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DEPARTMENT OF ECOLOGY
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July 7, 2020

Gil Insley
Clariant Corporation
4000 Monroe Rd
Charlotte, NC 28205
gil.insley@clariant.com

Re: Further Action at the following Site:

- **Site Name:** Chemtrade Performance Chemicals US LLC
- **Site Address:** 404 Hendrickson Dr., Kalama, Cowlitz County, WA. 98625
- **Facility/Site ID:** 24634187
- **Cleanup Site ID.:** 1784
- **VCP Project No.:** SW0492

Dear Gil Insley:

On February 12, 2020, the Washington State Department of Ecology (Ecology) received your request for opinion on your independent cleanup of the Chemtrade Performance Chemicals US LLC facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the [Model Toxics Control Act \(MTCA\)](#),¹ chapter 70.105D Revised Code of Washington (RCW).

Issue Presented and Opinion

This opinion provides Ecology's response to your February 12, 2020, feasibility study for the Site and discusses how the remedial actions conducted and proposed at the Site meet the substantive requirements of MTCA and its implementing regulations, Washington Administrative Code (WAC) chapters 173-340 and 173-204 (collectively "substantive requirements of MTCA and Sediment Management Standards [SMS]").

Ecology has reviewed the materials provided and the historical Site record, and provides suggestions for necessary further remedial action to determine a preferred remedial alternative for the Site.

¹ <https://fortress.wa.gov/ecy/publications/SummaryPages/9406.html>.

A summary of Ecology's comments includes:

- Additional applicable laws and regulations that may be appropriate for the cleanup.
- Details regarding the proposed environmental covenant.
- Considerations for terrestrial ecological evaluation.
- Information needed to establish off-property conditional points of compliance.
- Information needed for the preferred remedial alternative:

Description of the Site

This opinion applies only to the Site, defined by the nature and extent of contamination associated with a release or releases of hazardous substances into the environment from industrial operations at Cowlitz County tax parcel 6005401 (the Property). The Site may be thought of as the extent of contamination released to the environment, without regard to cleanup levels or property boundaries.

At this Site, zinc and cadmium were previously determined to be indicator hazardous substances. A parcel of real property can be affected by multiple sites. At this time, we have no information that the parcels associated with this Site are affected by other sites.

Basis for the Opinion

This opinion is based on the information contained in documents listed in Enclosure A. These documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. Information on obtaining the records can be found on [Ecology's public records requests web page](#).² Some site documents may be available on [Ecology's web page for the Site cleanup](#).³

Analysis of the Cleanup

1. Characterization of the Site.

Historical site characterization is included in Ecology's February 9, 2017, July 5, 2018, and May 20, 2019, opinions for this cleanup project, and in the reports and documents listed in Enclosure A.

² <https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests>.

³ <https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=1784>.

Ecology's May 20, 2019, opinion suggested evaluating applicable local, state, and federal laws, evaluating sediment anti-degradation and climate resiliency, and focusing on the upland Site for the feasibility study. You provided us a feasibility study report⁴ (Report) that includes a proposed preferred remedial alternative, and requested this opinion.

Ecology generally concurs with the Report's findings. In this opinion, we discuss exceptions and provide clarifications to our concurrence with those findings. We anticipate that the next step at this Site will be for you to review the information in this opinion and update the Site's remedial investigation and feasibility study. We expect you will provide an updated report for Ecology's review and opinion that includes the proposed draft environmental covenant for the Site as a necessary component of the proposed preferred remedial alternative. Ecology will review the feasibility study at that time.

You may alternately choose to proceed to clean up the Site independently, without Ecology's concurrence. However, due to the location and scope of this project, Ecology believes it is important to establish Ecology's written concurrence with a preferred remedial alternative for a final cleanup of the Site, describing the terms of our shared vision of how this Site cleanup will be completed within a reasonable timeframe, and the components of that cleanup.

Our specific comments on the proposed Site cleanup are provided below.

- a. **Applicable local, state and federal laws:** The Report includes a table of applicable local, state, and federal laws.⁵ Ecology believes that the following laws are also applicable to this cleanup project, based on the location of this project, our mutual respect for sovereign tribes, and to preserve Washington's cultural artifacts and heritage:
- Archaeological and Cultural Resources Act (chapter 43.53 RCW).
 - Archaeological and Historic Preservation Act (chapter 43.334 RCW).
 - Indian Graves and Records (chapter 27.44 RCW).
 - Archeological Sites and Resources (chapter 27.53 RCW).
 - Cemeteries and Human Remains (chapter 68 RCW).
 - National Historic Preservation Act (NHPA) 16 USC 470 et seq.)).
- b. **Environmental Covenant:** An environmental covenant is proposed as part of the Site's preferred remedial alternative, but was not included for this review. A draft environmental covenant with all attachments will be needed to adequately review the Site's proposed preferred remedial alternative.

⁴ Hart & Hickman, PC, *Feasibility Study Report, Chemtrade Performance Chemicals US LLC*, February 12, 2020.

⁵ Report Table 8.

Based on the information submitted for this review, Ecology provides the following suggestions:

- **Groundwater:** For the environmental covenant, include ongoing regular post-closure groundwater monitoring throughout the Site. A contingency plan should also be prepared. A 15 month ongoing groundwater monitoring and reporting frequency would likely provide sufficient information for Ecology to evaluate seasonal groundwater trends. Groundwater monitoring results will be evaluated by Ecology during our regular five-year periodic reviews.⁶

When ongoing groundwater monitoring is no longer needed, the owner at that time may submit a request to Ecology to reduce or eliminate groundwater monitoring, and include the evidence and rationale for Ecology to make the determination.⁷ However, at this time you should propose groundwater monitoring in perpetuity.

- **Industrial Cleanup Levels:** Ecology does not require the use of industrial cleanup levels anywhere at this Site. You may establish unrestricted land use soil cleanup levels under WAC 173-340-740 throughout the Site. Establishing unrestricted cleanup levels may be desirable for you to avoid restrictions on future property use.⁸

The use of industrial cleanup levels anywhere at this Site will result in the need for institutional controls and an environmental covenant restricting land use to industrial purposes, in accordance with WAC 173-340-440.⁹ Examples of necessary restrictions include ensuring limited access to the property, and maintaining barriers to access including fence and gates. This would also include restricting future land use to solely industrial purposes.

- **Engineered Controls:** If engineered controls are required for the cleanup, for example reliance on a building slab in the manufacturing and production area or asphalt as a cap and barrier to exposure, please memorialize any necessary engineered controls and proposed monitoring and reporting of engineered controls in the draft environmental covenant. Another engineered control would be maintenance of the fence and gates.
- **Institutional Controls:** Include necessary institutional controls, such as necessary restrictions on groundwater use, in the environmental covenant. Also, institutional controls will be needed for a terrestrial ecological evaluation conditional point of compliance (see below).

⁶ WAC 173-340-420

⁷ WAC 173-340-440(12)

⁸ WAC 173-340-745(4)

⁹ WAC 173-340-706(1)(a)

c. Terrestrial Ecological Evaluation:

- **Evaluating Compliance:** Please ensure you collect and report sufficient data to evaluate compliance with cleanup standards appropriate for ecological receptors throughout the Site.
 - **Establishing Conditional Points of Compliance for Terrestrial Ecological Evaluation:** Ecology concurs that your proposed six-foot conditional point of compliance for protection of terrestrial ecological receptors is likely adequate for this cleanup. However, institutional controls will be necessary where the evaluation relies on physical barriers to keep plants and animals from being exposed to residual contamination, or where a conditional point of compliance is used.
 - **Terrestrial Ecological Receptors – Requirements for Permanent Alternative:** Please ensure that at least one permanent alternative (Alternative 1) includes:
 - An unconditional terrestrial ecological receptor point of compliance of 0 to 15 feet below ground surface.
 - Simplified unrestricted terrestrial ecological receptor cleanup levels throughout the site (Cadmium = 25 mg/kg, Zinc = 270 mg/kg).
 - Removal of the buildings that created an incomplete exposure pathway.
 - Removal of contaminated materials under those buildings to 15 feet below ground surface.
 - **Assuming Industrial Zoning will be Maintained by Institutional Controls and Managed by an Environmental Covenant Inside the Fence:** Inside the fence, appropriate cleanup levels for cadmium are 36 mg/kg and Zinc 570 mg/kg. Outside the fence, appropriate unrestricted cleanup levels are cadmium 25 mg/kg and zinc 270 mg/kg. If industrial cleanup levels are proposed for terrestrial ecological receptors, include a condition in the environmental covenant that if the structures and concrete pads are removed, the Property inside the fence will be cleaned up to comply with industrial terrestrial ecological receptor cleanup levels.
- d. Establishing off-Property Conditional Points of Compliance:** Under three specific situations described in MTCA, conditional points of compliance may exceed a property boundary where the contamination originated.¹⁰ The Chemtrade Property, where this Site's contamination originated, directly abuts the Columbia River. Therefore, the situation described in WAC 173-340-720(8)(d)(i) is applicable to this cleanup.

¹⁰ WAC 173-340-720(8)(d).

For this cleanup, you proposed a 6-inch sediment biologically active zone, and conditional points of compliance immediately below the sediment biologically active zone in Columbia River hyporheic water flow. Contamination has been investigated in sediment, and the Site determined to not likely include a sediment site of potential concern.¹¹ You are proposing using the MTCA framework to establish points of compliance for the cleanup in contaminated hyporheic zone water, immediately below the sediment biologically active zone.

The United States Geologic Survey defines a hyporheic zone as *“The subsurface zone where stream water flows through short segments of its adjacent bed and banks.”*¹² MTCA defines groundwater as *“water in a saturated zone or stratum beneath the surface of land or below a surface water.”*¹³ **Ecology’s current written policy is that surface water travelling in a hyporheic zone below a sediment biologically active zone is regulated as groundwater.**¹⁴ This policy reflects a Washington State regulatory differentiation between surface water and groundwater, when in fact surface water and groundwater are a single connected resource that mix at this Site, throughout the hydrogeologic strata below the Columbia River, and similarly at other streams, creeks, and rivers.

Establishing a conditional point of compliance outside the property boundary in groundwater using the requirements of WAC 173-340-720(8)(d)(i) assumes that groundwater is discharging to surface water. For this Site, Ecology’s site conceptual model includes contaminated groundwater from the Site flowing to and mixing with surface water travelling in the hyporheic zone below the Columbia River. The mixed water more likely than not discharges contaminated groundwater to Columbia River sediment and surface water as hyporheic zone water flows back through the sediment to the surface water zone.

During this Site’s remedial investigation, zinc and cadmium were detected in biologically active zone sediment, and contaminated water was detected in the immediately underlying hyporheic zone. However, a sediment investigation at the Site subsequently provided sufficient evidence for Ecology to concur that the Site does not include a sediment site of potential concern.¹⁵ Also, due to the high volume of water passing through the Site and diluting incoming groundwater contamination, measuring surface water concentrations in the Columbia River will not likely detect exceedances of surface water standards.

¹¹ WAC 173-204-510.

¹² USGS Circular 1139; <https://pubs.usgs.gov/circ/circ1139/>.

¹³ WAC 173-340-200.

¹⁴ Toxic Cleanup Program Policy Implementation Memo 16.

¹⁵ Ecology, Re: Further Action at the following Site, May 20, 2019, Available at <https://apps.ecology.wa.gov/gsp/DocViewer.ashx?did=82871>.

To establish points of compliance in groundwater, we refer to Ecology's Implementation Memo 16. **Ecology's current policy provided in Implementation Memo 16, states that absent a site-specific reason the WAC 173-340-720(8)(d)(i)(A-G) conditions must be followed to approve a conditional point of compliance in groundwater upgradient of surface water for a property abutting surface water.**¹⁶

Regarding those WAC 173-340-720(8)(d)(i)(A-G) conditions for this Site, Ecology finds that:

- Applicable groundwater cleanup levels of 0.7 micrograms per Liter (µg/L) for cadmium and 66 µg/L for zinc are based on the protection of surface water beneficial uses under WAC 173-340-720(4). (WAC 173-340-720(8)(d)(i))
- Site data support that it is more likely than not contaminated groundwater and surface water mix in the hyporheic zone below the Columbia River, and that the contaminated groundwater plume discharges to surface water outside the Property boundary. The discharge appears to be below appropriate cleanup levels, and is expected to continue to discharge to surface water at the end of the proposed remedial action. (WAC 173-340-720(8)(d)(i)(A))
- The feasibility study supports through disproportionate cost analysis that it is not practicable to meet cleanup standards throughout the Site within a reasonable restoration time frame. (WAC 173-340-720(8)(b))
- A sediment or surface water mixing zone is not proposed. (WAC 173-340-720(8)(d)(i)(C))
- Groundwater discharges have not and are not expected to result in violations of sediment quality values published in WAC 173-204. (WAC 173-340-720(8)(d)(i)(E))

Additional Requirements of WAC 173-340-720(8)(D)(I)(A-G) that Still Need to be Addressed at this Site Include:

- To be conservatively protective, either collect site-specific data supporting the six inch biologically active zone thickness throughout the Site, or propose a conservatively protective thickness estimate for the biologically active zone to ensure that the environment will be protected. Demonstrate why the selected biologically active zone thickness is conservatively protective. Cleanup actions selected under MTCA shall be established that provide conservative estimates of human health and environmental risks that protect susceptible individuals as well as the general population.¹⁷ At this Site, the sediment biologically active zone is proposed to be six inches thick in the area of the Site.

¹⁶ Implementation Memo 16, page 9.

¹⁷ WAC 173-340-702(3).

Demonstrate that groundwater discharges are provided with all known available and reasonable methods of treatment before being released to surface water. (WAC 173-340-720(8)(d)(i)(D))¹⁸ Establishing all known available and reasonable methods of treatment is generally **more stringent** than determining an alternative that is “permanent to the maximum extent practicable” under MTCA.

- Propose groundwater and any needed surface water monitoring in the Site’s compliance monitoring plan. (WAC 173-340-720(8)(d)(i)(F))
 - Provide written notice of the proposal to the natural resource trustees, the Washington State Department of Natural Resources, and the United States Army Corps of Engineers. Ecology also requests that notice be provided to indigenous tribal nations potentially impacted by the contaminated Site. Provide stakeholder comments and concerns, and show how those comments and concerns were included in the proposed cleanup. (WAC 173-340-720(8)(d)(i)(G))
- e. Preferred Remedial Alternative:** Ecology will need the environmental covenant completed and the suggestions addressed in this opinion prior to completing our review of the Site’s feasibility study and preferred remedial alternative. Based on the materials currently available to Ecology for this review, for the proposed remedial alternative:
- **The use of a cap anywhere at the Site will require engineered and institutional controls memorialized through an environmental covenant.** This includes using the existing building foundations or asphalt as barriers to contamination. Include in the preferred remedial alternative and environmental covenant sufficient long term monitoring and any necessary upkeep for the proposed cap. Removing the building or the cap will require preapproval by Ecology, together with a plan for excavation and off-site disposal of contamination beneath the cap.
 - **Financial Assurance:** Financial assurances may be necessary, and are not included in the estimated cost details for the preferred remedial alternative. Please contact Ecology’s financial assurance officer for additional information.¹⁹
 - **Points of Compliance and Cleanup Levels:** Ecology concurs that the cleanup levels and points of compliance provided in Report Table 3 generally appear to meet MTCA requirements and address the comments contained in Ecology’s May 2019 opinion for this project. Cleanup standards for the Site may need to be updated based on the comments in this opinion and the ongoing work at the Site. Ecology will review how cleanup standards are implemented when the feasibility study has been updated.

¹⁸ See Implementation Memo 16 for additional details.

¹⁹ Currently, Joanna Richards, (360) 407-6754, joanna.richards@ecy.wa.gov.

2. Proposed Cleanup.

Ecology will evaluate the proposed remedial alternative after the feasibility study is updated.

3. Process Moving Forward.

Ecology believes that you are currently making good progress toward this cleanup. We appreciate that you have diligently worked to address Ecology's comments from recent opinions, and believe that our continued and ongoing collaboration will result in moving this project to no further action status.

Limitations of the Opinion

1. Opinion does not Settle Liability with the State.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

2. Opinion does not Constitute a Determination of Substantial Equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. See RCW 70.105D.080 and WAC 173-340-545.

3. State is Immune from Liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. See RCW 70.105D.180.

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our [Voluntary Cleanup Program web site](#).²⁰ If you have any questions, please contact me at (360) 407-6528 or adam.harris@ecy.wa.gov.

Sincerely,



Adam Harris, LHG
Toxics Cleanup Program
Southwest Regional Office

AH/tm

Enclosure: A – Documents Considered for this Opinion.

cc by email: Scott Drury, Hart & Hickman, PC, sdrury@harthickman.com
Nicholas Acklam, Ecology, nicholas.acklam@ecy.wa.gov
Kimberly Goetz, Ecology, kimberly.goetz@ecy.wa.gov
Ecology Site File

²⁰ <https://www.ecy.wa.gov/vcp>

Enclosure A

Documents Considered for this Opinion

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Documents for this Opinion.

1. CDM, *Phase I and 2 Environmental Site Assessment, Clariant Corporation Chemical Plant*, November 19, 2002.
2. CDM, *Angle Boring Groundwater Analytical Results, Former Clariant Plant*, July 21, 2003.
3. CDM, *Contaminant Delineation, Former Clariant Corporation Chemical Plant*, March 3, 2004.
4. CDM, *Soil Excavation Summary Report, Former Clariant Corporation Chemical Plant*, March 3, 2004.
5. CDM, *Winter 2004 Quarter Groundwater Monitoring, Former Clariant Corporation Chemical Plant*, March 24, 2004.
6. Washington State Department of Ecology, *To: Mr. Ronald Walton, Clariant Corporation, From: Mr. Charles Cline, Further action letter pursuant to RCW 70.105D.030(1)(i)*, June 1, 2004.
7. CDM, *Spring 2004 – 2nd Quarter Groundwater Monitoring, Former Clariant Corporation Chemical Plant*, July 9, 2004.
8. CDM, *VCP #SW0492 Evaluation of the Cadmium Plume, Former Clariant Plant*, August 17, 2004.
9. CDM, *Summer 2004 – 3rd Quarter Groundwater Monitoring, Former Clariant Corporation Chemical Plant*, October 18, 2004.
10. CDM, *Fall 2004 – 4th Quarter Groundwater Monitoring, Former Clariant Corporation Chemical Plant*, December 3, 2004.
11. CDM, *Winter 2005 – 5th Quarter Groundwater Monitoring, Former Clariant Corporation Chemical Plant*, April 14, 2005.
12. CDM, *Spring/Summer 2005 – 6th and 7th Quarters Groundwater Monitoring, Former Clariant Corporation Chemical Plant*, September 14, 2005.
13. CDM, *Screening Level Ecological Risk Assessment, Former Clariant Corporation Chemical Plant*, November 30, 2005.
14. CDM, *Site Conceptual Model for Zinc and Cadmium in Groundwater, Former Clariant Corporation Chemical Plant*, November 30, 2005.
15. CDM, *Fall 2005 – 8th Quarter Groundwater Monitoring, Former Clariant Corporation Chemical Plant*, January 3, 2006.
16. Washington State Department of Ecology, *Re: Further Action Determination under WAC 173-340-515(5) for the following Hazardous Waste Site: Former Clariant Corporation Chemical Plant*, March 9, 2006.

17. CDM, *Summer – 2006 Groundwater Monitoring, Former Clariant Corporation Chemical Plant*, September 29, 2006.
18. CDM, *Piezometer Installation and Groundwater Sampling Report – February 2007, Former Clariant Corporation Chemical Plant*, April 12, 2007.
19. CDM, *Feasibility Study, Former Clariant Corporation Chemical Plant*, October 10, 2008.
20. Washington State Department of Ecology, *Re: Opinion on Proposed Cleanup of the following Site: Former Clariant Corporation Chemical Plant (aka Chemtrade Performance Chemicals US LLC)*, November 10, 2008.
21. Hart & Hickman, *Remedial Action Report, Former Clariant Corporation Facility*, January 19, 2011.
22. Hart & Hickman, *Post-Injection Monitoring Report & RAWP Addendum*, July 5, 2011.
23. Hart & Hickman, *Pilot Test Plan, Former Clariant Corporation Facility*, September 9, 2011.
24. Hart & Hickman, *Pilot Test Report, Former Clariant Corporation Facility*, October 28, 2011.
25. Hart & Hickman, *Additional Remedial Action & Performance Monitoring Report, Former Clariant Corporation Facility*, October 16, 2012.
26. Hart & Hickman, *Geochemical Evaluation Summary & 2013 Remedial Action Work Plan, Former Clariant Corporation Facility*, March 25, 2013.
27. Hart & Hickman, *Pilot Scale Injection Report, Former Clariant Corporation Facility*, May 22, 2014.
28. Hart & Hickman, *Sediment and Sediment Pore Water Sampling Report, Former Clariant Corporation Facility*, September 30, 2015.
29. Washington State Department of Ecology, *Re: Further Action at the following Site: Chemtrade Performance Chemicals US LLC*, February 9, 2017.
30. Hart & Hickman, *From Scott Drury and Steven C. Hart, LG, Attention Mr. Adam Harris, LHG, Re: Response to Opinion, Chemtrade Performance Chemicals US LLC*, May 31, 2017.
31. Hart & Hickman, *Seep Study Work Plan Chemtrade Performance Chemicals US LLC Site*, May 31, 2017.
32. Hart & Hickman, *Soil Sampling Work Plan, Chemtrade Performance Chemicals US LLC Site*, May 31, 2017.
33. Washington State Department of Ecology, *DRAFT Chemtrade Statistical Analysis Memorandum, To: Adam Harris, Site Manager, From: Arthur Buchan, Toxicologist, Information & Policy Section, Toxics Cleanup Program*, June 16, 2017.

34. Washington State Department of Ecology, *Re; Further Action at the following Site: Chemtrade Performance Chemicals US LLC*, June 28, 2017.
35. Hart & Hickman, *Soil Sampling Report, Chemtrade Performance Chemicals US LLC Site*, November 29, 2017
36. Hart & Hickman, *Groundwater Monitoring and Seep Study Report, Chemtrade Performance Chemicals US LLC Site*, November 29, 2017.
37. Hart & Hickman, *Updated Conceptual Site Model, Chemtrade Performance Chemicals US LLC Site*, March 19, 2018.
38. Hart & Hickman, *Summary of Proposed Cleanup Action Alternatives, Chemtrade Performance Chemicals US LLC*, April 24, 2018.
39. Washington State Department of Ecology, *Re; Further Action at the following Site: Chemtrade Performance Chemicals US LLC*, July 5, 2018.
40. Hart & Hickman, *Evaluation of Sediment and Indoor Air Pathways, Chemtrade Performance Chemicals US LLC*, August 17, 2018.
41. Hart & Hickman, *Summary of Proposed Cleanup Standards, Chemtrade Performance Chemicals US LLC*, February 20, 2019.
42. Washington State Department of Ecology, *Re; Further Action at the following Site: Chemtrade Performance Chemicals US LLC*, May 20, 2019.
43. Hart & Hickman, *Feasibility Study Report, Chemtrade Performance Chemicals US LLC*, February 12, 2020.