



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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August 24, 2020

Randy Barnett
Ichijo USA Co., LTD
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randy@ichijousa.com

Re: Further Action at the following Site:

- **Site Name:** Former Brookdale Golf Club
- **Site Address:** 1802 Brookdale Rd E Tacoma, Pierce County, WA 98445
- **Cleanup Site ID:** 14894
- **Facility/Site ID:** 7758
- **VCP Project ID:** SW1672

Dear Randy Barnett:

On June 1, 2020, the Washington State Department of Ecology (Ecology) received your request for an opinion on the proposed independent cleanup of the Former Brookdale Golf Club (Site). Ecology has decided to provide this opinion without all necessary electronic data for this project accepted to Ecology's Electronic Information Management (EIM) database. We will review the electronic data for our next opinion. 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

You requested that Ecology review the Site cleanup and additional remedial investigation you have conducted at the Site. Ecology appreciates the significant efforts you have made to address our December 19, 2019, further action opinion. Ecology has reviewed the ongoing remedial investigation you have performed, and concurs with your assessment that additional remedial investigation is necessary at the Site to meet the requirements of WAC 173-340-350.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, chapter 70.105D RCW, and its implementing regulations, Washington Administrative Code (WAC) chapter 173-340 (collectively "substantive requirements of MTCA"). The analysis is provided below.

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

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:

- Pesticides into the soil, groundwater, surface water, and sediment.
- Metals into the soil, groundwater, surface water and sediment.

The parcel(s) of real property associated with this Site are also located within the projected boundaries of the Tacoma Smelter Plume facility (FSID #89267963). At this time, we have no information that those parcel(s) are actually affected. This opinion does not apply to any contamination associated with the Tacoma Smelter Plume facility.

Basis for the Opinion

This opinion is based on the information contained in the following documents:

1. Environmental Partners, Inc., *Remedial Investigation and Focused Feasibility Study Report, Brookdale Golf Course*, March 18, 2019.
2. Environmental Partners, Inc., *Cleanup Action Plan, Brookdale Golf Course*, March 18, 2019.
3. Environmental Partners, Inc., *Re: Response to Ecology Comments dated December 10, 2019*, May 29, 2020.
4. Environmental Partners, Inc., *Supplemental Remedial Investigation*, May 29, 2020.

Those documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. Information on obtaining those records can be found on [Ecology's public records requests web page](https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests).² Some site documents may be available on [Ecology's Cleanup Site Search web page](https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=14894).³

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis of the Cleanup

Ecology has concluded that **further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

1. Characterization of the Site.

This Site's ongoing characterization is described in the March 18, 2019, Remedial Investigation and Focused Feasibility Study Report. Since that report, you conducted additional remedial investigation contained in the May 29, 2020, Supplemental Remedial Investigation (the Report).

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

³ <https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=14894>

Ecology appreciates the significant remedial investigation and cleanup that you have conducted. We generally concur with your approach, based on our December 10, 2019, opinion, and agree with your assessment that additional remedial investigation is needed in the southern portion of the Site.

Ecology also will need to review additional remedial investigation results from the areas west of the former golf course in the wetlands of the proposed Nicolina Meadows housing development area to ensure that hazardous substances released from this toxic cleanup Site have not migrated to that location.^{4,5}

A MTCA Site can be thought of as the extent of contamination released to the environment, without regard to cleanup levels or property boundaries. Sufficient remedial investigation must be completed throughout the Site to delineate the Site, prior to setting cleanup standards or selecting a cleanup action for either the Site, or a property or properties within the Site.⁶

We also concur with your assessment that if additional areas of contamination are detected, additional remediation may need to be conducted.⁷ Ecology will review the Site cleanup after the extent of contamination at the Site is determined in the ongoing remedial investigation. Ecology appreciates the significant remedial investigation you have conducted, and supports your continued efforts to delineate and clean up contamination.

Reported Groundwater Contamination. You detected groundwater contamination, and report that groundwater contamination detected at monitoring well MW-1 was likely a result of turbidity from the drilling process. To empirically demonstrate compliance with groundwater cleanup standards, Ecology needs additional seasonally obtained groundwater sampling data demonstrating compliance with cleanup levels at this location at the Site. Seasonally-obtained groundwater monitoring demonstrating compliance with proposed cleanup standards is often acceptable for Ecology to concur that an empirical demonstration is sufficient. However, empirical demonstrations of groundwater compliance are not specifically supported in MTCA. We also refer you to the statistical methods in WAC 173-340-720(9) for evaluating groundwater compliance with cleanup standards.

Ecology also needs additional groundwater monitoring results obtained from temporary or permanent groundwater monitoring wells near where you detected groundwater contamination. Ecology needs the additional groundwater monitoring results to determine if the contamination is laterally or vertically extensive. To avoid the turbidity that you hypothesize may have caused the groundwater contamination, we recommend installing and adequately developing additional permanent groundwater monitoring wells. Ecology looks forward to reviewing the necessary additional groundwater analytical results obtained from this area of the Site as part of the ongoing remedial investigation.

⁴ Letter from Department of Ecology Southwest Regional Office, To Robert Jenkins, Pierce County Planning and Public Works, September 12, 2019, available at: <https://apps.ecology.wa.gov/gsp/DocViewer.ashx?did=91905>.

⁵ Letter from Stephen R. Shelton, Office of the Pierce County Hearing Examiner, Re: Major Amendment to Approved Preliminary Plat, available at: <https://apps.ecology.wa.gov/gsp/DocViewer.ashx?did=93053>

⁶ Regulations pertaining to remedial investigations for upland investigations are provided in WAC 173-340-350. Selecting a cleanup action is provided in WAC 173-340-360 through 390 for upland investigations. For sediment, refer to the requirements for determining a sediment site of potential concern contained in WAC 173-204-510.

⁷ Report pages 2-3.

Delineated Isopleth Maps. In the supplemental investigation, you did not provide the delineated isopleth maps Ecology previously requested. While it is your choice how you provide information for the remedial investigation and cleanup, that information must be sufficient for Ecology's determination that the extents of contamination have been adequately delineated and remediated where necessary. Ecology again suggests you provide delineated isopleth maps, so that we can determine that the remedial investigation and cleanup is sufficient.

Delineated isopleth maps can clearly show where your conclusions are supported by data, and where interpretations must be made between data results. While interpretations between data results are inevitable, Ecology prefers that you clearly illustrate where and how you made those interpretations. Whatever method you select, you will need to clearly depict both data results and the necessary interpretations between data results, and provide sufficient information for Ecology's concurrence. We again suggest you develop isopleth maps to provide this information.

Ethylene Dibromide. Your reported method detection limits for ethylene dibromide (EDB) exceed likely cleanup levels. Please ensure you provide data for EDB below cleanup levels throughout the Site.

Indicator Hazardous Substances. Without a detailed analysis showing how proposed indicator hazardous substances meet the specific criteria of WAC 173-340-703(2)(a-g), Ecology will need you to evaluate each hazardous substance detected throughout the Site, and compare it to proposed cleanup levels. If two or more hazardous substances remain at the Site, evaluate cumulative effects based on the details provided in Ecology's December 2019 opinion for the Site.

EIM Results. Ecology previously requested that prior to this review, you upload 4,4 DDE and 4,4 DDT results you obtained that are not currently in EIM. Ecology again requests you upload the following results. Please ensure you address the presence of these hazardous substances at the Site within the remedial investigation report.

- 4,4 DDE results obtained on January 25, 26, and 27, 2017.
- 4,4 DDT results obtained on January 25, 26, and 27, 2017.

2. Establishment of Cleanup Standards.

Cleanup Standards: Cleanup standards need to be updated in the completed remedial investigation, based on Ecology's suggestions in this and our December 19, 2019, opinion. Ensure you address all three components for establishing cleanup standards, including points of compliance,⁸ cleanup levels,⁹ and applicable state and federal laws.¹⁰

Under MTCA, cleanup standards consist of three primary components; (a) points of compliance,¹¹ (b) cleanup levels,¹² and (c) applicable state and federal laws.¹³

(a) Points of Compliance. Points of compliance are the specific locations at the Site where cleanup levels must be attained. For clarity, Ecology provides the following table of standard points of compliance:

Media	Points of Compliance
Soil-Direct Contact	Based on human exposure via direct contact, the standard point of compliance is throughout the Site from ground surface to fifteen feet below the ground surface. ¹⁴
Soil- Protection of Groundwater	Based on the protection of groundwater, the standard point of compliance is throughout the Site. ¹⁵
Soil-Protection of Plants, Animals, and Soil Biota	Based on ecological protection, the standard point of compliance is throughout the Site from ground surface to fifteen feet below the ground surface. ¹⁶
Groundwater	Based on the protection of groundwater quality, the standard point of compliance is throughout the site from the uppermost level of the saturated zone extending vertically to the lowest most depth which could potentially be affected by the site. ¹⁷
Groundwater-Surface Water Protection	Based on the protection of surface water, the standard point of compliance is all locations where hazardous substances are released to surface water. ¹⁸
Air Quality	Based on the protection of air quality, the point of compliance is indoor and ambient air throughout the Site. ¹⁹
Sediment	Based on the protection of sediment quality, compliance with the requirements of 173-204 WAC. ²⁰

(b) Cleanup Levels. Cleanup levels are the concentrations of a hazardous substance in soil, water, air, or sediment that are determined to be protective of human health and the environment. Additional evaluation requested in this opinion needs to be completed prior to Ecology concurring with the use of any proposed cleanup levels at the Site.

⁸ WAC 173-340-200 "Point of Compliance."

⁹ WAC 173-340-200 "Cleanup level."

¹⁰ WAC 173-340-200 "Applicable state and federal laws," WAC 173-340-700(3)(c)

¹¹ WAC 173-340-200 "Point of Compliance."

¹² WAC 173-340-200 "Cleanup level."

¹³ WAC 173-340-200 "Applicable state and federal laws," WAC 173-340-700(3)(c)

¹⁴ WAC 173-340-740 (6)(d)

¹⁵ WAC 173-340-747

¹⁶ WAC 173-340-7490(4)(b)

¹⁷ WAC 173-340-720(8)(b)

¹⁸ WAC 173-340-730(6)

¹⁹ WAC 173-340-750(6)

²⁰ WAC 173-340-760

(c) Applicable Laws and Regulations. In addition to establishing minimum requirements for cleanup standards, applicable local, state, and federal laws may also impose certain technical and procedural requirements for performing cleanup actions. Ecology's suggestions for including applicable laws and regulations for this cleanup were provided in our December 19, 2019, opinion for the Site. Ensure to adequately address this requirement in the completed remedial investigation.

Achievable Practical Quantitation Limits. The Washington State Sediment Management Standards (WAC 173-204) and the Sediment Cleanup User's Manual, Appendix D provide lower regularly-achievable laboratory practical quantitation limits than those you propose for Dieldrin. Please review and update proposed cleanup levels consistent with the information provided in Ecology regulations and guidance.²¹ Ecology provides the following additional chemical and media-specific information for establishing cleanup levels:

- **Dieldrin in Soil.** The proposed value of 0.0625 milligrams per kilogram (mg/kg) does not appear to take into account the leaching pathway to groundwater. To be protective of the leaching pathway (vadose zone at 13° C), the value in Ecology's **Cleanup Levels and Risk Calculation (CLARC)** is 0.0028 mg/kg. Ecology's Manchester Lab reports a method reporting limit of 0.00025 mg/kg for Dieldrin in soil. The proposed cleanup level should be no greater than 0.0028 mg/kg. An empirical demonstration may be completed showing that soil concentrations will not cause an exceedance of the applicable groundwater cleanup level.
- **Dieldrin in Groundwater/Surface Water.** The proposed <0.02 micrograms per liter (µg/L) is an order of magnitude higher than achievable method reporting limits. Manchester Lab reports 0.0025 µg/L as a Method Reporting Limit. The proposed cleanup level should be no higher than about **0.0055 µg/L for both groundwater and surface water.** This value appears protective of groundwater, and is a realistic upward adjustment to the regulatory surface water practical quantitation limit.
- **Dieldrin in Sediment.** The Sediment Management Standards lists a freshwater sediment cleanup objective (SCO) of 0.0049 mg/kg, and a regulatory practical quantitation limit of 0.003 mg/kg. As a result, there should be no upward adjustment to the regulatory practical quantitation limit. The cleanup screening level (CSL) for sediments (freshwater) is 0.0093 mg/kg and the SCO for sediments (freshwater) is 0.0049 mg/kg. The proposed cleanup level should not be greater than 0.0049 mg/kg.

3. Selection of Cleanup Action.

Ecology has determined that additional remedial investigation is necessary at the Site before selecting a cleanup action.

²¹ <https://test-fortress.wa.gov/ecy/publications/summarypages/documents/documents/1209057.html>

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.

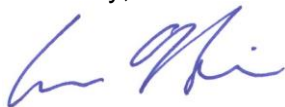
The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. See RCW 70.105D.180.

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](#).²² If you have any questions about this opinion, please contact me at (360) 407-6527 or adam.harris@ecy.wa.gov.

Sincerely,



Adam Harris, LHG
Toxics Cleanup Program
Southwest Regional Office

AH/tm

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Ecology Site File

²² <https://www.ecy.wa.gov/vcp>