SITE HAZARD ASSESSMENT
Worksheet 1: Summary Score Sheet

SITE NAME: Ultra Custom Cleaners **Rank: 1**

Cleanup Site ID: 14334

Facility/Site ID: 18955

Completed on 4/22/2020 for inclusion on the August 2020 Hazardous Sites List.

LOCATION OF SITE

2222 NW Bucklin Hill Rd, Suite 105

Silverdale, Kitsap County, WA 98383

Tax Parcel ID: 162501-4-111-2006

Township 25N, Range 1E , Section 16

Latitude, Longitude: 47.65091 , -122.67939

SITE DESCRIPTION

Within Currently Defined Site Boundaries

The Ultra Custom Cleaners site (Site) is located on the tax parcel listed above, which includes 0.96 acres of property zoned for community center use (Figure 1). The property is currently occupied by a strip retail building that is part of the Bucklin Place retail center. Contamination on the Site is linked to a dry cleaner, Ultra Custom Cleaners, located in the eastern-most tenant space.

The Governor's Puget Sound Initiative has a goal of restoring health to Puget Sound. Identifying contaminated properties around the shoreline can reduce pollution reaching the Sound. Ecology's Toxics Cleanup Program has determined this is a Puget Sound Initiative site because it is within one-half mile of Puget Sound.

Historical Owners and Operators

From	To	Owner/Operator	Site Uses
	2020	Ultra Custom Cleaners	dry cleaning

Area Surrounding the Site

The Site is generally located in a retail/commercial area. Apartment complexes are intermingled with commercial buildings to the north and east of the Site. The Site is generally flat, and a retaining wall separates it from the east-adjacent property, which is approximately 10 feet higher in elevation than the Site. The east-adjacent property (Figure 2) is occupied by the Montessori Children's House. The Children's House is affiliated with the Montessori School House in Bremerton, and hosts a toddler program on weekday mornings.

Approximately 1500 feet west of the Site, Clear Creek flows into Dyes Inlet. Old Mill Park is located just west of the confluence, and the Clear Creek Trail extends through the park and continues north along Clear Creek.

There are 2 additional Ecology cleanup sites within one quarter mile of this Site. Myhre Plaza Associates LLP has received a determination of No Further Action, and RK Mart is designated Cleanup Started.

SITE CHARACTERIZATION AND/OR REMEDIATION

Investigations at the Site began in early 2016, after a study by Adapt Engineering found elevated concentrations of tetrachloroethylene (PCE) and trichloroethylene (TCE) in soil vapor under the Ultra Custom Cleaners (UCC) tenant space. Landau Associates followed up with indoor air sampling in the UCC tenant space in April and May 2016. Sampling was done both at night, when the HVAC system was off and all building doors were closed, and

during the day, when the doors were open and the HVAC system was on. Ambient outdoor air samples have been collected concurrently with each indoor air sampling event on Site. Sampling conducted in May 2016 also included sub-slab soil vapor, 5 soil borings, and groundwater collected from 3 borings using temporary well screens. Soil samples did not contain PCE or TCE above MTCA Method A cleanup levels. Groundwater from borings SB-3 and SB-5 contained PCE above the Method A cleanup level, with a maximum concentration of 210 µg/L (Figure 3). Soil vapor contained PCE and TCE above Method B screening levels, with maximum concentrations of 3200 µg/m3 and 830 µg/m3, respectively. Indoor air concentrations were highest in samples collected at night, with maximum concentrations of 10 µg/m3 PCE and 68 µg/m3 TCE. These are above the Method B air cleanup levels (9.6 µg/m3 and 0.37 µg/m3, respectively). The TCE concentration is also above the commercial action level of 7.5 µg/m3, a value established under Ecology's Implementation Memo No. 22 to assess the risk of short-term TCE toxicity.

In August 2016, Landau Associates conducted sub-slab soil vapor and indoor air sampling in the Happy Nails tenant space adjacent to the UCC tenant space. Soil vapor samples contained PCE at a maximum concentration of 1100 µg/m3, above Method B screening levels, and TCE at a maximum of 19 µg/m3, below Method B screening levels. Indoor air samples did not contain PCE above laboratory reporting limits, but did contain TCE at a maximum concentration of 9.8 µg/m3. To mitigate the vapor intrusion of TCE into the tenant space, adjustments were made to the HVAC system settings in September 2016 to increase pressure inside the building and decrease potential vapor intrusion. Followup indoor air sampling was conducted in November 2016 to assess the effectiveness of this measure. Both PCE and TCE concentrations in the November samples were below laboratory reporting limits, indicating a successful mitigation.

Similar adjustments were made to the HVAC system for the UCC tenant space in September 2016 to increase pressure within the building and decrease vapor intrusion. Indoor air sampling in November 2016 in the UCC space indicated that these measures may not have been successful, as PCE and TCE were still present at concentrations of 4.1 µg/m3 and 65 µg/m3, respectively. A chemical inventory had been performed by Landau in March 2016 as part of a building survey before any air sampling was conducted. This inventory included 3 spot cleaners that possibly contained PCE or TCE. To assess whether the PCE and TCE concentrations observed in the November 2016 sampling were related to an indoor source or vapor intrusion, additional sampling was done in June 2017 by GeoEngineers. For this sampling, all chemicals and treated clothes were removed from the building for the duration of sampling. Samples were collected in the same locations as the November 2016 sampling. Concentrations of PCE and TCE were lower in the June 2017 sampling, with maximum concentrations of 0.37 µg/m3 and 0.19 µg/m3, respectively. These results suggest that modifications to the HVAC system may be effective at limiting vapor intrusion, but that normal business operations within the UCC tenant space also contribute to total observed indoor air PCE and TCE concentrations.

GeoEngineers did additional soil and groundwater sampling in February and March 2018 to help determine the extent of subsurface contamination. Six soil borings were advanced within the UCC tenant space to a maximum depth of 6 feet below ground surface (bgs). PCE was present above cleanup levels in boring B-3. A deep soil boring to 70 feet bgs was completed as a monitoring well in the aquifer at approximately 45 feet bgs. A groundwater sample from the perched aquifer at approximately 19 feet bgs was collected during boring. No samples from the deep boring contained PCE or TCE above laboratory reporting limits.

ADDITIONAL INFORMATION COLLECTED BY THE SITE HAZARD ASSESSOR

The Assessor visited the Site in February 2020. Site conditions were consistent with what was described in Site reports. Tenants in the strip mall building at that time included Ultra Custom Cleaners, Happy Nails, and Papa Murphy's Take 'N' Bake Pizza (Figure 2). The rest of the building was vacant. The retail building north of the strip mall was occupied by Tractor Supply Company and DEFY Silverdale, an indoor trampoline and extreme air sports park.

Site data was evaluated to assess the potential of toxicity following short-term exposure to TCE. This evaluation included the retail buildings closest to the currently known area of contamination. The Montessori Children's School is located approximately 110 feet away from the contamination, outside of the standard 100 foot screening distance, and was not considered likely to be impacted by vapor intrusion. Indoor air sampling after mitigation in the retail spaces confirms that TCE is not present above the action levels specified in Ecology

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SITE HAZARD ASSESSMENT
Worksheet 1: Summary Score Sheet

Implementation Memo 22. Further evaluation of short-term TCE risk may be necessary as further information is gathered about the extent of subsurface contamination.

SPECIAL CONSIDERATIONS

Checked boxes indicate routes applicable for Washington Ranking Method (WARM) scoring

☐ **Surface Water**

Not scored since currently available information does not indicate that contaminated groundwater extends as far as closest surface water.

☑ **Air**

Contaminants detected in soil vapor above screening levels and indoor air above cleanup levels (prior to mitigation).

☑ **Groundwater**

Contaminants detected in groundwater above cleanup levels.

The area within 2 miles surrounding the Site is served by multiple public water systems. These include the Silverdale Water District, City of Bremerton, North Perry Ave Water District, Island Lake Water Co., and multiple small areas that are served by Kitsap Public Utility District (Berquist, Brianwood, and Avellana). Given the availability of public water system connections and the coverage areas of these water systems, Group A water system wells are the likely source of drinking water for residents in the area, and were the wells considered for groundwater scoring. Since the extent of groundwater contamination at the Site has not been fully delineated and groundwater flow direction has not been determined, all Group A wells within 2 miles of the Site (Figure 4) were included in scoring.

ROUTE SCORES

Surface Water/ Human Health:		Surface Water/ Environment:	
Air/ Human Health:	25.8	Air/ Environment:	1.8
Groundwater/ Human Health:	58.7		

Overall Rank: 1

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State of Washington

SITE HAZARD ASSESSMENT
Worksheet 1: Summary Score Sheet

REFERENCES

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2 GeoEngineers. April 2018. Focused Soil and Groundwater Investigation, Ultra Custom Cleaners, 2222 NW Bucklin Hill Road, Silverdale, Washington.

3 GeoEngineers. August 2017. Supplemental Indoor Air Sampling and Evaluation, Ultra Custom Cleaners, 2222 NW Bucklin Hill Road, Silverdale, Washington.

4 Kitsap County Parcel Search. Accessed 2020. https://psearch.kitsapgov.com/psearch/index.html

5 Kitsap Public Utilities District. Accessed 2020. Water Service Areas Boundaries Map. https://www.kpud.org/downloads/CWSP_Esized_20191121.pdf

6 Landau Associates. December 2016. Technical Memorandum RE: Chemical Inventory Evaluation, HVAC System Adjustments, and Indoor Air Sampling Summary, Ultra Custom Cleaners Tenant Space - Bucklin Place, Silverdale, Washington.

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9 Landau Associates. September 2016. Technical Memorandum RE: Sub-Slab Soil Vapor and Indoor Air Sampling Results, Happy Nails Tenant Space - Bucklin Place, Silverdale, Washington.

10 Missouri Census Data Center. Accessed 2019. Circular Area Profiles – Version 10C. http://mcdc.missouri.edu/websas/caps10c.html

11 NOAA National Centers for Environmental Information. Accessed 2019. Global Summary of the Year 2000 - 2018 – Bremerton Weather Forecast Office. Requested from https://www.ncdc.noaa.gov/cdo-web/

12 WA Dept. of Ecology. Implementation Memo No. 22: Vapor Intrusion (VI) Investigations and Short-Term Trichloroethene (TCE) Toxicity. https://fortress.wa.gov/ecy/publications/SummaryPages/1809047.html

13 WA Dept. of Ecology. Accessed 2019. What's in My Neighborhood. https://fortress.wa.gov/ecy/neighborhood/

14 WA Dept. of Health Office of Drinking Water. Accessed 2020. Source Water Assessment Program (SWAP) Map. https://fortress.wa.gov/doh/swap/index.html

15 WA Dept. of Health Office of Drinking Water. Accessed 2020. Find Water System. https://fortress.wa.gov/doh/eh/portal/odw/si/FindWaterSystem.aspx

SITE HAZARD ASSESSMENT
Worksheet 2: Route Documentation

SITE NAME: Ultra Custom Cleaners

Cleanup Site ID: 14334

Facility/Site ID: 18955

1. SURFACE WATER ROUTE

List those substances to be considered for scoring:

Not scored.

Explain the basis for choice of substances to be used in scoring:

List those management units to be considered for scoring:

Explain basis for choice of unit to be used in scoring:

2. AIR ROUTE

List those substances to be considered for scoring:

PCE, TCE

Explain the basis for choice of substances to be used in scoring:

Detected in indoor air and soil vapor samples.

List those management units to be considered for scoring:

soil vapor, indoor air

Explain basis for choice of unit to be used in scoring:

Media that have a direct impact on assessment of indoor air quality.

3. GROUNDWATER ROUTE

List those substances to be considered for scoring:

PCE

Explain the basis for choice of substances to be used in scoring:

Detected in groundwater above cleanup levels.

List those management units to be considered for scoring:

soil, groundwater

Explain basis for choice of unit to be used in scoring:

Media that are impacted or that could contribute to future groundwater impacts.

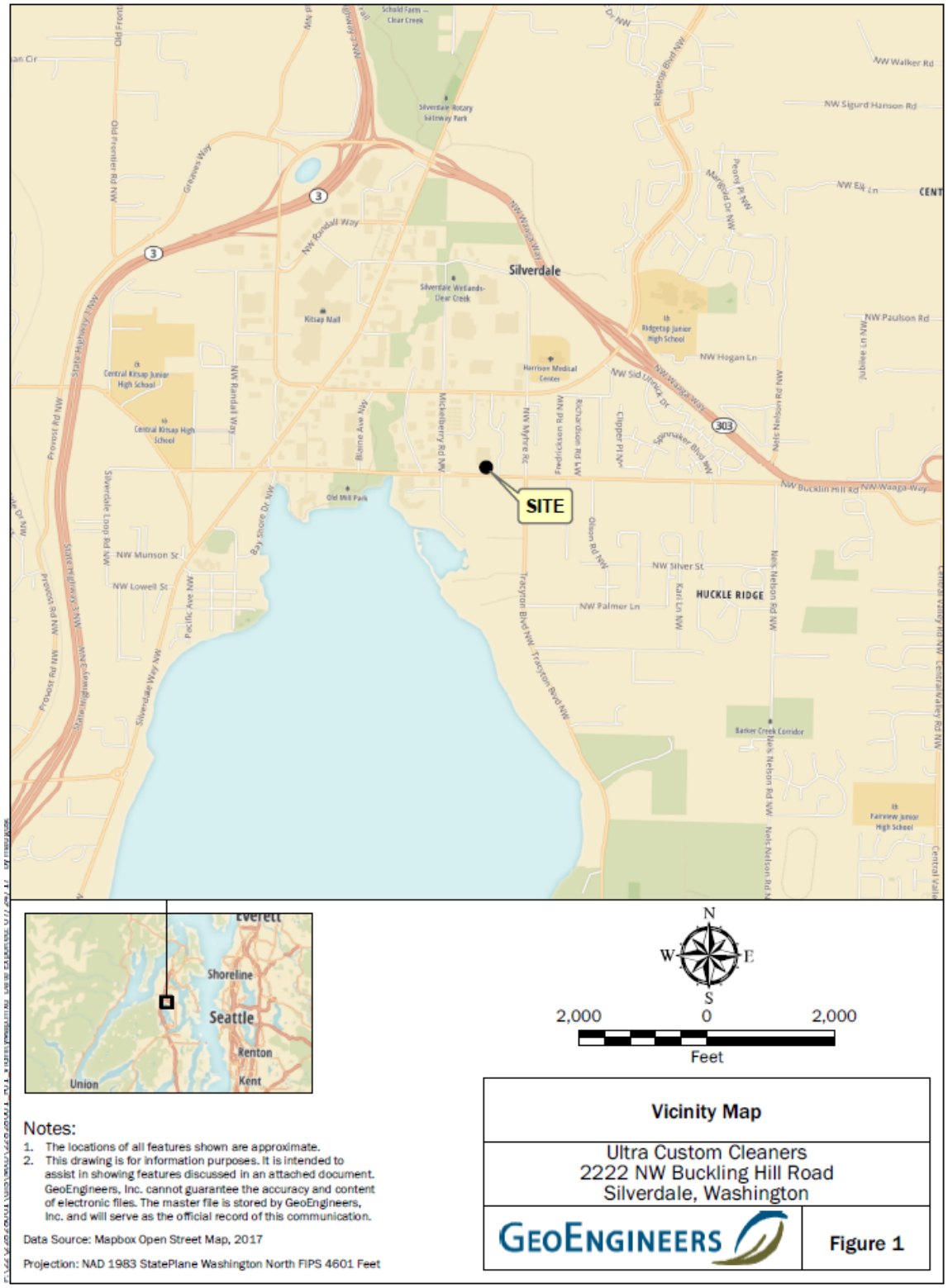

Figure 1. General location of the Site. Figure from GeoEngineers 2018.

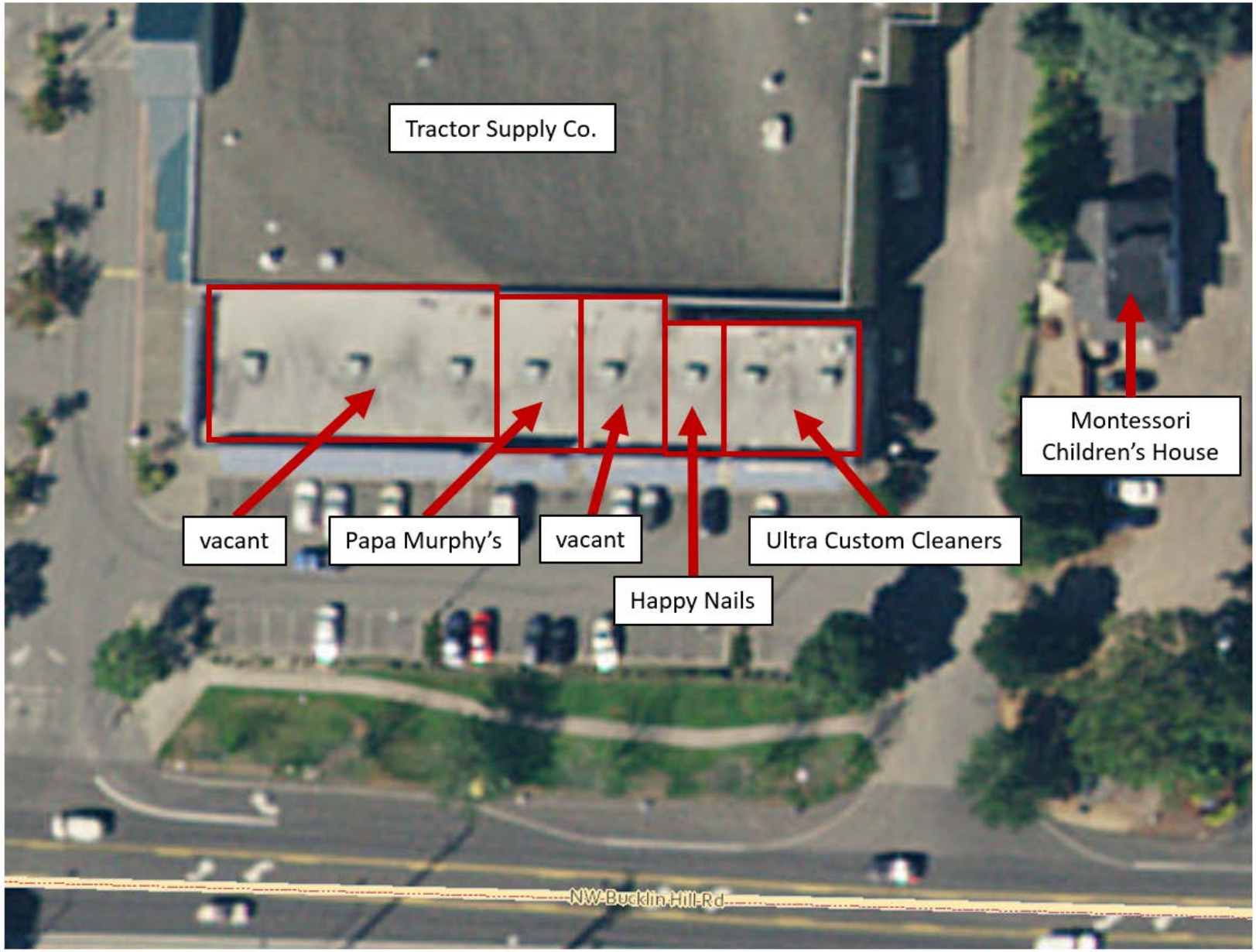

Figure 2. Location of businesses near Site as of February 2020. Basemap is 2017 aerial from Kitsap Parcel Search.

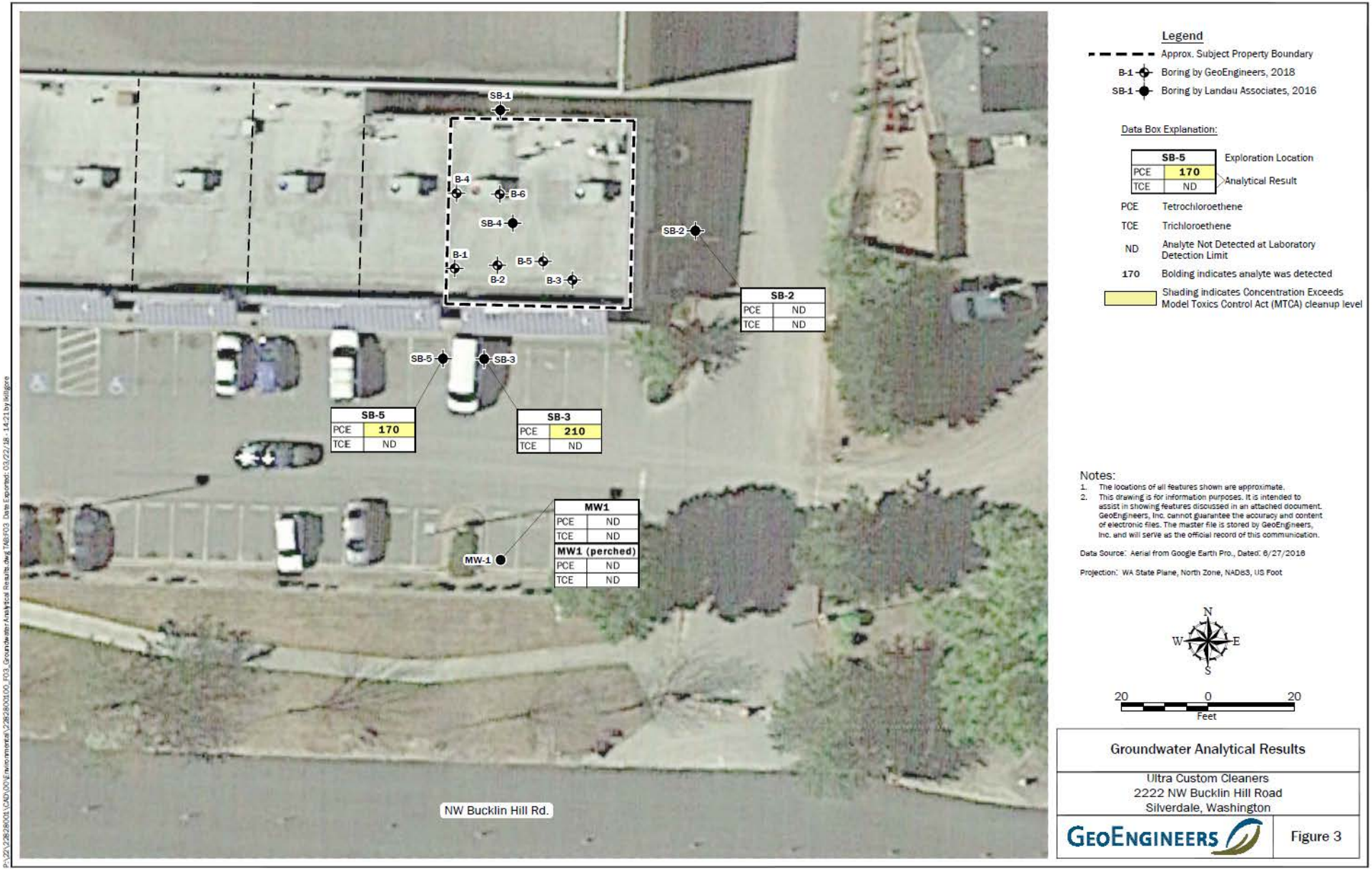

Figure 3. Location of soil and groundwater sampling. Groundwater exceeding Method A cleanup levels is shown on the figure. Soil exceeding Method A cleanup levels was found at both the 3.5-4 and 5.5-6 feet bgs sample intervals at location B-3. Detections below the Method A cleanup level were found at locations B-5 and B-6. Figure from GeoEngineers 2018.

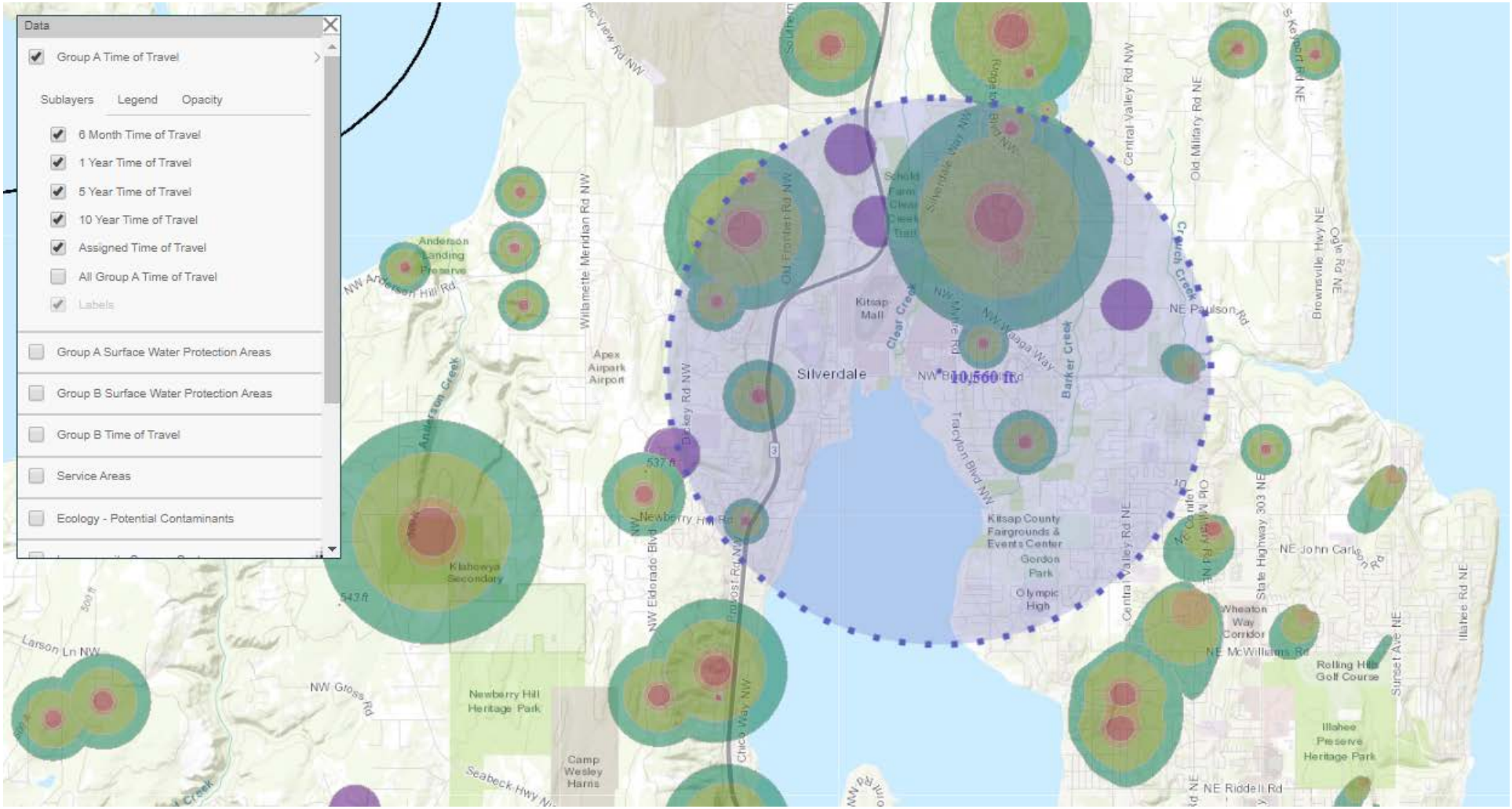

Figure 4. Dashed circle includes Group A water system wells within 2 miles (10,560 feet) of the Site. Figure from DOH SWAP Map.

Worksheet 4
Surface Water Route

CSID: 14334

Site: Ultra Custom Cleaners

Not scored.

Worksheet 5
Air Route

CSID: 14334

Site: Ultra Custom Cleaners

1.0 SUBSTANCE CHARACTERISTICS

1.1 Introduction

No scoring in Section 1.1.

1.2 Human Toxicity

	Amb. Air Stnd.		Acute Toxicity		Chronic Toxicity		Carcinogenicity	
Substance	Value (ug/m^3)	Score	Value (mg/m^3)	Score	Value (mg/kg/day)	Score	Adj. CPFi (risk/mg/kg-day)	Score
tetrachloroethylene (PCE)	1.69E-01	10	4.00E+03	5	1.14E-02	5	7.28E-04	3
trichloroethylene (TCE)	5.00E-01	10	1.56E+04	3	5.71E-04	10	1.44E-02	5

Maximum score: 10

Bonus points: 2

Human Toxicity Score: 12

Source: WARM Toxicity Database

Range: 1-12

1.3 Mobility

Gaseous Mobility

	Vapor Pressure		Henry's Law	
Substance	Value (mm Hg)	Score	Value (atm-m3/ mol)	Score
PCE	1.80E+01	4	1.82E-02	4
TCE	5.80E+01	4	1.03E-02	4

Maximum score: 4

Source: WARM Toxicity Database

Particulate Mobility

Soil type:

Erodibility factor:

Climatic factor:

Mobility value:

Mobility Score: 4

Source:

Range: 0-4

1.4 Human Toxicity/Mobility

Source: WARM Scoring Manual

Human Tox/Mobil Score: 24

Range: 1-24

1.5 Environmental Toxicity/Mobility

Substance	Acute Value (mg/m^3)	Score
PCE	4.00E+03	5
TCE	1.56E+04	3
Maximum score	5	

Source: WARM Toxicity Database

Environmental Toxicity Score: 5

Range: 1-10

Environmental Tox/Mobil Score: 10

Range: 1-24

1.6 Substance Quantity

Quantity: 2650 ft^2

Basis: estimated area of soil vapor above screening levels (Happy Nails tenant space + Ultra Custom Cleaners tenant space)

Source: site reports

Substance Quantity Score: 4

Range: 1-10

2.1 Containment

Description: soil contamination > 2 feet bgs with no active vapor collection system

Basis: site reports

Containment Score: 5

Range: 0-10

SUBSTANCE PARAMETER CALCULATIONS

Human Health Pathway

SUBh (Human Tox/Mobil + 5) x (Containment +1) + Substance Quantity 178.0

Environmental Pathway

SUBe (Environ. Tox/Mobil + 5) x (Containment +1) + Substance Quantity 94.0

3.0 TARGETS

3.1 Nearest Population

Description: adjacent retail building to the north

Distance (ft): 20

Source: Kitsap Co. parcel search

Nearest Population Score: 10

Range: 0-10

3.2 Nearest Sensitive Environment

Description:	Dyes Inlet		
Distance (ft):	1,500	Nearest Sensitive Environment Score:	6
Source:	Kitsap Co. parcel search	Range:	0-7

3.3 Population within One-Half Mile

Number:	1,317	Population within Half Mile Score:	36.3
Source:	MO CDC	Range:	0-75

TARGET PARAMETER CALCULATIONS

Human Health Pathway

TARh: Nearest Population + Population within Half Mile **46.3**

Environmental Pathway

TARe Nearest Sensitive Environment **6.0**

4.0 RELEASE

Evid. of release?	indoor air currently below cleanup levels due to mitigation measures		
Source:	site reports	Release Score (REL):	0.0
		Range:	0 or 5

AIR ROUTE CALCULATIONS

Human Health Pathway

AIRh = (SUBh x 60/329) x {REL + (TARh x 35/85} / 24 **25.8**

Environmental Pathway

AIRe = (SUBe x 60/329) x {REL + (TARe x 35/85} / 24 **1.8**

Range: 0-100

Worksheet 6
Groundwater Route

CSID: 14334

Site: Ultra Custom Cleaners

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human toxicity

Substance	Drink. Wat. Stnd Value (ug/L)	Score	Acute Toxicity Value (mg/kg)	Score	Chronic Toxicity Value (mg/kg/day)	Score	Carcinogenicity Adj. CPFo (risk/mg/kg-day)	Score
PCE	5.00E+00	8	8.00E+02	5	6.00E-03	3	1.68E-03	3

Maximum score: 8
Bonus points:
Human Toxicity Score: 8
Source: WARM Toxicity Database
Range: 1-12

1.2 Mobility

Substance	Solubility Value (mg/L)	Score
PCE	2.00E+02	2

Maximum value: 2
Mobility Score: 2
Source: WARM Toxicity Database
Range: 1-3

1.3 Substance quantity

Quantity: 206 yd^3
Basis: lateral area based on B-3, SB-3, and SB-5 (103 yd^2) x approximate 2 yd depth of contamination (soil at 3.5 ft bgs to groundwater at approx. 8 ft bgs)
Source: site reports
Substance Quantity Score: 3
Range: 1-10

2.1 Containment

Description: contaminated soil and groundwater
Source: site reports
Containment Score: 10
Range: 0-10

SUBSTANCE PARAMETER CALCULATION

SUB = (Human Toxicity + Mobility + 3) x (Containment + 1) + Substance Quantity **146.0**

2.0 MIGRATION POTENTIAL

2.2 Net precipitation

Amount (in.): 36
Net Precipitation Score: 4
Source: NOAA NCEI, ESRI
Range: 0-5

2.3 Subsurface Hydraulic Conductivity

Description: silty sand and silt with sand

Source: site reports

Hydraulic Conductivity Score: 3

Range: 1-4

2.4 Vertical Depth to Aquifer

Depth (ft): 0 - groundwater is contaminated

Source: site reports

Depth to Aquifer Score: 8

Range: 1-8

MIGRATION PARAMETER CALCULATION

MIG = Depth to Aquifer + Net Precipitation + Hydraulic Conductivity

15.0

3.0 TARGETS

3.1 Aquifer Usage

Description: public or private supply, alternate sources available (additional wells nearby but outside of 2 mi radius from the Site)

Source: WDOH Water System Database and SWAP Map

Aquifer Use Score: 4

Range: 1-10

3.2 Distance to Nearest Drinking Water Well

Distance (ft): 2,100

Source: WDOH Water System Database

Well Distance Score: 3

Range: 0-5

3.3 Population Served by Drinking Water Wells within Two Miles

Population Served Score: 100.0

No. of people: 39,811

Range: 0-100

Source: WDOH Water System Database - total for Group A systems

3.4 Area Irrigated by Wells within Two Miles

Area Irrigated Score: 20.3

Area (acres): 732

Range: 0-50

area of possible irrigation estimated using half of the number of residential connections to Group A wells counted above (total = 15,952) x approximate average size of yard in area around site (4000 ft^2, measured using Google Maps)

Source: WDOH water system database

TARGET PARAMETER CALCULATION

127.3

TAR = Aquifer Use + Well Distance + Population Served + Area Irrigated

4.0 RELEASE

Evid. of release? groundwater is contaminated

Source: site reports

Release Score (REL): 5.0

Range: 0 or 5

GROUND WATER ROUTE CALCULATION

58.7

GW = (SUB x 40/208) x {(MIG x 25/17) + REL + (TAR x 30/165)} / 24

Range: 0-100

Washington Ranking Method
Route Scoring Summary and Ranking Calculation

CSID: **14334**

Site: **Ultra Custom Cleaners**

Human Health Route Scores

Pathway	Score	Quintile
Surface water	0.0	
Air	25.8	4
Groundwater	58.7	5

Quintile	Value
High (H)	5
Middle (M)	4
Low (L)	

Human Health Pathway Quintiles - based off February 2020 HSL

Quintile	Surface Water		Air		Groundwater	
1	<=	7.3	<=	8.6	<=	24.1
2	7.4	14.7	8.7	16.3	24.2	33.1
3	14.8	21.1	16.4	25.6	33.2	40.4
4	21.2	29.5	25.7	40.1	40.5	49.6
5	>=	29.6	>=	40.2	>=	49.7

$(H^2 + 2M + L) / 8$

Human Health Priority Bin Score: 4.1

Environmental Route Scores

Pathway	Score	Quintile
Surface water	0.0	
Air	1.8	3

Quintile	Value
High (H)	3
Low (L)	

Environmental Pathway Quintiles - based off February 2020 HSL

Quintile	Surface Water		Air	
1	<=	11.3	<=	1.2
2	11.4	24.1	1.3	1.5
3	24.2	32.4	1.6	13.8
4	32.5	49.6	13.9	27.3
5	>=	49.7	>=	27.4

$(H^2 + 2L) / 7$

Environmental Priority Bin Score: 1.3

FINAL MATRIX RANKING

Human Health Priority	Environmental Priority 5	4	3	2	1	n/a
5	1	1	1	1	1	1
4	1	2	2	2	3	2
3	1	2	3	4	4	3
2	2	3	4	4	5	3
1	2	3	4	5	5	5
n/a	3	4	5	5	5	NFA

n/a - not applicable

NFA - no further action

Site Rank: 1