1180 NW Maple St., Suite 310
Issaquah, WA 98027
T 425.395.0010
TRCcompanies.com

March 22, 2021

Ms. Jing Song
Washington State Department of Ecology
NWRO Toxics Cleanup Program
3190 160th Avenue SE
Bellevue, Washington 98008

Re: Response to Ecology Opinion dated January 29, 2021
Modera River Trail Site
15801 and 15945 NE 85th Street
Redmond, WA 98052

Facility/Site No: 75292
Cleanup Site No: 15281
VCP Project No: NW3292

Dear Ms. Song:

On behalf of NE 85th Street Development LLC (MCRT), TRC Environmental Corporation (TRC) prepared this response to the January 29, 2021 letter from Washington State Department of Ecology (Ecology) indicating that further action is required at the Modera River Trail Site (Site). MCRT is the owner and developer of the Modera River Trail property.

Ecology's comments assert that the extent of residual contamination at the Site is not sufficiently characterized. As indicated in the documents submitted in support of our request for a No Further Action (NFA) determination, it is our opinion that the Site has been sufficiently characterized and that we have fully documented the potential exposure risks presented by residual soil and groundwater contamination located on the Modera River Trail property. Upon completion of the requested indoor air sampling, we are confident that Ecology will have all relevant and necessary information to issue a Restricted NFA determination.

Ecology's comments are provided in *italics* below with TRC's response following each comment.

1. *Characterization of the Site*

- *Additional contaminant analysis is needed for soil, and potentially for groundwater.*
  - *A literature review notes that prior to 1994, wood-preserving creosote could contain up to 20% phenolic compounds. Property use history indicated that these timber piles were installed in or prior to 1991. Therefore, phenolic compounds could be a potential COC in soil, in addition to PAHs.*

- *Ecology recommends collecting additional soil samples near the timber piles, and analyzing selected soil samples for phenolic compounds. At a minimum, the analysis should include phenol and methylphenols (cresol).*

The standard COCs for creosote contamination are cPAHs and naphthalenes. The additional COCs described above have very similar physical properties to these compounds, but are significantly less toxic with significantly less stringent cleanup levels. For instance, cPAHs and naphthalenes are considered carcinogenic while phenols and methylphenols are not.

Cleanup levels in soil for phenol and cresol are 4,000 milligrams/kilogram (mg/kg) to 24,000 mg/kg, respectively. In comparison, the cleanup levels for cPAHs and naphthalenes are 0.1 mg/kg and 5 mg/kg respectively. At concentrations exceeding those cleanup levels, phenol and cresol would have obvious field impacts in both visual and olfactory indicators. Similarly, as fraction components of creosote, it is expected that significant creosote impacts would have to be present in significant volumes for phenol and cresol to also be present. For example, if phenol is present at 20% of creosote, and phenol as a cleanup level of 4,000 mg/kg, bulk creosote would necessarily be present at 20,000 mg/kg. Creosote at that concentration would be obvious to any observer, but the bore logs for the investigation show that none of the perimeter borings exhibited any indications of obvious visual or olfactory impacts.

The maximum concentrations detected at the limits of the Modera River Trail property was 0.03 mg/kg for cPAHs and <0.1 mg/kg (not detected) for naphthalenes. With such low concentrations for the primary components of creosote, fractional components such as phenol and cresol cannot be present at a concentration greater than the 4,000 mg/kg and 24,000 mg/kg cleanup levels.

Additionally, as with the primary COCs, phenol and cresol have relatively low mobility. The data collected at the Site and documented in the conceptual site model (CSM) demonstrate that impacts to soil are only located immediately adjacent to the creosote piles within the boundaries of the Modera River Trail property. If present, these compounds would have been co-located with the primary COCs and would be immediately adjacent to the piles, with no anticipated migration anywhere on the property or off of the property.

Given the low mobility of these additional compounds, the high cleanup levels, and field screening conducted during the investigation, the probability of phenol and cresol impacts in locations not impacted by cPAHs or naphthalenes is non-existent. The claimed potential for low concentrations of phenol and cresol in the interior of the Modera River Trail property near the piles does not represent a data gap and does not present potential threats to human health or the environment.

- *Further characterization is needed to define the extent of the PAH-contaminated soil.*
  - *Ten soil borings DPT-1, DPT-2, and DPT-5 through DPT-12 were advanced to a depth of 25 feet below ground surface (bgs) at the perimeter of a former office building on the northwestern portion of the Property, where the timber piles are located. The soil samples collected from these soil borings contained concentrations of total naphthalenes and cPAHs total Toxic Equivalent Concentration (TEQ) below the MTCA Method A soil cleanup levels.*

The PAH- contaminated soil did not appear to extend laterally beyond the footprint of the former office building.

- *The timber piles were stacked vertically and extended to a maximum depth of 15 feet bgs. Two samples were collected directly from the timber piles at depths ranging from 3 to 5 feet bgs. Soil samples were collected from immediately adjacent to the two timber piles at depths ranging from 4 to 8 feet bgs, and then at 25 feet bgs. Concentrations of total naphthalenes and cPAHs total TEQ were detected above the MTCA Method A soil cleanup levels in soil samples collected at depths ranging from 4 to 6 feet bgs.*
- *No samples were collected from the timber piles or soil immediately adjacent to the timber piles between depths of 8 and 25 feet bgs. In particular, the soil condition near the bottom of the timber piles at 15 feet bgs is not clear. Additional soil sampling near selected timber piles is needed to fully define the vertical extent of the PAH-contaminated soil.*

The documented CSM demonstrates that mobility of COCs is very low. Field screening conducted did not demonstrate that soils outside of the limits of the area sampled were impacted. The shallow sampling conducted was performed to demonstrate that the impacts did not migrate far from the piles. The vertical sampling at 25 feet demonstrates that the COCs have not vertically migrated to deeper depths or to groundwater.

The 25-foot depth was used to characterize the maximum potential depths of impacts and in area calculations to determine a potential worst-case scenario. Additional sampling would only serve to potentially refine the vertical limits of contamination that will remain encapsulated beneath the new development, and does not provide meaningful data regarding the CSM or potential exposures.

It is critical to recognize that development of the Modera River Trail property is nearly complete with construction of improvements and it is not possible at this time to advance additional borings in interior of the property without compromising the integrity of the installed vapor barrier. As the requested data would not alter or change the implemented remedy or add to the understanding of potential threat to groundwater, the requested data does not represent a data gap.

- *Permanent groundwater monitoring wells and additional groundwater monitoring are needed.*
  - *One round of groundwater samples were collected from three permanent monitoring wells (B-1, B-2 and B-4) and six temporary monitoring wells (DPT-1 through DPT-6). Except for temporary well DPT-3, all groundwater samples contained concentrations of total naphthalenes and cPAHs total TEQ below the laboratory practical quantitation limit (PQL).*
  - *The groundwater sample collected from temporary well DPT-3 contained concentrations of total naphthalenes and cPAHs total TEQ above the laboratory PQL but below the MTCA Method A groundwater cleanup levels. Temporary well DPT-3 was located adjacent to a timber pile near the northern Property boundary.*
  - *Based on a one-time depth-to-groundwater measurement on temporary monitoring wells, Site groundwater is inferred to flow to the west-northwest toward the Sammamish River, which is located approximately 500 west of the Site. City of Redmond water supply Well No. 4 is located approximately 600 feet north of the Site, at an inferred cross-gradient to*

down-gradient location. This water supply well is screened within the same shallow aquifer in which Site groundwater occurs.

- *Due to the close proximity of a drinking water supply well and surface water, and the fact that Site groundwater was only sampled once and a COC was detected above the PQL, at least three groundwater monitoring wells are needed to evaluate Site groundwater flow direction and quality, and determine the potential impact to the nearby drinking water well and surface water.*

We respectfully disagree with the opinion that additional groundwater sampling is necessary. Our opinion is based on the following:

- Groundwater sapling locations were sufficient for assessment of water with sampling locations inside, surrounding, and downgradient of the impacted area. No data gaps exist in the placement of sampling locations.

- No groundwater contamination was observed anywhere beneath the Modera River Trail property at concentrations exceeding cleanup levels. Therefore, groundwater quality is already in compliance with drinking water standards at the standard point of compliance. Additional sampling is not necessary to establish or confirm that finding.

- Groundwater quality data, which is in compliance with cleanup levels, presents a "worst-case scenario" for the Site.

    - The sampling was conducted in the month of December, which is traditionally a seasonally high-water time. During such times, analytical results for groundwater typically exhibit the highest concentrations – yet no exceedances of cleanup levels were detected.

    - The methods used for groundwater sample collection were reconnaissance sampling from temporary wells installed using DPT. A shorter well screen introduces a high bias into the resulting data.

    - The temporary wells were not formally developed and generally had higher turbidity. With low solubility COCs (such as cPAHs and other compounds detected at the Site), high turbidity typically results in a high bias to any resulting data due to sorption to the suspended compounds.

- For over 30 years prior to construction, there was very little uncapped surface area at the Modera River Trail property. As such it is expected that any compounds in the aqueous phase would have already been present. But the absence of any COCs in groundwater at a concentration exceeding a cleanup level under such worst-case conditions indicates groundwater impacts are unlikely to be present.

- Lastly, due to the recent redevelopment of the Modera River Trail property with nearly a zero-setback with very few uncapped areas, there are no areas that can be used for meaningful study that would not damage the newly installed vapor barrier.

- *The status of the three previously existing monitoring wells (B-1, B-2, and B-4) are not provided to Ecology.*
  - *If these monitoring wells were decommissioned or destroyed during Property redevelopment, Ecology should be provided with paperwork that shows the proper decommissioning of these monitoring wells per WAC 173-160-460. Noel Philip (via email noel.philip@ecy.wa.gov, or via telephone at 425-649-7044) is Ecology's contact and resource for questions regarding proper decommissioning monitoring wells.*

These monitoring wells were decommissioned prior to re-development and are no longer available for future sampling. Decommissioning records are included in Attachment A.

- *Additional vapor intrusion evaluation is needed for the new building.*
  - *A vapor barrier has been installed beneath the new building to mitigate the potential vapor intrusion risk. The effectiveness of the vapor barrier is not evaluated. In addition, the vapor barrier does not cover the northwestern edge of the new building.*
  - *A vapor intrusion evaluation is needed for the new building. The vapor intrusion evaluation could consist of sub-slab soil gas sampling and/or indoor air sampling. Ecology recommends submission of a work plan prior to conducting additional vapor intrusion evaluation. Ecology can provide technical assistance if needed.*

The installed vapor barrier meets the requirements for the protection of indoor air with an properly designed buffer from the contaminated area that is in compliance with current guidance. In order to confirm the effectiveness of the installed vapor barrier, MCRT proposes to perform two rounds of indoor air sampling - one during a heating season (summer) and one during a cooling season (winter). During both sampling events, sampling will consist of two indoor air samples from select locations within the building. Both samples will be collected from areas of the building that are designed for occupancy. One outdoor background sample will also be collected.

The indoor air samples will be collected from approximately 5 feet above floor level which represents the standard breathing zone of potential occupants. The outdoor air sample will be collected from an area upgradient from the prevailing wind relative to the onsite building. These air samples will utilize 6-Liter Summa canisters with an 24-hour inlet regulator, appropriate for a residential exposure scenario.

Each sample will be analyzed for naphthalene using U.S Environmental Protection Agency (EPA) Method TO-15.

MCRT will augment the current RI/FS report with the additional data collected during this proposed sampling event.

Ecology has determined that the incomplete Site characterization does not allow a determination whether the cleanup action you selected for the Site meets the substantive requirements of MTCA.

A Feasibility Study (FS) and a Disproportionate Cost Analysis (DCA) has been submitted to Ecology in the August 2020 RI/FS). Alternative 1, which includes institutional controls, was selected as the cleanup action. However, due to the insufficient Site characterization data, Ecology does not recognize the current FS/DCA.

- *The vertical extent of contaminated soil is not fully defined. Therefore, the cost associated with contaminated soil removal should be re-estimated based on further soil characterization.*

As outlined herein, the data collected to date is more than sufficient to select a remedy for the subject property. The existing data clearly demonstrate compliance with cleanup levels and the delineation of the vertical and lateral extent of any impacts. Additional data would not address any perceived data gap and would not result in selection of any different remedy for the subject property.

- *The potential impact to groundwater is not fully evaluated. The protectiveness, permanence, and effectiveness of each cleanup action alternative should be re- evaluated after further characterization.*

As described above, groundwater conditions presented in the report should be considered worst case scenario. No contamination was observed and therefore, groundwater is not considered adversely impacted and no data gaps exist. In the absence of groundwater impacts, the current FS is sufficient to select a remedy.

- *Table 6, 7, and 8 of the August 2020 RI/FS provided cost estimates of each cleanup action alternative. Ecology notices that some cost estimates are not accurate. For example, the cost of "Excavate and Stockpile Clean Overburden On-Site" is different in Alternative 2 than in Alternative 3; the cost of "Cleanup Action Reports" is calculated twice in Alternative 2; the cost of "Excavate, Load, and Transport Timber Piles Off-Site" is not included in Alternative 3.*

For Alternative 2, the "Cleanup Action Reports" listed twice are different reporting events and are not duplicate. The labels for these individual reporting events will be revised.

We acknowledge the typographical errors in Table 8 regarding the different cost for "Excavate and Stockpile Clean Overburden On-Site" and the missing cost for "Excavate, Load, and Transport Timber Piles Off-Site". Table 8 will be corrected to reflect the accurate costs. The result of these changes will be that the costs for Alternative 3 will increase. This correction will show an even greater disproportionate cost for Alternative 3 relative to the other alternatives. Therefore, the results of the DCA are still accurate and these edits will not alter the results.

An appropriate cleanup action can be selected only after the Site is fully characterized. The FS/DCA should be updated based on further Site characterization. The cost estimates of each cleanup action alternative should be accurate. The cleanup action selected must meet the minimum requirements in WAC 173-340-360(2).

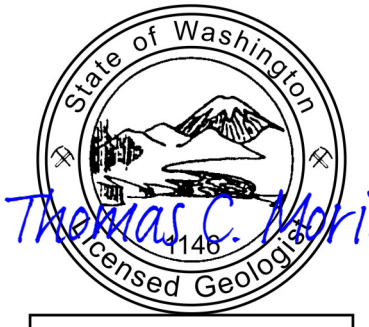
It is our opinion that soil and groundwater at the subject property is fully characterized in order to evaluate and select a remedy. Further characterization in soil and groundwater would not affect the conclusions of any updated FS/DCA. The maximum extent of soil and groundwater impacts is well understood and no data gaps exist for these media.

In conclusion, it is our opinion that the selected remedy meets the requirements of MTCA and that no current or future exposure pathways exist at the subject property since implementation of the current remedy. Our performance of indoor air monitoring will confirm that our remedy is protective of human health and the environment.

We look forward to discussing these responses with you, and to work cooperatively towards the issuance of a Restricted NFA determination.

Sincerely,

Prepared by:
Eric Koltes, L.G.
Senior Geologist



Reviewed and approved by:
Thom Morin, L.G.
Principal Geologist / PNW Area Practice Leader