



RESPONSIVENESS SUMMARY

**GEORGIA-PACIFIC WEST SITE
Bellingham, Washington**

First Amendment to the Agreed Order

August 2011

ISSUED BY:

WASHINGTON STATE DEPARTMENT OF ECOLOGY

TOXICS CLEANUP PROGRAM

1. Introduction

On July 5, 2011 the proposed First Amendment to the Agreed Order (Amendment) for the Georgia-Pacific West site (Site) in Bellingham was issued for a 30-day public comment period. The public comment period closed on August 4, 2011. Public involvement activities related to this public comment period included:

- Distribution of a fact sheet describing the Site and the documents through a mailing to over 6,100 people, including neighboring businesses and other interested parties;
- Publication of one paid display ad in *The Bellingham Herald*; dated July 1, 2011;
- Publication of notice in the Washington State Site Register, dated June 30, 2011;
- A public meeting held on July 12, 2011;
- Announcement of the public comment period and posting of the documents on the Ecology web site.
- Providing copies of the documents through information repositories at Ecology’s Bellingham Field Office and Northwest Regional Office, and the Bellingham Public Library – Downtown Branch.

A total of 8 persons and organizations submitted written comments on the Amendment. The commenters are listed in Table 1-1. Section 2 of this document provides background information on the Site and Site cleanup activities, and Section 3 presents anticipated next steps. Section 4 lists the comments as received and Ecology’s responses to those comments.

Table 1. Summary of Commenters

1	Morrison, Elly, PhD
2	Zucker, Jeffrey
3	Nez, Arthur
4	Olsen, Thomas F.
5	Karam, Sue
6	Russell, Jim
7	Zucker, Jeffrey
8	Trim, Heather – People for Puget Sound

2. Background

The Site, located at 300 West Laurel Street in Bellingham, Washington, encompasses approximately 64 acres on the south side of the Whatcom Waterway. The Site is bordered on the north by the Whatcom Waterway (at mudline), on the east and south by the BNSF Railway Company (BNSF) main line, and on the west by the Bellingham Shipping Terminal and Bellingham Bay.

A Pulp and Tissue Mill operated at the Site from 1926 through 2007. A Chlor-Alkali Plant, producing chlorine gas and sodium hydroxide (caustic) using a mercury cell technology, operated within a portion of the Mill between 1965 and 1999. Steam heat was supplied to the Mill by burning fuel oil (e.g., Bunker C oil) in an on-Site Steam Plant. The fuel oil was stored in a 375,000-gallon tank located east of the Steam Plant and, later, in one of eight Million Gallon Tanks (Tank 2) located immediately north of the BNSF main line and west of the Pulp and Tissue Mill.

Contamination from historical industrial activities has impacted Site upland soils and groundwater with a variety of constituents, including mercury, total petroleum hydrocarbons (TPH), and other constituents. The Site is defined by the extent of contamination caused by the release of hazardous substances at the Site. The Site constitutes a Facility under RCW 70.105D.020(5).

In 1999 and 2002, Georgia-Pacific (GP) entered into a pair of Agreed Orders with Ecology to perform plant decommissioning and a remedial investigation/feasibility study (RI/FS) for the Chlor-Alkali Plant portion of the Site. In addition to decommissioning the former Chlor-Alkali Plant's process equipment and machinery in 2000, GP independently conducted significant environmental investigation (including a RI/FS) and cleanup work for the Chlor-Alkali Plant area. In 2004, GP also conducted an extensive Phase II Environmental Site Assessment for the remaining portion of the property (the Pulp and Tissue Mill) prior to GP's sale of the Site to the Port.

The Port purchased the Site from GP in January 2005, and is currently evaluating potential future land uses, including continued industrial use and potential re-zoning to accommodate mixed use redevelopment.

In August 2009, the Port entered Agreed Order No. DE 6834 with Ecology to complete a RI/FS for the Site in accordance with WAC 173-340-350 and the Statement of Work (SOW) and Schedule in the Agreed Order. In accordance with the SOW, the Port prepared a RI/FS Work Plan, and subsequently prepared two Addenda to the RI/FS Work Plan, each of which was reviewed and approved by Ecology. The Site RI/FS is currently underway.

The first amendment to Agreed Order No. DE 6834 allows the Port to undertake Interim Actions (IAs), prior to completion of the RI/FS and with public review and Ecology approval, in accordance with WAC 173-340-430 and WAC 173-340-600(16). The IA outlined in this Work Plan will reduce the threat to human health and the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance at the

Site. The IA will be implemented in advance of selection of the final cleanup action for the Site, and shall not foreclose reasonable alternatives for the final cleanup action (WAC 173-340-430[3][b]).

3. Next Steps

No changes were made to the Amendment as a result of public comment and it will now be signed by the Port of Bellingham and Ecology, and the interim cleanup will move forward.

The Port will conduct the interim action in a two-phased construction approach: the petroleum-contaminated soil removal in the Bunker C Tank area in Fall 2011, and removal of mercury-contaminated soil in the Caustic Plume area and the Mercury Cell Building in Spring 2012. Due to the unique characteristics of the individual subareas, this approach allows adequate time for remedial design of the mercury-contaminated soil removal, and limits soil excavation in the most challenging wet season conditions. The schedule for the IA is as follows:

Summer 2011: the Port conducts remedial design and submits to Ecology for review and approval the following documents for the Bunker C Tank area soil removal:

- Construction plans and specifications detailing the cleanup construction for this area;
- Construction management plan, which outlines the tasks, including performance monitoring, to be performed by the Port during construction to ensure that the interim action objectives for this area are met; and
- Site-specific health and safety plan including protection monitoring requirements.

Fall 2011: IA construction in the Bunker C Tank area is to be initiated with a 1-month construction period anticipated;

Fall/Winter 2011: the Port conducts remedial design and submits to Ecology for review and approval the following documents for the Caustic Plume area soil removal and Mercury Cell Building Removal:

- Construction plans and specifications detailing the cleanup construction for these areas;
- Construction management plan, which outlines the tasks, including performance monitoring, to be performed by the Port during construction to ensure that the interim action objectives for these areas are met; and
- Site-specific health and safety plan including protection monitoring requirements.

Spring 2012: IA construction in the Caustic Plume area and Mercury Cell Building is to be initiated, with a 1-month construction period anticipated; and

Spring 2012: The Port shall prepare, for Ecology review and approval, a draft Interim Action Report. The Port shall incorporate Ecology comments and produce the final Interim Action Report.

The Port will subsequently integrate the IA information into the revised draft Remedial Investigation (RI) report being prepared under the Agreed Order, which will then be submitted for Ecology review.

4. Comments and Ecology Responses

Comment #1:

Dear Mr. Sato

Thank you for the information on the toxic cleanup program. I am a new resident in Bellingham. I appreciate your work. How is this program funded?. Does Georgia Pacific contribute to the cost?.

I look forward to receiving the information.

Thanks

Elly Morrison PhD
Former proposal writer for the Maryland Academy of Sciences
Baltimore Maryland

Response #1:

As the historic owner and operator of the Site, Georgia-Pacific has been named as a potentially liable party (PLP) by the Department of Ecology. The Port of Bellingham, as the current property owner, has also been named a PLP for the cleanup. As the sole signatory PLP to the Agreed Order, the Port is responsible for 100% of the costs of the cleanup. Georgia Pacific also purchased an environmental insurance policy as part of their property transaction agreement with the Port to address potential future cleanup costs.

As a public agency, the Port is eligible for reimbursement of up to 50% of eligible costs in remedial action grants from the State. State remedial action grants are funded by the Local Toxics Control Account. That account is funded by petroleum taxes.

Comment #2:

Brian,

I have read several times of plans to remove various contaminated soils from sites in Bellingham and transporting them to an Oregon site. Micro-Buddies Technologies provides in-situ decontamination solutions for many different types of contaminants including hydrocarbons and related chemicals associated with them. Oil Digester and BioRem-2000 Surface Cleaner are both US-EPA-NCP registered for these applications as bioremediation products. Oil Digester can be used as an injection type solution along with oxygen sparging and nutrients. BioRem-2000 Surface Cleaner can be used as a soil washing system for the removal of hydrocarbons.

I would like to discuss the use of our products in solving some of the problems at lower cost and with less liability.

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Jeffrey Zucker, President

Micro-Buddies Technologies, LLC

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Response #2:

The specific type of hydrocarbon contamination at GP-West consists of a heavy oil-range petroleum known as Bunker C. This material is only marginally degradable and has limited treatment options. Bioremediation can be effective on lighter forms of petroleum such as gasoline, but has not been shown to be effective on Bunker C. Soil excavation and off-site disposal was selected as the most permanent, expedient, and cost-effective means to achieve the desired source control actions.

Comment #3:

During the cleanup of this site it should be the policy of the state to choose remediation methods that are cheap and effective. The agency is no doubt familiar with mycoremediation (the use of fungi to biologically degrade pollutants) techniques and their applications for treating petroleum contaminated soils. **This technique is cheaper, possibly more effective and requires less work than other types of bioremediation.** I assume the agency is already considering the benefits and costs of employing this type of treatment on the GP project. Not being an expert I couldn't say whether or not mycoremediation would be well suited to this project, but as a concerned citizen I would request that a report be produced detailing the feasibility of using mycoremediation to treat petroleum contaminated soils excavated during this project.

I am referencing below a link to a 1998 study by the WSDOT of this remediation technique.

<http://www.wsdot.wa.gov/research/reports/fullreports/464.1.pdf>

Arthur Nez

cell: 206.499.9885

Response #3:

Cost and effectiveness are important parts of a cleanup, and are considered for all cleanup projects. State cleanup regulations provide for evaluating costs to insure the incremental increase in the cost of a remedy does not exceed the incremental degree of benefit achieved. The effectiveness of any remedy must also meet State cleanup regulations to insure the cleanup action is protective of human health and the environment and uses permanent solutions to the maximum extent practicable.

Mycoremediation has not been shown to be effective on Bunker C and has not been pursued further as a cleanup alternative for this interim action.

Comment #4:

Reference: Pub. Number 11-09-125 "Proposed Interim Cleanup Ready for Public Review" dated July 2011

"GP West" Site

I was unable to attend the public meeting on this subject having just returned from traveling, so I hope my comments can still be included in the public hearing record.

As a Bellingham resident who has attended previous DoE public meetings on this cleanup, and followed the written summaries, I'm writing to express approval of the proposed cleanup plan. The proposed mitigation measures seem appropriate for the scale and nature of the contamination. I hope the administrative approvals can now be completed expeditiously and the actual mitigation work begun as soon as possible.

Sincerely,
Thomas F. Olsen

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Tom Olsen
2024 Falcon Ct
Bellingham, WA 98229
Ph 360.647.1223
Email tom.olsen@comcast.net
F 360.334.7782

Response #4:

The Department of Ecology appreciates your input and looks forward to implementing these actions.

Comment #5:

This is to comment on the Dept. of Ecology's proposal for cleanup of contaminated sediment at the Georgia Pacific site in Bellingham WA. The project ID number is 2279.

I am concerned about the contemplated use of dredged sediment from Squalicum Harbor which apparently is "lightly" contaminated with dioxin, being placed over existing sediment in the Cornwall landfill which also is contaminated with dioxin.

Bellingham is in an area with the potential for earthquakes. Should an earthquake occur in Northwest Washington, there is potential for a tsunami also to occur. A tsunami could wash the new, lightly compacted, contaminated sediment from the Cornwall landfill far into downtown Bellingham, creating a serious problem.

I hope the Dept. of Ecology is taking the earthquake and tsunami possibilities into consideration during the cleanup planning.

Sincerely,
Sue Karam
Bellingham, Washington

Response #5:

This comment period is limited to the GP-West Agreed Order amendment and interim action and does not include work planned for the Cornwall Avenue Landfill. There was a comment period from June 6 - July 6, 2011 for that site. Your comments mirror many of the comments Ecology received during that public comment period and our response (Responsiveness Summary) can be found on the Cornwall Avenue Landfill web page at: <https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=220> .

Comment #6:

I am a resident of East Wenatchee Washington and a columnist for the Empire Press of Douglas County and read the proposed interim clean for GP-West site in Bellingham. I understand the plan is to remove mercury and oil soils and building materials to an approved upland landfill, but the official documents I read did not designate the specific site. Mr Zucker's comments referred to an Oregon landfill, which I presume to be Chemical Waste Management of the NW, Inc., 12 miles south and west of the Columbia River Oregon/Washington state boundary.

Would you please confirm that all offsite hazardous material is to be delivered to the CWMNW Arlington site or, are other sites possible and permitted, such as the Waste Management landfill in Douglas County, Washington?

Jim Russell
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East Wenatchee, WA 98802
509-860-0675
james.s.russell@frontier.com
<http://blog.jamesrussell.com>

Response #6:

There are two different types of licensed and permitted landfills that can accept materials from the GP-West site. Municipal solid waste landfills (Subtitle D) can accept low levels of contaminated materials. Hazardous waste landfills (Subtitle C) can accept high levels of contaminated materials. The excavated materials are tested first to determine which type of landfill can be used for disposal. The closest hazardous waste landfill is operated by Chemical Waste Management Of The Northwest, Inc., located in Arlington, OR. There are several municipal solid waste landfills that could potentially accept materials from GP-West containing low levels of contamination. The Greater Wenatchee Regional Landfill, operated by Waste Management is a licensed and permitted Subtitle D municipal solid waste landfill and will be evaluated for disposal of materials containing low levels of contamination.

Comment #7:

Brian,

About the combination of oil and mercury contaminated soils at the site. 1) My firm Micro-Buddies Technologies is a vendor of bioremediation materials for hydrocarbons that can be used to remove the oil from the soil in-situ; presumably by soil washing. 2) A story comes to mind about my hometown Niagara Falls at one time the electro-chemical center of the world. The firms would dump their waste into any of the unused canals that were used for hydro power in the pre electric age. One of these canals was through the downtown area and was covered with RR tracks. I was told by an elder gentleman in Columbus, Ohio how he and his brothers would go to this location and scoop mercury into their hands to sell to my grandfather, a scrap dealer. The only way that I can figure that this would be possible is because of the vibration of the trains running over the contaminated soil. The mercury, i believe can be separated from the soil in-situ by either applying vibration to the entirety of the site or by moving the soil in batches to a vibratory plate separator where the mercury can mechanically be separated from the lighter soil; such as gold from gravel.

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Response #7:

Applying vibration to the ground or to soil in batches to separate mercury from soil has not been shown to be an effective method of recovering mercury. A retort is typically used to recover mercury.

Comment #8:



August 3, 2011

Mr. Brian Sato
Site Manager, Georgia-Pacific West
WA Department of Ecology
3190 160th Avenue SE
Bellevue, WA 98008-5452
Via E-mail: brian.sato@ecy.wa.gov

RE: Proposed Interim Cleanup Action, Georgia-Pacific West Site

Dear Brian,

Thank you for the opportunity to comment on the draft Interim Cleanup Action which is written in the draft *First Amendment To Agreed Order* and draft *Interim Action Workplan* (June 2011) for the Georgia-Pacific West site, located at 300 W. Laurel Street in Bellingham, WA.

People for Puget Sound is a nonprofit, citizens' organization whose mission is to protect and restore the health of Puget Sound and the Northwest Straits.

We view this interim Georgia-Pacific West site cleanup action from the perspective of restoring the Sound's long-term characteristics. The potential flow of toxic chemicals from this site to the Sound must be reduced.

Background: The site was used to manufacture paper products from 1925 through 2007, including operation of a chlor-alkali plant, which produced chlorine gas and sodium hydroxide (caustic) using a mercury cell technology from 1965 to 1999. Monitoring to support the remedial investigation (RI)/feasibility study (FS), scheduled for public

review in 2012, has revealed (1) high densities of Bunker C fuel oil residue in the soil in the vicinity of the former steam plant and its pair of fuel oil tanks (northwestern portion of site) and (2) high densities of elemental mercury (up to 90,000mg/kg) in the mercury cell building and the soils of the mercury caustic plume sub area (southeastern portion of site).

The Department of Ecology has determined that immediate action is required to remove this highly contaminated material. Investigations to date have also found petroleum hydrocarbons, metals, dioxins, furans, polycyclic aromatic hydrocarbons (PAHs), and volatile organic compounds in soils and groundwater that exceed Model Toxics Control Act (MTCA) standards.

The proposed interim cleanup, focusing on sources of contamination to groundwater and air, would remove the petroleum soils (~8,000 tons; 5000 cubic yards) in the fall of 2011 and the mercury materials and soils (~450 tons) in the spring of 2012. These soils/materials are to be transported to an Ecology-approved upland site. The former figures are based on removing soils containing lateral total petroleum hydrocarbon (TPH) densities >10,000 mg/kg (to mitigate near-term groundwater and vapor migration dangers) and vertical TPH densities > 3,100 mg/kg (to mitigate near term direct contact danger).

Our comments on the proposed interim action plan follow:

- **Comprehensive cleanup.** People For Puget Sound supports the work of Ecology and the Port of Bellingham to contribute to recovering the health of Puget Sound by removing mercury- and petroleum-contaminated material from the Georgia-Pacific West site and transporting it to an Ecology-approved upland site, beginning this September. All feasible safeguards must be implemented during the removal, transport, and upland site placement process to minimize the escape of any toxic residues into Bellingham Bay.

We are very concerned, however, that the entire site is not being addressed more aggressively now and that groundwater especially the NAPL is not being addressed immediately. **A groundwater pump and treat system should be installed as soon as possible in order to halt the continued impact of this site on Puget Sound.** This site has been under study for many years and with these levels of contamination, a more comprehensive interim cleanup should be proposed. Allowing the Port of Bellingham to stall on the fuller cleanup because they do not know the anticipated landuse is not an adequate reason for delay.

- **Monitoring during cleanup.** We emphasize the importance of monitoring, both during the interim cleanup and afterwards, to detect any potential adverse effects on the surrounding area and its residents/workers.

- **Removal of additional material during this interim action.** We are concerned that the statement (section 3.1) “If, during execution of the interim action, soil with visible mercury is encountered outside of the area that has been previously designated, the soils *may* be designated for off-site disposal at that time” is inadequate. Any soil with visible mercury should be removed for disposal.

• **Health and Safety Plan.** We would like the opportunity to review the interim cleanup health and safety plan. Our prime organizational interest is the effect of possible escaping contaminated materials on the Bay and Sound. We are also concerned about human health and thus the potential deleterious effects on site workers and surrounding residents/ workers.

• **Assessment of the neighboring area.** We request the initiation of an evaluation of the Georgia-Pacific operations on the health of the surrounding residents/workers, particularly over the long term. The mercury cell operations (begun in the mid 1960s) and the steam plant operations (begun in the late 1940s) must be emphasized. That there is an ongoing source of mercury to air is extremely concerning as to the potential human health impacts. As a start, we request that Ecology conduct or require the Port to conduct soil testing of the adjacent upland neighborhood to ensure that mercury and other toxic chemical in soil is characterized. In addition to mercury, the soils in these neighborhoods should be investigated for dioxin.

Thank you for your consideration. You can reach me at (206) 382-7007 (X172) or htrim@pugetsound.org or Tom Winter at (206) 723-5311 or t2winterjr@yahoo.com.

Sincerely,

Heather Trim
Urban Bays and Toxics Program Manager

Response #8:

Comprehensive cleanup. A site-wide Remedial Investigation and Feasibility Study (RI/FS) is currently being developed and scheduled for Ecology review near the end of 2012. Initial site investigations for the RI/FS revealed the presence of NAPL (Non-Aqueous Phase Liquid) in the vicinity of the former Bunker C storage tank. This information prompted the development of this interim action to remove the ongoing source of groundwater contamination. Removal of this NAPL is intended to immediately address this source of groundwater contamination. The Feasibility Study will evaluate a number of remedial alternatives to address groundwater contamination. A pump and treat system is only one of several remedies that can be considered. The Feasibility Study is intended to be a comprehensive document that evaluates multiple alternatives. It is not intended to premeditatedly select one alternative. There are many factors that affect the timing and schedule of all cleanups. Ecology does not intend to delay cleanup due to unknown land use issues.

Monitoring during cleanup. There are three types of compliance monitoring required by regulation:

1. Protection monitoring- to confirm that human health and the environment are adequately protected during construction period of the interim action.
2. Performance monitoring- to confirm that the interim action has attained the performance standard or remediation levels established.
3. Confirmation monitoring- to confirm the long-term effectiveness of the interim action.

Removal of additional material during this interim action. Visible mercury continues to be an on-going source of groundwater and vapor impacts. All soils containing visible mercury will be removed regardless of location.

Health and Safety Plan. Ecology will send you the Health and Safety Plan.

Assessment of the neighboring area. Preliminary information indicates contamination has not migrated to adjacent upland neighborhoods. The Remedial Investigation will characterize the extent of contamination, and if warranted, additional sampling and investigation will be performed.