STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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Electronic Copy

April 7, 2017

Mr. Larry Hine
Amerco Real Estate Company
2727 N Central Ave Suite 500
Phoenix, AZ 85004-1120

Re: Opinion on Proposed Cleanup of the following Site:

- **Site Name:** Church of God in Christ
- **Site Address:** 9201 Pacific Avenue South, Tacoma, Pierce County
- **Facility/Site No.:** 19947
- **Cleanup Site ID:** 12404
- **VCP Project No.:** SW1531

Dear Mr. Hine:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your proposed independent cleanup of the Church of God in Christ 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.

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, 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:

- Volatile Organic Compounds into soil and groundwater.
- Petroleum Hydrocarbons and related constituents into soil and groundwater.

The Site is located at 9201 Pacific Avenue in Tacoma, Washington. As currently known to Ecology, the Site is contained within Pierce County parcel number 0320333309 (the Property). The Property is approximately 8.86 acres and is occupied by a 61,230 square feet one-story building and parking lot. The Site is located in soil and groundwater below the northern portion of the one-story building and parking lot.

Please note the parcel(s) of real property associated with this Site are also located within the projected boundaries of the Tacoma Smelter Plume facility (# 62855481). At this time, we have no information that those parcel(s) are actually affected; however, Ecology recommends that any soil samples collected from the Site be analyzed for lead and arsenic to determine whether the Site has been impacted. 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 Associates (EA), *Limited Soil and Groundwater Sampling and Testing, Commercial Property*, April 26, 2013.
2. Anderson Environmental (Anderson), *Phase I Environmental Site Assessment,* September16, 2014.
3. Anderson Environmental, *Phase II Environmental Site Investigation Report*, April 20, 2015.
4. Ecology, *Further Action Opinion*, Church of God in Christ, August 25, 2015.
5. Anderson Environmental, *Response to comments, COGIC Property*, September 25, 2015.
6. Anderson Environmental, *Remedial Investigation Feasibility Study Work Plan, COGIC Property*, October 20, 2015.
7. ATC Environmental (ATC), *Site Characterization Work Plan, U-Haul Facility No 881090 / Former Church of God in Christ Facility*, October 4, 2016.

Those 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.

In April, 2015 Anderson completed a Phase I Environmental Site Assessment that detected the following recognized environmental concerns at the Property:

- The identification of a dry cleaning operation at the Property, which operated sometime between 1965 and 1984[1].
- Reports of chemical releases at the Property in August, 1997 and June 2013[2].
- A 2013 EA report of soil and groundwater sampling and testing at the Site, that had detected chlorinated solvent contamination above MTCA Method A cleanup levels.

The 2013 EA report was provided to Ecology in April, 2015, and documented how in 2013, EA had sampled and analyzed soil and groundwater at the Site. Ecology did not receive a report of release of hazardous substance within 90 days of discovery, as is required by WAC 173-340-300.

Using direct push techniques, EA advanced six soil borings (B-1 through B-6) to refusal depths of between 15-16 feet below ground surface (bgs) in the area of the former dry cleaners. Soil beneath the Site was reported as sand, silt and gravels, which EA interpreted as indicative of glacial till. Groundwater was first encountered between 11 and 14 feet bgs. EA collected soil and groundwater samples from the borings. Sample results indicated a range of volatile organic compounds, chlorinated solvents and petroleum in both soil and groundwater samples.

EA attributed Stoddard Solvent detected during the 2013 investigation to a possible gasoline release from a nearby former underground storage tank (UST) located at 9001 Pacific Avenue, Tacoma (FS/ID 91674293). Stoddard solvent is a common historical petroleum-based dry cleaner solvent used as early as 1928, and was the predominant dry cleaning solvent until the late 1950s.

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[1] The 1965 date is the date of a building permit detailing the layout of a laundromat with dry cleaning machines at the Site. The 1984 date is based on historical telephone directories.
[2] SPILLS database.

Ecology's database shows that one 6,000 gallon UST was removed from 9001 Pacific Avenue in 1996. At this time, Ecology has received no documentation that a release has occurred at 9001 Pacific Avenue, Tacoma. No additional evidence has been provided to Ecology supporting the hypothesis that the Stoddard Solvent reported at the Site is in fact gasoline from a nearby UST.

In April 2015, Anderson also reported on a Phase II Site investigation conducted in 2014. The Anderson report also references a Riley Group 2005 site investigation that is not in Ecology's Site record, and also includes results from the EA 2013 Phase II Site investigation.

For the Phase II Site investigation, Anderson advanced 13 soil borings at the Site (B1 through B13), and converted four of the soil borings into monitoring wells (MW-1 through MW-4). The 13 soil borings were advanced inside and outside of the northern end of the former dry cleaning facility using a hollow stem auger outside the building, and direct push drilling inside the building, to depths of between 7 and 21 feet bgs. Soils encountered include silty and clayey sands and gravels. Groundwater was encountered at approximately 14 feet bgs at the time of drilling and sample collection. Anderson collected soil and groundwater samples, and analyzed those samples for VOCs using US EPA Method 8260c. No analysis of petroleum hydrocarbons as Stoddard Solvent was conducted. Sample results indicated a range of volatile organic compounds and chlorinated solvents in both soil and groundwater samples.

Comments on the Work Plan:

1. **2015 opinion:** For the remedial investigation, please address all points raised in Ecology's August 25, 2015 further action letter regarding this Site.
2. **Delineated concentration contour maps needed:** Products that need to be developed for this remedial investigation include, in plan view and cross section, delineated concentration contour maps to natural background of all contamination detected at the Site above method detection limits in soil, soil vapor and groundwater:
    a. Resulting from the Site's use as a dry cleaners from 1965-1984, including chlorinated solvents, byproducts and petroleum solvents detected in 2013.
    b. Resulting from gasoline reported possibly encroaching on the Site from a former leaking UST at 9001 Pacific Avenue, Tacoma (FS/ID 91674293).
    c. Resulting from a chemical spill reported in 1997, and a transformer fluid release reported in 2013.

    Clearly indicate locations where insufficient data are available to delineate to natural background with confidence. Report all data results at or above method detection limits.

Use estimated qualifiers for data results between method detection limits and practical quantitation limits. Also provide estimates of contamination source mass.

3. **Additional groundwater monitoring:** For the remedial investigation, please conduct and report on additional regular groundwater monitoring at the existing four monitoring wells and at the proposed monitoring well.

4. **Additional soil and groundwater locations:** To sufficiently delineate the lateral and vertical extents of contamination, additional soil and groundwater sample results are needed for the remedial investigation to the north, west and south of location B-2 (2014), and to the east and west of B-12 (2014). The depth of sampling needed is dependent upon the vertical delineation of contaminant concentrations in the source zone.

5. **Depths of current groundwater results:** Groundwater sample results for the remedial investigation to date are reported from groundwater obtained from soil borings between 10-15 feet bgs, and from monitoring wells screened between 13 and 19 feet bgs. Results from the proposed vertical delineation, including geologic logs and depth discrete sampling, will inform the need for additional deeper delineation of chlorinated solvents in groundwater and for additional monitoring wells at the Site.

   Please collect and analyze sufficient soil and groundwater samples from the proposed vertical delineation to ensure that the vertical profile of contaminant distribution is adequately characterized. If contamination is detected deeper than the current monitoring well network, additional monitoring wells may be needed.

6. **Vashon Till:** Ecology's data objective for the single proposed vertical delineation boring is to advance to and sample above, at and below the contact with underlying low permeability strata at the Site. The proposed 40 feet bgs arbitrary termination depth may not be sufficient to obtain these needed data. The proposed soil boring needs to include samples at the base of the overlying unconfined aquifer and sample at lenses of low permeability strata encountered while advancing. If a low permeability stratum containing contamination is used as an integral part of the Site conceptual model, then the lateral extent of low permeability strata encountered in the boring will likely need to be supported by data showing lateral contiguousness.

   Ecology's working conceptual site model is at this location, silty and clayey sands reported in shallow soil borings at the Site in previous investigations likely represent recessional outwash deposits (Qvo) overlying lower permeability glacial till (Qvt

Glacial till likely overlies advance outwash deposits (Qva), that are the main water bearing zone. Recessional outwash deposits likely include lenses of low permeability strata.

At other nearby sites, tetrachloroethene contamination in soil and groundwater has penetrated low permeability Qvt glacial till. Penetration of low permeability glacial till may be a result of the slow infiltration of chlorinated solvents into glacial till from overlying sources, preferential pathways in the glacial till, or may be an artificial result due to drilling and investigation processes creating a preferential pathway for contamination to enter lower permeability strata. Therefore, please carefully advance the proposed soil boring through overlying sands into underlying strata.

To avoid unnecessary drilling and to avoid creating a conduit for contamination into underlying strata, please carefully advance and log the soil boring. Upon contact with significantly lower permeability strata, advance the boring in short increments to obtain depth discrete sample results from the area surrounding the contact. Below the low permeability contact, please obtain and analyze depth discrete soil samples at 1 foot intervals.

Please provide a high-resolution well log, and report significant geologic contacts. Include photographs and measurements of core samples obtained that show strata at high resolution, and indicate sample locations in the core. Complete the soil boring as a monitoring well that includes a screened interval that extends upward from below the contact between underlying lower permeability strata and overlying sands. Please do not penetrate the till into any underlying, more permeable strata. It may be most successful to mobilize a sonic drilling rig and mobile laboratory to obtain the needed data to vertically delineate contamination in glacial till to natural background concentrations.

If no contamination is encountered at the low permeability contact in the area of the source zone, the single proposed soil boring may be sufficient for vertical delineation. Additional borings may be required, depending upon the results obtained. Please demonstrate with sample results the depth that contamination does detectably penetrate into lower permeability glacial till.

It may also be appropriate to use additional technologies, such as a membrane interface probe or dye enhanced laser induced fluorescence, as possible and appropriate, to further evaluate contamination extents.

7. **Aquifer testing.** If the preferred remedial alternative for the Site relies on an underlying low permeability barrier to impede contaminant migration, supporting aquifer property test results are likely needed to conservatively evaluate contaminant migration.

8. **Contamination attributable to the Site:** Ecology has investigated the type of dry cleaning machines reported in building department records provided in the work plan. The Philco-Bendix 6-Pac dry cleaning machines reported in the building department inspection record were coin operated dry cleaning machines marketed by Philco-Bendix as part of a 1960's campaign to develop a nationwide chain of coin-operated laundromats that included self-service dry cleaning. "6-Pac" referred to a set of six coin-operated dry cleaning machines at the Site with associated infrastructure.

   Ecology investigated patents for products related to the "6-Pac" machines and found information supporting the likely use of tetrachloroethene (PCE) as the primary solvent in coin-operated dry cleaning machines. Stoddard Solvent was not a typical solvent used in coin-operated dry cleaning machines. Use of tetrachloroethene in coin-operated dry cleaning machines at this Site is supported by tetrachloroethene detection in Site soil and groundwater, and provides support for EA's hypothesis that petroleum solvent contamination measured in Site groundwater may be gasoline originating from a nearby off-Property source, which needs additional investigation.

9. **Petroleum contamination:** EA 2013 report attributes the Stoddard solvent in Site groundwater to gasoline from an off-Property source, and directs attention to a former nearby underground storage tank at 9001 Pacific Avenue. Please provide additional soil and groundwater sample results to evaluate the hypothesis that petroleum contamination is from the former UST at 9001 Pacific, is not encroaching on this Site, and will not encroach on this Site during any proposed cleanup activities.

   As hypothesized by EA, the detection of petroleum contamination in Site soil and groundwater may indicate an encroaching release from the nearby former UST. The source of petroleum contamination needs to be further evaluated and characterized for the remedial investigation between the Site of the former dry cleaner and the former UST. The proposed investigation does not appear to address this investigation need.

   Shallow groundwater gradients were measured once at the Site, in March 2015. The groundwater gradient is reported to the north, which does not support the hypothesis of encroachment of petroleum products from the nearby former UST. Additional seasonal groundwater gradient determination is needed. The release of petroleum products at the Site needs additional evaluation and characterization for this remedial investigation.

10. **Soil vapor and indoor air measurements**: Please ensure that sub-slab vapor and indoor air sampling is conducted simultaneously. Soil vapor sampling should not be attempted during or after a heavy rain. Please include reporting of appropriate rainfall and barometric pressures both before and during vapor sampling. Please have air samples analyzed for chlorinated solvents, other identified contaminants, and air-phase petroleum hydrocarbons (APH) using the Massachusetts Department of Environmental Protection method based on Method TO-15.

    Please ensure that Summa canisters are placed away from doors and windows, at approximately 3-4 foot elevation above ground level near floor cracks or drains. Provide photographs of Summa canister placement and relationship to cracks and floor drains detected at the facility. Summa canisters must be retrieved and provided to the laboratory with measureable vacuum at the valve. Data results from Summa canisters received by the lab at ambient pressure may not be acceptable to Ecology, and the study may need to be redone. Based on current Site use, 8 hour samples may be more appropriate. If a future residential scenario is possible at the Site, 24 hour samples would be appropriate. The remedial alternative selected for the Site must be protective of a point of compliance that includes ambient and indoor air throughout the Site, with the current building configuration, and with all possible future building configurations.

11. **Other common solvents:** Other common solvents and spotting agents used in the time period 1965 through 1984 that may need to be evaluated for this investigation include Freon 113 and 1,1,1, TCA / 1, 4 Dioxane.

12. **Other releases at the Site:** The 1997 chemical spill and the 2013 reported spill of transformer fluid at the Property need evaluation and characterization in relation to their impact on this Site. The proposed investigation does not appear to include how these releases will be evaluated for this remedial investigation.

13. **Terrestrial Ecological Evaluation:** Please conduct a terrestrial ecological evaluation, and incorporate into the remedial investigation all cleanup standards determined appropriate by that evaluation. (WAC 173-340-7490).

14. **Data submittal requirements:** In accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840 (Data Submittal Requirements), data generated for Independent Remedial Actions shall be submitted simultaneously in both a written and electronic format.

For additional information regarding electronic format requirements, see the website http://www.ecy.wa.gov/eim. Be advised that according to the policy, any reports containing sampling data that are submitted for Ecology review are considered incomplete until the electronic data has been entered. Please ensure that data generated during on-site activities is submitted pursuant to this policy. Data must be submitted to Ecology in this format for Ecology to issue a No Further Action determination. Please be sure to submit all soil and groundwater data collected to date, as well as any future data, in this format. Data collected prior to August 2005 (effective date of this policy) is not required to be submitted; however, you are encouraged to do so if it is available. Be advised that Ecology requires up to two weeks to process the data once it is received.

15. **Electronic Submittals:** Please provide Ecology the following reports in electronic format:

    - The Riley Group, *Phase I Environmental Site Assessment*, January 28, 2005
    - Environmental Associates (EA), *Limited Soil and Groundwater Sampling and Testing, Commercial Property*, April 26, 2013.
    - Anderson Environmental (Anderson), *Phase I Environmental Site Assessment,* September 16, 2014.
    - Anderson Environmental, *Response to comments, COGIC Property*, September 25, 2015.

2. Establishment of cleanup standards.

Ecology has determined the cleanup levels and points of compliance established for the Site do not meet the substantive requirements of MTCA. Cleanup standards have not been established because the Site has not yet been fully defined.

3. Selection of cleanup action.

Ecology has determined the cleanup action you proposed for the Site does not meet the substantive requirements of MTCA. The Site requires additional characterization before selecting a cleanup action.

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 proposed will be substantially equivalent. Courts make that determination. *See* RCW 70.105D.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 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 70.105D.030(1)(i).

Contact Information

Thank you for choosing to clean up your Property under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may resubmit your proposal for our review. 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) 407-6528 or e-mail at adam.harris@ecy.wa.gov.

Sincerely,

Adam Harris, LHG FOR
SWRO Toxics Cleanup Program

ah: kb

By certified mail: [91 7199 9991 7037 0279 7611]

cc: Mr. Simon Payne, ATC Group Services, LLC
Ms. Sharon Bell, Tacoma-Pierce County Health Department
Mr. Matt Alexander, Ecology