ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING
AN ATLAS COMPANY

6347 Seaview Avenue NW
Seattle, WA 98107
Phone +1 206-781-1449
Fax +1 206-781-1543
www.atcgroupservices.com

January 5, 2021

Mr. Mike Warfel
Department of Ecology, Northwest Region
3190 160th Avenue SE
Bellevue, WA 98008

Re: Response to Ecology Opinion Letter dated November 17, 2020
Site Address: 12660 1st Ave S, Burien WA 98168
Site Name: Circle K 1476 (Phillips 66 Facility No. 2701476, AOC #2063)
Facility/Site No.: 35395376
Cleanup Site ID: 8839
VCP Project No.: NW2718
ATC Project Number: Z076000070

Dear Mr. Warfel:

ATC Group Services LLC (ATC) has reviewed the Washington State Department of Ecology (Ecology) Opinion letter, dated November 17, 2020 for the above-referenced site (**Figure 1**). A copy of the Opinion Letter is included in **Attachment A**. We offer the following responses on behalf of the Voluntary Cleanup Program (VCP) Customer, Phillips 66 (Phillips). ATC provides the following specific responses to the items contained in the November 17, 2020 Ecology letter (Ecology's items are in bold font, while ATC's responses are in regular font).

Ecology's comments from the November 17, 2020 letter are presented below in italics, followed by ATC's responses. *Proposed additional scopes of work are italicized*. We would appreciate if we could meet with you once you have had a chance to review this letter, so that we can formulate an agreed-upon scope of work.

Analysis and Opinion
Based on a review of the RI Report, Ecology has determined:

• Ecology appreciates the continued progress towards Site cleanup, including confirmation soil sampling, decommissioning of older monitoring well with excessively long well screens, submission of the *RI Report*, and ongoing quarterly groundwater monitoring.

• The "Site Boundary" shown on Figure 1 of the *RI Report*, Site Plan, should be re-labeled as "Property Boundary," to be consistent with the MTCA definition of "Site." Also, please adjust the Property boundary to be consistent with the boundary of parcel 1446800380, per the King County Assessor's tax parcel map.

ATC Response: ATC has revised Figure 1: Site Plan of the RI Report, to show the "Property Boundary," to be consistent with the MTCA definition of "Site", and to adjust the Property boundary to be consistent with the boundary of parcel 1446800380, per the King County Assessor's tax parcel map. The revised Figure 2 is attached to this letter.

The "Current Soil Conditions – 2018 Soil Data" (Figure 8 of the *RI Report*) needs to be updated to include the following soil sample exceedances of Method A cleanup levels:

Consulting Firm	Sample Name	Sample Date	Sample Depth (ft below ground surface)
ESE	NWW	1/8/1992	11.0
ESE	TFOX-1	1/17/1992	14.5
ESE	SDOX-F1	1/23/1992	3.0
ESE	SDOX-WW	1/23/1992	2.0
ESE	SDOX-F4	2/20/1992	15.0
ESE	SDOX-DWW1	2/20/1992	11.0
ESE	SDOX-DSW1	2/20/1992	12.0
ESE	SDOX-DEW1	2/20/1992	10.0
ESE	B-1	4/20/1992	15
SEACOR	MW-5	4/20/1994	35-35.5
SEACOR	MW-5	4/20/1994	75-75.5
SEACOR	MW-6	4/20/1994	40-40.5
SEACOR	MW-6	4/20/1994	60-60.5
SEACOR	AI-1	4/20/1994	20-20.5
SEACOR	AI-1	4/20/1994	40-40.5
Cardno ATC	SB-1-30'	7/18/2012	30
Cardno ATC	SB-1-50'	7/18/2012	50
Cardno ATC	SB-5-30'	7/19/2012	30
Cardno ATC	SB-5-45'	7/19/2012	45

ATC Response: See next comment.

• If adjacent confirmation soil samples resolved any of these exceedances, please document by linking each prior exceedance with the confirmation sample result in a table.

ATC Response:

As noted above, petroleum impacted soil has historically been detected at concentrations greater than the MTCA Method A cleanup levels in sample locations NWW, TFOX-1, SDOX-F1, SDOX-WW, SDOX-F4, SDOX-DWW1, SDOX-DSW1, SDOX-DEW1, B-1, MW-5, MW-6, AI-1, SB-1, and SB-5. A total of nineteen samples collected from these fourteen locations were specified.

Between October 8 and October 31, 2018 ATC oversaw the installation of 6 shallow and deep monitoring well pairs in the vicinity of the south dispenser island. Additionally, two shallow wells were also installed adjacent to existing wells GW-8 and GW-10 to create well pairs at these locations. Shallow well borings advanced in 2018 were designated GW-8S, GW-10S, and GW-13S through GW-18S, and deep well borings were designated GW-13D through GW-18D. All locations are shown on **Figure 2**. Some of the sample depths were selected in order to evaluate if contaminant degradation had occurred.

The attached **Table 1** compares the TPH-g and BTEX concentrations detected at fourteen locations (nineteen soil samples) collected between 1992 and 2012 to the TPH-g and BTEX concentrations detected in the confirmation samples from similar locations and depths collected in 2018.

A comparison of the analytical data obtained during the 2018 assessment to the nineteen historical samples noted above indicates the following:

- No confirmation samples were collected in the vicinity of former samples NNW and TFOX-1. Both locations are along the north side of the UST basin. However, data from the other confirmation samples could be used to support the assertion that similar scale of decrease has occurred at these locations.
- Five of the prior samples were collected under the existing dispenser island, so the closest confirmation sample locations were approximately 21 to 30 feet away.
- At one of the sample locations (MW-6 at 60 feet bgs), the benzene concentration increased from 0.12 mg/kg to 0.553 mg/kg.
- In six of the locations, new samples were within 4 to 10 feet of the original locations, and concentrations of petroleum hydrocarbons and related constituents decreased and attenuated over time to below CULs and often, to below the detection limits

Using the demonstrated sample reductions in the samples within 4-10 feet of prior samples, concentrations from prior locations would also likely have decreased over time by similar percentages, resulting in current concentrations below respective CULs.

• The off-Property detection of benzene in soil in the GW-8 boring (2.11 mg/kg at 80.5 – 81 feet) occurred in October 1994, when the contaminant plume in the lower groundwater zone was present in well GW-8D (benzene up to 25,000 µg/L). Concentrations of contaminants in GW-8D have been below Method A cleanup levels since the September 2000 monitoring event. Therefore, it is unlikely that Site impacts to soil are currently present at GW-8.

ATC Response: ATC appreciates this comment, and will remove the off-Property detection of benzene in soil in the GW-8 boring (2.11 mg/kg at 80.5 – 81 feet) from the list of current soil impacts present at the Site.

• The geologic cross sections in the *RI Report* (Figures 4 and 5) need to show elevations on the vertical axis, rather than depth below ground surface. The elevation datum should be referenced as National Geodetic Vertical Datum (NGVD) 1988.

ATC Response: ATC has revised the geologic cross sections to reflect this modification. Revised **Figures 3 and 4** show elevations on the vertical axis, and are attached to this letter.

• Show GW-9D as a decommissioned well on Site maps.

ATC Response: ATC has revised historical soil and groundwater figures to reflect this modification. Revised **Figure 2** is attached to this letter.

• The horizontal extent of impacts to groundwater in the shallow and deep groundwater zones has not been delineated and likely extends into the S 128th Street right-of-way. Monitoring wells GW-18S and GW-18D are in a critical downgradient location with respect to assessing the extent of impacts in the shallow and deep groundwater zones, respectively. However, the sampling record for MW-18S has shown "insufficient water to sample" in all six sampling events for this well, from 12/11/2018 through 3/11/20. Similarly, samples from MW-18D could not be collected during the last two events listed for that well (3/11/20 and 7/31/20). Alternatives to assessing the horizontal extent of groundwater impacts from the Site need to be evaluated.

ATC Comment: ATC concurs that additional data would be useful at select locations to characterize current groundwater conditions. To address this comment, ATC proposes well installation in the vicinity of GW-18S and GW-18D. ATC requests a meeting to discuss the preferred locations for any additional monitoring wells, and any other alternatives to assessing the horizontal extent of groundwater impacts from the Site.

• The vertical extent of groundwater impacts has not been determined. Data from Site monitoring wells and regional groundwater resource reports document downward vertical groundwater gradients in the layered hydrogeologic system comprised of the Vashon till, Vashon advance outwash, and underlying pre-Vashon deposits (see Enclosure A, Figure 7). Alternatives to assessing the vertical extent of groundwater impacts from the Site need to be evaluated.

ATC Comment: The deepest wells at the Site that have had detections of petroleum hydrocarbon compounds above MTCA Method A cleanup levels are GW-14D and GW-18D. Therefore, ATC proposes installing a deeper well at GW-18D to determine if impacts extend vertically at the Site. ATC requests a meeting to discuss the preferred locations for any additional monitoring wells, as well as other potential alternatives to assessing the vertical extent of groundwater impacts from the Site.

Based on the generalized hydrostratigraphic cross section included with Ecology's opinion letter (**Attachment A**), the top and base of the shallow aquifer in the vicinity of the Site is approximately 325 and 250 foot elevation, respectively. Wells at the Site are screened to a maximum depth of approximately 324 foot elevation. Therefore, ATC will install the proposed well within the shallow aquifer. ATC assumes this will coincide with approximately 300 to 275 feet elevation.

• Ecology concurs with the following data gap identified in the *RI Report*:
o Concentrations of non-TPH heating oil and waste oil constituents at the locations of the former waste-oil and heating oil USTs, per Table 830-1 in WAC 173-340.

ATC Comment: In order to complete Site Characterization at the locations of the former waste-oil and heating oil USTs, ATC will collect soil samples at the locations on the attached **Figure 2**. One boring will be advanced at each of the former UST locations. Samples will be collected from the same depths as the deepest prior samples and will be analyzed for analyses as required on Table 830-1 of the MTCA Cleanup Regulation. Proposed boring locations are shown on the attached **Figure 2**.

• Upon resolution of the above noted revisions and data gaps, Ecology concurs that the RI will likely meet MTCA requirements and guidance.

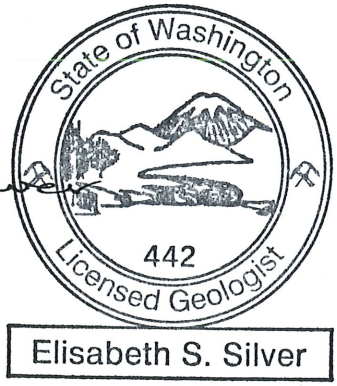
ATC Comment: No comment required.

• The Site may be eligible for a Groundwater Model Remedy, which eliminates the need for a Feasibility Study; see https://ecology.wa.gov/Regulations-Permits/Guidance-technical assistance/MTCA-model-remedies. If a Model Remedy is proposed, please provide documentation that all associated requirements have been met.

ATC Comment – ATC understands that while Site Characterization is still being conducted, the Site is not eligible for a Groundwater Model Remedy. However, once the characterization is complete, the applicability of Model Remedies will be reevaluated.

Should you require further information about this letter, please do not hesitate to contact me at (206) 781-1449.

Sincerely,
ATC Group Services LLC



Elisabeth Silver, L.G.
Senior Project Manager

Attachments:

Table 1 Soil Sample Attenuation Comparison

Figure 1 Site Vicinity Map
Figure 2 Site Map with Proposed Sample Locations
Figure 3 Cross Section A-A'
Figure 4 Cross Section B-B'

Attachment A Ecology Opinion Letter, November 17, 2020

cc: Mr. Eli Gurian, Program Manager, Phillips 66 Company (electronic mail only)

Table

TABLE 1
Soil Sample Attenuation Comparison
Phillips 66 Facility No. 2701476 (AOC 2063)
12660 First Avenue South
Seattle, Washington

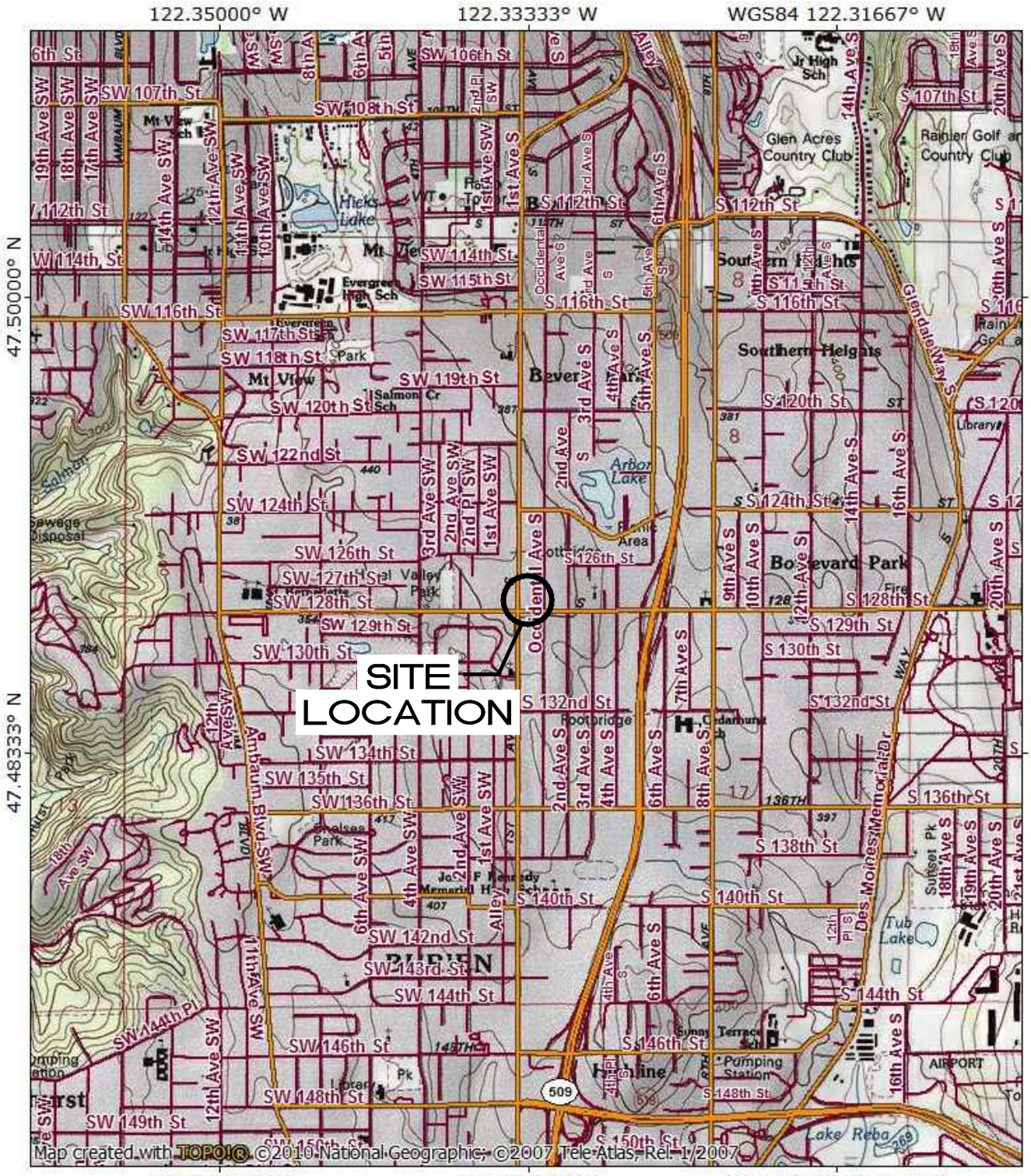
	Sample Location	Sample Collection Date	Sample Depth (feet)	TPH-g (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/kg)	Approx distance btw points (feet)
MTCA Method A Cleanup Level (mg/Kg)				30/100	0.03	7	6	9	
Older Sample:	**NWW**	1/8/1992	11	1.7	**0.15**	0.22	ND	0.3	
Newer Sample:			NA						
		Percent Reduction		***NA***	***NA***	***NA***	***NA***	***NA***	
Older Sample:	**TFOX-1**	01/17/92	14.5	2.1	**0.067**	<0.10	<0.10	0.14	
Newer Sample:			NA						
		Percent Reduction		***NA***	***NA***	***NA***	***NA***	***NA***	
Older Sample:	**SDOX-F1***	01/23/92	3.0	**110**	<0.050	0.26	0.49	8.5	
Newer Sample:	GW-14D-3	10/16/18	3	<0.71	<0.0030	<0.0129	<0.0029	<0.0123	30
	GW-15D-3	10/10/18	3	<0.80	<0.0034	<0.0145	<0.032	<0.0138	22
	GW-17D-3	10/12/18	3	<0.69	<0.0031	<0.0135	<0.0030	<0.0129	23
		Percent Reduction		***99.27***	***NA***	***94.42***	***99.35***	***99.84***	
Older Sample:	**SDOX-WW**	01/23/92	2.0	**45**	<0.050	<0.10	<0.10	0.11	
Newer Sample:	GW-17D-3	10/12/18	3	<0.69	<0.0031	<0.0135	<0.0030	<0.0129	10
		Percent Reduction		***98.47***	***NA***	***NA***	***NA***	***88.27***	
Older Sample:	**SDOX-F4***	02/20/92	15.0	**150**	**0.47**	4.7	2.8	**18**	
Newer Sample:	GW-14S-15	10/17/18	15	<0.74	<0.0032	<0.0137	<0.0031	<0.0131	24
	GW-16D-15	10/25/18	15	<0.71	<0.0030	<0.0132	<0.0029	<0.0125	24
		Percent Reduction		***99.51***	***99.32***	***99.71***	***99.89***	***99.93***	
Older Sample:	**SDOX-DWW1***	02/20/92	11.0	**470**	**1.4**	**14**	**7.9**	**48**	
Newer Sample:	GW-14S-15	10/17/18	15	<0.74	<0.0032	<0.0137	<0.0031	<0.0131	24
		Percent Reduction		***99.84***	***99.77***	***99.90***	***99.96***	***99.97***	
Older Sample:	**SDOX-DSW1***	02/20/92	12.0	**1,200**	**4.9**	**69**	**36**	**210**	
Newer Sample:	GW-14S-15	10/17/18	15	<0.74	<0.0032	<0.0137	<0.0031	<0.0131	21
		Percent Reduction		***99.94***	***99.94***	***99.98***	***99.99***	***99.99***	
Older Sample:	**SDOX-DEW1***	02/20/92	10.0	**57**	<0.050	0.36	0.42	2.3	
Newer Sample:	GW-14S-15	10/17/18	15	<0.74	<0.0032	<0.0137	<0.0031	<0.0131	21
		Percent Reduction		***98.70***	***NA***	***96.19***	***99.26***	***99.43***	
Older Sample:	**B-1**	04/20/92	15	**960**	**0.62**	**34**	**18**	**110**	
Newer Sample:	GW-14S-15	10/17/18	15	<0.74	<0.0032	<0.0137	<0.0031	<0.0131	22
		Percent Reduction		***99.92***	***99.50***	***99.96***	***99.98***	***99.99***	
Older Sample:	**MW-5**	04/20/94	35 - 35.5	**2,100**	<0.1	**40**	**23**	**140**	
Newer Sample:	GW-18S-30	10/19/18	30	<0.72	<0.0030	<0.0130	<0.0029	<0.0123	5
		Percent Reduction		***99.97***	***NA***	***99.97***	***99.99***	***99.99***	
Older Sample:	**MW-5**	04/20/94	75 - 75.5	**1,000**	**3.8**	**37**	**14**	**78**	
Newer Sample:	GW-18D-75	10/22/18	75	<0.73	<0.0030	<0.0131	<0.0029	<0.0125	7
		Percent Reduction		***99.93***	***99.92***	***99.96***	***99.98***	***99.98***	
Older Sample:	**MW-6**	04/20/94	40 - 40.5	16	**0.1**	0.33	0.1	0.63	
Newer Sample:	GW-13S-40	10/11/18	40	<0.70	<0.0030	<0.0131	0.0093	<0.0125	4
		Percent Reduction		***95.63***	***96.90***	***96.03***	***90.70***	***98.02***	
Older Sample:	**MW-6**	04/20/94	60 - 60.5	<1.0	**0.12**	0.11	<0.1	<0.1	
Newer Sample:	GW-13D-60	10/12/18	60	<0.93	**0.553**	<0.0150	<0.0033	<0.0142	4
		Percent Reduction		***NA***	***-360.83***	***86.36***	***NA***	***NA***	
Older Sample:	**AI-1**	04/20/94	20 - 20.5	11	**0.17**	0.42	0.2	1.0	
Newer Sample:	GW-14S-20	10/17/18	20	3.8	<0.0031	<0.0134	0.206	1.290	20
		Percent Reduction		***65.45***	***98.18***	***96.81***	***-3.00***	***-29.00***	
Older Sample:	**AI-1**	04/20/94	40 - 40.5	4.9	**0.11**	0.18	<0.1	0.21	
Newer Sample:	GW-14D-80	10/18/18	80	<0.75	<0.0031	<0.0135	<0.0030	<0.0128	19
		Percent Reduction		***84.69***	***97.18***	***92.50***	***NA***	***93.90***	
Older Sample:	**SB-1-30'**	07/18/12	30	**273**	0.0135	0.873	1.59	**11**	
Newer Sample:	GW-14S-35	10/17/18	35	18.8	<0.0030	<0.0128	0.160	0.724	16
		Percent Reduction		***93.11***	***100.00***	***98.53***	***89.94***	***93.59***	
Older Sample:	**SB-1-50'**	07/18/12	50	**49.1**	**0.172**	0.800	0.459	2.99	
Newer Sample:	GW-14S-50	10/17/18	50	3.9	0.0206	0.107	0.111	0.791	16
		Percent Reduction		***92.06***	***88.02***	***86.63***	***75.82***	***73.55***	
Older Sample:	**SB-5-30'**	07/19/12	30	**56.5**	<0.0026	0.0028	0.0034	0.0138	
Newer Sample:	GW-18S-30	10/19/18	30	<0.72	<0.0030	<0.0130	<0.0029	<0.0123	8
		Percent Reduction		***98.73***	***NA***	***-364.29***	***14.71***	***10.87***	
Older Sample:	**SB-5-45'**	07/19/12	45	**675**	0.0077	1.440	2.530	**20.1**	
Newer Sample:	GW-18S-45	10/19/18	45	**55.3**	<0.0032	0.0272	0.119	0.533	8
		Percent Reduction		***91.81***	***100.00***	***98.11***	***95.30***	***97.35***	

Note: when new concentration is ND, zero is used for percent reduction calculation

BOLD values exceed CUL

* Sample was beneath dispensers; closest samples used for comparison

Figures



SOURCE: USGS TOPO MAP, DES MOINES, WA QUAD, 1995

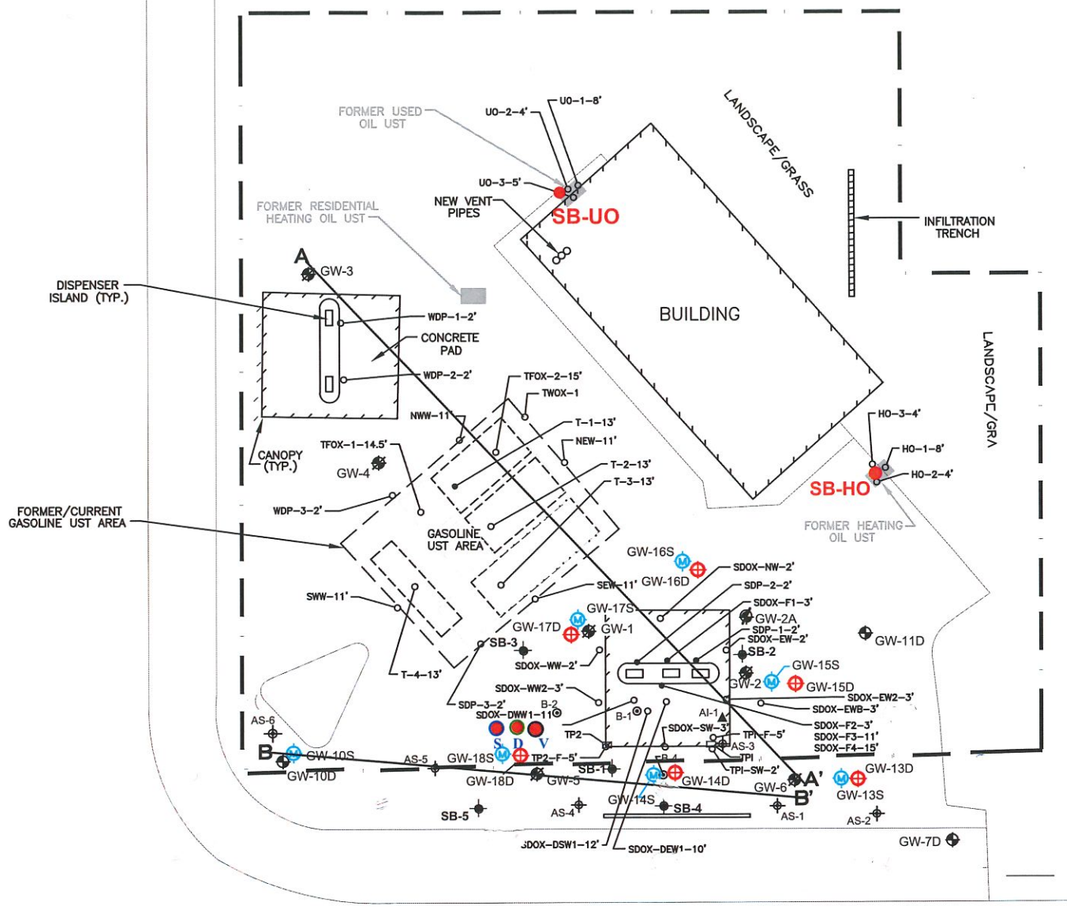
SITE VICINITY MAP

PHILLIPS 66 FACILITY NO. 2701476 (AOC #2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WA

PROJECT NUMBER: Z076000048		DATE: 4/26/16	FIGURE 1
APPROVED BY: KS		DRAWN BY: BK	

ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

S:\Projects\7675000 COP\2063\VICINITY.dwg



LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- DECOMMISSIONED MONITORING WELL
- SOIL BORING (1992)
- AIR SPARGE WELL (1994)
- AIR SPARGE POINT (1998)
- MONITORING WELL (1994/1995)
- SOIL SAMPLE NOT ANALYZED
- SOIL SAMPLE CONTAINING PETROLEUM HYDROCARBONS LESS THAN SCLG'S
- SOIL SAMPLE CONTAINING PETROLEUM HYDROCARBONS GREATER THAN SCLG'S
- S PROPOSED SHALLOW WELL LOCATION
- D PROPOSED DEEP WELL LOCATION
- V PROPOSED VERTICAL DELINEATION WELL LOCATION
- SB-5 SOIL BORING
- SB-HO PROPOSED SOIL BORING LOCATION
- TRENCH WITH ID
- FORMER UST
- A – A' CROSS SECTION TRANSECT
- APPROXIMATE PROPERTY BOUNDARY

N

0 30 60

SCALE, FT

NOTE: ALL LOCATIONS ARE APPROXIMATE

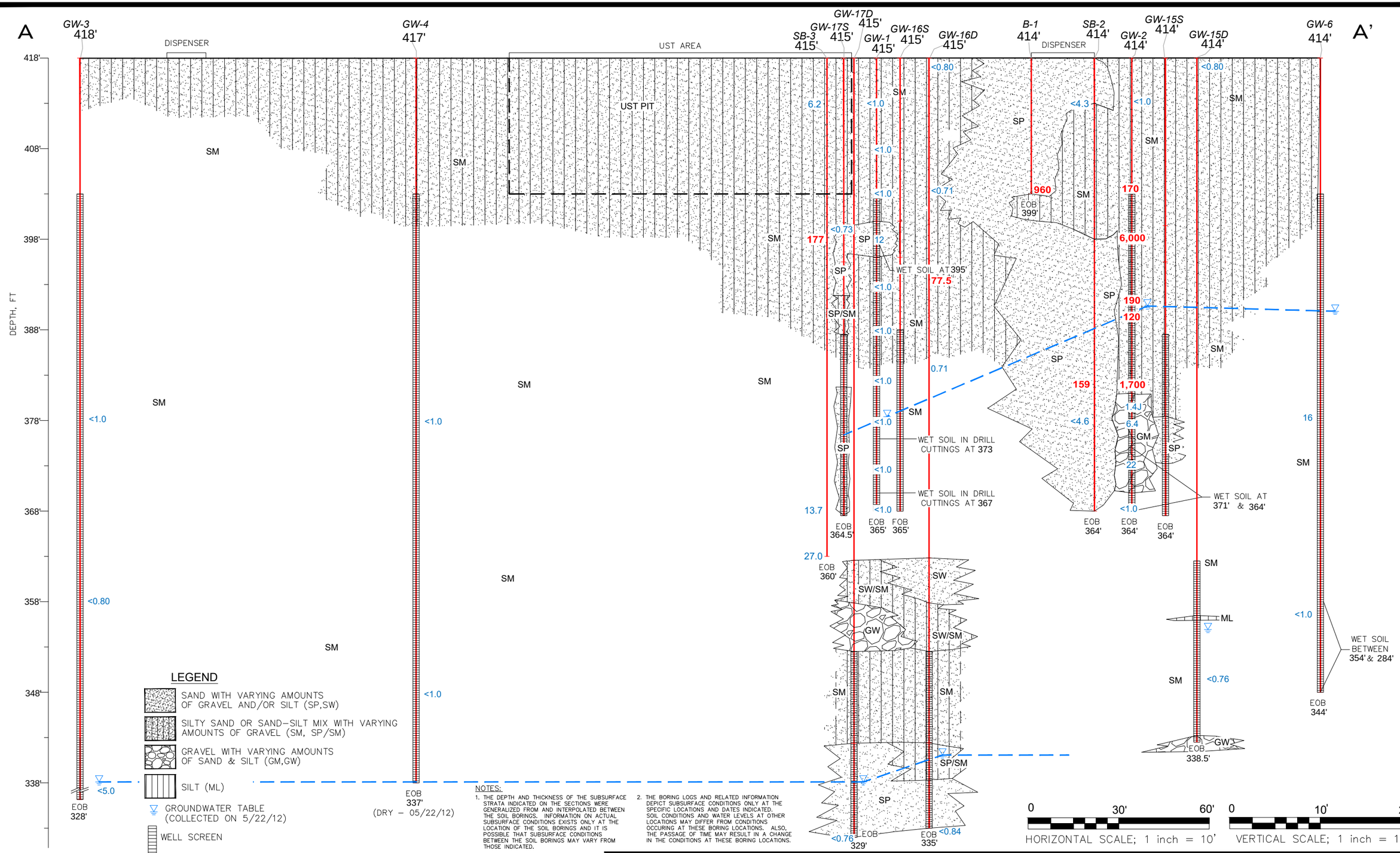
PROPOSED SAMPLE LOCATIONS

PHILLIPS 66 FACILITY NO. 2701476 (AOC 2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WA

PROJECT NUMBER: Z076000070		DATE: 11/30/20	FIGURE
APPROVED BY: ES		DRAWN BY: BK	2

ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

S:\Projects\76\75000 COP\2063\SP_021319.dwg



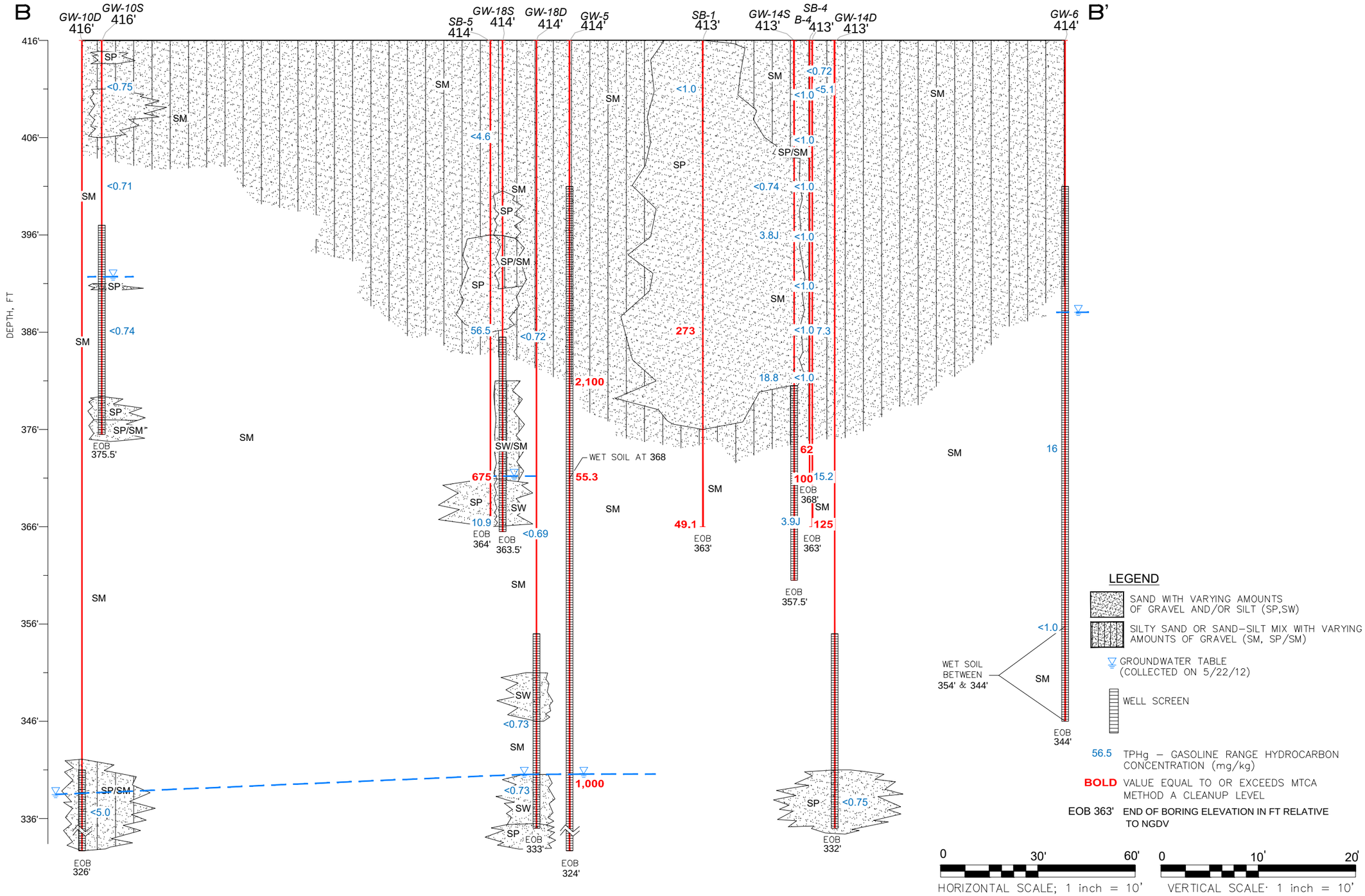
CROSS SECTION A - A'

PHILLIPS 66 FACILITY NO. 2701476 (AOC #2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WA

PROJECT NUMBER: Z076000070		DATE: 3/8/19	FIGURE 3
APPROVED BY: ES		DRAWN BY: BK	

ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

S:\Projects\76\75000 COP\2063\SECTA_022519.dwg



NOTES:

1. THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTIONS WERE GENERALIZED FROM AND INTERPOLATED BETWEEN THE SOIL BORINGS. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE LOCATION OF THE SOIL BORINGS AND IT IS POSSIBLE THAT SUBSURFACE CONDITIONS BETWEEN THE SOIL BORINGS MAY VARY FROM THOSE INDICATED.
2. THE BORING LOGS AND RELATED INFORMATION DEPICT SUBSURFACE CONDITIONS ONLY AT THE SPECIFIC LOCATIONS AND DATES INDICATED. SOIL CONDITIONS AND WATER LEVELS AT OTHER LOCATIONS MAY DIFFER FROM CONDITIONS OCCURING AT THESE BORING LOCATIONS. ALSO, THE PASSAGE OF TIME MAY RESULT IN A CHANGE IN THE CONDITIONS AT THESE BORING LOCATIONS.

GENERALIZED CROSS SECTION B - B'

PHILLIPS 66 FACILITY NO. 2701476 (AOC #2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WA

PROJECT NUMBER: Z076000070		DATE: 3/14/19	FIGURE 4
APPROVED BY: ES		DRAWN BY: BK	

ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

S:\Projects\76\75000.COP\2063\SECTB_030819_.dwg

Attachment A

Electronic Copy

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Avenue SE • Bellevue, Washington 98008-5452 • (425) 649-7000
711 for Washington Relay Service • Persons with a speech disability can call (877) 833-6341

November 17, 2020

Eli Gurian
ConocoPhillips Company
3900 Kilroy Airport Way Suite 210
Long Beach, CA 90806
(Eli.A.Gurian@p66.com)

Re: Opinion pursuant to WAC 173-340-515(5) on Remedial Action for the following Hazardous Waste Site:

- **Site Name:** Circle K 1476 (Phillips 66 Facility No. 2701476, AOC #2063)
- **Site Address:** 12660 1st Ave S, Burien WA 98168
- **Facility/Site No.:** 35395376
- **Cleanup Site ID No.:** 8839
- **VCP Project No.:** NW2718

Dear Eli Gurian:

The Washington State Department of Ecology (Ecology) received your request for an opinion on the Remedial Investigation Report dated August 19, 2020 (*RI Report*) completed at the Circle K 1476 facility (Site), dated August 19, 2020. This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

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:

- Gasoline-range petroleum hydrocarbons (TPH-G), benzene, toluene, ethylbenzene, and xylenes (BTEX) into the Soil and Groundwater.

Enclosure A includes a detailed description and diagrams of the Site, as currently known to Ecology. Please note contaminant impacts from this Site are possibly located within the projected boundaries of the UNOCAL 6382 facility (Cleanup Site ID [CSID] 8250) and the Burien City Right of Way facility (CSID 9475). At this time, we have no information that the contaminant plumes are actually commingled. This opinion does not apply to any contamination associated with the CSID 8250 or CSID 9475 facilities.

Basis for the Opinion

This opinion is based on the information contained in the documents listed in **Enclosure B**. A number of these documents are accessible in electronic form from the Site web page[1]. The complete records are kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. Visit our Public Records Request page[2] to submit a public records request or get more information about the process. If you require assistance with this process, you may contact the Public Records Officer at publicrecordsofficer@ecy.wa.gov or 360-407-6040.

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis and Opinion

Based on a review of the *RI Report*, Ecology has determined:

- Ecology appreciates the continued progress towards Site cleanup, including confirmation soil sampling, decommissioning of older monitoring well with excessively long well screens, submission of the *RI Report*, and ongoing quarterly groundwater monitoring.

- The "Site Boundary" shown on Figure 1 of the *RI Report*, Site Plan, should be re-labeled as "Property Boundary," to be consistent with the MTCA definition of "Site." Also, please adjust the Property boundary to be consistent with the boundary of parcel 1446800380, per the King County Assessor's tax parcel map.

- The "Current Soil Conditions – 2018 Soil Data" (Figure 8 of the *RI Report*) needs to be updated to include the following soil sample exceedances of Method A cleanup levels:

[1] https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=8839
[2] https://ecology.wa.gov/publicrecords

Consulting Firm	Sample Name	Sample Date	Sample Depth (ft below ground surface)
ESE	NWW	1/8/1992	11.0
ESE	TFOX-1	1/17/1992	14.5
ESE	SDOX-F1	1/23/1992	3.0
ESE	SDOX-WW	1/23/1992	2.0
ESE	SDOX-F4	2/20/1992	15.0
ESE	SDOX-DWW1	2/20/1992	11.0
ESE	SDOX-DSW1	2/20/1992	12.0
ESE	SDOX-DEW1	2/20/1992	10.0
ESE	B-1	4/20/1992	15
SEACOR	MW-5	4/20/1994	35-35.5
SEACOR	MW-5	4/20/1994	75-75.5
SEACOR	MW-6	4/20/1994	40-40.5
SEACOR	MW-6	4/20/1994	60-60.5
SEACOR	AI-1	4/20/1994	20-20.5
SEACOR	AI-1	4/20/1994	40-40.5
Cardno ATC	SB-1-30’	7/18/2012	30
Cardno ATC	SB-1-50’	7/18/2012	50
Cardno ATC	SB-5-30’	7/19/2012	30
Cardno ATC	SB-5-45’	7/19/2012	45

- If adjacent confirmation soil samples resolved any of these exceedances, please document by linking each prior exceedance with the confirmation sample result in a table.

- The off-Property detection of benzene in soil in the GW-8 boring (2.11 mg/kg at 80.5 – 81 feet) occurred in October 1994, when the contaminant plume in the lower groundwater zone was present in well GW-8D (benzene up to 25,000 µg/L). Concentrations of contaminants in GW-8D have been below Method A cleanup levels since the September 2000 monitoring event. Therefore, it is unlikely that Site impacts to soil are currently present at GW-8.

- The geologic cross sections in the *RI Report* (Figures 4 and 5) need to show elevations on the vertical axis, rather than depth below ground surface. The elevation datum should be referenced as National Geodetic Vertical Datum (NGVD) 1988.

- Show GW-9D as a decommissioned well on Site maps.

- The horizontal extent of impacts to groundwater in the shallow and deep groundwater zones has not been delineated and likely extends into the S 128th Street right-of-way. Monitoring wells GW-18S and GW-18D are in a critical downgradient location with respect to assessing the extent of impacts in the shallow and deep groundwater zones, respectively. However, the sampling record for MW-18S has shown “insufficient water to sample” in all six sampling

events for this well, from 12/11/2018 through 3/11/20. Similarly, samples from MW-18D could not be collected during the last two events listed for that well (3/11/20 and 7/31/20). Alternatives to assessing the horizontal extent of groundwater impacts from the Site need to be evaluated.

- The vertical extent of groundwater impacts has not been determined. Data from Site monitoring wells and regional groundwater resource reports document downward vertical groundwater gradients in the layered hydrogeologic system comprised of the Vashon till, Vashon advance outwash, and underlying pre-Vashon deposits (see **Enclosure A, Figure 7**). Alternatives to assessing the vertical extent of groundwater impacts from the Site need to be evaluated.

- Ecology concurs with the following data gap identified in the *RI Report*:

    - Concentrations of non-TPH heating oil and waste oil constituents at the locations of the former waste-oil and heating oil USTs, per Table 830-1 in WAC 173-340.

- Upon resolution of the above noted revisions and data gaps, Ecology concurs that the RI will likely meet MTCA requirements and guidance.

- The Site may be eligible for a Groundwater Model Remedy, which eliminates the need for a Feasibility Study; see https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/MTCA-model-remedies. If a Model Remedy is proposed, please provide documentation that all associated requirements have been met.

- Ecology looks forward to your evaluation of additional Site characterization and remediation options, and continued progress towards Site cleanup under the VCP.

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/vcp. If you have any questions about this opinion, please contact me by phone at (425) 324-1890 (mobile) by email at michael.warfel@ecy.wa.gov.

Sincerely,

Michael R. Warfel
VCP Site Manager
Toxics Cleanup Program, NWRO

Enclosures (2): A – Description and Diagrams of the Site
B – Basis for the Opinion: List of Documents

cc: Juns Investment, Inc., Property Owner (gamga25@hotmail.com)
Elisabeth Silver, ATC (Elisabeth.Silver@atcgs.com)
Sonia Fernandez, VCP Coordinator, Ecology, (sonia.fernandez@ecy.wa.gov)

Enclosure A

Description and Diagrams of the Site

Site Description

This section provides Ecology's understanding and interpretation of Site conditions, and is the basis for the opinions expressed in the body of the letter.

Site: The Site is defined by the release of total petroleum hydrocarbons in the gasoline range (TPH-G), and benzene, toluene, ethylbenzene, and xylenes (BTEX) to soil and groundwater, associated with the operation of a gasoline service station. The Site is located at 12660 First Avenue South in Burien, Washington (Property.

Area and Property Description: The Property corresponds to King County parcel number 144680-0380 which is 0.47 acres in size. The Property is occupied by a one-story building built in 1965. The Property is located in the northeast corner of the intersection of 1st Avenue S and S 128th St, (**Figure 1**). Adjacent properties include a Mobile-branded gasoline station to the west (Underground Storage Tank [UST] ID 604839), commercial businesses to the southwest, and a restaurant to the south (**Figure 2**).

Property History and Current Use: The Property is currently occupied by an active service station with a convenience store (Burien 76, UST ID 5748). Service station operations have been active on the property since 1965. The present service station includes three USTs containing unleaded gasoline (one 12,000-gallon and two 10,000-gallon), and two fuel dispenser islands, each covered by a canopy (**Figure 3**). The remainder of the Property is covered by asphalt or concrete, with small landscaped areas on the northern and eastern boundaries.

Contaminant Source and History: First-generation USTs were reportedly installed on the Property in December 1964 and January 1965 (500-gallon waste oil, 6,000-gallon leaded gasoline, and 8,000-gallon unleaded gasoline). Another 6,000-gallon unleaded UST was installed in January 1976. These gasoline USTs were removed in 1992 during fueling facility upgrades, when the existing gasoline USTs were installed. The waste-oil UST was removed in 1995, along with a 500-gallon heating oil UST that was discovered during the removal work.

A leaking UST (LUST) release was discovered at the Site during UST removal work in 1992 and reported to Ecology on January 29, 1992.

Physiographic Setting: The Site is situated at an elevation of approximately 415 feet above mean sea level (amsl). Land surface slopes to the west, south, and east from the Site. The Site is located in the Puget Sound Lowland Physiographic Province, a north-south trending structural and topographic depression bordered to the west by the Olympic Mountains and to the east by the Cascade Mountains.

Surface/Storm Water System: The closest surface water bodies to the Site are tributaries of Miller Creek, which are located 1,300 feet south and 1,400 feet northeast of the Site. Runoff from the paved areas of the Site is collected in a storm drains located at the intersection of 1st

Avenue S and SW 128th Street. An unpaved grassed area is located in the northeast corner of the Property, behind the convenience store building.

Ecological Setting: The Property is located in an urban area primarily covered with asphalt, concrete, and buildings with minor grassy areas. The southeast corner of Puget Sound Park, located approximately 350 feet northwest of the Site, is the closest undeveloped land. Less than 1.5 acres of the Park are located within 500 feet of the Site. The *RI Report* included a Terrestrial Ecological Evaluation (TEE) that documented an exclusion from further evaluation.

Geology: The Site is underlain by 65 to 75 feet of dense fine- to medium-grained silty sand with varying amounts of gravel (Vashon till), overlying less-dense coarse-grained sand and gravel (Vashon advance outwash), as illustrated on **Figure 4**).

Groundwater: Groundwater beneath the Site occurs in the till at depths ranging from 20 to 50 feet bgs. The flow direction in this upper zone is westerly (**Figure 5**). Groundwater has been observed in monitoring wells completed in the advance outwash at depths of 60 to 80 feet bgs, with a flow direction in the lower zone to the southwest (**Figure 6**). This lower zone flow direction is consistent with regional hydrogeologic studies that show flow in the advance outwash aquifer to the west and southwest towards Puget Sound (Woodward, et. al, 1995). Downward vertical gradients from the till to the advance outwash are evident from Site monitoring well water-level data.

Water Supply: The Property is served by King County Water District 20 which obtains water from the Seattle Public Utilities Cedar River Pipeline. Water well records indicate that the closest water supply well to the Site is the Boulevard Park wellfield operated by the City of Seattle, located 1.2 miles east of the Site. These water supply wells are screened in pre-Vashon deposits consisting of sand, gravel, and cobbles, shown as the "Intermediate Aquifer" in **Figure 7** (NTIS 1996).

Release and Extent of Soil and Groundwater Contamination: Characterization of soil and groundwater contamination at the Site began with the release discovery in 1992 and has continued through the present, as described by more than 80 documents (see **Enclosure B**, Basis for the Opinion, List of Documents). The following chronology summarizes the progress of the release investigations and interim actions completed at the Site:

- 1992: Petroleum hydrocarbons results showed concentrations above Method A cleanup levels in soil samples from borings B-1, B-3, and B-4, and in groundwater samples from monitoring wells GW1 and GW2 (see **Figure 3**). A free product sheen was observed in well GW2.

- 1994-1995: Additional borings and monitoring wells supported further delineation of soil and groundwater contamination. Measurements in monitoring wells GW2 and GW6 showed the presence of light non-aqueous phase liquid (LNAPL). LNAPL recovery began in GW2 and GW6.

- 1998: Operation of an air sparge/soil vapor extraction (AS/SVE) began, consisting of seven AS wells and nine combination monitoring/SVE wells. A catalytic oxidizer treated the SVE discharge. Operation of three combination monitoring/groundwater extraction wells also began, with the discharge treated by air stripping and carbon absorption, prior to discharge to an on-site infiltration trench (see **Figure 3**). The remediation systems operated until October 2006, when they were shut down after asymptotic performance was verified. Estimated removals were 1,550 pounds of hydrocarbons by the AS/SVE system and greater than 1 million gallons of groundwater treated by the extraction well system. LNAPL observations ceased in GW6 and GW2 after November 1995 and August 2001, respectively.

- 2012: Additional Site characterization work confirmed locations with the continued presence of soil and groundwater contaminants above Method A cleanup levels.

- 2016: Decommissioning of the AS/SVE and groundwater extraction systems was completed.

- 2018: Monitoring wells GW1 through GW6 were decommissioned, an activity that resolved the issues of long well screens extending across shallow and deep groundwater zones in GW3 through GW6. Thirteen additional shallow and deep monitoring wells were installed at the Site.

The most recent Site maps showing the current extent of contaminants above Method A cleanup levels are shown for soil in **Figure 8** and for groundwater in **Figures 9 and 10**.

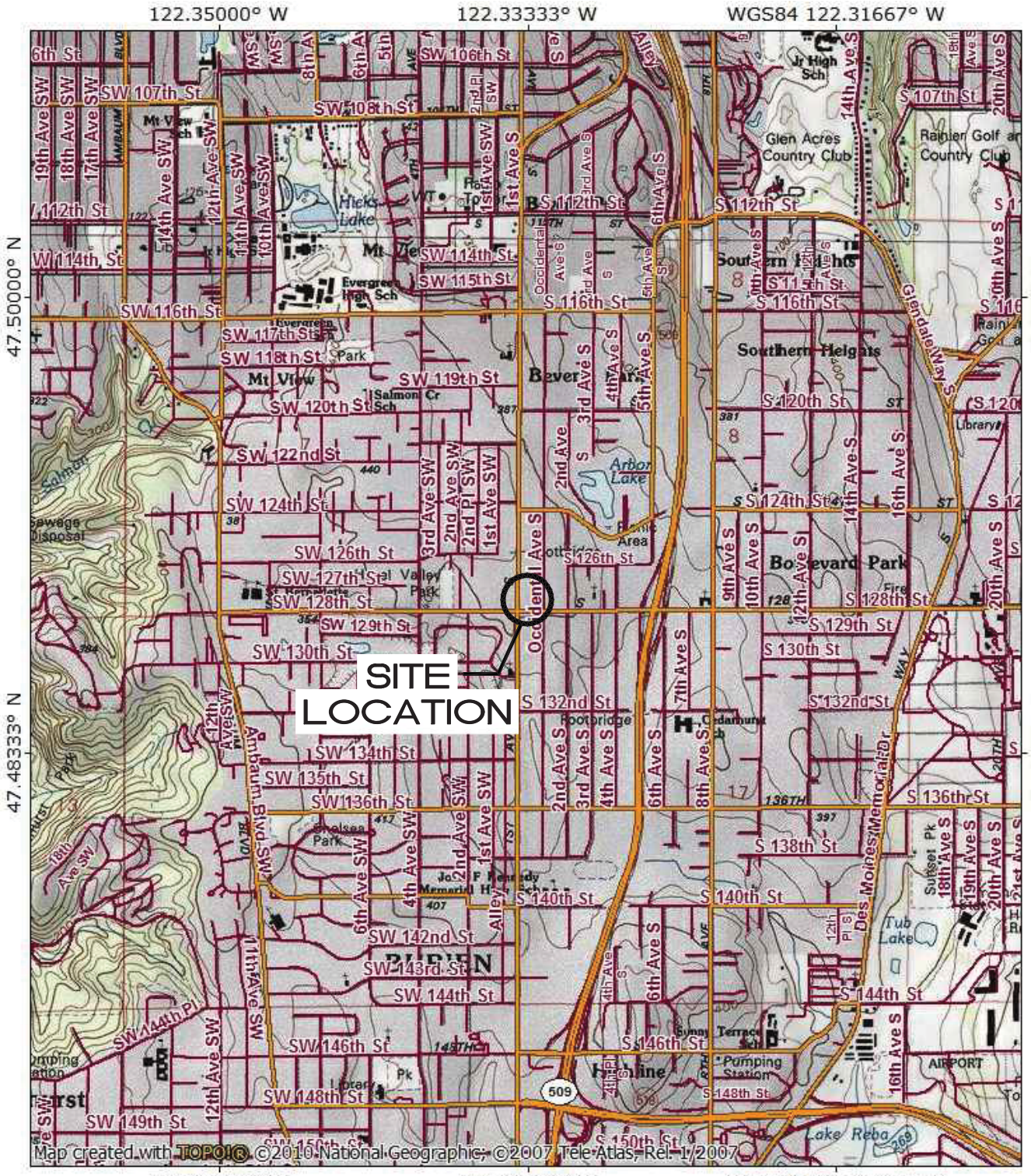
Contaminant impacts from this Site are possibly located within the projected boundaries of the UNOCAL 6382 facility (Cleanup Site ID 8250) and the Burien City Right of Way facility (Cleanup Site ID 9475); see **Figure 11**. The CSID 9475 site is located in the right turn lane from SW 128th Street to 1st Avenue S, where the "Former USTs (Pre-1980)" are located on the figure. At this time, we have no information that the contaminant plumes are actually commingled.

References

National Technical Information Service (NTIS), U.S. Department of Commerce. Highline Well Field Artificial Groundwater Recharge Demonstration Project Summary. Document PB2005-106501. June 1996

D.G. Woodward, F.A. Packard, N.P. Dion, and S.S. Sumioka. Occurrence and Quality of Ground Water in Southwestern King County, Washington. U.S. Geological Survey, Water-Resources Investigations Report 92-4098. 1995.

Site Diagrams



SOURCE: USGS TOPO MAP, DES MOINES, WA QUAD, 1995

SITE VICINITY MAP

PHILLIPS 66 FACILITY NO. 2701476 (AOC #2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WA

PROJECT NUMBER: Z076000048		DATE: 4/26/16	FIGURE 1
APPROVED BY: KS		DRAWN BY: BK	

ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

S:\Projects\7675000 COP\2063\VICINITY.dwg

Enclosure A, Figure 1

Enclosure B

Basis for the Opinion:
List of Documents

1. 1992. Environmental Science and Engineering (ESE). Removal of "Unknown Owner" Underground Storage Tank from 12660 1st Ave So., Seattle, WA. 3/2/1992.

2. 1992. ESE. Results of a Tank Removal and Soil Removal Program. 4/6/1992.

3. 1994. ESE. Additional Site Assessment Investigation Report. 8/5/1994

4. 1995. Seacor International, Inc. (SECOR). Additional On-Site and Initial Off-Site Subsurface Investigation. 1/9/1995.

5. 1995. SECOR. 1st Quarter 1995 Monitoring. 3/31/1995.

6. 1995. SECOR. Additional On-Site and Off-Site Investigation. 6/12/1995.

7. 1995. SECOR. Decommissioning and Site Assessment of the Used Oil and the Fuel Oil USTs. 9/19/1995.

8. 1995. SECOR. 3rd Quarter 1995 Monitoring. 9/19/1995.

9. 1995. SECOR. Step-Drawdown Aquifer Test, Constant-Rate Aquifer Test, and Percolation Test. 10/31/1995.

10. 1995. SECOR. 4th Quarter 1995 Monitoring. 12/20/1995.

11. 1996. SECOR. 1st Quarter 1996 Groundwater Monitoring. 5/15/1996.

12. 1996. SECOR. 2nd Quarter 1996 Groundwater Sampling. 9/9/1996.

13. 1997. SECOR. 4th Quarter 1996 Monitoring. 3/20/1997.

14. 1997. SECOR. 1st Quarter 1997 Monitoring. 4/29/1997.

15. 1997. SECOR. 2nd Quarter 1997 Monitoring. 8/26/1997.

16. 1997. SECOR. 3rd Quarter 1997 Monitoring. 11/5/1997.

17. 1998. Environmental Resolutions, Inc. (ERI). 4th Quarter 1997 Groundwater Monitoring, Sampling, and Report. 1/19/1998.

18. 1998. ERI. 1st Quarter 1988 Groundwater Monitoring, Sampling, and Report. 3/25/1998.

19. 1998. ERI. 2nd Quarter 1998 Groundwater Monitoring, Sampling, and Report. 6/5/1998.

20. 1998. ERI. Monitored, Purged, and Sampled Groundwater Monitoring Wells. 10/29/1998.

21. 1998. TOSCO Marketing Company. 4th Quarter 1998 Groundwater Monitoring Report. 12/22/1998.

22. 1999. ERI. Laboratory Results of Soil and Water Samples. 1/29/1999.

23. 1999. TOCSO Marketing Company. 1st Quarter 1999 Groundwater Monitoring. 6/1/1999.

24. 1999. TOSCO Marketing Company. 2nd Quarter Groundwater Monitoring. 8/12/1999.

25. 1999. ERI. 3rd Quarter Groundwater Monitoring August 1999. 10/11/1999.

26. 1999. ERI. November 1999 Groundwater Monitoring. 12/9/1999.

27. 2000. ERI. February 2000 Groundwater Monitoring. 3/3/2000.

28. 2000. ERI. May 2000 Groundwater Monitoring. 7/21/2000.

29. 2001. ERI. February 2001 Groundwater Monitoring. 4/4/2001.

30. 2001. ERI. 2nd Quarter 2001 Groundwater Monitoring. 7/6/2001.

31. 2001. ERI. 3rd Quarter Groundwater Monitoring August 2001. 10/4/2001.

32. 2002. ERI. 4th Quarter Groundwater Monitoring November 2001. 1/29/2002.

33. 2002. ERI. 2nd Quarter 2002 Groundwater Monitoring. 9/6/2002.

34. 2003. ERI. 4th Quarter 2002 Groundwater Monitoring. 1/23/2003.

35. 2003. ERI. Groundwater Status May 2003. 7/24/2003.

36. 2004. SECOR. 4th Quarter 2003 Groundwater Monitoring. 2/12/2004.

37. 2004. SECOR. Groundwater Status May 2004. 8/3/2004.

38. 2004. SECOR. Groundwater Status September 2004. 12/2/2004.

39. 2005. SECOR. 4th Quarter 2004 Groundwater Monitoring. 2/25/2005.

40. 2005. SECOR. Groundwater Status February 2005. 4/26/2005.

41. 2005. SECOR. Groundwater Status May 2005. 8/19/2005.

42. 2005. SECOR. Groundwater Status August 2005. 12/9/2005.

43. 2005. SECOR. Groundwater Status November 2005. 12/27/2005.

44. 2006. SECOR. Groundwater Status May 2006. 9/6/2006.

45. 2006. SECOR. Groundwater Status August 2006. 10/2/2006.

46. 2007. SECOR. Groundwater Status November 2006. 1/17/2007.

47. 2007. SECOR. Groundwater Status February 2007. 3/8/2007.

48. 2007. SECOR. Groundwater Status May 2007. 10/5/2007.

49. 2007. SECOR. Groundwater Status August 2007. 10/19/2007.

50. 2008. SECOR. Groundwater Status November 2007. 3/12/2008.

51. 2008. Stantec Consulting Corporation (Stantec). Groundwater Status February 2008. 7/21/2008.

52. 2008. Stantec. Groundwater Status May 2008. 9/25/2008.

53. 2008. Stantec. Groundwater Status August 2008. 12/12/2008.

54. 2009. Stantec. Groundwater Status November 2008. 1/29/2009.

55. 2009. Stantec. Groundwater Status February 2009. 4/16/2009.

56. 2009. Stantec. Groundwater Status May 2009. 8/19/2009.

57. 2009. Stantec. Groundwater Status August 2009. 11/5/2009.

58. 2010. Stantec. Groundwater Status November 2009. 1/7/2010.

59. 2010. Stantec. Groundwater Status February 2010. 5/5/2010.

60. 2010. ERI. Sensitive Receptor Survey, Former Exxon Station 73498. 5/5/2010.

61. 2010. Stantec. Groundwater Status May 2010. 7/1/2010.

62. 2010. Stantec. Groundwater Status September 2010. 10/11/2010.

63. 2011. Stantec. Groundwater Status December 2010. 2/4/2011.

64. 2011. Stantec. 1st Quarter 2011 Groundwater Monitoring Report. 5/9/2011.

65. 2011. Cardno ERI. Off-Site Well Installation and Groundwater Monitoring Report. 6/16/2011.

66. 2011. ATC Associates (ATC) Groundwater Status May 2011. 8/23/2011.

67. 2011. ATC. Groundwater Status September 2011. 10/27/2011.

68. 2012. ATC. Groundwater Status December 2011. 3/7/2012.

69. 2012. ATC. 2nd Quarter 2012 Groundwater Monitoring Report. 8/27/2012.

70. 2012. ATC. 3rd Quarter 2012 Groundwater Monitoring Report. 12/27/2012.

71. 2013. Cardno ATC. Post Remediation Soil Assessment Report. 4/10/2013.

72. 2013. Cardno ATC. 1st Quarter 2013 Groundwater Monitoring Report. 10/2/2013.

73. 2017. ATC Group Services, LLC (ATC), 2017. Remediation System Decommissioning. 2/1/2017.

74. 2017. ATC. Annual 2016 Groundwater Monitoring Report. 08/25/2017.

75. 2018. ATC. Pumping Test Work Plan. 01/24/2018.

76. 2019. ATC. 4th Quarter 2018 Groundwater Monitoring Report. 03/18/2019.

77. 2019. ATC. Well Installation Report. 05/10/2019.

78. 2019. ATC. 1st Quarter 2019 Groundwater Monitoring Report. 05/22/2019.

79. 2019. ATC. 3rd Quarter 2019 Groundwater Monitoring Report. 12/27/2019.

80. 2020. ATC. Groundwater Monitoring Report 4th Quarter 2019. 04/03/2020.

81. 2020. ATC. 1st Quarter 2020 Groundwater Monitoring Report. 05/21/2020.

82. 2020. ATC. Monitoring Well Decommissioning Report. 07/06/2020.

83. 2020. ATC Remedial Investigation Report. 08/19/2020.

84. 2020. ATC. 3rd Quarter 2020 Groundwater Monitoring Report. 10/5/2020.

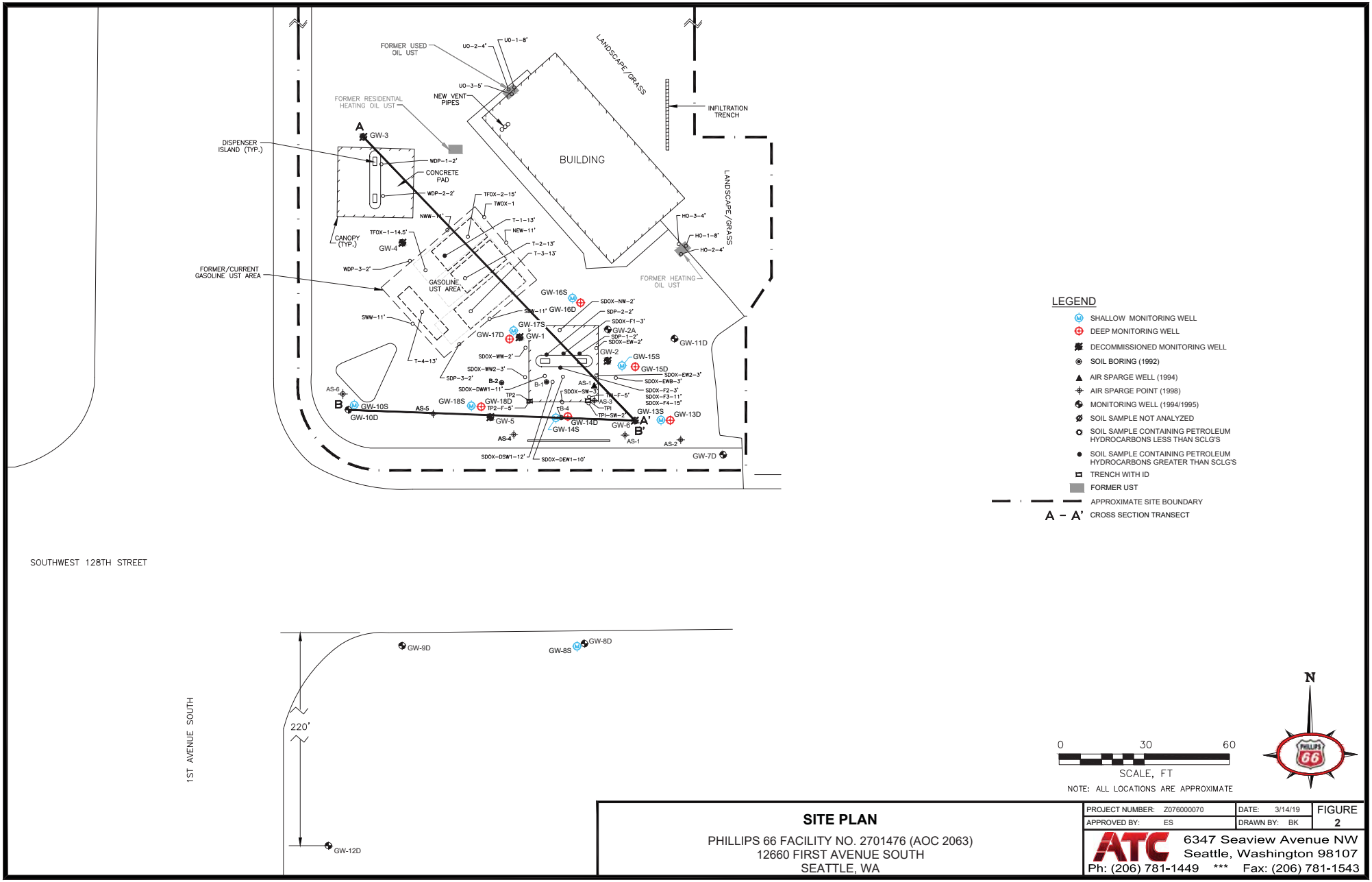
King County iMap

N

King County

Date: 10/27/2020 Notes:

Enclosure A, Figure 2



SITE PLAN

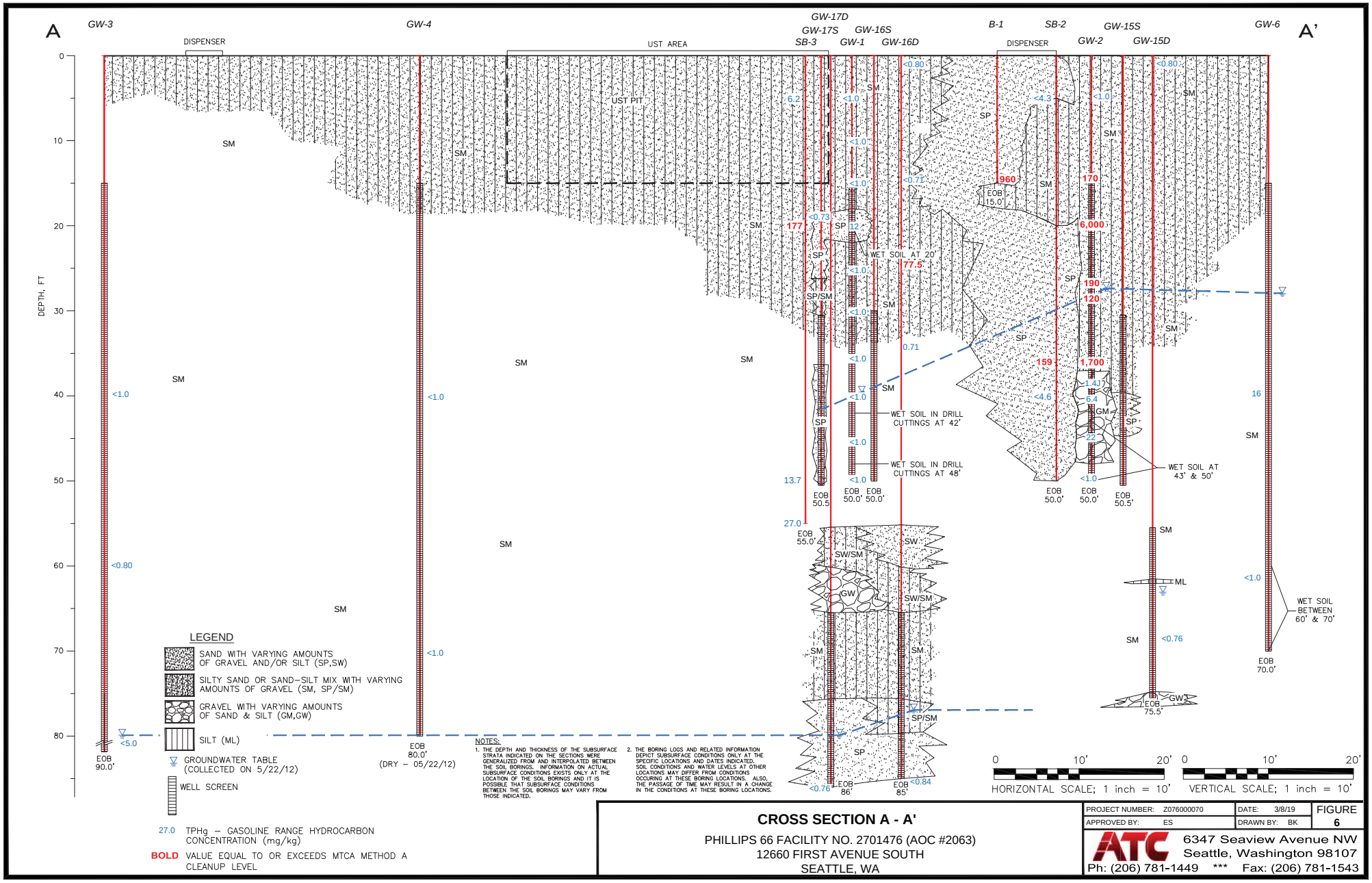
PHILLIPS 66 FACILITY NO. 2701476 (AOC 2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WA

PROJECT NUMBER: Z076000070		DATE: 3/14/19	FIGURE 2
APPROVED BY: ES		DRAWN BY: BK	

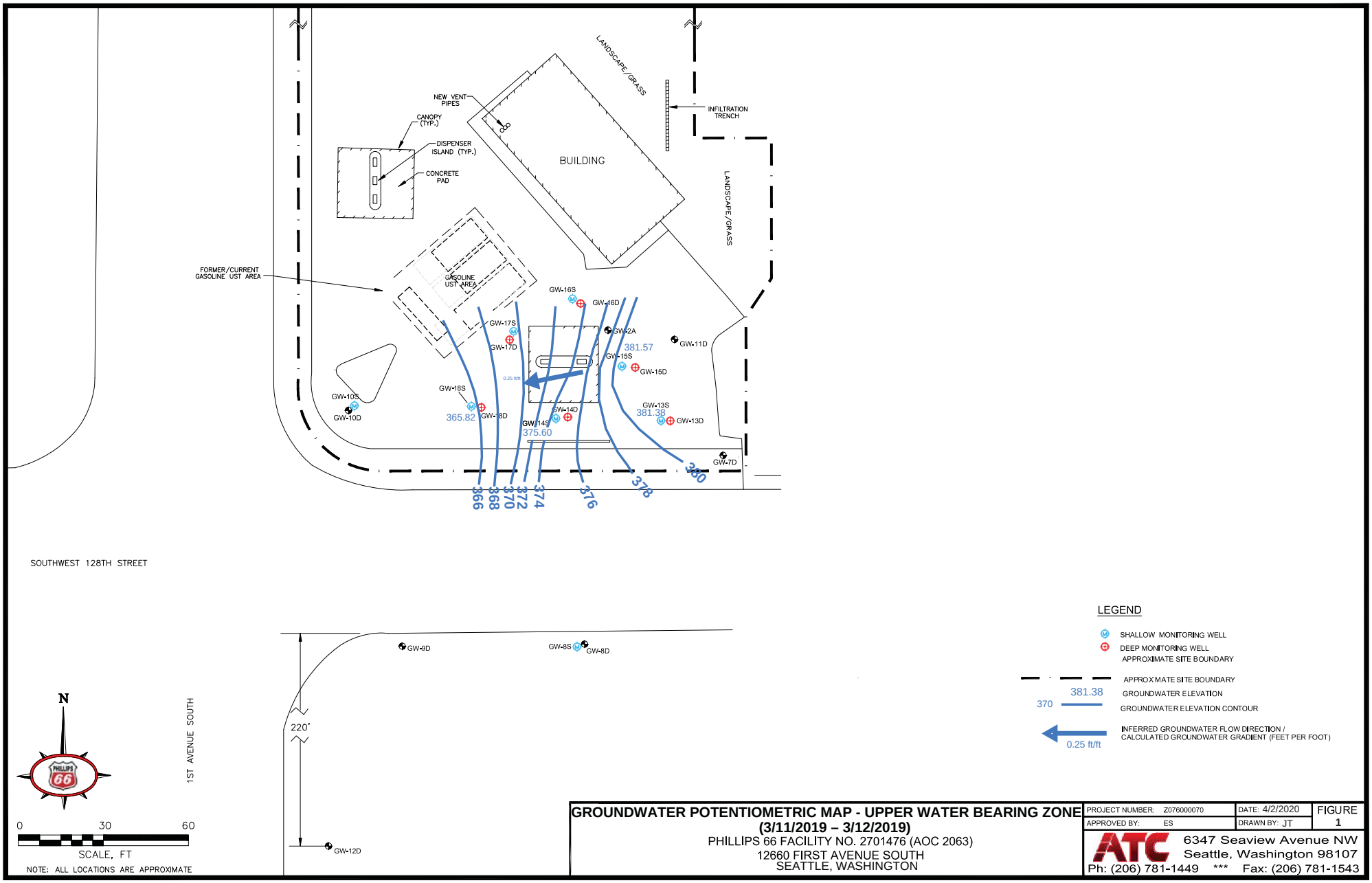
ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

S:\Projects\7675000 COP\2063\SP_021319.dwg

Enclosure A, Figure 3



Enclosure A, Figure 4



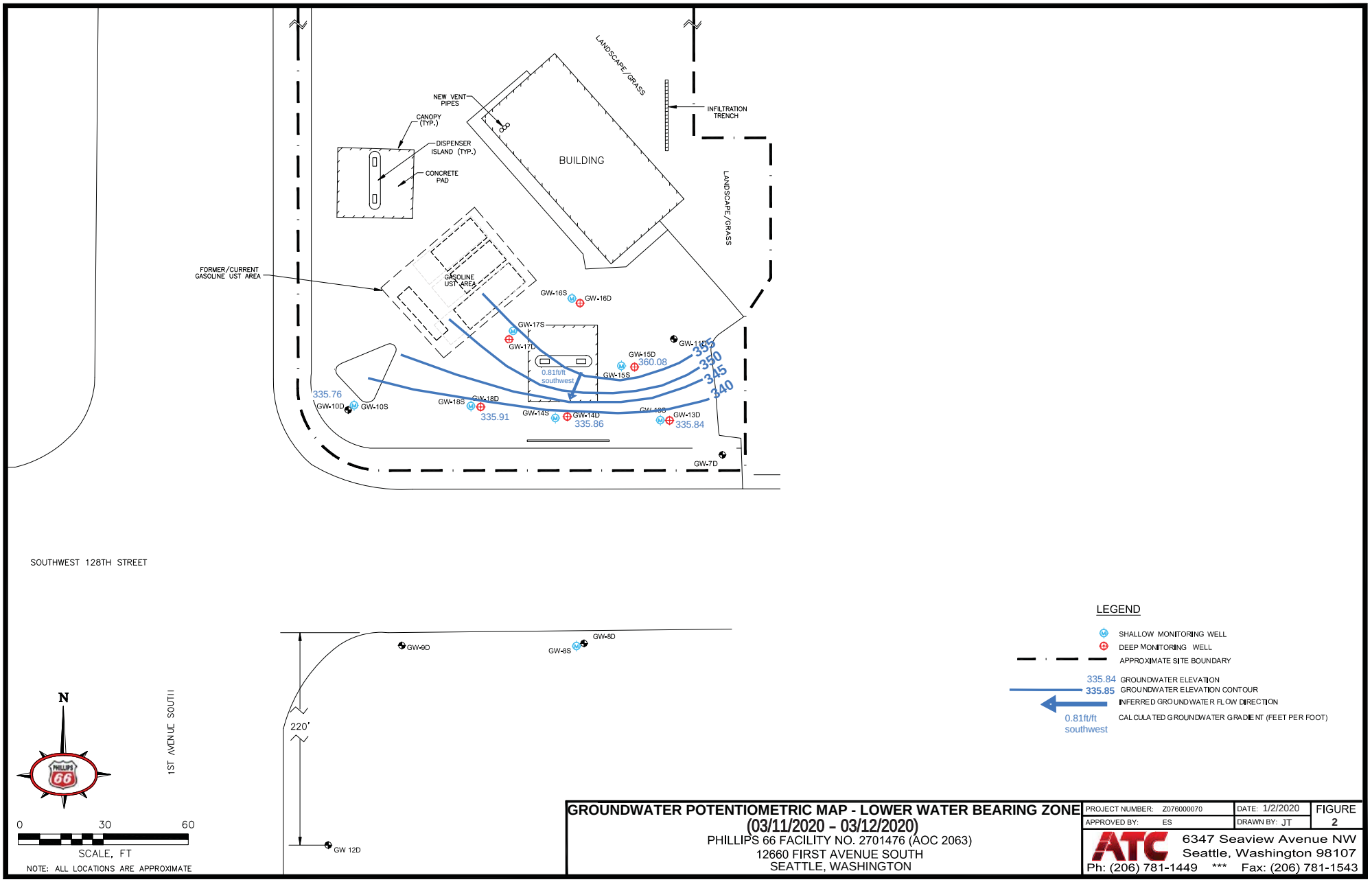
GROUNDWATER POTENTIOMETRIC MAP - UPPER WATER BEARING ZONE (3/11/2019 – 3/12/2019)

PHILLIPS 66 FACILITY NO. 2701476 (AOC 2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WASHINGTON

PROJECT NUMBER: Z076000070	DATE: 4/2/2020	FIGURE 1
APPROVED BY: ES	DRAWN BY: JT	

ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

Enclosure A, Figure 5



GROUNDWATER POTENTIOMETRIC MAP - LOWER WATER BEARING ZONE (03/11/2020 – 03/12/2020)

PHILLIPS 66 FACILITY NO. 2701476 (AOC 2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WASHINGTON

PROJECT NUMBER: Z076000070	DATE: 1/2/2020	FIGURE
APPROVED BY: ES	DRAWN BY: JT	2

ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

Enclosure A, Figure 6

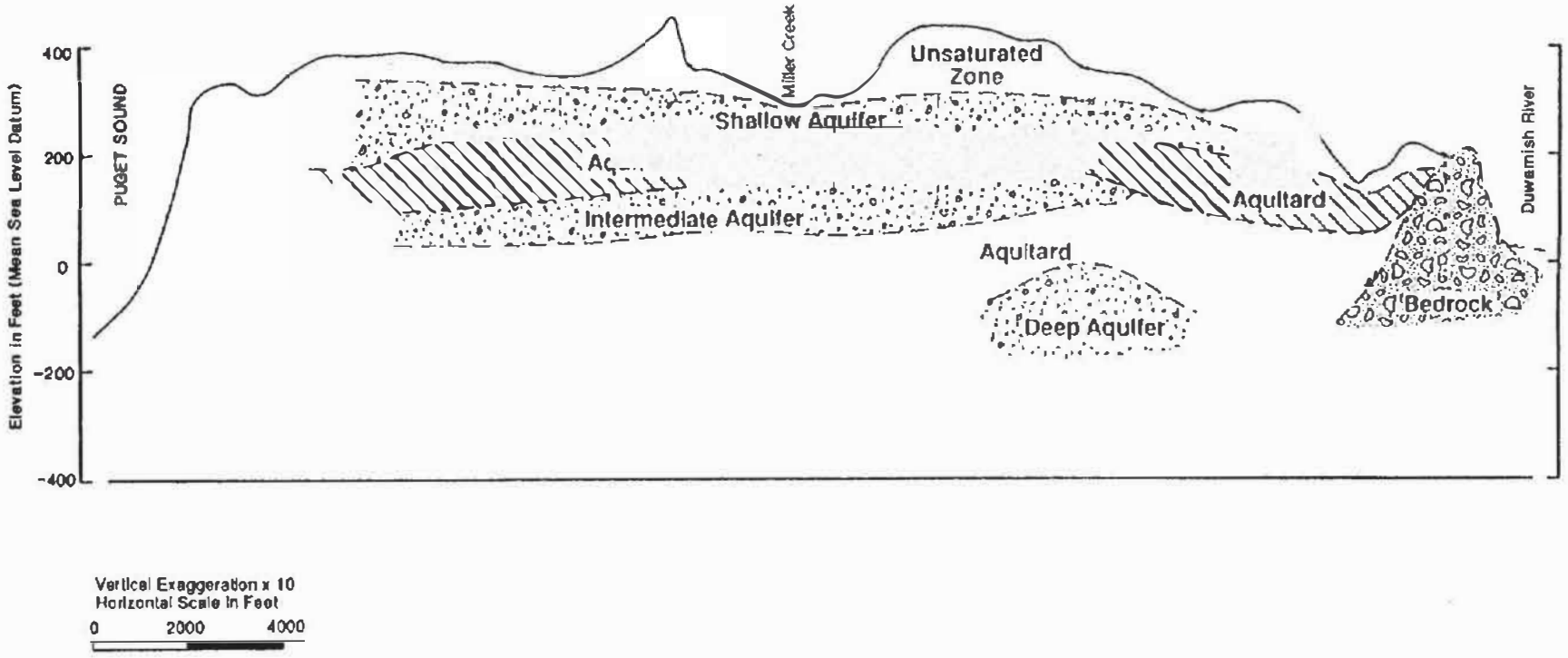
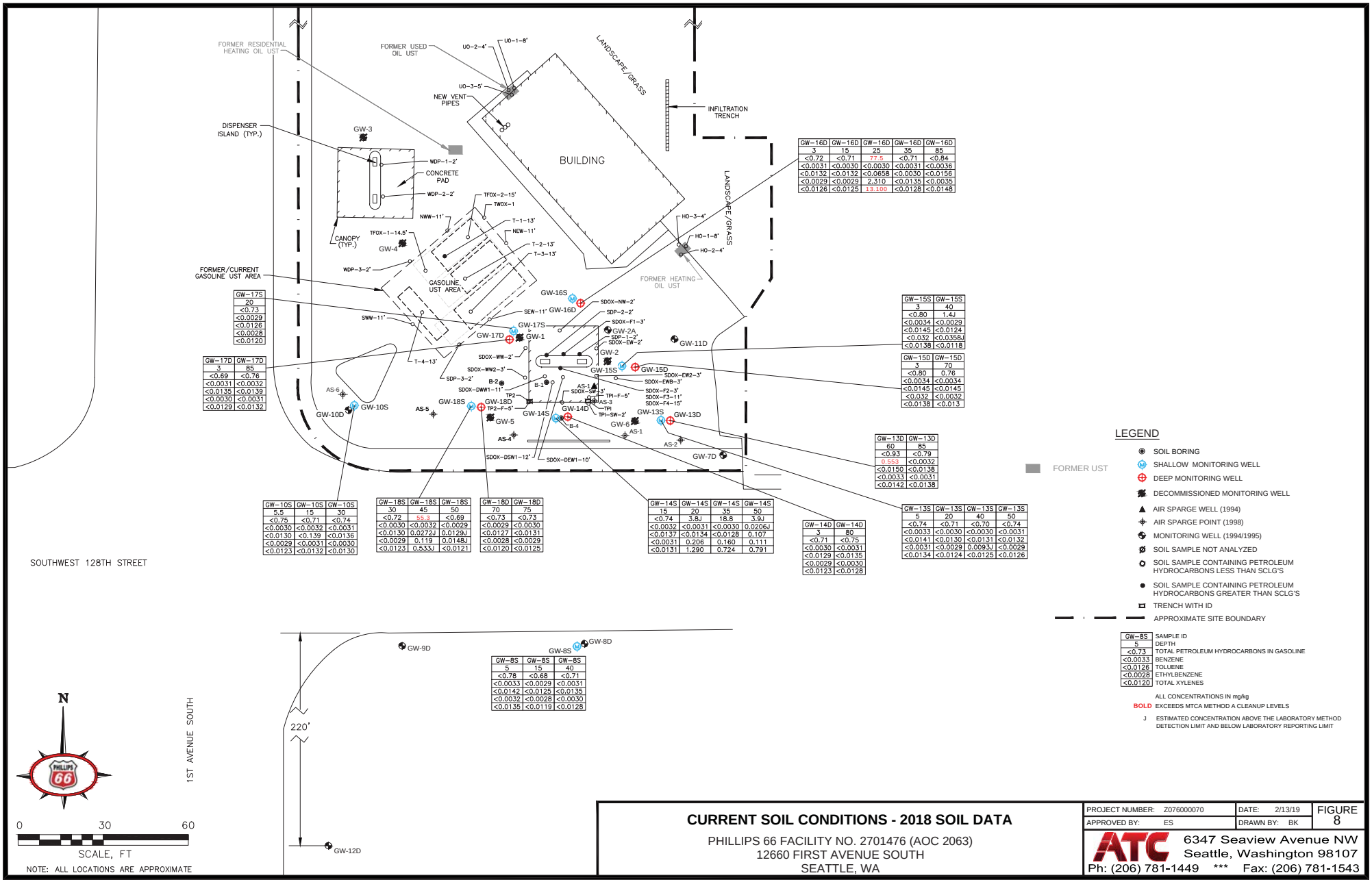


FIGURE 2

GENERALIZED HYDROSTRATIGRAPHIC CROSS-SECTION

Enclosure A, Figure 7



GW-17S	
20	
<0.73	
<0.0029	
<0.0126	
<0.0028	
<0.0120	

GW-17D	GW-17D
3	85
<0.69	<0.76
<0.0031	<0.0032
<0.0135	<0.0139
<0.0030	<0.0031
<0.0129	<0.0132

GW-16D	GW-16D	GW-16D	GW-16D	GW-16D
3	15	25	35	85
<0.72	<0.71	77.5	<0.71	<0.84
<0.0031	<0.0030	<0.0030	<0.0031	<0.0036
<0.0132	<0.0132	<0.0658	<0.0030	<0.0156
<0.0029	<0.0029	2.310	<0.0135	<0.0035
<0.0126	<0.0125	13.100	<0.0128	<0.0148

GW-15S	GW-15S
3	40
<0.80	1.4J
<0.0034	<0.0029
<0.0145	<0.0124
<0.032	<0.0358J
<0.0138	<0.0118

GW-15D	GW-15D
3	70
<0.80	0.76
<0.0034	<0.0034
<0.0145	<0.0145
<0.032	<0.0032
<0.0138	<0.013

GW-13D	GW-13D
60	85
<0.93	<0.79
0.553	<0.0032
<0.0150	<0.0138
<0.0033	<0.0031
<0.0142	<0.0138

GW-14D	GW-14D
3	80
<0.71	<0.75
<0.0030	<0.0031
<0.0129	<0.0135
<0.0029	<0.0030
<0.0123	<0.0128

GW-13S	GW-13S	GW-13S	GW-13S
5	20	40	50
<0.74	<0.71	<0.70	<0.74
<0.0033	<0.0030	<0.0030	<0.0031
<0.0141	<0.0130	<0.0131	<0.0132
<0.0031	<0.0029	0.0093J	<0.0029
<0.0134	<0.0124	<0.0125	<0.0126

GW-14S	GW-14S	GW-14S	GW-14S
15	20	35	50
<0.74	3.8J	18.8	3.9J
<0.0032	<0.0031	<0.0030	0.0206J
<0.0137	<0.0134	<0.0128	0.107
<0.0031	0.206	0.160	0.111
<0.0131	1.290	0.724	0.791

GW-18S	GW-18S	GW-18S
30	45	50
<0.72	55.3	<0.69
<0.0030	<0.0032	<0.0029
<0.0130	0.0272J	0.0129J
<0.0029	0.119	0.0148J
<0.0123	0.533J	<0.0121

GW-18D	GW-18D
70	75
<0.73	<0.73
<0.0029	<0.0030
<0.0127	<0.0131
<0.0028	<0.0029
<0.0120	<0.0125

GW-10S	GW-10S	GW-10S
5.5	15	30
<0.75	<0.71	<0.74
<0.0030	<0.0032	<0.0031
<0.0130	<0.139	<0.0136
<0.0029	<0.0031	<0.0030
<0.0123	<0.0132	<0.0130

GW-8S	GW-8S	GW-8S
5	15	40
<0.78	<0.68	<0.71
<0.0033	<0.0029	<0.0031
<0.0142	<0.0125	<0.0135
<0.0032	<0.0028	<0.0030
<0.0135	<0.0119	<0.0128

CURRENT SOIL CONDITIONS - 2018 SOIL DATA

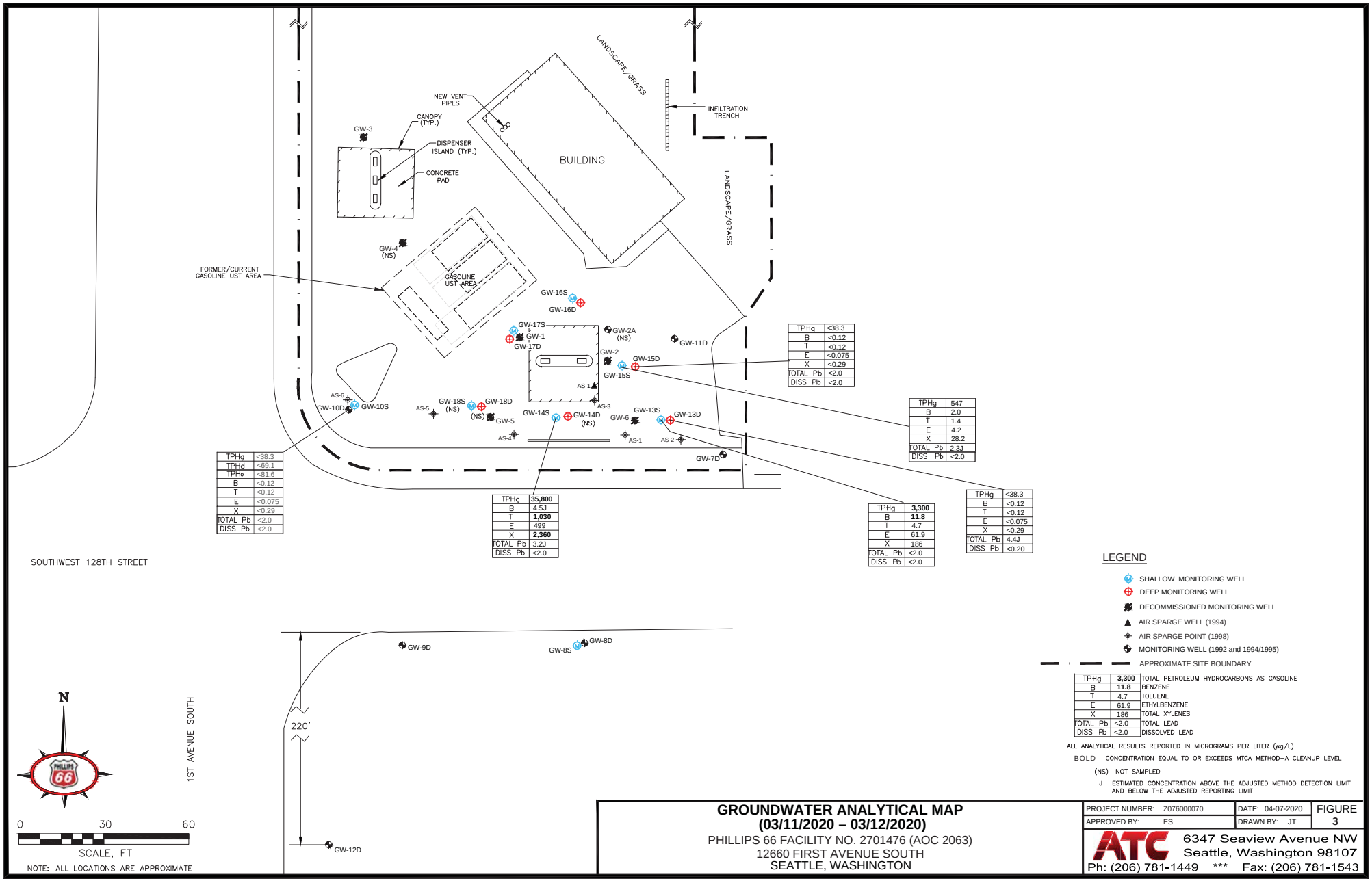
PHILLIPS 66 FACILITY NO. 2701476 (AOC 2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WA

PROJECT NUMBER: Z076000070	DATE: 2/13/19	FIGURE 8
APPROVED BY: ES	DRAWN BY: BK	

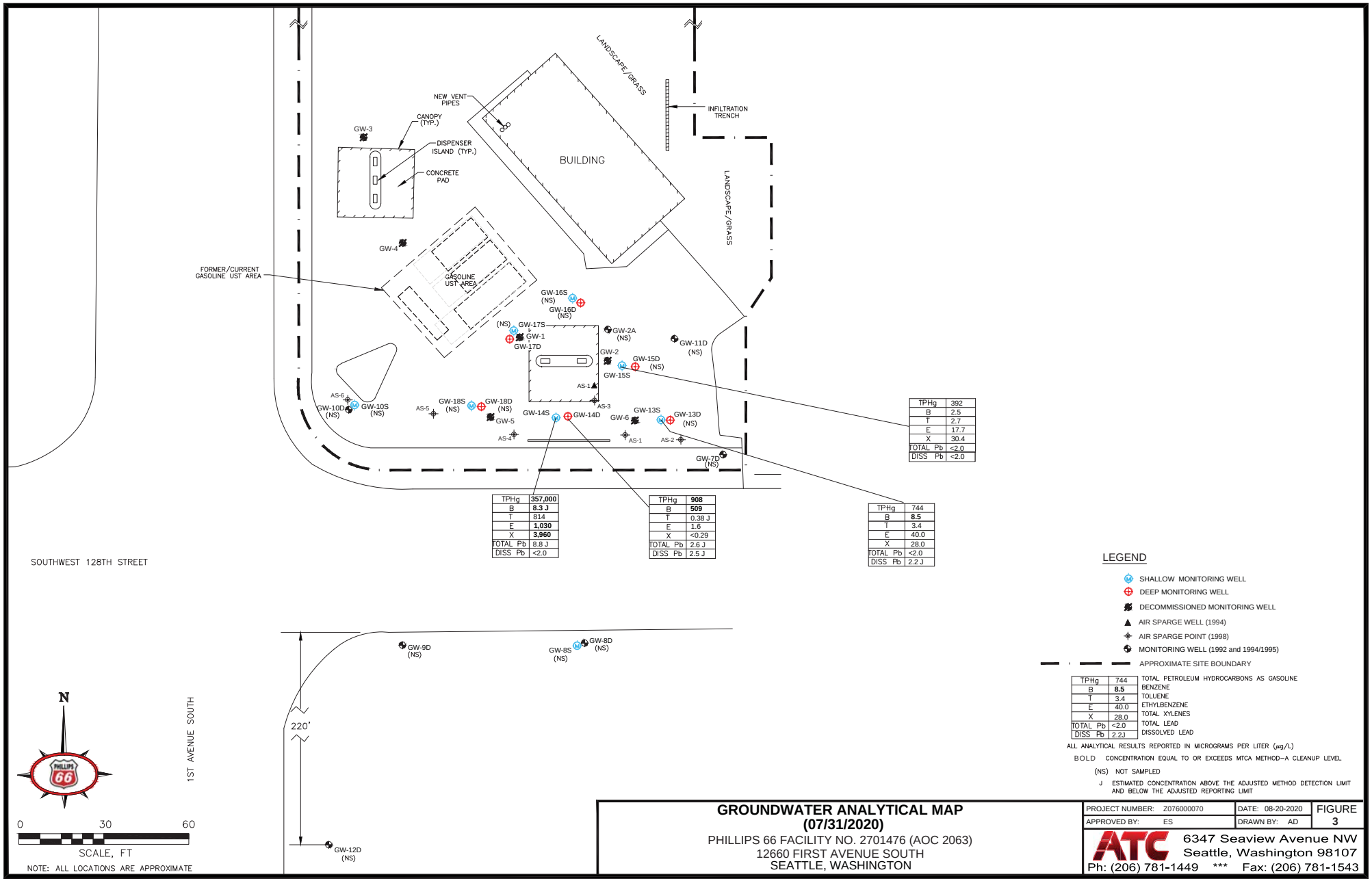
ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

S:\Projects\76\75000 COP\2063\SOIL\ANL_10_2018.dwg

Enclosure A, Figure 8



Enclosure A, Figure 9



TPHg	392
B	2.5
T	2.7
E	17.7
X	30.4
TOTAL Pb	<2.0
DISS Pb	<2.0

TPHg	**357,000**
B	**8.3 J**
T	814
E	**1,030**
X	**3,960**
TOTAL Pb	8.8 J
DISS Pb	<2.0

TPHg	**908**
B	**509**
T	0.38 J
E	1.6
X	<0.29
TOTAL Pb	2.6 J
DISS Pb	2.5 J

TPHg	744
B	**8.5**
T	3.4
E	40.0
X	28.0
TOTAL Pb	<2.0
DISS Pb	2.2 J

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- DECOMMISSIONED MONITORING WELL
- AIR SPARGE WELL (1994)
- AIR SPARGE POINT (1998)
- MONITORING WELL (1992 and 1994/1995)
- APPROXIMATE SITE BOUNDARY

TPHg	744	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
B	**8.5**	BENZENE
T	3.4	TOLUENE
E	40.0	ETHYLBENZENE
X	28.0	TOTAL XYLENES
TOTAL Pb	<2.0	TOTAL LEAD
DISS Pb	2.2J	DISSOLVED LEAD

ALL ANALYTICAL RESULTS REPORTED IN MICROGRAMS PER LITER (µg/L)

BOLD CONCENTRATION EQUAL TO OR EXCEEDS MTCA METHOD–A CLEANUP LEVEL

(NS) NOT SAMPLED

J ESTIMATED CONCENTRATION ABOVE THE ADJUSTED METHOD DETECTION LIMIT AND BELOW THE ADJUSTED REPORTING LIMIT

GROUNDWATER ANALYTICAL MAP (07/31/2020)

PHILLIPS 66 FACILITY NO. 2701476 (AOC 2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WASHINGTON

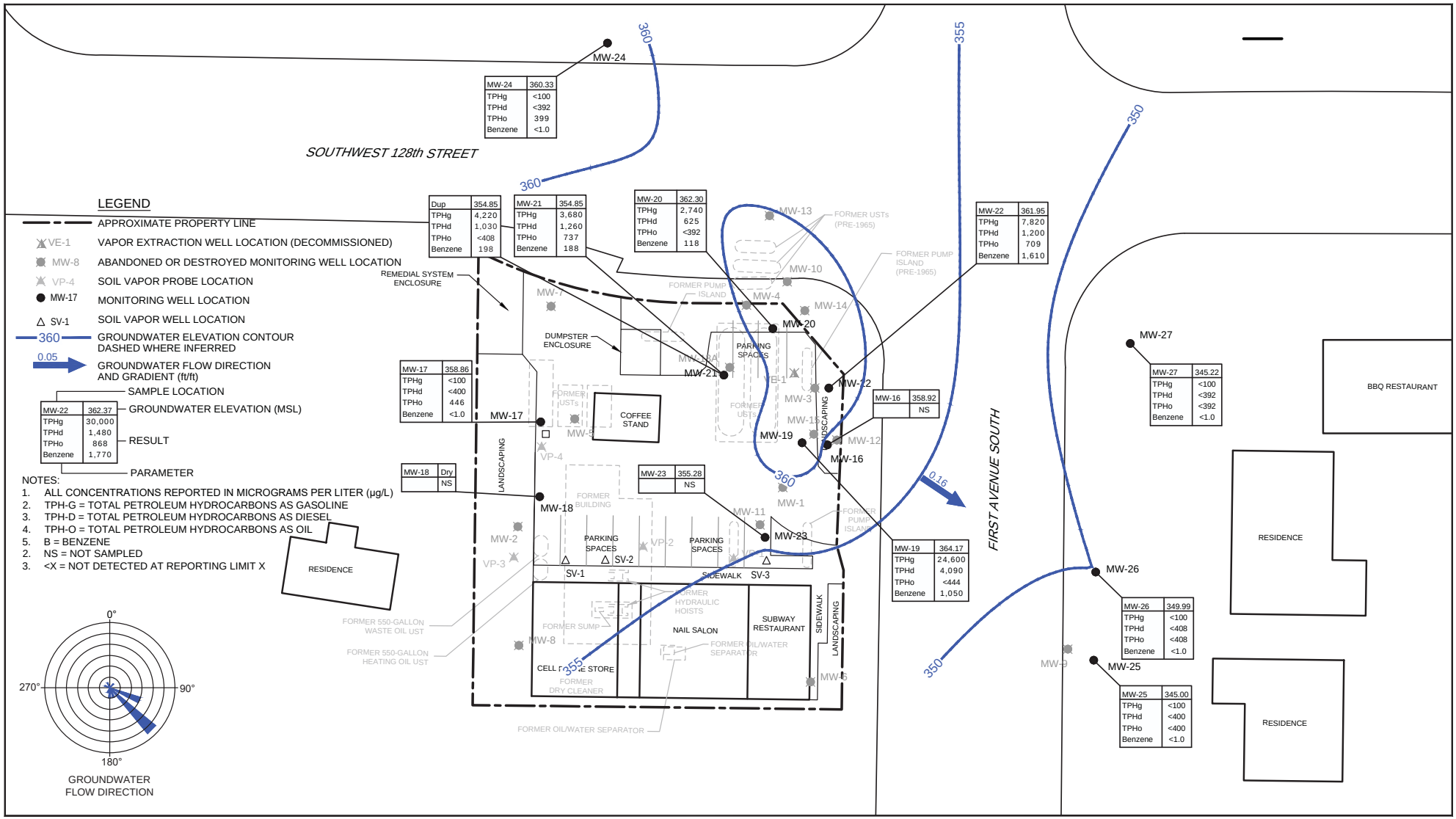
PROJECT NUMBER: Z076000070	DATE: 08-20-2020	FIGURE 3
APPROVED BY: ES	DRAWN BY: AD	

ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

S:\Projects\76\75000.COP\2063\GWA_121118.dwg

Enclosure A, Figure 10

NW2718 Property



Source: ARCADIS, FIGURE 2, SITE MAP, DATED 9/28/2011.

PHILLIPS 66 SITE 1572
12805 FIRST AVENUE SOUTH
BURIEN, WASHINGTON

GROUNDWATER CONTOUR AND CHEMICAL CONCENTRATION MAP - SEPTEMBER 10, 2019

11145900-4RM00
Jan 21, 2020

FIGURE 4

CAD File: N:\US\Santa Rosa\Projects\Sonoma Legacy\Sonoma.Public\CAD\drawings\11140000s\11145900\11145900-REPORT\11145900-4RM00(006)GN\11145900-4RM00(006)GN-SO005.DWG

Enclosure A, Figure 11