **Legal Notice:**
  - Publication of one paid legal ad in *The Bellingham Herald*, dated December 7, 2018.
- **Site Register:**
  - Publication of five notices in Ecology's Toxics Cleanup Site Register:
    - Comment Period Notice:
      - December 6 , 2018
      - December 20, 2018
      - January 3, 2019
      - January 17, 2019
    - Response Summary Notice:
      - March 14, 2019
    - Visit Ecology's Site Register website[1] to download PDFs.
- **Website**:
  - Announcement of the public comment period, public meeting, and posting of the Fact Sheet and associated documents for review on Ecology's Georgia Pacific West website[2]
- **Document Repositories:**
  - Provided copies of the document for public review through three information repositories:
    - Bellingham Public Library in Bellingham
    - Ecology's Bellingham Field Office in Bellingham
    - Ecology's Northwest Regional Office in Bellevue

[1]https://fortress.wa.gov/ecy/publications/UIPages/PublicationList.aspx?IndexTypeName=Program&NameValue=Toxics+Cleanup&DocumentTypeName=Newsletter

[2] https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=4606

Comment Summary

Ecology received one comments during the 45-day comment period from an individual.

Table 1: List of Commenters

	First Name	Last Name	Agency/Organization/Business	Submitted By
1	Tip	Johnson		Individual

Next Steps

In 2019 Ecology expects to issue a draft Cleanup Action Plan (CAP) for the Chlor-Alkali Area of the Georgia Pacific West site for public review. We will develop the CAP based on the information in the Remedial Investigation and Feasibility Study. The CAP will be part of a legal agreement that requires the Port of Bellingham, and possible others, to design and implement the cleanup action.

Comments and Responses

Ecology has reviewed and considered all comments received on the legal agreement amendment. Based on Ecology's evaluation of the comments, no changes were made to the documents and have been finalized.

The comments are presented below, along with Ecology's responses. Appendix A, page 8, contains the comments in their original format.

Comment from: Tip Johnson

Please, while we are working on this, will it be possible to actually clean up some of the mercury? How many pounds of mercury has or will be actually re-contained? How much is left? Where is it?

Response:

As documented in the Caustic Plume/Cell Building Interim Action Report[3] (Aspect Consulting, October 10, 2014), an estimated 6,877 tons of mercury contaminated soil and debris was properly disposed of offsite as follows:

- 673 tons of Non-Hazardous Waste was disposed of at the Waste Management Subtitle D landfill in Wenatchee, Washington.
- 704 tons of State-Only Dangerous Waste (WT02) was disposed of at the Chemical Waste Management Subtitle C landfill at Arlington, Oregon.
- 2,187 tons of Federal Hazardous Waste (D009) was macroencapsulated and disposed of at the Chemical Waste Management Subtitle C landfill at Arlington, Oregon.

[3] https://fortress.wa.gov/ecy/gsp/DocViewer.ashx?did=41650

- 2,460 tons of non-hazardous waste (primarily concrete and weed) was generated by demolition of the Cell Building structure and was disposed of at Republic Services' Roosevelt Regional Subtitle D landfill in Roosevelt, Washington.
- 9 tons of Federal Hazardous Waste (D009) debris from demolition of the Cell Building was macroencapsulated and disposed of at the Chemical Waste Management Subtitle C landfill at Arlington, Oregon.

Additional details of this work are available for your review in the above referenced report.

As documented in the Interim Action Report, Mercury Soil Treatment and Disposal Project,[4] and Appendices[5] (Aspect Consulting, March 8, 2018), an estimated 754 tons of mercury contaminated soil and debris was properly disposed offsite as follows:

- 703 tons of State-Only Dangerous Waste (WT02) was disposed of at the Chemical Waste Management Subtitle C landfill at Arlington, Oregon.
- 33 tons of Federal Hazardous Waste (D009) was macroencapsulated and disposed of at the Chemical Waste Management Subtitle C landfill at Arlington, Oregon.
- 18 tons miscellaneous non-hazardous waste was disposed of at the Waste Management Subtitle D landfill in Arlington, Oregon.

Additional details of this work are available for your review in the above referenced report.

As documented in the Feasibility Study, Chlor-Alkali Remedial Action Unit[6], and Appendices[7] (Aspect Consulting, June 2018), an estimated 5,200 tons of mercury and petroleum contaminated soil is proposed for offsite disposal as follows:

- 3,300 tons of mercury contaminated soils from the Log Pond area will be excavated and properly disposed based on characterization data collected during cleanup.
- 1,900 tons of petroleum contaminated soils from the Cell Building area will be excavated and properly disposed at an appropriate non-hazardous waste Subtitle D landfill.

An additional 15,000 cubic yards of mercury contaminated soils from the Chlorine Plant area will be stabilized in-situ.

Additional details of this work are available for your review in the above referenced report.

[4] https://fortress.wa.gov/ecy/gsp/DocViewer.ashx?did=71551
[5] https://fortress.wa.gov/ecy/gsp/DocViewer.ashx?did=71552
[6] https://fortress.wa.gov/ecy/gsp/DocViewer.ashx?did=75279
[7] https://fortress.wa.gov/ecy/gsp/DocViewer.ashx?did=75278

Public safety should compel us to account for the total quantity of mercury used in the chlor-alkali process. The public should know where it went, how it got there or how it remains.

Response:

The Remedial Investigation synthesized data from more than 490 explorations, 1,200 samples and 2,100 chemical analyses of soil, 340 samples and 940 chemical analysis of groundwater, 43 samples and chemical analysis of soil vapor and ambient air, a detailed mineralogic evaluation of the Fill Unit aquifer matrix, bench-scale treatability testing for mercury-contaminated soil and groundwater, as well as extensive characterization of Site hydrogeology. This work was performed to characterize the nature and extent of contamination for the purpose of developing cleanup alternatives that protect public safety and the environment. It is not possible or necessary to account for the total quantity of mercury used in order to develop appropriate cleanup alternatives.

At https://bit.ly/2HtYN38, the WSDNR reports that "tsunami waves will reach the Anacortes/Bellingham areas about 1.5 hours after the Cascadia earthquake, with inundation depths as high as 18 feet and current velocities in excess of 20 knots. Tsunami inundation is expected to continue for more than 8 hours."

Can the parties to this agreement assure the public that in-situ remedies will withstand a liquefaction event followed by 8 hours of turbulent inundation?

Response:

The in-situ remedy will be similar to the 2013/2014 and 2017 interim action work that utilized solidification/stabilization to mix cement and sulfur with the contaminated soil to physically bind the mercury and react with the sulfur to form a more stable compound that is less prone to leaching. The in-situ solidification/stabilization treated soils will resist liquefaction. The final cleanup will also require long term monitoring, inspection and maintenance, and five year periodic reviews.

At the risk of redundancy, I resubmit the following from last April:

I advocate full removal and aggressive pursuit of natural resource damage claims to fund an expanded project. Some concerns I am sure others will also address:

Response:

Ecology acknowledges the preference for complete removal and evaluated this in Alternative 8 of the final Feasibility Study (FS). Please note that every alternative evaluated in the FS eliminates exposure to harmful levels of contamination. Each alternative prevents direct contact with contaminated soil, prevents the emission of unsafe vapors and protects surface water and sediment from contaminated groundwater. Moreover, Ecology must operate within the scope of its authority, as defined by the Model Toxics Control Act (chapter 70.105D RCW; MTCA), and in accordance with the dictates of the accompanying MTCA regulations WAC 173-340[8]. Per MTCA, the selected cleanup action must meet a number of requirements, including the requirement to be "permanent to the maximum extent practicable" WAC 173-

[8] https://apps.leg.wa.gov/wac/default.aspx?cite=173-340

340-360(2)(a)-(b). To make this determination, we employ the disproportionate cost analysis (DCA) WAC 173-340-360(3). For the GP West site, the DCA (Section 8.3 of the FS) identified Alternative 4 as the remedy that is permanent to the maximum extent practicable.

1) The plan's baseline assumption for sea level rise is significantly less than current modeling now suggests. Please indicate what contingencies are in place for sea level rises greater than the plan anticipates. How will erosion caused by normal wind wave action and storm surges affect in situ treatment of contaminants?

Response:

The Intergovernmental Panel on Climate Change (IPCC) (2007) estimates that the global average sea level will rise between 0.6 and 2 feet in the next century. Puget Sound is likely to experience seal level rise similar to the global average (University of Washington Climate Impacts Group and Ecology 2008). In the Waterfront District Environmental Impact Statement documents, a potential sea level rise in Bellingham Bay of 2.4 feet by 2100 was considered a reasonable estimate. Based upon this estimate, the current site grade elevation of 14-16 ft. will accommodate the projected sea level rise. However, due to the evolving science behind sea level rise estimates, we will revisit this issue during future remedial design activities. The in-situ treatment area is not located at the shoreline and would not be susceptible to erosion.

2) There is a discrepancy in exhibits for tsunami inundation of the site. Some federal and state models show inundation extending over the site and into Maritime Heritage Park, while exhibits used by the city and port show the park as a safe zone and the site unaffected. How can we reconcile these differences and how will tsunami inundation affect in situ treatment of contaminants?

Response:

Groundwater at the site is shallow (within a few feet of the existing ground surface) and the soils, including the in-situ treatment area have been evaluated for protectiveness based on saturated conditions. Inundation caused by a tsunami would have a similar saturated soil condition as currently exists.

3) The site is a known liquefaction zone. What potential releases of contaminants might occur in the event of the anticipated 9 - 9.2 magnitude earthquake and soil liquefaction at the site? How will containment measures fare?

Response:

The contaminated soils treated with in-situ solidification/stabilization adds sulfur to react with the mercury to form the compound mercury sulfide, a more stable and less volatile form of mercury that is not prone to leaching into groundwater or volatilizing into the air. Cement is also added to physically bind or enclose the mercury sulfide. The treated soils will be a more stable material that is less prone to leaching and is not anticipated to release contaminants due to liquefaction. Other areas outside of the in-situ treatment area contain lower levels of contamination and could pose a risk for potential release due to liquefaction. These areas will be addressed by inspection and maintenance to insure the containment measures are performing as expected should a liquefaction event occur at the site.

4) Severe mercury contamination is commonly found on and downwind of chlor-alkali plants. Redevelopment has already begun immediately downwind of the site. How will these sites be monitored and occupants protected? How will workers on and off site be protected?

Response:

The Remedial Investigation has characterized the nature and extent of contamination at the site to allow selection of a cleanup remedy protective of future occupants. During implementation of the final remedy, monitoring similar to the previous interim action work will be performed to insure the safety of the workers and the off-site public.

5) Modeling predictions show residual contamination levels gradually subsiding over time. Where will it go?

Response:

Because mercury is an element, it cannot be destroyed, but the hazard potential is greatly reduced by converting the contaminants into a less soluble, mobile, or toxic form. Groundwater concentrations are expected to diminish over time for the soluble fraction of mercury. The dissolved mercury in groundwater will come out of solution and be bound in the soil.

6) Will there be continuing mercury vapor monitoring on site and over potentially contaminated downwind soils and structures that could contribute mercury flux to ambient air in the downtown core?

Response:

Yes. Institutional controls will be placed to evaluate and/or implement vapor intrusion controls within the Chlor-Alkali Plant Area, where mercury may pose a concern and in the vicinity of the Million Gallon Tanks subarea, where naphthalene vapor may pose a concern.

Slightly off-topic in terms of the remedial alternatives, but the No Action Alternative of the original environmental review substantially lacked substance. I wonder if leaving the site a minimally developed, open public space could provide more benefit for more of Whatcom County than planning for maximum redevelopment and privatization. This was never examined. How would planning for shorter term exposures affect the design of remedial alternatives?

Response:

The final Feasibility Study (June 2018) evaluated a total of eight alternatives and did not include a No Action Alternative. This alternative would not address contaminant levels that are potentially harmful and must be addressed under Washington's cleanup law, MTCA. Please also note that under the MTCA, Ecology has no authority over land use decisions.

Finally,
6) On behalf of the Mercury Victims of Whatcom County, I incorporate by reference their comments which I compiled from a number of confidential interviews over the past several weeks, currently published at:
https://nwcitizen.com/entry/mercury-victims-of-whatcom-county

I appreciate the technical effort that has gone into this analysis, but am more than ever convinced that the scope and clean-up needs to be expanded and elevated to a level sufficient to guarantee protection of the health of our community and environment.

Response:

Comment noted, please refer to the final Feasibility Study for a detailed evaluation and rational for identifying the preferred remedial alternative protective of human health and the environment.

Appendices

Appendix A. Public Comments in Original Format

Tip Johnson

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