STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
4601 N Monroe Street • Spokane, WA 99205-1295 • 509-329-3400

March 23, 2022

Moshghan Mansoori
GHD, Inc.
20818 44th Avenue West, Suite 190
Lynwood, WA 98036

Re: Further Action at the Following Site:

Site Name:	Yellowstone Pipeline Co Fairchild Delivery Facility
Site Address:	2122 Graham Road, Spokane
Cleanup Site ID:	2084
Facility/Site ID:	15488433
VCP Project ID:	EA0265

Dear Moshghan Mansoori:

On December 9, 2021, the Washington State Department of Ecology (Ecology) received your request for an opinion on the independent cleanup of the Yellowstone Pipeline Co Fairchild Delivery Facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70A.305 RCW.

Issue Presented and Opinion

Upon completion of the proposed cleanup, will further remedial action likely be necessary to clean up contamination at the Site?

YES. Ecology has determined that further remedial action is necessary to clean up contamination and meet all cleanup standards at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70A.305 RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided as follows.

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:

- Petroleum hydrocarbons and volatile organic compounds (VOCs) into the soil and groundwater

Enclosure A includes a detailed description and diagram of the Site, as currently known to Ecology.

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site are affected by other sites.

Basis for the Opinion

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

1. GHD, Closure Request- Fairchild Delivery Facility, December 7, 2021.
2. GHD, Revised Remedial Investigation and Feasibility Study, Phillips 66 Facility No. 6624, November 17, 2020
3. GHD, Site Investigation Summary Report, Phillips 66 Facility No. 6624, February 27, 2020.
4. GHD, Site Assessment Work Plan, Phillips 66 Facility No. 6624, June 19, 2019.
5. GHD, Remedial Investigation Report, Phillips 66 Facility No. 6624, December 12, 2018.

Some of these documents are accessible in electronic form from the Site webpage[1].The complete records are stored in the Central Files of the Eastern Regional Office of Ecology (ERO) for review by appointment only. Visit our Public Records Request page[2], to submit a public records request or get more information about the process. If you require assistance with this process, you may contact the Public Records Officer at recordsofficer@ecy.wa.gov or 360-407-6040.

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

[1] https://apps.ecology.wa.gov/gsp/CleanupSiteDocuments.aspx?csid=2084
[2] https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests

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. Groundwater Determination of Non-Potability

Ecology does not agree with the groundwater determination of non-potability made in the Closure Request. WAC 173-160-171(3)(b)(vi) limits siting distance for groundwater wells based on proximity to a solid waste landfill, but does not make a determination of groundwater potability within that area. WAC 173-340-720(2) classifies all groundwater as potable unless criteria are met including no current or potential groundwater use by any local planning authority, insufficient yield with a pump rate less than 0.5 gallons per minute, and unsuitable water quality due to natural background concentrations of organic or inorganic constituents. At this time, Ecology still considers groundwater at the Site a State resource that must meet all MTCA cleanup standards. Therefore, the appropriate cleanup levels should be based on protection of groundwater for maximum beneficial use as a potential drinking water source.

2. Cleanup Levels

The proposed cleanup levels for both soil and groundwater are not appropriate based on the following analysis:

Ecology does not agree with the groundwater determination of non-potability, as explained in Part 1 of this section. Therefore, MTCA Method B should be used to calculate a groundwater total petroleum hydrocarbons (TPH) cleanup level based on the protection of potable groundwater. This target groundwater value can then be used to evaluate the soil leaching pathway and calculate a protective soil TPH cleanup level which will not lead to a residual impact to groundwater.

The criteria for adjusting cleanup levels under MTCA Method B are listed in WAC 173-340-720(7)(d). Adjusted cleanup levels should not result in a hazard quotient greater than 1, an excess cancer risk greater than 1×10^{-6} for a single hazardous substance or 1×10^{-5} for a mixture of hazardous substances, or the presence of non-aqueous phase liquid (NAPL) in or on the groundwater. The proposed target groundwater TPH cleanup level of 42,000 µg/L results in a hazard quotient of 2.16 and a protective soil concentration up to and including 100% NAPL, which do not meet the minimum criteria detailed above. When evaluating the soil leaching pathway using the hazard quotient of 1 as the most stringent criteria, the median protective groundwater concentration is 732 µg/L and the median protective soil concentration is 68.07 mg/kg. While the final cleanup levels may differ from these values, they may provide a more appropriate guidance for meeting the minimum requirements of MTCA.

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 70A.305.040(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 proposed will be substantially equivalent. Courts make that determination. *See* RCW 70A.305.080 and WAC 173-340-545.

3. **Opinion is limited to proposed cleanup.**

   This letter does not provide an opinion on whether further remedial action will actually be necessary at the Site upon completion of your proposed cleanup. To obtain such an opinion, you must submit a report to Ecology upon completion of your cleanup and request an opinion under the Voluntary Cleanup Program (VCP).

4. **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 70A.305.180.

Contact Information

Thank you for choosing to clean up the Site under the VCP. As you conduct your cleanup, please do not hesitate to request additional services. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our webpage[3]. If you have any questions about this opinion, please contact me by phone at (509) 342-5564 or e-mail at ted.uecker@ecy.wa.gov.

[3] https://www.ecy.wa.gov/vcp

Sincerely,

Ted M. Uecker
ERO Toxics Cleanup Program

tmu;hg

Enclosures (1): A – Site Description and Diagram

cc: Rich Solomon, Phillips 66
Brian Peters, GHD
Kathleen Falconer, Ecology KLF

Enclosure A

Description and Diagram of the Site

Site Description

The Site is a former tank farm with two above-ground storage tanks (ASTs) that were decommissioned in 2002. The petroleum release to soil and groundwater was discovered on October 23, 1996 during hydrostatic testing of the pipeline manifold.

The site surface consists of gravel and bare ground with sparse vegetative cover. Subsurface soils consist of gravel, silt and variable sand, underlain by weathered basalt. Historic soil concentrations exceeding MTCA cleanup levels are present from approximately 2 to 10 feet below ground surface (bgs). Groundwater at the site occurs in the shallow aquifer (0.5 to 15.1 feet bgs), a deeper water bearing zone (beginning at 7.28 to 15.02 feet bgs), and encountered again in fractured bedrock at 93 feet bgs. Contaminants have not been detected in samples collected in the deep monitoring well (MW-1D) since its installation in 2001, which suggests that the shallow and deep aquifers are not hydraulically connected. In addition, contaminants have not been detected in groundwater from downgradient well MW-3, suggesting that there is not significant plume migration along the groundwater flow direction.

Private wells are located within 0.25-0.5 miles of the site and are screened within the deep aquifer (100-205 feet bgs) or deeper yet (480 feet bgs). However, due to the proximity to the Graham Road Landfill, groundwater in the vicinity cannot be used as a drinking water source.

Site History

In 1999, one unregulated underground storage tank (UST) was removed, and petroleum impacted soils related to the above-ground manifold was sampled but not analyzed. In 2000, three groundwater monitoring wells (MW-1 through MW-3) were installed and six soil samples were analyzed. One soil sample exceeded the MTCA Method A cleanup level, and one monitoring well (MW-1) exceeded the MTCA Method A cleanup levels, for gasoline-range petroleum hydrocarbons (GRPH), diesel-range petroleum hydrocarbons (DRPH), and volatile organic compounds (VOCs) including benzene, toluene, ethylbenzene, and xylenes (BTEX). Later in 2000, eight test pits, six soil borings, and two additional monitoring wells (MW-5 and MW-7) were completed. One test pit sample exceeded the cleanup level for DRPH, the other samples were below cleanup levels. In 2001, eight additional test pits were excavated and sampled, no samples exceeded cleanup levels. In 2006, twelve additional test holes were excavated and sampled from 1 to 4 feet bgs, with one sample exceeded the cleanup levels for GRPH and benzene. In 2013, three additional monitoring wells (MW-8, MW-9, and MW-10) were installed and four soil samples were collected, no soil concentrations exceeded the cleanup levels.

Groundwater monitoring has been conducted at the Site on a quarterly to semi-annual frequency since 2001, with a gap from 2014-2017. In October 2016, Ecology authorized an Underground Injection Control (UIC) well for hydrogen peroxide injections to rehabilitate well MW-1 by cleaning the filter pack and adjacent soils. Groundwater monitoring resumed in April 2017.

In September 2017, groundwater samples were collected from 3 monitoring wells. MW-3 had insufficient quantities of water for sampling. TPH-G concentrations were above cleanup levels in MW-1. A follow-up sample collected in March 2018 showed GRPH concentrations remained above cleanup levels in MW-1, increasing from the previous sampling event. This increase appears to be consistent with historical trends.

In March and June 2018, groundwater samples collected from MW-1 contained gasoline-range petroleum concentrations of 2,700 and 1,900 ug/L, respectively. In 2019, current soil conditions were evaluated by collecting samples from borings near TH-7, TH-9, and TH-19 near the above-ground manifold. Concentrations of GRPH had decreased over the 14 years since the last soil samples were collected, however they still exceeded the MTCA Method A cleanup level.

In November 2020, an updated RI/FS was submitted which revised the conceptual site model, cleanup levels, and areas of focus for proposed remedial actions. Groundwater monitoring in September 2020 demonstrated that MW-1 continues to have exceedances of GRPH and DRPH (2,200 ug/L and 640 ug/L, respectively), while no other wells sampled contained any constituents of concern.

The RI/FS concluded that the following exposure pathways are present at the Site:

- Non-potable contaminated groundwater could migrate offsite to potable groundwater
- Direct contact through soil
- Direct contact through groundwater
- Non-potable groundwater beneficial uses (irrigation, dust suppression) could show impact

In addition, the RI/FS determined that vapor intrusion and surface water were not exposure pathways. A terrestrial ecological evaluation (TEE) was also submitted, which concluded that further evaluation was not warranted as no significant ecological receptors were impacted by the release. The cleanup levels proposed in the RI include Method A for groundwater, as determined by NWTPH-Gx and NWTPH-Dx analyses, and Method B for soil, as determined by the TPH concentration protective of potable groundwater. The soil cleanup level was calculated using boring samples HA-1, HA-3, and HA-3, analyzed for extractable petroleum hydrocarbon (EPH) and volatile petroleum hydrocarbon (VPH) fractions, and the MTCA TPH workbook for determining Method B TPH cleanup levels for soil and groundwater. The areas of concern include soil around the above-ground manifold (GRPH, benzene, total xylenes), shallow groundwater near MW-1

Three remedial alternatives were evaluated as part of the Feasibility Study, including:

- Dual-phase extraction (DPE), a combination of groundwater withdrawal and treatment with soil vapor extraction
- Soil vapor extraction (SVE) and air sparging (AS)
- Physical containment with institutional controls

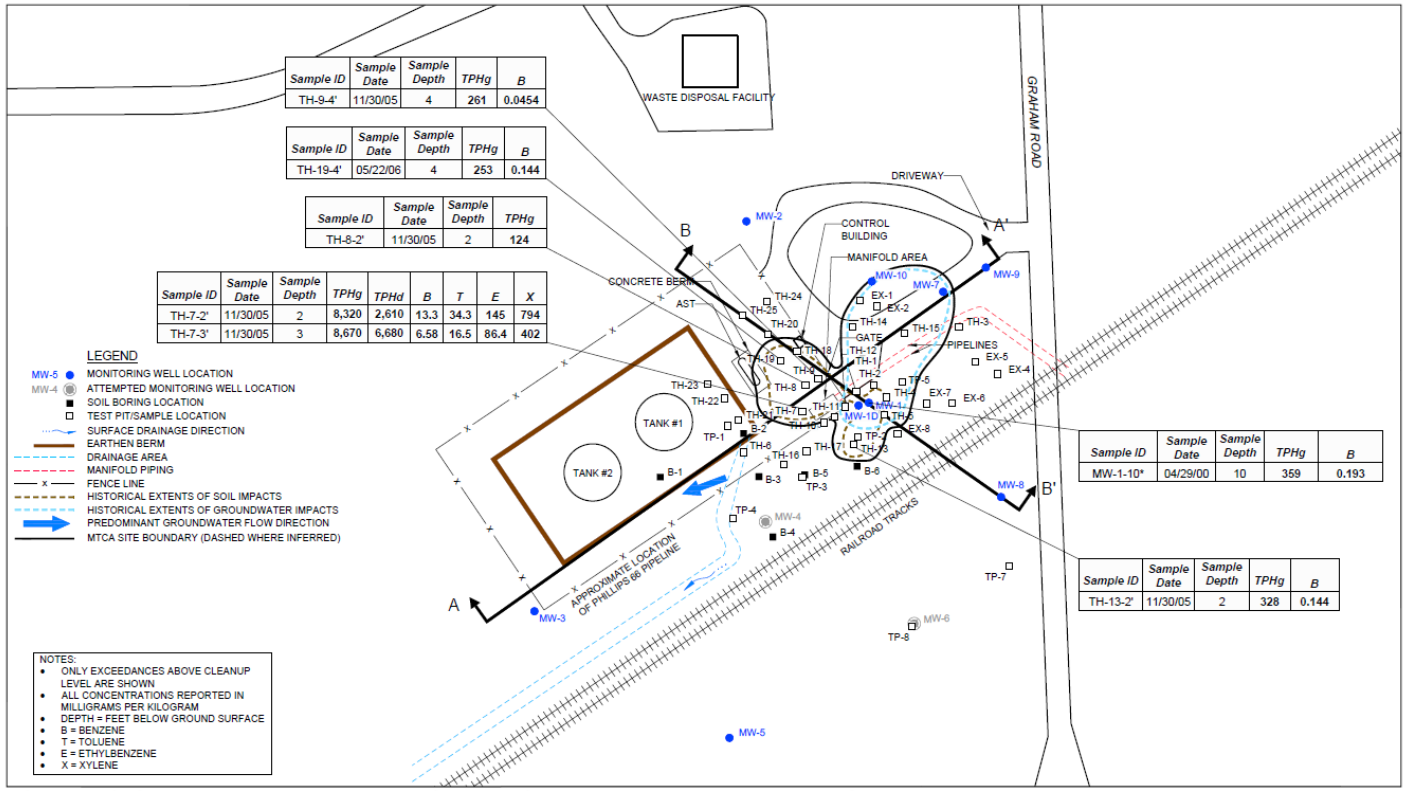
DPE is considered feasible to remove adsorbed hydrocarbons from soil below the water table, and to treat the free NAPL and dissolved phase hydrocarbons in groundwater. Requirements for

DPE include permits for discharging treated groundwater, as well as a permit for air emissions from the local clean air authority. The effectiveness of the DPE system will be dependent on the porosity of the subsurface lithology and contaminant mass removal rates, which will be determined by a 5-day pilot test. It is considered the option most protective of human health and the environment, and most permanent in the treatment of impacted media.

AS and SVE are not considered feasible since the contaminated soil and groundwater intervals are relatively shallow, thin, and underlain by partially competent basalt, which would not allow for the AS wells to sufficiently deliver air below the contaminant mass.

Containment with institutional controls is the lowest cost alternative, but does not reduce or remove the contaminant mass in either media, and relies on the effective management of the institutional controls. In addition, the proposal for containment in the FS relies only on the underlying and adjacent silts and basalt for preventing migration of contaminated media, and does not propose additional engineered controls or an above-media barrier.

Site Diagram



Sample ID	Sample Date	Sample Depth	TPHg	B
TH-9-4'	11/30/05	4	261	0.0454

Sample ID	Sample Date	Sample Depth	TPHg	B
TH-19-4'	05/22/06	4	253	0.144

Sample ID	Sample Date	Sample Depth	TPHg
TH-8-2'	11/30/05	2	124

Sample ID	Sample Date	Sample Depth	TPHg	TPHd	B	T	E	X
TH-7-2'	11/30/05	2	8,320	2,610	13.3	34.3	145	794
TH-7-3'	11/30/05	3	8,670	6,680	6.58	16.5	86.4	402

Sample ID	Sample Date	Sample Depth	TPHg	B
MW-1-10*	04/29/00	10	359	0.193

Sample ID	Sample Date	Sample Depth	TPHg	B
TH-13-2'	11/30/05	2	328	0.144

Base Source: Microsoft Product Screen Shot(s) Reprinted with permission from Microsoft Corporation, Acquisition Date Jun/2015 - Sep/2016, Accessed: 2017. Source: MAXIM Technologies, Inc. various sample location figures no dates. AECOM Draft figure 5 Soil Analytical Results dated 1/17/14.

PHILLIPS 66 FACILITY NO. 6624
YELLOWSTONE PIPELINE
FAIRCHILD DELIVERY FACILITY
SPOKANE, WASHINGTON

HISTORICAL SOIL AND GROUNDWATER EXTENTS

11210703-6MN00
Sep 18, 2020

FIGURE 7