STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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February 10, 2017

Ms. Danelle MacEwen
City of Olympia
PO Box 1967
Olympia, Washington 98507-1967

Re: Further Action at the following Site:

- **Site Name:** 318 State Ave NE Olympia
- **Site Address:** 318 State Ave NE, Olympia, Thurston County
- **Facility/Site No.:** 3024394
- **Cleanup Site No.**:2010
- **VCP Project No.:** SW1013

Dear Ms. MacEwen:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the 318 State Ave NE, Olympia 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

Is further remedial action necessary to clean up contamination at the Site?

YES. Ecology has determined that further remedial action is 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. This opinion does not apply to any other sites that may affect the Property. Any such sites, if known, are identified separately below.

Enclosure A includes pertinent figures and tables from the work plan for the Site, as currently known to Ecology. For a complete Site description, please refer to Ecology's most recent opinion letter, dated February 23, 2016.

Please note a parcel of real property can be affected by multiple sites. At this time, Ecology has no information that the Property is affected by other sites.

Basis for the Opinion

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

1. GeoEngineers, Inc. (GeoEngineers), *Shallow Soil and Groundwater Treatment Work Plan,* 318 State Avenue, Olympia, Washington.
2. Department of Ecology (Ecology) opinion letter, RE: *No Further Action at a Property associated with a Site*, dated February 23, 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 **further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

> This opinion letter provides comments on GeoEngineers' *Shallow Soil and Groundwater Treatment Work Plan.* The work plan proposes chemical injection on a portion of the Site in order to reduce concentrations of chlorinated solvents and associated degradation products to less than groundwater cleanup and groundwater screening levels for vapor intrusion. The 318 State Ave NE, Olympia, property previously received a property-specific No Further Action (NFA) opinion letter from Ecology based on implementation of environmental covenant and institutional control requirements. The chemical injection is proposed on a portion of the Site exclusive of the property where the NFA was granted.

This work plan proposes to treat shallow soil and groundwater for residual concentrations of chlorinated solvents: tetrachloroethylene (PCE), trichloroethylene (TCE), degradation products (1,1-dichloroethylene [1,1-DCE]), cis-1,2-dichloroethylene (cis 1,2-DCE) and trans-1,2-dichloroethylene [trans 1,2-DCE]), and vinyl chloride. Additional contaminants of concern (COCs) identified for the Site still may require cleanup or concentrations of non-chlorinated Site COCs may be coincidentally reduced by this treatment; however, this work plan focuses on treatment of the aforementioned chlorinated volatile organic compounds (VOCs).

Comments:

1) Overall, Ecology concurs with the proposal of chemical injection to reduce VOC concentrations in shallow soil and groundwater. However, Ecology has the following comments.

    a. VOC concentrations in shallow soil and groundwater have been identified primarily between approximately 2 to 9 feet below ground surface (bgs). Depth to groundwater in Site monitoring wells has fluctuated between approximately 3 and 5 feet below top of casing. Shallow groundwater beneath the Site is located in fill which sits atop an approximately 2 foot thick peat and silt layer observed from approximately 6 to 10 feet bgs. The work plan proposes injecting soluble iron, fermentable carbon, microorganisms (*Dehalococcoides* sp. [DHC]) from 2 to 9 feet bgs, targeting the smear zone as well as any residual concentrations which lie in the upper portion of the uppermost aquifer beneath the Site.

    b. Prior to starting the field work, register the Site with Ecology's Underground Injection Control (UIC) division. The injection points proposed in the work plan are considered Class V injection wells under WAC 173-218-040(5)(x). The online registration form is located here:
        i. http://www.ecy.wa.gov/programs/Wq/grndwtr/uic/UIConlineregis.html

2) Please provide additional detail (e.g., examples of commercially available product names) about the chemical composition of the products to be injected. Per WAC 173-218-080, the nonendangerment standard for groundwater must be met. The chemicals in these fluids cannot result in exceedances of groundwater cleanup levels.

3) In the fifth paragraph of Section 4.0 (Treatment Approach), the work plan proposes approximately 55 direct-push borings as injection points. Ecology suggests referencing Section 5.4 (Treatment Monitoring) and elaborating on which field conditions may result in more than 55 injection points (in order to maximize degradation of chlorinated solvents).

4) With regards to groundwater monitoring before, during, and after the injections, Ecology requests that you consider the following:

    a. Ecology concurs that the well network should be sampled prior to initiating the injections in order to establish a recent baseline of pre-injection conditions at the Site (Figure 1).

    b. Ecology concurs that MW-01 is the background well to use for determining background conditions at the Site before, during, and after injection (Figure 2).

    c. Ecology concurs with the contingency for quarterly groundwater monitoring past the 12 month mark. A post-injection rebound spike of VOC concentrations is likely as desorption of VOCs from soil causes residual contaminant concentrations to enter the groundwater dissolved phase. Any rebound spike of chlorinated VOC concentrations in groundwater may persist beyond 12 months.

    d. Ecology recommends that all monitoring wells identified in the work plan (MW-01, MW-03, MW-16, MW-18, and MW-19) be sampled for the parameters and constituents proposed in the work plan (Tables 1 and 2). Except for MW-01, VOC concentrations have been identified in each monitoring well proposed for sampling, including MW-18, which is located at the northern property boundary.

    e. If in fact "contaminant concentrations are anticipated to be below cleanup levels within the first three months" (Section 4.0, fourth paragraph), monthly sampling should be completed for the first three months after injection in order to establish concentration trends. However, Ecology suggests revising this statement, as it is unlikely that concentrations trends will comply with Site cleanup levels within three months after injection without a subsequent rebound spike.

5) In Section 5.3, paragraph 2, it is stated: "Each injection point will be abandoned in accordance with Washington State law (WAC 173-160-381) using bentonite grout." Injection points advanced using direct push probe should be decommissioned consistent with WAC 173-218-120 and WAC 173-160-460. Bentonite grout is satisfactory to use for injection point decommissioning. Ecology recommends finishing each decommissioned injection point with a surface seal of concrete.

6) As a fermentable carbon source is proposed for injection into the subsurface, total organic carbon (TOC) should be added to the groundwater sampling list.

7) In Section 5.4 (Treatment Monitoring) of the work plan, it is proposed to measure the following groundwater quality parameters during treatment: depth to water, pH, temperature, dissolved oxygen (DO), conductivity, and oxidation-reduction potential (ORP). For consistency with past groundwater monitoring and to compare groundwater quality parameter data across monitoring events, Ecology recommends collecting data for all groundwater quality parameters, as identified in Table 2.

8) Though a contractor to complete the injections has not yet been selected, and thus the specific design of the field implemented chemical injection system may vary slightly, please provide a diagram of a standard design for the chemical injection system based on the equipment described in work plan Sections 5.1 (Equipment) and 5.3 (Treatment Methods).

9) Specify what is meant in Section 5.4 (Treatment Monitoring) by "alternative injection tooling or techniques."

10) Identify if any air monitoring is required based on the injection chemicals in addition to the photoionization detector (PID) based air monitoring proposed in the Air Monitoring Plan (Section 6.0) of the health and safety plan (HASP; Appendix A of workplan).

11) In accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840 (Data Submittal Requirements), data generated for 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; however Ecology highly recommends that this data be submitted concurrently with submittal of the environmental report.**

Please be sure to submit all soil and groundwater data collected to date, as well as any future data, in this format. Be advised that Ecology requires up to two weeks to process the data once they are received.

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 360-407-6265 or e-mail at Tim.Mullin@ecy.wa.gov .

Sincerely,

Tim Mullin, LG
SWRO Toxics Cleanup Program

tcm: kb

Enclosures (1): A – Selected Site Figures and Tables

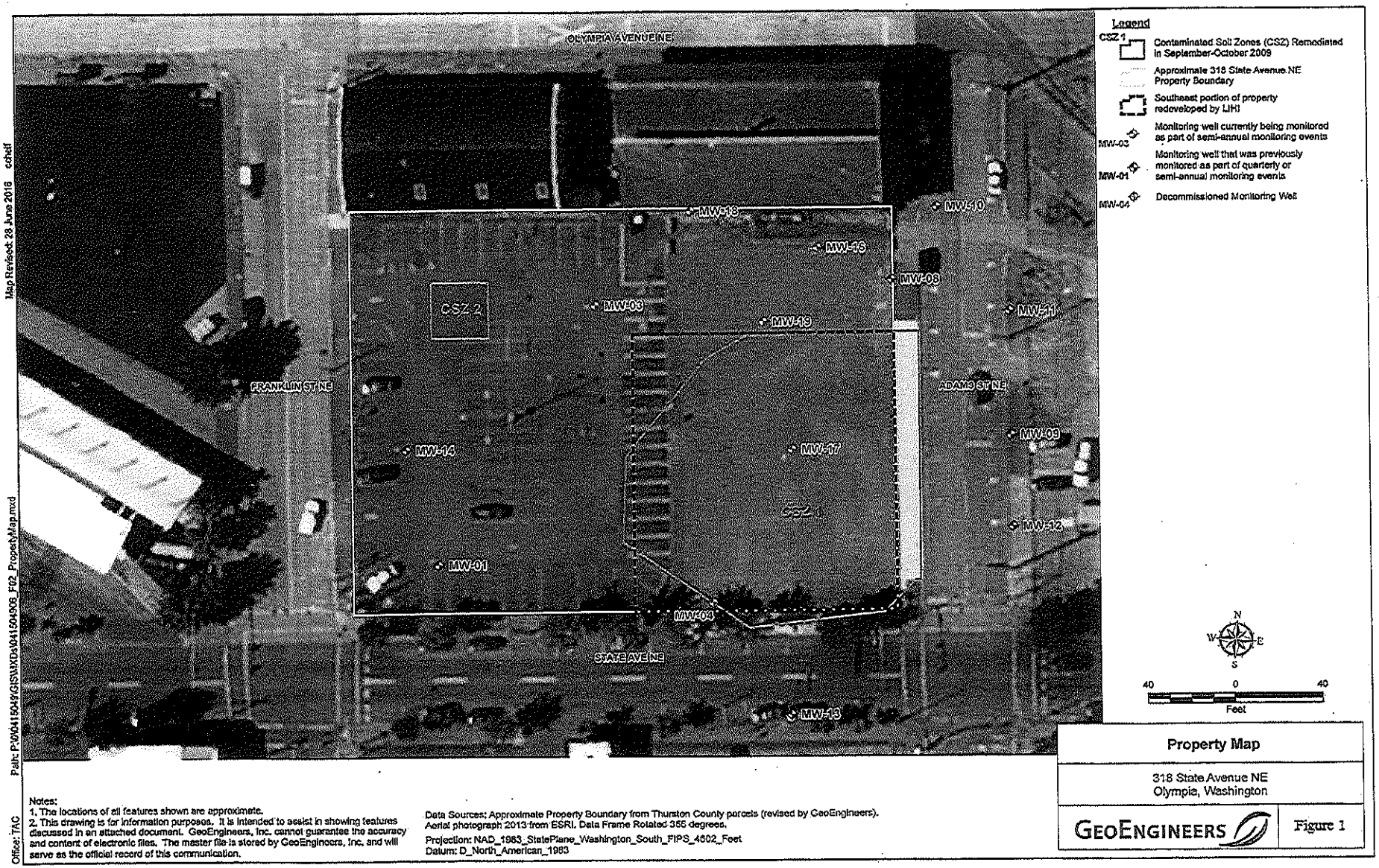
By Certified Mail: [91 7199 9991 7037 0278 3799]

cc: Iain Wingard, GeoEngineers
Nick Acklam, Ecology
Matt Alexander, Ecology

Enclosure A

Selected Site Figures and Tables

1) Figure 1 – Property Map
2) Figure 2 – Treatment Area
3) Table 1 – Summary of Groundwater Compliance Monitoring Parameters
4) Table 2 – Summary of Groundwater Quality Parameters



Map Revised: 28 June 2018 cshell

Path: P:\004150491GIS\MXDs\04150490G_F02_PropertyMap.mxd

Office: TAC

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Sources: Approximate Property Boundary from Thurston County parcels (revised by GeoEngineers).
Aerial photograph 2013 from ESRI. Data Frame Rotated 355 degrees.

Projection: NAD_1983_StatePlane_Washington_South_FIPS_4602_Feet
Datum: D_North_American_1983

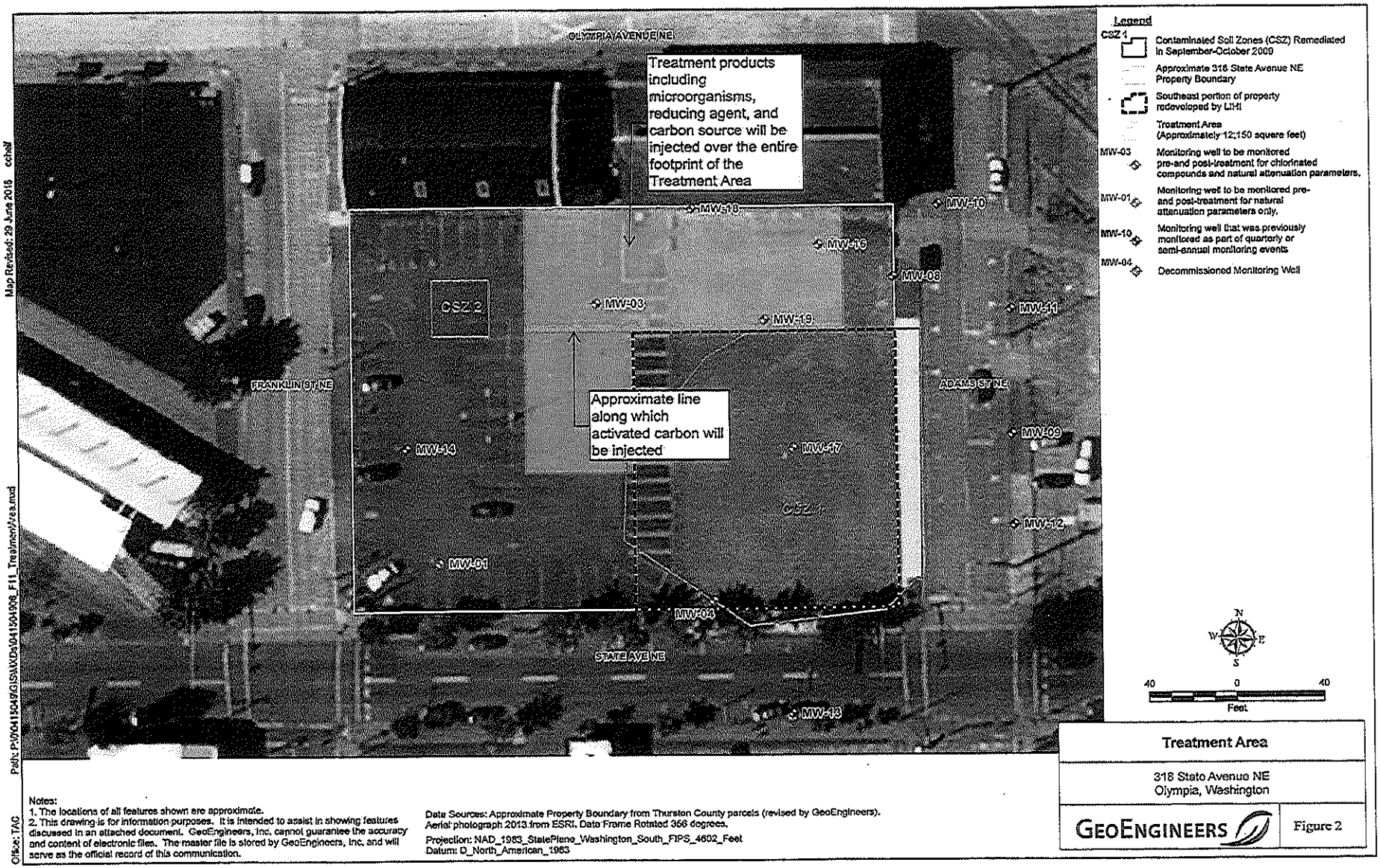
Property Map

318 State Avenue NE
Olympia, Washington

GeoEngineers

Figure 1

Figure 2



Map Revised: 29 June 2016 cchell

Path: P:\004115049\GIS\MXDs\041150496_F11_TreatmentArea.mxd

Office: TAC

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Sources: Approximate Property Boundary from Thurston County parcels (revised by GeoEngineers).
Aerial photograph 2013 from ESRI. Data Frame Rotated 366 degrees.

Projection: NAD_1983_StatePlane_Washington_South_FIPS_4602_Feet
Datum: D_North_American_1983

Treatment Area

316 State Avenue NE
Olympia, Washington

GeoEngineers | Figure 2

TABLE 1

SUMMARY OF GROUNDWATER COMPLIANCE MONITORING PARAMETERS[1]

318 STATE AVENUE NE

OLYMPIA, WASHINGTON

			Chlorinated Compounds					
		Analyte	Tetrachloroethene (PCE)	Trichloroethene (TCE)	1,1-Dichloroethene (1,1-DCE)	Cis-1,2-Dichloroethene (cis 1,2-DCE)	Trans-1,2-Dichloroethene (trans 1,2-DCE)	Vinyl Chloride (VC)
		Unit	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
		MTCA Groundwater Cleanup Levels[2]	8.85	7	3.2	NE	4,000	1.6
		Groundwater Screening Level for Soil Vapor Intrusion[3]	22.9	1.55	130	NE	NE	0.347
Location	Sample ID	Sample Date						
MW-03	MW3-052410-W	05/24/10	0.1 U	0.48	0.1 U	0.14	0.1 U	0.48
	MW3-082510-W	08/25/10	0.1 U	0.26	0.1 U	0.11	0.1 U	0.12
	MW3-112410-W	11/24/10	0.1 U	1.3	0.1 U	0.28	0.1 U	1.1
	MW3-022311-W	02/23/11	0.1 U	1.6	0.1 U	0.59	0.1 U	0.92
	MW3-052511-W	05/25/11	0.1 U	1.5	0.1 U	0.60	0.15	0.83
	DUP-052511-W[4]	05/25/11	0.1 U	1.2	0.1 U	0.36	0.12	0.69
	MW3-082411-W	08/24/11	0.1 U	0.64 J	0.1 U	0.31	0.11	0.37 J
	DUP-082411-W[5]	08/24/11	0.1 U	0.49 J	0.1 U	0.23	0.1 U	0.27 J
	MW3-112911-W	11/29/11	0.1 U	2.6	0.1 U	0.39	0.11	0.45
	DUP-112911-W[6]	11/29/11	0.1 U	2.7	0.1 U	0.41	0.10	0.62
	MW3-022812-W	02/28/12	0.1 U	0.99	0.1 U	0.63	0.18	1.4
	DUP-022812-W[7]	02/28/12	0.1 U	1.3	0.1 U	0.84	0.19	1.9
	MW3-082312-W	08/23/12	0.1 U	0.11	0.1 U	0.36	0.30	0.27
	DUP-082312-W[8]	08/23/12	0.1 U	0.11	0.1 U	0.34	0.33	0.26
	MW3-022813-W	02/28/13	0.1 U	0.70	0.1 U	0.34	0.14	0.72
	DUP-022813-W[9]	02/28/13	0.1 U	0.68	0.1 U	0.32	0.12	0.69
	MW03-82213-W	08/22/13	0.1 U	0.1 U	0.1 U	0.24	0.28	0.15
	DUP01-82213-W[10]	08/22/13	0.1 U	0.1 U	0.1 U	0.23	0.32	0.16
	MW3-140227-W	02/27/14	0.1 U	2.5	0.1 U	0.78	0.12	0.79
	MW03-140825-W	08/25/14	0.1 U	0.1 U	0.1 U	0.35	0.36	0.25
	MW03-150225-W	02/25/15	0.5 U	0.58	0.1 U	1.8	0.2 U	3.6
	MW03-150723-W	07/23/15	0.5 U	0.2 U	0.1 U	0.34	0.34	0.28
	MW3-160217-W	02/17/16	0.5 U	4.0	0.1 U	0.41	0.2 U	0.19
MW-16	MW16-052410-W	05/24/10	0.1 U	0.44	0.1 U	0.20	0.18	0.76
	MW16-082510-W	08/25/10	0.1 U	0.46	0.1 U	0.32	0.34	1.0
	MW16-112410-W	11/24/10	0.1 U	0.49	0.1 U	0.17	0.19	0.33
	DUP-1-112410-W[11]	11/24/10	0.1 U	0.50	0.1 U	0.16	0.21	0.38
	MW16-022311-W	02/23/11	0.1 U	0.42	0.1 U	0.13	0.13	0.22
	DUP-1-022311-W[12]	02/23/11	0.1 U	0.43	0.1 U	0.11	0.15	0.23
	MW16-052611-W	05/25/11	0.1 U	0.47	0.1 U	0.1 U	0.16	0.18
	MW16-082411-W	08/24/11	0.1 U	0.41	0.1 U	0.26	0.24	0.70
	MW16-112911-W	11/29/11	0.1 U	0.35	0.1 U	0.10	0.12	0.15
	MW16-022812-W	02/28/12	0.1 U	0.40	0.1 U	0.1 U	0.13	0.17
	MW16-082312-W	08/23/12	0.1 U	0.52	0.1 U	0.21	0.20	0.47
	MW16-022813-W	02/28/13	0.1 U	0.28	0.1 U	0.1 U	0.1 U	0.088
	MW16-82213-W	08/22/13	0.1 U	0.26	0.1 U	0.22	0.13	0.44
	MW16-140227-W	02/27/14	0.1 U	0.24	0.1 U	0.1 U	0.1 U	0.093
	DUP01-140227-W[13]	02/27/14	0.1 U	0.26	0.1 U	0.1 U	0.1 U	0.090
	MW16-140825-W	08/25/14	0.1 U	0.37	0.1 U	0.25	0.18	0.52
	DUP01-140825-W[14]	08/25/14	0.1 U	0.36	0.1 U	0.25	0.19	0.51
	MW16-150225-W	02/25/15	0.5 U	0.24	0.1 U	0.2 U	0.2 U	0.16
	DUP01-150225-W[15]	02/25/15	0.5 U	0.23	0.1 U	0.2 U	0.2 U	0.15
	MW16-150712-W	07/23/15	0.5 U	0.23	0.1 U	0.27	0.2 U	0.60
	DUP01-150723-W[16]	07/23/15	0.5 U	0.24	0.1 U	0.28	0.2 U	0.64
	MW16-160217-W	02/17/16	0.5 U	0.23	0.1 U	0.2 U	0.2 U	0.02 U
	DUP1-160217-W[17]	02/17/16	0.5 U	0.25	0.1 U	0.2 U	0.2 U	0.02 U
MW-18	MW18-052410-W	05/24/10	0.1 U	0.62	0.1 U	0.28	0.16	2.3
	MW18-082510-W	08/25/10	0.1 U	0.26	0.1 U	0.22	0.13	1.9
	MW18-112410-W	11/24/10	0.1 U	0.81	0.1 U	0.34	0.23	1.7
	MW18-022311-W	02/23/11	0.1 U	0.72	0.1 U	0.30	0.16	0.90
	MW18-052511-W	05/25/11	0.1 U	0.63	0.1 U	0.21	0.14	1.2
	MW18-082411-W	08/24/11	0.1 U	0.40	0.1 U	0.39	0.24	2.3
	MW18-112911-W	11/29/11	0.1 U	0.57	0.1 U	0.30	0.15	0.88
	MW18-022812-W	02/28/12	0.1 U	0.49	0.1 U	0.20	0.16	1.20
	MW18-082312-W	08/23/12	0.1 U	0.62	0.1 U	0.43	0.29	2.7
	MW18-022813-W	02/28/13	0.1 U	0.34	0.1 U	0.1 U	0.1 U	0.15
	MW18-82213-W	08/22/13	0.1 U	0.61	0.1 U	0.45	0.28	2.1
	MW18-140227-W	02/27/14	0.1 U	0.57	0.1 U	0.26	0.26	1.5
	MW18-140825-W	08/25/14	0.1 U	0.48	0.1 U	0.51	0.43	2.7
	MW18-150225-W	02/25/15	0.5 U	0.68	0.1 U	0.23	0.20	1.5
	MW18-150723-W	07/23/15	0.5 U	0.29	0.1 U	0.34	0.27	2.0
	MW18-160217-W	02/17/16	0.5 U	0.48	0.1 U	0.26	0.26	1.5
MW-19	MW-19-150723-W	07/23/15	0.5 U	0.47	0.1 U	0.2 U	0.2 U	0.89
	MW-19-151027-W	10/27/15	0.5 U	0.91	0.1 U	0.2 U	0.2 U	0.41
	MW19-160217-W	02/17/16	0.5 U	1.7	0.1 U	0.2 U	0.2 U	0.02 U
	MW19-160503-W	05/03/16	0.5 U	1.2	0.1 U	0.1 J	0.2 U	0.51
	DUP1-160217-W[18]	05/03/16	0.5 U	1.5	0.1 U	0.2 U	0.2 U	0.41

TABLE 2

SUMMARY OF GROUNDWATER QUALITY PARAMETERS[1]

318 STATE AVENUE NE
OLYMPIA, WASHINGTON

Location ID	Sample Date	Ferrous Iron (mg/l)	Sulfate (mg/l)	Dissolved Oxygen (mg/l)	pH	Conductivity (mS/m)	Salinity (ppt)	Total Dissolved Solids (g/l)	Turbidity (NTU)	Temperature (C)	ORP[2] (mv)	Water Level (ft btoc)
MW-03	05/24/10	0.9	7.5	4.38	9.79	27.2	0.1	1.4	0.89	16.2	-211	4.27
	08/25/10	1.4	1.2 U	0.31	6.98	75.0	0	0.48	0.94	21.32	-133	4.99
	11/24/10	0.8	6.6	0.00	7.04	68.7	0	0.43	0.84	15.53	-94	3.80
	02/23/11	0.6	2.5	0.01	7.10	46.3	0	0.3	2.51	11.28	-117	4.05
	05/25/11	0.8	2.4	0.01	7.07	46.7	NC	NC	0.59	15.12	-130	4.10
	08/24/11	1.1	1 U	0.40	7.20	72.3	0	0.46	0.44	21.02	-90	4.82
	11/29/11	0.6	11	5.00	7.10	59.0	0	0.38	3.08	13.67	89	3.49
	02/28/12	0.8	40 UJ	2.60	7.25	41.5	0	0.27	5.45	10.99	-59	3.75
	08/23/12	1.0	1.2 U	7.14	6.87	53.0	0	0.34	0.59	21.3	-117	4.92
	02/28/13	1.5	2.1	0.78	6.53	48.0	0	0.31	17.6	11.52	-48	3.98
	08/22/13	1.6	1.2 U	0.10	7.61	61.7	0	0.40	37.4[3]	23.2	-156	4.98
	02/27/14	0.0	11	3.80	7.30	33.2	0	0.31	0.63	10.3	204.4	3.44
	08/25/14	1.8	1.2 U	0.68	7.25	52.0	0.26	0.35	2.48	22.99	-108.6	4.78
	02/25/15	0.5	2.1	1.25	7.31	31.9	0.2	0.26	1.56	12.21	-70.3	4.14
	07/23/15	0.5	1.2 U	0.09	7.11	48.8	0.25	0.34	0.81	22.6	-150	5.04
	02/17/16	0.0	12	4.94	7.50	30.0	0.19	0.25	2.3	12.7	46.5	3.41
MW-16	05/24/10	0.0	20.0	2.44	8.19	26.6	0	0.17	2.9	15.1	-116	4.24
	08/25/10	0.4	42.0	0.04	7.26	69.8	0	0.44	1.2	21.91	-108	5.02
	11/24/10	0.0	28	1.93	7.54	49.8	0	0.36	1.16	15.42	-34	3.68
	02/23/11	0.0	17	5.08	7.53	37.5	0	0.24	2.58	11.53	-9	4.04
	05/25/11	0.0	11	1.02	7.55	33.1	NC	NC	2.28	13.87	64	4.06
	08/24/11	1.2	4.9	1.00	7.66	51.0	0	0.33	1.28	20.26	-66	4.86
	11/29/11	0.4	19	6.20	7.60	35.3	0	0.23	4.00	13.82	98	3.33
	02/28/12	0.0	54 UJ	6.80	7.70	29.8	0	0.19	1.87	10.89	87	3.72
	08/23/12	0.0	3.9	3.21	7.02	31.4	0	0.2	1.22	19.7	-109	4.91
	02/28/13	0.0	7.7	5.86	6.84	29.4	0	0.19	0.40	11.36	115	3.86
	08/22/13	0.0	3.5	0.11	7.93	46.5	0	0.3	62[3]	22.9	-177	4.91
	02/27/14	0.0	7.3	2.61	7.24	23.6	0	0.21	0.31	10.9	206.2	3.33
	08/25/14	0.5	3.1	0.72	7.59	42.1	0.21	0.28	0.42	22.35	-30.8	4.73
	02/25/15	0.0	5.7	3.07	7.64	23.1	0.15	0.2	1.39	11.51	-52.2	4.09
	07/23/15	0.5	1.2 U	0.11	7.41	42.6	0.22	0.31	0.91	20.6	-168.8	4.93
	02/17/16	0.0	8.5	3.32	7.66	21.3	0.13	0.18	2.65	12.6	40.1	3.28
MW-18	05/24/10	0.0	34.0	3.92	9.16	9.0	0	0.5	1.9	14.3	-194	4.39
	08/26/10	0.2	11.0	0.00	6.81	71.9	0	0.46	4.12	21.82	-75	5.09
	11/24/10	0.0	38	0.01	7.11	47.9	0	0.31	0.61	15.52	39	3.87
	02/23/11	0.0	23	0.17	7.22	40.3	0	0.26	0.99	11.7	55	4.15
	05/25/11	0.0	17	0.00	7.15	40.8	NC	NC	1.07	12.8	31	4.21
	08/24/11	0.2	18.5	0.50	7.33	74.1	0	0.47	0.48	19.54	-48	4.97
	11/29/11	0.4	23	3.50	6.81	34.3	0	0.22	2.82	13.18	183	3.63
	02/28/12	0.0	67 UJ	8.20	7.21	32.9	0	0.21	1.56	10.33	93	3.87
	08/23/12	1.0	7.5	4.03	7.08	53.4	0	0.34	3	18.2	-110	5.02
	02/28/13	0.0	7.4	5.68	6.05	21.1	0	0.14	7	10.94	182	4.02
	08/22/13	1.1	4.1	1.90	7.72	59.3	0	0.38	54.8[3]	20.9	-153	5.04
	02/27/14	0.0	11	3.00	7.1	22.2	0	0.2	0.48	10.6	201.3	3.52
	08/25/14	0.8	1.2 U	2.02	9.23	46.7	0.25	0.33	2.79	20.37	-102.9	4.85
	02/25/15	0.0	5.9	1.71	7.37	25.4	0.17	0.23	1.81	11.2	-35.2	4.21
	07/23/15	0.6	1.2 U	0.07	7.06	44.2	0.24	0.31	3.67	20.4	-102.6	5.08
	02/17/16	0.0	6.7	1.56	7.23	20.8	0.13	0.18	3.2	11.9	-5.2	3.53
MW-19	07/23/15	0.5	1.2 U	0.11	7.36	47.6	0.34	0.33	5.02	21.6	-144.6	4.66
	10/27/15	1.0	5.0	0.24	7.07	37.8	0.21	0.28	12.9	18.3	-138.7	3.47
	02/17/16	0.0	8.1	6.85	7.69	15.4	0.10	0.13	5.2	12.3	23.4	2.85
	05/03/16	0.0	11.0	0.28	7.02	290.0	0.17	0.23	4.54	15.5	-46.2	3.99

Notes:

[1] Groundwater quality parameters include the analytes ferrous iron and sulfate to evaluate and monitor natural attenuation.

[2] ORP field readings are considered to be an estimate.

[3] Turbidity measurements collected at this compliance monitoring location are considered to be biased high due to a water quality equipment malfunction. Visual observation made at the time of sampling identified that the sample was clear and free of particulates.

ORP = Oxidation/reduction potential

mg/l = milligrams per liter

g/l = grams per liter

ppt = parts per trillion

mv = MilliVolts

mS/m = milliSiemens per meter

C = Celsius

NTU = nephelometric turbidity unit

NC = Not collected

ft btoc = feet below the top of monitoring well casing

J = Analyte concentration is estimated

U = The analyte was not detected at a concentration greater than the identified reporting limit