STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300
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September 12, 2016

Mr. Scott Hooton
Environmental Project Manager
Port of Tacoma
P.O. Box 1837
Tacoma, WA 98401-1837

RE: Arkema 2901 and 2920 Taylor Way, Tacoma, WA
Comments on Draft Feasibility Study (FS) Data Gap Investigation Work Plan
FSID # 1220
Agreed Order No. DE 5668 (AO)

Dear Mr. Hooton:

The Washington State Department of Ecology (Ecology) has reviewed the referenced document submitted on July 22, 2016 and based on this review Ecology has made specific comments which are in Attachment A and three general comments which are in the following paragraphs:

Comment 1: Ecology will evaluate the feasibility study in accordance with the applicable sections of Model Toxics Control ACT (MTCA) to ensure compliance. More specifically, MTCA 173-340-360 (2) requires all cleanup actions shall meet the following threshold requirements and they are:

1. Protect human health and environment;
2. Comply with cleanup standards (WAC 173-340-410 & 173-340-720 through 173-340-760);
3. Comply with applicable state and federal requirements;
4. Provide for compliance monitoring and;

When selecting from cleanup action alternatives that fulfill the threshold requirements, the selected action shall; use a permanent solution to the maximum extent practicable, provide for a reasonable restoration time frame and consider public concerns.

In additional, if you conduct a disproportionate cost analysis in accordance with WAC 173-340-360 (3) (e), each cleanup alternative will be compared to other alternatives considering the following criteria:

a. Protectiveness, permanence, cost, effectiveness over the long term, management of short term risk, technical and administrative implementability, and consideration of public concerns.

Ecology emphasizes to the Port and their consultant, please develop and implement the data gap study and other studies to address the above criteria.

Comment 2: Ecology has not made any decision on the location of point of compliance or a conditional point of compliance for the site for the groundwater to surface water pathway. Ecology is studying the issues and understanding the implication(s) of choosing a point of compliance that is protective of human health and the environment. Ecology wants to ensure that by choosing an appropriate point of compliance, a true concentration of groundwater discharging from the site into the surface water is measured. All the data from groundwater, seeps, and/or pore water samples collected during data gap study along with evaluating remedial actions such as source removal, containment (sheet pile wall), and groundwater in-situ polishing would provide data for Ecology to set an appropriate point of compliance or conditional point of compliance during the development of the cleanup action plan for the site.

Comment 3: Ecology is a public agency and citizens may want to review the environment documents without having to look for documents referenced in the Data Gaps Study. Please ensure to develop a stand-alone document without the need to conduct research to find referenced documents. When a citizen or reviewer encounters numerous references, it causes frustration on the part of the reviewer.

If you would like to meet to discuss these comments or have any questions, please contact me at 360-407-6256.

Sincerely,

Mohsen Kourehdar, P.E.
Toxics Cleanup Program
Southwest Regional Office

MK/ksc:Arkema data gap 2016

Attachments: Attachment A
Ecology Comments on the Draft Feasibility Study (FS)
Data Gap Investigation Work Plan

Attachment A

September 12, 2016

Ecology's comments on the Draft Feasibility Study (FS) Data Gap Investigation Work Plan:

Pages 2-7 and 2-8, Section 2.7.2:

This section should be removed. Ecology has not committed to future increase of groundwater cleanup level protective of surface water. The groundwater cleanup level at the point of compliance will be 5 µg/l.

Please remove the references to preliminary point of compliance (PPOC). Model Toxics Control Act (MTCA) regulation 173-340 WAC does not recognize PPOC. Ecology will make decision regarding the point of compliance during development of the feasibility study and cleanup action plan (CAP).

Page 2-8, Section 2.7.2:

Ecology has not made any written or verbal promises on preliminary point of compliance. Ecology will review all the data which will be developed with the implementation of this work plan and decide about the point of compliance for groundwater based on this information. The point of compliance should be developed in the feasibility study and cleanup action plan.

The following paragraph is for Port's information:

According to WAC 173-340-720(8)(d)(i), which states before approving the conditional point of compliance, "a notice of the proposal shall be mailed to the "natural resource trustees, the Washington Department of Natural Resources and the United States Army Corps of Engineers".

This notice shall be in addition to any notice provided under WAC 173-340-600 (public involvement requirements) and invite comments on the proposal.

Page 2-9:

It is stated that "current surface water concentrations are less than the MTCA Method B surface water cleanup level of 36 µg/l for protection of aquatic organisms in the Hylebos Waterway". The measured surface water concentration about 200 feet from the shoreline area has nothing to do with discharges from the site via groundwater, and discussion of it is misleading.

The Applicable or Relevant and Appropriate Requirements (ARARs) is marine human health water quality criteria of 0.14 µg/l based on a fish consumption value of 6.5 grams/day from the National Recommended Water Quality Criteria published under Section 304(a) of the Clean Water Act. The MTCA Method B marine human health water quality criteria of 0.0982 µg/l is based on a fish consumption value of 54 grams/day. This value is calculated based on equation 730-2, Page 164 of WAC 173-340-730. In this case, the most appropriate ARAR value for this site is 0.14 µg/l. WAC 173-340-730 (5) (c) states the cleanup level shall not be set at levels below the practical quantitation limit or natural background concentration, whichever is higher. In this case, the appropriate groundwater cleanup level is 5 µg/l, which is the natural background concentration for Washington (WAC 173-340, Table 720-1, footnote b). The value of 5 µg/l should be used throughout this document for the cleanup level for groundwater.

Page 2-9:

Please remove references to EPA's 1989 CB/NT document. Referencing this document has no impact in Ecology's decision on setting the cleanup level for groundwater to protect surface water for this site. This confuses the reader of this document.

Page 2-11 and 2-12, Section 2.9.4:

This geochemical transformation of arsenite and precipitating out as arsenate with ferric iron, over a long run, would not this transformation cause increase in arsenic sediment concentration in the Hylebos Waterway?

Page 3-1:

References have been made to a PPOC. There is no definition/meaning in MTCA for a PPOC. Please remove all references to PPOC.

Page 3-1:

Ecology reviewed Figures 5-37a, 5-37b and 5-37c in the 2013 site's remedial investigation (RI). These figures show nickel contamination around Taylor Lake, in vicinity of Penite Pits area in the shallow aquifer (as high as 404 µg/l versus WQ criteria of 8.2 µg/l) and the intermediate aquifer shows contamination in the same range in the same general area. The deep aquifer shows one well with a nickel concentration of 10 µg/l.

The groundwater data around Taylor Lake suggests that there might be other potential sources of nickel soil contamination. Ecology does not think changing a seep sampler to a non-stainless steel type would solve the nickel problem in the seep samples.

Page 3-2, Section 3.3:

The groundwater, seep and pore water samples will be collected one time and tested. In order to build a concentration trend and take seasonal variability into account, Ecology suggests that you reduce the number of groundwater wells by-half and test these wells during the wet and the dry seasons along with seeps and pore water samples.

Page 3-2, Section 3.4:

Collecting information from surface water data does not represent what is coming from the site and these data would not have any effect on Ecology's decision on future remedial actions or selecting a point of compliance. If the Port wants to collect data from Hylebos Waterway, that is fine. No decision will be made based on the surface water information.

Page 3-2, Section 3.5:

Why are you inspecting only the top portion of the upper aquifer? The lower part of the wall extends into the intermediate aquitard, is not the intermediate aquifer directly discharges into Hylebos Waterway? Ecology does not think measuring the tidal fluctuation on both sides of the sheet pile wall would provide information that a conclusion can be made about the integrity of sheet pile wall containing the intermediate aquifer for containment over thirty years.

Have you considered having a corrosion engineer evaluate the competency of the wall? Also, is it possible to determine if cathodic protection could be added to extend the life expectancy of the wall? Does a corrosion engineer certify the life/protectiveness of the wall with no cathodic protection for the next thirty years?

Please consider the long term view and look at the feasibility of an additional wall with cathodic protection for groundwater containment and surface water protection.

Page 3-2, Section 3.6, Table 3-1, Table 1 in Appendix A:

In the FS, there will need to be a detailed cost analysis for removing and disposing all the contaminated soil to 88 mg/kg, and that cleanup alternative should be included in the disproportionate cost analysis.

Page 4-2, Section 4.1.3:

Several references (USEPA 2007a, 2007b, 2015 (Savannah River National Laboratory)) have been made to support arsenic stability. To make this document a stand-alone document, please include all these references in the appendix that the reader could follow.

Page 4-2, Section 4.1.4:

References to PPOC should be removed.

The proposed surface water data collection points are not an indication of what is coming out of the site. When Ecology is making decision on point of compliance or a conditional point of compliance from the site, the surface water data will not be taken into account.

Page 4-2, Section 4.1.5:

Intermediate aquifer water discharges into Hylebos Waterway (See 2013 RI by Matt Dalton). Why do you inspect only the wall located on the top portion of the upper aquifer? Why don't you inspect the sheet pile wall its full depth?

Ecology prefers you evaluate and retrofit the wall with cathodic protection for long term, if possible.

Page 4-2, Section 4.1.6:

Please make an addition to this section that Ecology will be kept in the loop throughout bench-scale treatability study (ies) to determine the feasibility of ex-situ soil stabilization.

Page 4-2, Section 4.1.6, Figures 4-6A and 4-6B, Penite Pits**:**

Based on the proposed borings in this area, it does not appear that the extent of soil contamination in the area of the Penite Pits will be determined. Specifically:

Figure 4-6A shows a soil boring (to the northwest of sampling proposed point PTC-115), where the results are >1,180 mg/kg of arsenic. There are no borings beyond this boring to determine the extent of arsenic soil contamination in this area.

Figure 4-6A shows to the west of PTC-114 and PTC-113, there are soils with arsenic concentrations of 590 mg/kg and 1180 mg/kg. Some of these samples are 6-12 feet below ground surface (bgs) with concentrations of arsenic above 1,180 mg/kg.

It is important to state these sampling locations should provide sufficient information to develop feasibility study and disproportionate cost analysis for multiple source removal scenarios.

Page 4-2, Section 4.1.6, Figure 4-6B:

Figure 5-39b in the September 2013 RI report shows two areas at the site where the intermediate aquifer has a pH of > 8.7. The soil testing described in Table 4-6B of the data gap work plan only shows testing 5 feet into the first aquitard. Please continue the soil boring into the second aquifer to ensure the extent of soil pH contamination is determined.

Wypenn:

Figure 5-39a in the September 2013 RI report shows the upper aquifer has pH values ranging from 9.1 to 11.5 in the of the Wypenn property. Wypenn groundwater is part of the site and it has not been resolved yet. Please include soil testing program to find the source of pH contamination in groundwater in that area.

Page 4-2, Section 4.1.7, Wedge Area:

Figure 8-3 of the 2013 RI shows, concentration of arsenic as high as 3090 mg/kg in the first aquitard from sampling locations AT-8 through AT-12 located beneath the intertidal cap. Ecology estimates there are approximately 100,000 yd^3 of arsenic contaminated soil ranging in concentration from 33 mg/kg to

3090 mg/kg in the wedge. Ecology considers this area a source of arsenic pollution to the Hylebos Waterway. Considerations for this area should be part of the final remedy.

The work plan only offers two soil samples inside and outside the sheet pile wall at 150-50-0 which has shown a high pore water concentration of 157 µg/l, and two additional contingent soil sampling locations. Are three sampling locations (one proposed and two contingent), enough for determining extent of soil contamination in the wedge area?

Page 4-3, Section 4.1.8:

Please note, modeling should be a minor component to the final selected remedy. The feasibility study should focus on source removal, containment, and further treatment of groundwater by in-situ methods to eliminate arsenic discharge into surface water. Modeling could be used in the final step in the selected remedy by providing site specific data that shows the plume is stabilized at the site.

Page 4-3, Section 4.2:

Please develop a sampling and analysis plan in accordance with WAC 173-340-820 and attach it to the Data Gap work plan. Groundwater, pore water, surface water, Nylon-Screen Diffusion sampler (NSDS), and soil and sediment sampling methods should be part of the sampling and analysis plan.

Page 4-3, Section 4.3:

Quality assurance project plan (QAPP) when developed should be part of this work plan.

Page 4-3, Section 4.4:

PPOC should be removed from this section.

Figure 4-3D:

Please define the NSDS. It is confusing to the reader. Please attach a sampling and analysis plan to appendix which defines everything applicable to this data gap study.

Figure 4-4:

Surface water samples from Hylebos do not represent what is coming out of the site and it will not play a role in setting a point of compliance or a conditional point of compliance.

Table 1 in Appendix A:

In-situ soil/groundwater treatment with a stabilization technology is proposed for only near the shoreline area which has low arsenic concentration. There are areas with high groundwater contamination (Penite Pits) (as high as 165,000 µg/l, Figure 5-32A from 2013 RI report). When developing the feasibility study, stabilization technology should also be considered for the high arsenic groundwater contamination area such as Penite Pits.

Appendices A and B:

Please remove the two slides presentations given to Ecology. Ecology has seen these slides and they do not add any value to this Data Gap work plan.

North Site Boundary Area:

There is no mention of North Boundary area in this Data Gap work plan. Are there any data gaps for North Boundary area?