

From: [Clay Patmont](#)
To: [Asher, Chance \(ECY\)](#)
Cc: [Dan Berlin](#); [Tom Wang](#); [David Templeton](#); [Mark Larsen](#); [Ryan Barth](#); [Matt Woltman](#); [Kathy Ketteridge](#)
Subject: Additional Regional Background Comments
Date: Tuesday, September 24, 2013 9:48:44 PM

Chance –

We understand that Ecology has been reconsidering its approach to setting regional background levels in Port Gardner, Elliott Bay, Seattle's East/West Waterways, and the Lower Duwamish Waterway, and we applaud that effort. As you know, Anchor QEA is representing more than 20 clients in these areas who have been working diligently to accomplish sediment cleanup. While we were initially hopeful that the regional background concept would be an effective tool to help move cleanups forward, the current approaches that Ecology has applied to date are far too stringent to be of any practical value for this purpose. As we have discussed, to facilitate moving sediment cleanups ahead, the regional background concept must provide sufficient differentiation between prospective sediment cleanup units and bay-wide contamination.

Current bedded sediment concentrations in all urban areas of Puget Sound are the product of a wide range of historical point and non-point source legacy releases, as well as ongoing non-point source inputs. Regional background needs to reflect future contaminant loading contributions from the upper and urban watershed areas, other urban stormwater sources, and also from definable far-field sources that cannot be reasonably controlled in any practicable or timely manner. To be an effective tool, regional background must allow sediments influenced by these regional sources to be distinguished from more discrete sediment sites that can be linked to more specific, and likely historical, operations.

For estuarine areas of the Lower Snohomish River, Lower Duwamish Waterway, and Seattle's East and West Waterways, regional background concentrations should be developed using an appropriate combination of riverine particulate sampling and recontamination modeling. Specifically:

- Regional background levels for the Lower Snohomish River and Lower Duwamish Waterway (LDW) should be derived based on considerations of sediment input from the Snohomish and Green Rivers, respectively, as well as lateral inputs (e.g., stormwater outfalls) that contribute to sediment deposition. Annual loads have been calculated in the LDW Feasibility Study (FS), which also calculates a weighted average for a number of the primary chemicals of concern. The recontamination modeling presented in the LDW FS also calculates that portion of the contaminant load that will settle in the LDW, which represents regional background for the LDW.
- The regional background values for Seattle's East and West Waterways should be different than the value applied for the LDW. Sediment entering the East and West Waterways comes from three primary sources: the Green River, LDW bedded sediments (periodically eroded during higher flows) and LDW lateral inputs. The weighted average concentration of each of the loads from these diffuse sources should be used to estimate the regional background for these Waterways.
- The concentration of suspended sediments entering the East and West Waterways are

different than the Green River suspended sediments concentrations. For example, much of the coarse fraction of the Green River suspended sediments settles out in the LDW, whereas modeling conducted as part of the Supplemental Remedial Investigation and FS for the East Waterway Operable Unit of the Harbor Island Superfund Site indicates that no sand particles enter the East Waterway. Moreover, suspended sediment samples collected by USGS as part of the Green River Study appear to have a larger proportion of coarse grain sizes (> silts) than anticipated. This could be due to the sampling method (pumping), which may preferentially collect coarse sediments, which have lower concentrations than fine grain fractions, and therefore bias the concentration low in the collected samples. Also, river particulate samples should be taken following dam release events (as well as large rainfall events) to fully characterize the suspended sediment concentrations that are transported into the estuaries.

- Measurements of Green River suspended sediments should be taken closer to River Mile 6 rather than at River Mile 10 to account for the contribution of diffuse lateral inputs that are entering the LDW.

For Elliott Bay and those areas of Port Gardner that are downstream of direct influence from the Lower Snohomish River (e.g., Everett East Waterway), regional background concentrations should be similarly developed using an appropriate combination of sediment trap sampling and recontamination modeling. Specifically:

- Sediment traps can be readily designed to provide for collection of high volume samples needed for trace contaminant analysis even in areas with relatively low net sedimentation rates (i.e., 0.1 centimeter per year or lower), simply by enlarging the effective diameter of trap. We have constructed and successfully deployed these types of traps in numerous areas to cost-effectively obtain the necessary sample volume.
- There are a number of “fingerprinting” methods that can be used to evaluate the sediment trap data to determine the relative significance of resuspended legacy sediment releases and ongoing non-point source inputs.
- Recontamination modeling can also be used to calculate inputs resulting from lateral inputs (e.g., stormwater outfalls) that contribute to contaminant loading outside of the immediate outfall depositional area. Again, the weighted average concentration resulting from lateral loading from diffuse sources should be used to estimate the regional background for these areas, corroborating the recontamination modeling values summarized above.

As always, please let me know if you have any questions. Thanks -

Clay Patmont

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From: [Teri A. Floyd](#)
To: [Asher, Chance \(ECY\)](#)
Cc: ["Johnson, Ken"](#); ["Erik Gerking"](#); [John Herzog](#); [Megan McCullough](#); [Lynn Grochala](#); [Amanda McKay](#)
Subject: Port Gardner SAP
Date: Wednesday, March 06, 2013 4:39:34 PM

Chance,

Thank you for the opportunity to review the Sampling and Analysis Plan for Port Gardner prior to the meeting on the 12th. At the request of Weyerhaeuser, Floyd|Snider has prepared the following comments/discussion points in anticipation of the Technical Workshop on March 12.

1. PCB congener analysis vs. Aroclors. We believe that we understand why you have selected congener rather than Aroclor analysis; however, this causes significant complications when making site-specific decisions. For example:
 - o This eliminates the potential to use a significant amount of existing data that was collected for Aroclors; how will we or Ecology decide if a specific historical location is above or below background?
 - o Increases costs moving forward since all new data will need to consider multiple ARARs, some of which are based on congeners and some on Aroclors; essentially requiring the collection of both.

We strongly encourage Ecology to solve this problem by analyzing the background samples for BOTH congeners and Aroclors. And calculating the background using side-by-side data from the same locations.

2. When applying "background" for organics, it will be critical that data are normalized in some way for grain size and TOC. For example, a medium sand with no organics from a background area will have much lower concentrations for hydrophobic organics than a sample from the same location with 20% fines and TOCs of 1%, simply due to physical processes that cause increased sorption in the latter sample. This needs to be considered and included in the discussion of background.
3. PQL Discussion: For the analytical laboratory to provide appropriate PQLs, MDLs, or LMCLs, calculated from the calibration curve and replicate tests results that meet the USEPAs SW-846 associated definitions, the LMCLs must be conducted on a matrix that is representative of the sample matrix being analyzed (in this case, sediments). The LMCL is functionally equivalent to the PQL ONLY when the calibration matrix is reagent water, and if the calibration curve, including the lowest standard meets data validation protocols. We strongly advise that you consider modifying the WP to make this clear; or include it in the final report. These types of critical, matrix-dependent distinctions are at risk of being lost as we move forward to implement SMS.
4. Appendix A provides details regarding existing data available for use in this background study; however, it is unclear what data will be used and what guidelines will be followed for

incorporating existing data particularly when the data is greater than 10 years old.

We look forward to the discussion on the 12th and may have additional comments after the Public Meeting.

Sincerely, Teri

Teri A. Floyd, Ph.D.

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March 6, 2013

Peter Adolphson
Aquatic Lands Cleanup Unit
Washington State Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

Re: Comments on Draft Port Gardner Regional Background Sediment Characterization Sampling and Analysis Plan

Dear Peter:

On behalf of the Kimberly-Clark Corporation (“Kimberly-Clark”), provided below are comments on the draft Port Gardner Regional Background Sediment Characterization Sampling and Analysis Plan (SAP). Our comments are organized into general and specific comments below.

General Comments

We understand that the new Sediment Management Standards (SMS; WAC 173-204) include the concept of regional background that can be used to help set sediment cleanup levels. As defined in the SMS, “regional background” means the concentration of a contaminant within an Ecology-defined geographic area that is primarily attributable to diffuse sources, such as atmospheric deposition or storm water, and not attributable to a specific source or release. We also understand that WAC 173-204-560(5) includes general procedures and requirements for establishing regional background.

While we understand that Ecology is still working through the details of how to establish regional background, Kimberly-Clark has significant concerns that the regional background calculation approaches that Ecology is using in Port Gardner are far too stringent to be of any

practical value in informing sediment cleanup actions. The overall approaches used to develop the Port Gardner SAP do not allow sufficient differentiation between existing or prospective sediment cleanup units and bay-wide contamination problems. This will continue the current gridlock in the processing of the current backlog of sediment cleanup units in the area.

Regional background should include contaminants contributed to the region from multiple urban stormwater sources, in order to distinguish those pollution problems from more discrete sediment sites that can be linked to a more specific, and likely historic, past practices. For example, detailed national and regional studies of dioxin sources have concluded that: 1) currently, the largest quantified source of dioxin emissions throughout the U.S. is the uncontrolled burning of household trash (backyard burning; <http://www.epa.gov/wastes/nonhaz/municipal/backyard/health.htm>); and 2) common non-point source inputs such as those resulting from historical roadside weed control have been identified as important sources of dioxin to regional sediments. The similarity of both soil and sediment dioxin concentrations and congener profiles in urbanized areas of Puget Sound to those found throughout the region, including in Port Gardner, provides further evidence that existing sediment dioxin concentrations are the product of a wide range of historical point and non-point source legacy releases, as well as ongoing non-point source inputs.

Regional background problems should be addressed under the appropriate regulatory tool (e.g., Phase II municipal permits) and not site-specific MTCA/SMS enforcement. Calculation of regional background should also include the influence of multiple urban sources, and should be specifically used to determine discrete SMS sediment cleanup units. Again, the overall approaches used to develop the Port Gardner SAP do not allow sufficient differentiation between existing or prospective sediment cleanup units and bay-wide contamination problems. We respectfully request that Ecology reevaluate its approach to develop a more meaningful and useful regional background value for Port Gardner.

Specific Comments

1. The Port Gardner SAP is focused in relatively deep offshore sediments in Port Gardner. This focus is not representative of the true regional background in the East Waterway, which is an urban port. Shallow, nearshore samples would
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- provide a much more realistic picture of the background levels in the East Waterway. In addition to not evaluating the influence of multiple urban sources as outlined above, this sample design also does not characterize the range of physical sediment conditions (e.g., grain size and total organic carbon [TOC]) present within Port Gardner which are most relevant to the cleanup projects (intertidal and nearshore subtidal environments). Sediment elevations above -6 feet MLLW are summarily excluded without a good supporting rationale. The deep offshore locations are likely to have lower TOC concentrations, and may not correlate with or be relevant to comparison to intertidal and nearshore subtidal sediments. At the very least, the SAP should explicitly state that organic carbon normalization of nonpolar organic chemicals will be performed, consistent the current SMS regulations that apply to these chemicals.
2. No tissue or bioaccumulation analysis is proposed as part of the Port Gardner SAP. As has been demonstrated in specific parts of Port Gardner and other similar areas of Puget Sound, the bioavailability of nonpolar organic chemicals can vary widely between sites and sediment cleanup units due to variable amount of black carbon and other sequestering agents. Bioavailability can and should be considered in SMS evaluations of sediment cleanup actions (e.g. see WAC 173-204-570(5)(c)); not including bioavailability considerations limits the utility of regional background.
 3. Existing information planned for inclusion in the dataset is not adequately described:
 - a. Existing sample collection depths range from 0 to 2 cm (PSAMP) to 0 to 12 cm. There is no discussion of how these differences would be dealt with. The SAP proposes collection of sediment from 0 to 10 cm.
 - b. Appendix A does not present TOC or grain size data and only includes dry weight concentrations. As discussed above, the SAP should explicitly state that organic carbon normalization of nonpolar organic chemicals will be performed, consistent the current SMS regulations that apply to these chemicals.
 4. The discussion of how outliers will be addressed in the calculation of the regional background concentration is subjective. All data should be carried through and presented in the Final Report.
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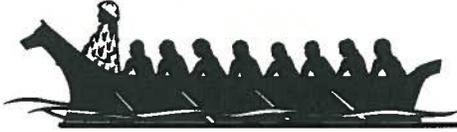
We look forward to discussing these and other stakeholder comments at the Technical Workshop scheduled for March 12th. As always, please call should you have any questions.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Clay Patmont". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Clay Patmont
Anchor QEA, LLC

Cc: Cindy Jernigan, Bryan Lust and Howard Sharfstein, Kimberly-Clark
Jennifer Addis and Bill Chapman, K&L Gates
Nathan Soccorsy and John Laplante, Anchor QEA



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THE SUQUAMISH TRIBE

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March 6, 2013

Mr. Peter Adolphson
Washington Department of Ecology
Toxics Cleanup Program
Peter.Aldolphson@ecy.wa.gov

RE: Port Gardner Bay Regional Background Sediment Characterization SAP
February 2013 Draft

Dear Mr. Adolphson:

The Suquamish Tribe (Tribe) appreciates the opportunity to review Ecology's draft Sampling and Analysis (SAP) for the Port Gardner Bay Regional Background Sediment Characterization. This is the first sampling effort to address and incorporate recent changes to the Sediment Management Standards (SMS) that provide for the use of "Regional Background" as Cleanup Screening Levels. As described in the SAP, Ecology intends that the approach and methods proposed for Port Gardner Bay will serve as an example of how regional background concentrations could be established in a particular Ecology-established geographic area. The Tribe offers its comments on the approach provided in the SAP for establishing regional background levels as follows:

1. Given that Ecology sees the Port Gardner Bay SAP as important in establishing state-wide precedent in the use of regional background levels, please revise the Introduction and Background sections to more fully discuss limitations regarding protectiveness and application as a screening tool.

During the review of changes to the SMS, the Tribe provided written comments that background levels do not provide a health-protective metric for screening or measuring recovery of contaminated sites. However, where risk-based thresholds are less than background levels, the Tribe supports the use of natural background, defined as substances that naturally occur in the bedrock, sediment and soil of Washington State due solely to the geological processes that formed these materials, at non-anthropogenic concentrations.

Regional background concentrations are assumed to be higher than natural background levels and include substances such as PCBs that are known to produce harm. Regional background incorporates impaired conditions that may already represent a threat to human health or the environment. While Ecology has determined that using regional background levels will afford the State and regulated community additional freedom in listing sites and negotiating clean up liability, re-setting the baseline does not reduce or eliminate adverse biological effects or human health risks.

2. The Port Gardner Bay SAP should be revised to clearly present the basis for determining that the area proposed for sampling meets the SMS definition of Regional Background, as well as guidance provided in the August 2012 draft Sediment Clean Up Manual. This should include a thorough discussion of current and historical sources and discharges, dispersion patterns, and sediment transport dynamics. If research indicates that the proposed area includes contamination from known sources, the physical boundaries of the area to be sampled for background analysis should be revised to exclude such an area.

The SMS definition of regional background is given as "...the concentration of a contaminant within a department-defined geographic area that is primarily attributable to diffuse sources, such as atmospheric deposition or storm water, not attributable to a specific source or release". The August 2012 draft guidance states: "When sampling background populations, the physical boundaries of the background area need to be identified based on best professional judgment, knowledge about local point and non-point sources and chemical transport mechanisms."

In reviewing easily obtainable references, the Tribe found information that appears to indicate that the area proposed for sampling has been historically impacted by point source discharges. First, in the March 1967 report by the U.S. Department of the Interior and the Washington State Pollution Control Commission, *Pollutional Effects of Pulp and Paper Mill Wastes in Puget Sound*, concentrations of sulfite waste liquor, a major component of pulp mill discharge, were measured beyond Hat Island at levels (>5 ppm) which are presumed to be indicative of contamination. Next, a June 1986 report by the Department of Ecology, *Ecological Baseline and Monitoring Project*, also contains a section on water quality in Port Gardner Bay which discusses the stratified dilution and dispersion patterns of process waste effluent from the Weyerhaeuser and Scott Paper companies, discharged via the deep water multiple-port diffuser. In this discussion, the stratified effluent plume was tracked northward for 6 to 9 kilometers. Mid-depth entrained effluent is described as moving northward toward Saratoga Passage and Port Susan, where it may be trapped behind a sill. Effluent entrained in bottom waters is described as moving south into Possession Sound.

In addition, because the SAP proposes to measure regional background concentrations of metals including arsenic, contaminant transport dynamics associated with the Everett Asarco Smelter should be addressed.

3. The reporting procedures in the SAP should be revised to include data analysis and interpretation, in addition to documentation of sample collection and chemical analyses procedures and results. Data analysis and interpretation reporting needs to present summary statistics, as well as discuss any outliers and data gaps and uncertainties.

I plan to attend the technical workshop scheduled for March 12, 2013, and the Tribe requests that Ecology provide responses to these comments at that time. Please send all documents and correspondences on this issue to my attention.

Sincerely,

Denice Taylor

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August 20, 2013

Chance Asher
Sediment Management Standards
Washington Department of Ecology

Sent by electronic mail to chance.asher@ecy.wa.gov

Subject: Port Gardner Regional Background Characterization

Dear Chance:

Thank you for the opportunity to review your presentation on regional background values for Port Gardner. We are supportive of your approaches in sampling, analysis, and statistical evaluations; unfortunately, this is overshadowed by a fundamental tenet in your study design that placed sampling locations outside of the urban embayment.

The definitions of “natural background” and “regional background” (WAC 173-204-505), and then the procedures and requirements for establishing regional background in WAC 173-204-560(5), support our understanding that the regional background would be within the urban embayment, but outside of the “site” as it would have been defined using the existing sediment quality standards values. The regulatory objective was to implement an approach that “considers the reality of widespread, ubiquitous, anthropogenic contamination above risk based levels”. Instead, for the Port Gardner study, Ecology seems to have decided to interpret the regulation to mean that any possible contributions from human activities in the urban embayment were to be excluded.

The primary goals of the Sediment Management Standards revisions for marine sites were to add consideration of human health impacts to the establishment of cleanup levels and selection of sediment remedial actions while focusing resources (money, time, and Ecology staff) on critical issues. The use of very conservative approaches to develop human health criteria, especially when combined with the strong preference for active sediment remedies, would only be realized if regional background was used to distinguish sites best addressed by cleanup from those best addressed by changes in societal practices to accomplish declining inputs. Ecology’s selection of locations in Port Gardner has generated a data set that largely fails to achieve this balance, as evidenced by the fact that the “regional background” values are frequently lower than the “natural background” values determined by the Bold study.

The regional background values defined for Port Gardner are so low they exclude almost all diffuse source/anthropogenic inputs. Any consideration of achieving these low levels would require regional or societal changes in practices, way beyond the purview of any sediment cleanup project. Cleanup projects grind to a halt when PLPs are ordered to perform cleanups that are unrelated to their releases and where the prospect of uncontrollable re-contamination

threatens the cleanup action. Rather than resulting in more and accelerated cleanups, Ecology's current approach to regional background will delay cleanup actions, and waste a large amount of time, money, and Ecology resources.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Johnson". The signature is written in a cursive style with a prominent initial "K" and a long, sweeping underline.

Ken Johnson
Regulatory Environmental Affairs Manager