STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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August 3, 2017

Electronic Copy

Mr. Gary Galloway, LHG
Galloway Environmental, Inc.
3102 220th Place SE
Sammamish, WA 98075

Re: Opinion on Proposed Cleanup of the following Site:

- **Site Name:** Northwest Furniture Factory Outlet Property
- **Site Address:** 5907 & 5906 6th Avenue, Tacoma, Pierce County, WA
- **Facility/Site No.:** 627382
- **Cleanup Site ID No.**: 868
- **VCP Project No.:** SW1499

Dear Mr. Galloway:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the Northwest Furniture Factory Outlet Property facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

Opinion

Ecology has determined that, upon completion of your proposed cleanup, further remedial action will likely be necessary to clean up contamination at the Site.

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, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

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:

- Total petroleum hydrocarbons and related constituents, and chlorinated solvents and related byproducts into soil and soil gas.

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

Basis for the Opinion

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

1. Koehler, McFayden & Company (Koehler et al.), *Phase I Environmental Audit*, Highland Hill Shopping Center, 5907-6201 6th Avenue, Tacoma, Washington, January 8, 1998.
2. Galloway Environmental, Inc. (GEI), *Limited Level II Environmental Site Assessment*, Northwest Furniture Factory Outlet Property, Highland Hills Shopping Center, 5909 6th Avenue, Tacoma, Washington, July 2004.
3. GEI, Transmittal of Existing Environmental Documents for the Firestone Tire Store, 5907 6th Avenue, Tacoma, Washington, April 5, 2005.
4. GEI, *Environmental Cleanup Status Report*, Northwest Furniture Outlet Property, Highland Hills Shopping Center, August 2005.
5. SECOR International, Inc., (Secor), *Limited Subsurface Assessment Report for BF Retail & Commercial Operations*, LLC, BFRC Retail Store Number 015539, November 2, 2005.
6. GEI , *Work Plan to Perform Environmental Site Assessment Services at the BFRC Facility,* Highland Hills Shopping Center, Tacoma, Washington, May 8, 2006.
7. Washington State Department of Ecology, Re; Opinion Pursuant to WAC 173-340-515(5) on Proposed Remedial Action for the following Hazardous Waste Site: Northwest Furniture Factory Outlet Property, May 19, 2006.
8. GEI , *Summary Status Letter* – Northwest Furniture Store/ Bridgestone Firestone Retail Center, Highland Hills Shopping Center, March 30, 2009.
9. GEI , *Site Cleanup Confirmation Investigation at the Highlands Hills Shopping Center*, Northwest Furniture & Bridgestone Firestone Retail Center, December 29, 2014.
10. GEI, *Cleanup Action Plan for the Highland Hills Shopping Center (Northwest Furniture & Bridgestone Firestone Retail Center)*, September 25, 2015.

11. Washington State Department of Ecology, Opinion on Proposed Cleanup of the following Site: Northwest Furniture Factory Outlet, February 17, 2016.

12. GEI, *No Further Action Request,* Northwest Furniture Factory Outlet and BFRC Site, Tacoma WA, March 20, 2017.

13. GEI, *Environmental Cleanup Report for the Highland Hills Shopping Center*, Northwest Furniture and Bridgestone Firestone Retail Center, Tacoma WA., March 20, 2017.

These documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. You can make an appointment by calling the SWRO resource contact at 360-407-6365.

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, upon completion of your proposed cleanup, **further remedial action** will likely be necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

1. Characterization of the Site.

Ecology has determined your characterization of the Site is not sufficient to establish cleanup standards and select a cleanup action. The Site is located at 5907 and 5909 6th Avenue in Tacoma, Pierce County, Washington. As currently known to Ecology, the Site is located within Pierce County Tax Parcel 0220026013, at the location of a former dry cleaning business and current automotive repair shop. The former dry cleaning business was located in a 5,000 square foot building from between 1969 until approximately 1988. The building containing the former dry cleaning business was vacant from approximately 1988 until 1993, when the location was used for retail furniture sales. The building was demolished in April 2008, and the footprint of the former building was paved with asphalt and landscaped areas. Adjacent and south of the former building is a 6,820 square foot building currently occupied by an automobile service center that has been in business since 1969.

In January 1998, Koehler et al. conducted a Phase I Environmental Site Assessment (Phase I ESA) for the Site and other businesses in the surrounding area. The Phase I ESA included reference to an earlier 1990 Phase I ESA that is not in Ecology's Site record. The review describes Firestone as a generator of hazardous wastes at the Site. Results of the 1998 Phase I ESA included *"Unknown impacts (if any) to site soil and/or groundwater from former and current dry cleaning facilities located on the subject site"*[1].

In June 2004, GEI conducted a Phase II Environmental Site Assessment (Phase II ESA) at the Site. A release of chlorinated solvents was detected in soils below the floor at the location of the former dry cleaning operation. The laboratory results were contained in a report dated June 24, 2004. The release report[2] was received by Ecology on May 2, 2006. Results from this investigation were not uploaded to Ecology's Environmental Information Management (EIM) database.

In April 2005, GEI provided a portion of a Phase II ESA report conducted at the Site in March, 2005, including an executive summary, figures and a lab report. The EPI Phase II ESA was reported to have been based on the results of an EPI Phase I ESA for the Site. The EPI Phase I ESA is not in Ecology's Site record. While there is no date on the partial EPI Phase II ESA report, the laboratory chain of custody indicates that samples were obtained on March 17, 2005. Analytical results reported to EIM for that investigation detected up to 7,900 mg/kg total petroleum hydrocarbons as gasoline (TPH-G), tetrachloroethylene (PCE), trichloroethylene (TCE) and other volatile organic carbons in soil at the Site. The draft executive summary of the April, 2005 report also refers to a February 2005 interim action soil removal conducted at the Site.

In August 2005, GEI provided an Environmental Cleanup Status Report for the Site to Ecology. The GEI report states that in February 2005, GEI excavated 175 tons of potentially contaminated soil for off-Property disposal from beneath the floor of the Northwest Furniture Factory building, where contamination was detected in soil. Appendix C of the report is stated to contain records of soil disposal, but Appendix C is not in Ecology's Site record. An Ecology response letter to a Contained-In request for disposal of excavated soil stockpiles is in Ecology's Site record. The Ecology response letter states that approximately 10 cubic yards of F002-listed dangerous waste contaminated soils were removed from the Site.

[1] Koehler, McFayden & Company, Phase I Environmental Audit, January 8, 1998, page 33.
[2] WAC 173-340-300 (2)

Approximately 110 cubic yards of soil excavated from the Site contained F002-listed dangerous waste at concentrations that did not warrant management as dangerous waste. Analytical results of some soil confirmation samples collected at the extents of the excavation are reported to have been above MTCA Method A screening levels.

In September 2005, Secor conducted a subsurface assessment at the Site, advancing six soil borings up to 19.5 feet below ground surface (bgs) in the vicinity of an underground oil/water separator in the BFRC building. Soil samples were collected from the soil borings and analyzed for TPH-G, total petroleum hydrocarbons as diesel (TPH-D), and total petroleum hydrocarbons as heavy oil (TPH-O) using NWTPH-Gx/Dx. Samples were also analyzed for volatile organic carbons (VOCs) using United States Environmental Protection Agency (US EPA) Method 8260b. All analytical results have not yet been uploaded and accepted to the EIM database. Of the analytical results currently accepted to EIM, up to 7,800 mg/kg TPH-G, 1,600 mg/kg TPH-O, 11 mg/kg PCE, and 0.92 mg/kg TCE were detected in soil at this location of the Site, in soils as deep as 17 feet bgs.

In July 2006, GEI advanced soil boring GEIB-1 at the Site. The soil boring is reported in the log as having been advanced to the northwest of the BFRC building, and is reported in EIM to be located approximately 15 meters to the northwest of the northwest corner of the BFRC building, approximately 20 meters northwest of the location of the former oil/water separator. Samples collected from 15 feet depth, 30 feet depth and 60 feet depth during advancement of the soil boring were submitted for analysis using methods NWTPH-Gx/BTEX and US EPA Method 8260b. Results reported to EIM detected methylene chloride at up to 0.011 mg/kg in the soil sample obtained from 30 feet bgs. Groundwater was not encountered in the soil boring.

A March 30, 2009 GEI Summary Status letter states that *"The Furniture Store building was demolished in April 2008 and in May 2008; GEI contracted ESN Drilling Company to inject chemical oxidation compounds (Potassium Permanganate) into the ground (to approximately 15 feet below ground) in the former footprint of the furniture store…"* [3].

[3] *Galloway Environmental, Inc., Summary Status Letter – Northwest Furniture Store/Bridgestone Firestone Retail Center, March 30, 2009, page 1.*

A plan view figure of the footprint of the injection area is included in the letter. The plan view figure text caption lists *"Permanganate & ORC injection area (with GeoProbe)"*[4].

GEI also states that the oil/water separator and impacted soil was removed to a depth of 15' bgs. The final disposition of removed soil is not clear. Soil samples were obtained from the excavation sidewalls and bottom. An August 2, 2007 Site Plan map is included in the 2009 Summery Status letter that shows the locations of samples obtained. Results of soil sampling were reported to EIM. The laboratory report for the samples obtained from excavation sidewalls and bottom is not in Ecology's Site record. A summary table of results is included in the letter that reports up to 8,100 mg/kg TPH-G in samples obtained from the oil/water separator excavation sidewall and bottom at 8 feet bgs, 12 feet bgs, and 15 feet bgs. TCE and PCE were also detected above appropriate screening levels at 8 feet bgs and 12 feet bgs in sidewall and excavation bottom samples.

In November 2014, eight soil borings were advanced at the Site in the footprint of the former dry cleaning building, where soil was excavated in 2005. Eleven soil samples submitted for analysis from the soil borings at depths ranging from 2.6 to 11 feet bgs, and analyzed using US EPA Method 8260. Results from the November 2014 investigation detected up to 7,900 mg/kg PCE, and 79 mg/kg TCE, in a sample obtained at 2.6 feet bgs. The laboratory report for the November 2014 investigation lists quality control and quality assurance issues for the samples that affect the interpretation of the data. Groundwater was not encountered during this investigation.

Within the November 2014 investigation, GEI also provides a table and figure of four additional soil samples, B-1@13', B-2@11', B-3@17', and B-4@19' that are stated to have been *"Collected by GEI during Seacor's Investigation in February 2005…"*[5]. No laboratory report for samples B-1 through B-4 is in Ecology's Site record, and the data have not yet been uploaded to EIM.

In March, 2017, GEI provided an Environmental Cleanup Report for the Site. Between October 2016 and February 2017, additional investigation and remedial excavation is reported to have been conducted at the Site. Forty-four tons of potentially impacted material is reported to have been excavated for off-Property disposal.

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[4] *Galloway Environmental, Inc., Summary Status Letter – Northwest Furniture Store/Bridgestone Firestone Retail Center, March 30, 2009, Figure 2-1.*

[5] *Galloway Environmental, Inc., Site Cleanup Confirmation Investigation, December 29, 2014, Table 3.2 footnote, Page 3-3.*

The locations of this work are provided in the Environmental Cleanup Report, but the details of the investigation have not yet been reported. Soil gas and indoor air sample analytical results are also provided. The details of soil vapor sampling are not provided.

Ecology has provided opinion letters for this investigation on May 19, 2006, and on February 17, 2016.

COMMENTS

REMEDIAL INVESTIGATION:

1. **The lateral and vertical extents of soil and soil gas contamination remaining at the Site need additional delineation.**
    a. **Soil:** Analytical results of soil samples obtained for the remedial investigation in 2016 and reported to EIM detected up to 9,540 mg/kg mineral spirits in a sample obtained from 16 feet below ground surface (bgs) [6] and 5,860 mg/kg mineral spirits in a sample obtained at 20 feet bgs[7], below the location of the former oil/water separator. These samples also detected chlorinated solvents above appropriate screening levels. No deeper sample results are reported from this area of the Site. Delineation of the lower bounds and lateral extents of soil contamination are needed in this area of the Site to evaluate the vertical separation of soil contamination to groundwater, and to evaluate remedial alternatives provided in the feasibility study, including whether institutional controls managed by an environmental covenant are appropriate as the preferred remedial alternative for the Site.

    b. **Soil Gas:** Results reported to EIM from remedial investigation conducted in 2016 detected sub slab soil gas contamination within the footprint of the building at up to 5,750 µg/m^3 PCE. The source and extents of chlorinated solvent contamination in soil vapor is not yet clearly or adequately delineated or reported. The extents of soil vapor contamination at the Site need to be delineated in figures, and related to source zones and preferential pathways such as floor drain lines, and transmissive areas of poorly sorted fill beneath the building, adjacent to the retaining wall to the east, and below the concrete pad to the west of the service bays. Please ensure adequate reporting based on guidance.

[6] Sample ID VCSW1499BP-4@16
[7] Sample ID VCSW1499BP-4@20

c. **Please update the Site Conceptual Model with delineated plan view depth-discrete concentration isopleth maps and delineated geologic cross sections depicting remaining contamination in soil and soil gas to background levels throughout the Site.** The lateral and vertical extents of contamination remaining at the Site need additional clarification in materials submitted for review.

   i. Clearly indicate where additional information was obtained for the remedial investigation that was requested in comments in Ecology's February 17, 2016 opinion letter.

   ii. Report all Site contamination results remaining at the Site in figures, including results obtained by EPI, Secor, and others. Ensure Ecology receives laboratory and investigation results for all reported Site investigation.

   iii. Report the method of contouring used to create isopleth maps in both plan view and cross section.

   iv. Include in figures individual sample results used for contouring, contouring parameters and assumptions.

   v. Clearly identify source areas, areas remaining above and below proposed cleanup levels, and areas remediated in both plan view and cross section.

   vi. Delineate areas of chemical injection in plan view and cross section.

   vii. Provide in cross sections the vertical separation from contamination in soil to groundwater.

   viii. Include illustration of the Site in relation to modelled City of Tacoma wellhead protection zones.

   ix. Affirmatively indicate where insufficient data are available to delineate contamination extents with confidence.

   x. Include soil borings, wells, surface features and infrastructure limiting investigation or remediation.

   xi. Identify the specific confirmational samples used to define the contamination extents in both horizontal and vertical extents.

   xii. Identify excavated (removed) soil sample locations with a different figure symbol or font.

xiii. Include all report data for the Site, and ensure that lateral and vertical extents of contamination, as determined by confirmational sampling are clearly indicated for hazardous substances detected at the Site.

2. **Please provide detailed reporting on environmental investigations conducted between October 2016 and February 2017, that are mentioned on pages 3-6 of the March 20, 2017 Environmental Cleanup Report.** From the materials submitted for review, it is not clear how sub-slab and indoor air samples were obtained and analyzed, and how those samples are related to remaining source areas and areas of contamination at the Site. Because vapor sampling can be highly variable, and dependent on factors such as atmospheric pressure, rainfall, sampling locations and techniques used to obtain the samples, the specific methodology and locations used to obtain gas samples for this investigation needs to be fully documented in the remedial investigation.

3. **For the remedial investigation, please provide analysis and figures, as appropriate, for the occurrence and remaining distribution of petroleum and related constituents including TPH-G, TPH-D, and TPH-O, which have been detected at the Site.**

4. **For the remedial investigation, please provide analysis and figures, as appropriate, for the occurrence and remaining distribution of each of the following possible and confirmed contaminants at the Site related to dry cleaning operations.** The following dry cleaning solvents were regularly used in the time period 1970-1988, when the dry cleaner at the Site is reported to have operated[8].

    - Stoddard Solvent (First use 1928)
    - Trichlorethylene (TCE) (First Use 1930)
    - Perchloroethylene (PCE) (First Use 1934)
    - 140-F solvent (First Use 1950)
    - Freon 113 (First Use 1964)
    - 1,1,1 Trichloroethane (TCA) and 1,4 Dioxane (First marketed as dry cleaning solvent early 1980s)

5. Please provide receipts and laboratory analyses performed on disposed of potentially contaminated soil.

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[8] *Phase I Environmental Audit, Koehler McFayden & Company, January 8, 1998, Page 15.*

6. Since the oil/water separator was reported removed in 2005 with 175 tons of soil, please clarify where the floor drains are currently connected.
7. In 2014, GEI reported that semi-annual injections of chemical oxidation treatment were proposed for the Site[9]. Please report on ongoing chemical oxidation treatments.
8. Please provide the chain of custody and laboratory report for samples obtained on January 30, 2007. If available, provide the report of the excavation and sampling.
9. Please provide the chain of custody and laboratory report for the following samples, obtained during February 2005. If available, provide the report of the sampling event.
    - B-1@13'
    - B-2@11'
    - B-3@17'
    - B-4@19'

FEASIBILITY STUDY:

1. The remedial investigation needs to be completed before Ecology evaluates the feasibility study. For the feasibility study, please provide detailed supporting information and additional line item breakdown of costs for each proposed remedial alternative. Where appropriate, include data supporting predicted natural attenuation rates and estimated restoration timeframes. Provide detailed site plans and cross sections illustrating the infrastructure and extents needed for each proposed remedial alternative. Include locations of proposed remedial construction, estimated radii of influence as appropriate, and delineate proposed excavation in lateral and vertical extents based on plan view maps and cross sections for the remedial investigation. Provide plans for needed building foundation shoring. Provide supporting evidence for estimated business loss of revenue.
2. Please evaluate mitigating current potential vapor risks using a sub slab depressurization system and/or shallow soil vapor extraction to reduce vapor contamination concentrations in the subsurface.
3. For the disproportionate cost analysis, please clearly determine and compare the incremental costs of each alternative. Costs are disproportionate to benefits if the incremental costs of the alternative over that of a lower cost alternative exceed the incremental degree of benefits achieved by the alternative over that of the other lower cost alternative.

[9] *GEI, Site Cleanup Confirmation Investigation, Highland Hills Shopping Center, December 29, 2014, Page 1-5.*

Ecology needs to clearly identify incremental costs and degree of benefits. Comparing alternative costs with numerically ranked and weighted benefits is one method used to accomplish this.

EIM REPORTING:

1. Please clarify why Study_Specific_Location_IDs VCSW1499SECB-1 through VCSW1499SECB-6 are reported collected with Field_Collection_Start_Date of both 3/17/2005 and 9/8/2005.
2. Soil Gas results SG-11 through SG-13 are reported in units of mg/L and µg/L, which may not be correct. Please clarify.
3. Volatile organic carbon analytical results obtained using US EPA Method 8260 during SECOR's September 2005 subsurface investigation have not yet been uploaded to EIM. Please ensure that all results obtained for Secor's September, 2005 study are uploaded to EIM.
4. NWTPH-Gx / BTEX results for the following samples need to be uploaded to EIM:
    - BFRC N@8
    - BFRC E@8
    - BFRC S@8
    - BFRC W@8
    - BFRC N@12
    - BFRC E@12
    - BFRC S@12
    - BFRC W@12
    - BFRC S1/2@15
    - BFRC N1/2@15
5. For the November 2014 sample results (borings P1 through P8), based upon the laboratory case narrative describing QA/QC issues for the results, please update the laboratory results qualifiers Result_Data_Qualifier, Result_Suspect_or_Rejected_Flag, Result_Suspect_Code, and Result_Suspect_Description.

6. Please upload the results for GEI's soil samples: B-1@13', B-2@11', B-3@17', and B-4@19', which were stated to have been obtained in 2005 during Secor's investigation.

2. Establishment of cleanup standards.

Ecology has determined the cleanup levels and points of compliance you established for the Site do not meet the substantive requirements of MTCA. Additional remedial investigation is needed before establishing cleanup levels and points of compliance.

3. Selection of cleanup action.

Ecology has determined the cleanup action you selected for the Site does not meet the substantive requirements of MTCA. The Site requires further remedial investigation prior to selecting a remedial alternative.

4. Cleanup.

Ecology has determined the cleanup you performed does not meet any cleanup standards at the Site. Several interim actions have been completed at the Site, excavating potentially contaminated soil. In-Situ Chemical Oxidation was performed at the Site through injection of potassium permanganate into the subsurface. The Site requires further characterization prior to selecting a remedial alternative.

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.030(1)(i).

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 web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion, please contact me by phone at (360) 407-6527 or e-mail at Adam.Harris@ecy.wa.gov.

Sincerely,

Adam Harris, LHG.
Site Manager
SWRO Toxics Cleanup Program

ah: kb

By Certified Mail: [91 7199 9991 7037 1758 8839]

cc: Rob Olsen, TPCHD
Stephanie Bussell, Ecology
Nicholas Acklam, Ecology