



March 29, 2021
Cardno 03122602.W01

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SUBJECT **Groundwater Monitoring Well Installation Work Plan**
Sam's Mobil Station
301 South 6th Street
Sunnyside, Washington

Ms. Monahan:

At the request of ExxonMobil Environmental and Property Solutions, on behalf of ExxonMobil Oil Corporation (ExxonMobil), Cardno has prepared the enclosed *Groundwater Monitoring Well Installation Work Plan*, dated March 29, 2021 for the subject site.

Please contact Mr. Bobby Thompson, Cardno Project Manager for this site at 206 510 5855 with questions.

Sincerely,

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ENCLOSURE

Cardno's *Groundwater Monitoring Well Installation Work Plan*, dated March 29, 2021

cc: w/ enclosure

Mr. Mark Myers, Williams Kastner (*Electronic copy via email*)
Mr. Jonathan Quander, Exxon Mobil Corporation (*Electronic copy via email*)
Ms. Susan Anglin, ExxonMobil Environmental and Property Solutions Company (*Electronic copy via email*)
Ms. Jennifer Sedlachek, ExxonMobil Environmental and Property Solutions Company (*Filed in project folder*)

Groundwater Monitoring Well Installation Work Plan

Sam's Mobil Station
301 South 6th Street
Sunnyside, Washington

Cardno 03122602.W01



Prepared for
ExxonMobil Environmental and Property
Solutions

March 29, 2021

Groundwater Monitoring Well Installation Work Plan

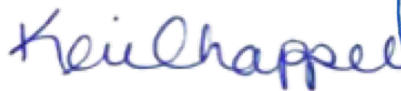
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1 Introduction

1.1 Site Information

Site Name: Sam's Mobil Station
Address: 301 South 6th Street
Sunnyside, Washington
Township/Section/Range: Township 32 North, Section 40, Range 1 East
Tax Parcels: 221025-24572
221025-24573
Current Property Owner: Mr. George Johnson and Ms. Evelyn Johnson
915 Crescent Avenue
Sunnyside, Washington 98944

1.2 Purpose

At the request of ExxonMobil Environmental and Property Solutions, on behalf of ExxonMobil Oil Corporation (ExxonMobil), Cardno prepared this scope of work for Sam's Mobil Station, located in Sunnyside, Washington (Plate 1). The purpose of the work is to further delineate the extent of hydrocarbons associated with operation of the former Sam's Mobil Station.

The scope of work includes:

- > The advancement of eight soil borings with completion of the borings as groundwater monitoring wells MW4 through MW11.
- > The development of groundwater monitoring wells MW4 through MW11.
- > The survey of lateral site features and wellhead elevations for wells MW1 through MW11.
- > The collection of soil and groundwater samples.

2 Site Background

2.1 Site Description

The Commercial Tire property (Property) is located at 301 South 6th Street, Sunnyside, Washington (Plate 2). The Property is comprised of eight parcels (Yakima County, 2020). Based on a review of historical documents, Sam's Mobil Station (Site) was historically located on the two northern most parcels (Yakima County Parcels 221025-24572 and 221025-24573) of the Commercial Tire property (EDR, 2019a; Yakima County, 2020).

The Property is currently comprised of a vacant asphalt-paved lot on the northern portion and a Commercial Tire facility on the southern portion of the Property (Plate 2). Blaine Avenue is located north of the Property, South 6th Street is located to the east of the Property, and an unpaved alley is located to the west of the Property. Beyond the alley to the west and southwest are unpaved vacant lots, tire storage, a residential building, former Shell service station, and the Cascade Natural Gas (CNG) Site.

2.2 Historical Service Station Operations

Based on a review of historical documents, it was identified that a former service station was located on the southwest corner of South 6th Street and Blaine Avenue in Sunnyside, Washington. A service station was identified on the 1944 and 1960 Sanborn Maps (EDR, 2019a). Title records indicate General Petroleum

Corporate (a predecessor of ExxonMobil) leased the Site beginning in 1947 for a term of 10 years (First American, 2019). Reverse directories from 1963, 1969, and 1975 identified a service station (Sam's Mobil Service) at the Site (EDR, 2019b). Sam's Mobil Station appears to have been independently owned and operated service station that carried the Mobil brand, and was not leased or owned by ExxonMobil. No further information regarding historical service station operation or UST decommissioning was available at the time of this investigation.

2.3 Regional Geology

The Property is located within the Columbia Plateau physiographic region. Basaltic rocks of Columbia River Group underlie the region and are middle Miocene through Pliocene in age. The Yakima Basalt of the Columbia River Group is exposed in the Yakima River Basin. Warping and folding of the Yakima Basalt form the principle topographic features of the region. Structural basins formed through folding of the basalt sequence are filled with lacustrine and fluvial sediments of Pliocene age. (SECOR, 1994).

2.4 Site Geology and Hydrogeology

Soil at the Site consists of stratified layers of sand, silty sand, and sand with gravel from surface to approximately 16.5 feet bgs (Cardno, 2020). The DTW at the Site, encountered during August 2020 delineation activities, ranged from 8 to 9 feet bgs (Table 3). With the installation of proposed groundwater monitoring wells MW4 through MW11, geology and hydrogeology will be further defined at the Site.

3 Previous Investigations

In August 2020, Cardno conducted a lateral delineation investigation (Cardno, 2020). Laboratory results indicated concentrations of TPHg, TPHd, TPHmo, benzene, ethylbenzene and total xylenes exceeding the MTCA Method A Cleanup Levels at monitoring well MW1 in both groundwater and soil (Plates 3 and 4). Concentrations detected in wells MW2, MW3, and temporary well TMW4 were less than MTCA Method A Cleanup Levels in both groundwater and soil (Plates 3 and 4).

Cumulative soil analytical results are summarized in Table 1. Well construction details are shown in Table 2. Cumulative groundwater analytical results are summarized in Table 3. Locations of all former and existing wells and historical soil borings are shown on Plate 2.

4 Cleanup Level Selection

Ecology issued cleanup levels under the MTCA in 2001 under Washington Administrative Code (WAC) Chapter 173-340-704 (WAC, 2007). The MTCA Method A cleanup criteria define cleanup levels for common hazardous substances such as total petroleum hydrocarbons.

The MTCA Method A Cleanup Levels for chemicals of concern at the Site for soil, in accordance with Ecology's *Table 740-1 Method A Soil Cleanup Levels for Unrestricted Land Uses*, and for groundwater, in accordance with Ecology's *Table 720-1 Method A Cleanup Levels for Groundwater*, are shown in Figure 1 (WAC Chapter 173-340-900).

Figure 1 – MTCA Method A Cleanup Levels

Constituent	Soil (mg/kg)	Groundwater (µg/L)
TPHg	30/100 ^a	800/1,000 ^b
TPHd	2,000	500
TPHmo	2,000	500

Constituent	Soil (mg/kg)	Groundwater (µg/L)
Benzene	0.03	5
Toluene	7	1,000
Ethylbenzene	6	700
Total Xylenes	9	1,000
EDB	0.005	0.01
EDC	480 ^c	5
MTBE	0.1	20
Total Lead	250	15
Dissolved Lead	N/A	15

Notes:

N/A = Not applicable

a = TPHg cleanup level of 100 mg/kg if no detectable benzene is present in soil, or if toluene, ethylbenzene, and total xylenes constitute greater than 1% of the TPHg present in the sample; if these conditions are not met, then the cleanup level for TPHg is lowered to 30 mg/kg.

b = TPHg cleanup level of 1,000 µg/L if no detectable benzene is present in groundwater; 800 µg/L if benzene is present in groundwater.

c = No published MTCA Method A Cleanup Level, the MTCA Method B Cleanup Level used as the point of compliance

5 Proposed Groundwater Monitoring Well Installation

The purpose of the proposed work is to evaluate the extent of hydrocarbons at the Site. The soil and groundwater characterization activities will be conducted in accordance with Cardno's standard field protocols (Appendix A) and under the supervision of a licensed geologist. The proposed groundwater monitoring well locations (Plate 5) were selected to further delineate dissolved hydrocarbons and establish an adequate groundwater well network for groundwater monitoring.

5.1 Pre-Field Activities

Prior to conducting field activities, Cardno will negotiate access with the Property owner and a state-licensed driller will obtain Washington start cards from Ecology. Underground Service Alert will be notified at least 48 hours prior to the onset of field activities and the Property owner will be notified in accordance with the access agreement. Cardno personnel will visit the Site to check for obstructions and mark the proposed locations. Cardno will contract a private utility locating service to locate utilities. If subsurface structures are detected during the locate, the locations of the proposed borings may be revised based on the information collected in the field.

5.2 UST Study

On February 9, 2021, Cardno observed Advanced Underground Utility Locating (AUUL) use ground penetrating radar (GPR) to evaluate the presence or absence of USTs and associated product lines at the Site. During the survey, the locate confirmed the presence a UST basin and potential product line in the northeast corner of the Site, just east of the 1944 former service station (Plate 2). AUUL indicated that the three USTs may have not been removed and were possibly backfilled in place. During the proposed drilling activities, Cardno plans to use soft digging techniques to confirm the existence of the USTs and the product line by uncovering the top of each.

5.3 Subsurface Investigation and Groundwater Well Installation

The proposed soil borings (MW4 through MW11) will be cleared with a combination of hand tools and soft digging methods to depths ranging from 4 to 8 feet bgs (or to the bottom of any subsurface structure, whichever deeper) to avoid damage to subsurface utilities. The proposed soil borings will be advanced using drilling equipment based on soil type encountered, overhead obstructions, or limited workspace, to depths of approximately 15 feet bgs. The final depths of the borings will be determined at the time of drilling based on field observations and field screening using a PID. Soil samples will be collected for laboratory analysis at depths where confirmation or delineation is necessary, where field observations indicate the presence of hydrocarbons, and for geologic logging purposes. Additional soil samples may be collected from each boring depending on soil conditions observed during drilling activities. Any soil samples collected during water or air knife clearance will be advanced by a hand auger from 18 inches above the desired sampled depth to preserve the sample integrity.

Following drilling, proposed groundwater monitoring wells MW4 through MW11 will be constructed using 2-inch diameter, Schedule 40 PVC casings with either 0.010 or 0.020 slots (to be determined at the time of installation). Each well will be screened from approximately 10 to 15 feet bgs.

5.4 Groundwater Monitoring Well Development

Forty-eight hours following the installation of the cement cap or before placement of the bentonite seal, Cardno will develop the newly installed wells using a surge block and over-purging with a downwell pump. The wells will be purged until the turbidity of groundwater had stabilized to +/-10% for three consecutive readings of 3-minute intervals.

5.5 Groundwater Monitoring and Sampling

Following well development, Cardno will monitor DTW and collect a groundwater sample using low-flow sampling methods from each monitoring well to further define hydrocarbon concentrations in groundwater and establish groundwater flow direction and magnitude for the Site. Four quarters of groundwater monitoring and sampling activities will be conducted to establish a baseline of groundwater conditions at the Site. All groundwater monitoring and sampling activities will be conducted in accordance with Cardno's standard field protocol (Appendix A).

5.6 Laboratory Analysis

Soil and groundwater samples will be shipped to Eurofins Calscience, LLC (Eurofins), a state-certified laboratory, located in Garden Grove, California.

Soil and groundwater samples will be analyzed for:

- > TPHg in accordance with Ecology Method NWTPH-Gx.
- > TPHd and TPHmo in accordance with Ecology Method NWTPH-Dx.
- > BTEX in accordance with EPA Method 8260C.
- > Total lead in soil in accordance with EPA Method 6010B.
- > Total and dissolved lead in groundwater in accordance with EPA Method 6020.

Select samples will be analyzed for additional constituent of potential concern in accordance with Ecology's *Table 830-1 Required Testing for Petroleum Releases* (WAC, 2007):

- > EDB in soil in accordance with EPA Method 8260C.
- > EDB in groundwater in accordance with EPA Method 504.1.
- > EDC, MTBE, and n-Hexane in accordance with EPA Method 8260C.

- > HVOCs in accordance with 8260C.
- > cPAHs and naphthalenes in accordance with EPA Method 8270C Selected Ion Monitoring (SIM).
- > PCBs in accordance with EPA Method 8082.

5.7 Waste Management

The soil and decontamination water generated during drilling activities will be temporarily stored on-site in DOT-approved 55-gallon drums. Soil and decontamination water will be transported by a licensed contractor to a disposal facility for treatment or disposal following profiling and characterization. The disposal facility will be selected from ExxonMobil's Approved Waste Sites List. Waste documentation for soil and water will be included in the final report.

Water generated during groundwater sampling will be treated using Cardno's portable GWPTS and discharged to a permeable surface.

5.1 Report

After completion of the proposed field activities, a report summarizing field and laboratory procedures, boring logs, laboratory results, and waste shipment documentation will be submitted to ExxonMobil and Ecology. The report will be signed by a State of Washington professional geologist or engineer.

6 Contact Information

- > The responsible party contact is Ms. Jennifer Sedlachek, ExxonMobil Environmental and Property Solutions Company, 4096 Piedmont Avenue, #194, Oakland, California 94611.
- > The consultant contact is Mr. Bobby Thompson, Cardno, 801 Second Avenue, Suite 1150, Seattle, Washington 98104.
- > The agency contact is Ms. Mary Monahan, Toxics Cleanup Program, Central Regional Office, 1250 West Alder Street, Union Gap, Washington 98903.

7 Limitations

For documents cited that were not generated by Cardno, the data taken from those documents is used "as is" and is assumed to be accurate. Cardno does not guarantee the accuracy of this data and makes no warranties for the referenced work performed nor the inferences or conclusions stated in these documents.

This report and the work performed have been undertaken in good faith, with due diligence and with the expertise, experience, capability and specialized knowledge necessary to perform the work in a good and workmanlike manner and within all accepted standards pertaining to providers of environmental services in Washington at the time of investigation. No soil engineering or geotechnical references are implied or should be inferred. The evaluation of the geologic conditions at the site for this investigation is made from a limited number of data points. Subsurface conditions may vary away from these data points.

8 References

Cardno. November 16, 2020. *Lateral Delineation Report*, Sam's Mobil Station, Former Sam's Mobil Station, 301 South 6th Street, Sunnyside, Washington.

EDR. March 18, 2019a. *Certified Sanborn® Map Report*, 301 South 6th Street, Sunnyside, Washington 98944. Inquiry No: 5593388.3.

EDR. March 19, 2019b. *City Directory Image Report*, 301 South 6th Street, Sunnyside, Washington 98944. Inquiry No: 5593388.3.

First American Title Insurance Company (First American). May 17, 2019. *Recorded Document Guarantee – Guarantee No.: 4439-3233777*, 301 South 6th Street, Sunnyside, Washington.

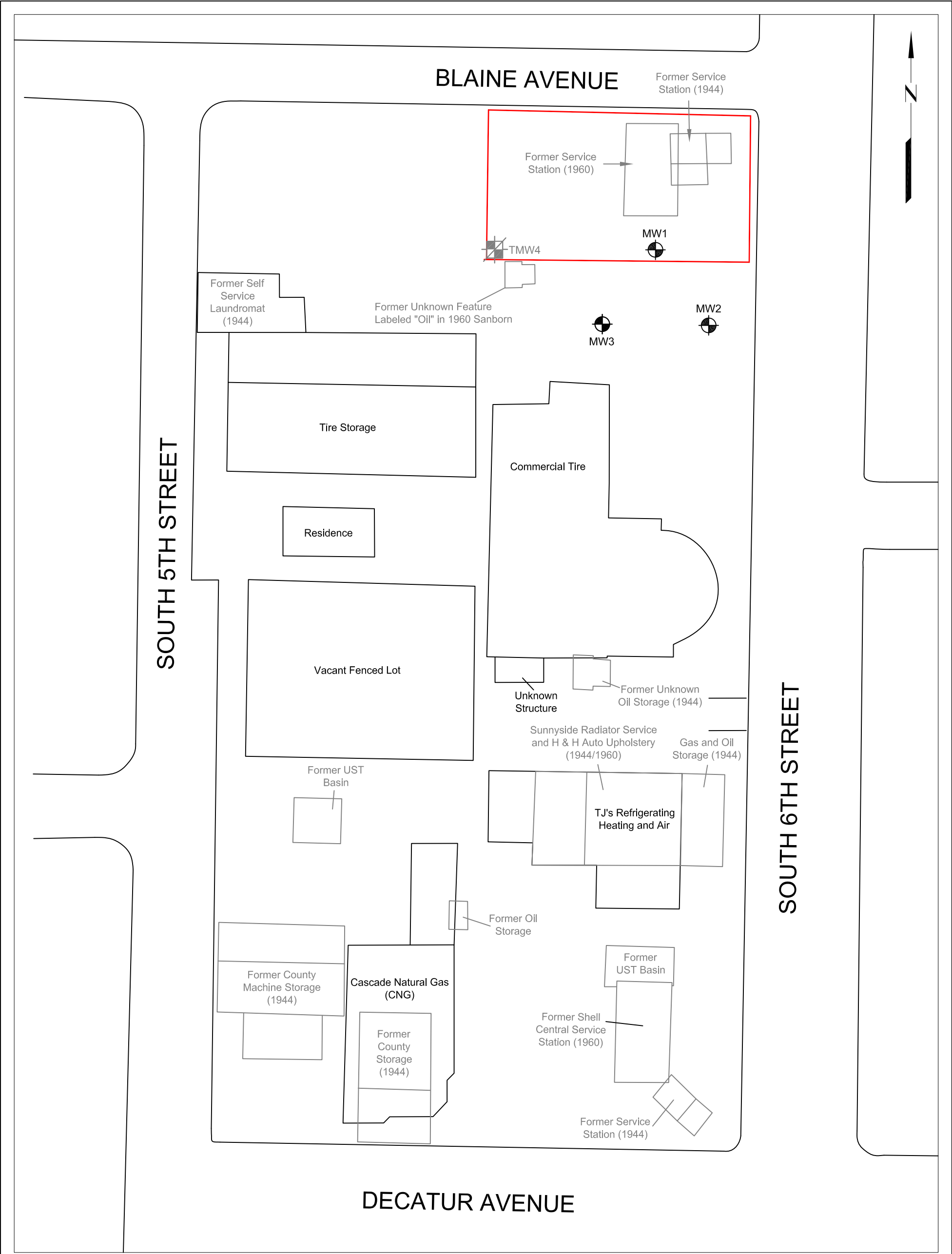
SECOR International Incorporated (SECOR). November 3, 1994. *Remedial Investigation and Assessment of Groundwater Remedial Alternatives*, Cascade Natural Gas Corporation, Sunnyside, Washington.

Washington Administrative Code (WAC). October 12, 2007. *Chapter 173-340 Model Toxics Control Act – Cleanup*. <http://apps.leg.wa.gov/WAC/default.aspx?cite=173-340>. Accessed October 7, 2020.

Yakima County. 2020. *Parcel Search | Yakima County, WA*. <https://www.yakimacounty.us/627/Parcel-Search>. Accessed November 16, 2020.







9 Acronym List

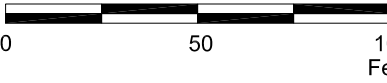
µg/L	Micrograms per liter	NAPL	Non-aqueous phase liquid
µs	Microsiemens	NEPA	National Environmental Policy Act
1,2-DCA	1,2-dichloroethane	NGVD	National Geodetic Vertical Datum
acfm	Actual cubic feet per minute	NPDES	National Pollutant Discharge Elimination System
AS	Air sparge	O&M	Operations and Maintenance
bgs	Below ground surface	ORP	Oxidation-reduction potential
BTEX	Benzene, toluene, ethylbenzene, and total xylenes	OSHA	Occupational Safety and Health Administration
CEQA	California Environmental Quality Act	OVA	Organic vapor analyzer
cfm	Cubic feet per minute	P&ID	Process & Instrumentation Diagram
COC	Chain of Custody	PAH	Polycyclic aromatic hydrocarbon
CPT	Cone Penetration (Penetrometer) Test	PCB	Polychlorinated biphenyl
DIPE	Di-isopropyl ether	PCE	Tetrachloroethene or perchloroethylene
DO	Dissolved oxygen	PID	Photo-ionization detector
DOT	Department of Transportation	PLC	Programmable logic control
DPE	Dual-phase extraction	POTW	Publicly owned treatment works
DTW	Depth to water	ppmv	Parts per million by volume
EDB	1,2-dibromoethane	PQL	Practical quantitation limit
EDC	1,2-dichloroethane	psi	Pounds per square inch
EPA	Environmental Protection Agency	PVC	Polyvinyl chloride
ESL	Environmental screening level	QA/QC	Quality assurance/quality control
ETBE	Ethyl tertiary butyl ether	RBSL	Risk-based screening levels
FID	Flame-ionization detector	RCRA	Resource Conservation and Recovery Act
fpm	Feet per minute	RL	Reporting limit
GAC	Granular activated carbon	scfm	Standard cubic feet per minute
gpd	Gallons per day	SSTL	Site-specific target level
gpm	Gallons per minute	STLC	Soluble threshold limit concentration
GWPTS	Groundwater pump and treat system	SVE	Soil vapor extraction
HVOC	Halogenated volatile organic compound	SVOC	Semivolatile organic compound
J	Estimated value between MDL and PQL (RL)	TAME	Tertiary amyl methyl ether
LEL	Lower explosive limit	TBA	Tertiary butyl alcohol
LPC	Liquid-phase carbon	TCE	Trichloroethene
LRP	Liquid-ring pump	TOC	Top of well casing elevation; datum is msl
LUFT	Leaking underground fuel tank	TOG	Total oil and grease
LUST	Leaking underground storage tank	TPHd	Total hydrocarbons as diesel
MCL	Maximum contaminant level	TPHg	Total hydrocarbons as gasoline
MDL	Method detection limit	TPHmo	Total hydrocarbons as motor oil
mg/kg	Milligrams per kilogram	TPHs	Total hydrocarbons as stoddard solvent
mg/L	Milligrams per liter	TRPH	Total recoverable hydrocarbons
mg/m ³	Milligrams per cubic meter	UCL	Upper confidence level
MPE	Multi-phase extraction	USCS	Unified Soil Classification System
MRL	Method reporting limit	USGS	United States Geologic Survey
msl	Mean sea level	UST	Underground storage tank
MTBE	Methyl tertiary butyl ether	VCP	Voluntary Cleanup Program
MTCA	Model Toxics Control Act	VOC	Volatile organic compound
NAI	Natural attenuation indicators	VPC	Vapor-phase carbon



FN 0312260002

EXPLANATION

	Current Features		MW3 Groundwater Monitoring Well	SOURCE: Modified from maps provided by EDR, GoogleEarth, and Yakima County
	Former Features Based on 1944 and 1960 Sanborn Maps		TMW4 Destroyed Temporary Groundwater Monitoring Well Location	
	Sam's Mobil Station		B-17 CNG Off-site Temporary Groundwater Monitoring Well	

APPROXIMATE SCALE

0 50 100 Feet



GENERALIZED SITE PLAN AND SITE VICINITY MAP

SAM'S MOBIL STATION
301 South 6th Street
Sunnyside, Washington

PROJECT NO.
031226

PLATE
2
LEC: 01/07/20

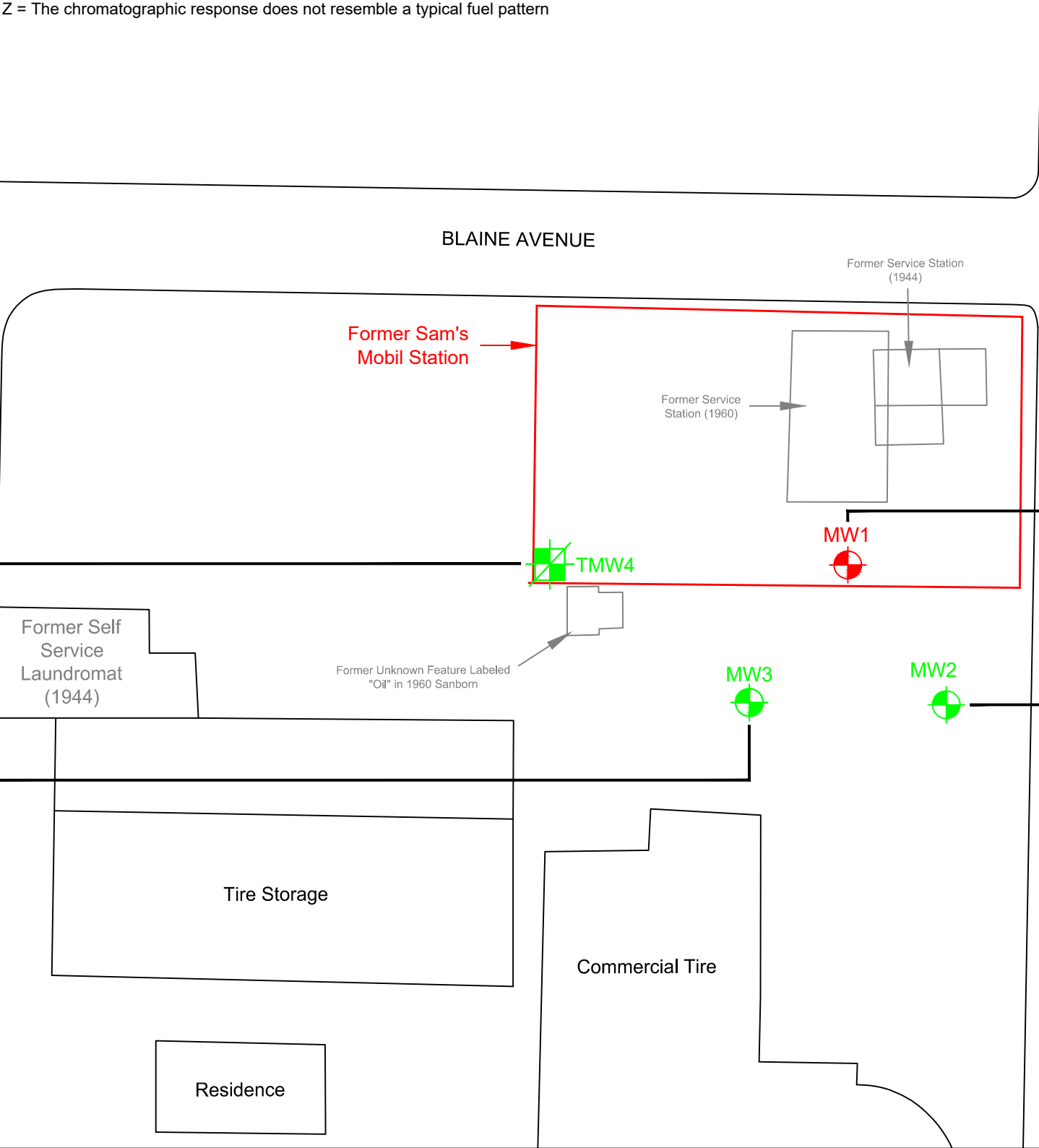
Laboratory Results In mg/kg	
MW1	Boring / Well ID
08/17/20	Sample Date
S-7.5-MW1	Sample Name
7.5	Sample Depth
8,400Z	Total Petroleum Hydrocarbons as Gasoline
8,100Z	Total Petroleum Hydrocarbons as Diesel
2,800Z	Total Petroleum Hydrocarbons as Oil
2.2	Benzene
<1.6	Toluene
150	Ethylbenzene
480	Total Xylenes
37.3	Total Lead
-- = Not Analyzed or Sampled	
<1.00 = Less than the Stated Laboratory Reporting Limit	
mg/kg = Milligrams per Kilogram	
Laboratory Results or Well Symbols in Red Indicate Residual Hydrocarbon Concentrations Which Exceed MTCA Method A Cleanup Levels	
Laboratory Results or Well Symbols in Green Indicate Residual Hydrocarbon Concentrations Less Than MTCA Method A Cleanup Levels	
Laboratory Results Not Available for Numbers and Symbols in Black	

c = Insufficient soil volume submitted to laboratory to perform requested analysis
Z = The chromatographic response does not resemble a typical fuel pattern

TMW4			
08/17/20	08/17/20	08/17/20	08/17/20
S-5-TMW4	S-7.5-TMW4	S-10-TMW4	S-15-TMW4
5	7.5	10	15
<0.23	<0.22	<0.16	<0.22
20Z	5.9Z	6.0Z	<4.8
23Z	<4.8	<5.2	<4.8
<0.0016	<0.00085	--c	<0.00097
<0.0016	<0.00085	--c	<0.00097
<0.0016	<0.00085	--c	<0.00097
<0.0048	<0.0025	--c	<0.0029
3.48	3.84	4.05	4.53

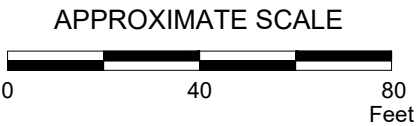
MW3			
08/18/20	08/18/20	08/18/20	08/18/20
S-5-MW3	S-7.5-MW3	S-10-MW3	S-15-MW3
5.0	7.5	10	15
<0.21	<0.21	<0.21	0.32Z
43Z	19Z	16Z	6.1Z
47Z	8.2Z	<5.0	<5.0
<0.00078	<0.00090	<0.00088	<0.00083
<0.00078	<0.00090	<0.00088	<0.00083
<0.00078	<0.00090	<0.00088	<0.00083
<0.0023	<0.0027	<0.0026	<0.0025
3.86	4.70	4.04	5.24

SOURCE: Modified from maps provided by EDR, Google Earth, and Yakima County



MW1				
08/17/20	08/17/20	08/17/20	08/17/20	08/17/20
S-5-MW1	S-7.5-MW1	S-10-MW1	S-15-MW1	S-15-MW1
5	7.5	10	12.5	15
140Z	8,400Z	510Z	7.6Z	0.89Z
1,100Z	8,100Z	880Z	59Z	99Z
1,600Z	2,800Z	620Z	59Z	150Z
0.37	2.2	--c	0.023	0.0046
0.12	<1.6	--c	<0.00084	<0.00085
6.2	150	--c	0.086	0.0022
26	480	--c	0.21	0.0049
35.0	37.3	25.2	6.87	11.5

MW2			
08/18/20	08/18/20	08/18/20	08/18/20
S-5-MW2	S-7.5-MW2	S-10-MW2	S-15-MW2
5.0	7.5	10	15
<0.26	<0.20	<0.22	<0.27
51Z	23Z	6.8Z	5.2Z
60Z	13Z	<5.3	<5.0
<0.00080	<0.00076	<0.00090	<0.00081
<0.00080	<0.00076	<0.00090	<0.00081
<0.00080	<0.00076	<0.00090	<0.00081
<0.0024	<0.0023	<0.0027	<0.0024
3.53	4.16	3.70	6.90



FN 0312260002



HISTORICAL SOIL SAMPLE ANALYSIS MAP

SAM'S MOBIL STATION
301 South 6th Street
Sunnyside, Washington

EXPLANATION

- MW3
Goundwater Monitoring Well
- TMW4
Destroyed Temporary Groundwater Monitoring Well

PROJECT NO.

031226

PLATE

3

CPA: 03/11/21

Laboratory Results in µg/L	
MW1	Well ID
08/18/20	Sample Date
2,100	Total Petroleum Hydrocarbons as Gasoline
980	Total Petroleum Hydrocarbons as Diesel
<91	Total Petroleum Hydrocarbons as Oil
420	Benzene
<5.0	Toluene
180	Ethylbenzene
250	Total Xylenes
<2.5	EDC
<1.00	Dissolved Lead
-- = Not Analyzed or Sampled	
<1.0 = Less than the Stated Laboratory Reporting Limit	
µg/L = Micrograms per Liter	
● Laboratory Results and Well Symbols in Red Indicate Dissolved Concentrations Exceeding MTCA Method A Cleanup Levels	
● Laboratory Results and Well Symbols in Blue Indicate Dissolved Concentrations Less Than MTCA Method A Cleanup Levels	
● Laboratory Results Not Available for Numbers and Symbols in Black	

Z = The chromatographic response des not resemble a typical fuel pattern

TMW4
08/18/20
<100
160Z
<91
<0.50
<1.0
<1.0
<3.0
<0.50
<1.00

MW3
08/18/20
<100
<91
<91
<0.50
<1.0
<1.0
<3.0
0.94
<1.00

MW1
08/18/20
2,100Z
980Z
<91
420
<5.0
180
250
<2.5
<1.00

MW2
08/18/20
<100
<91
<91
<0.50
<1.0
<1.0
<3.0
<0.50
<1.00

SOURCE: Modified from maps provided by EDR, Google Earth, and Yakima County

FN 0312260002



HISTORICAL GROUNDWATER SAMPLE ANALYSIS MAP

SAM'S MOBIL STATION
301 South 6th Street
Sunnyside, Washington

EXPLANATION

MW3



Goundwater Monitoring Well

TMW4



Destroyed Temporary Groundwater Monitoring Well

PROJECT NO.

031226

PLATE

4

LEC: 01/07/20

- Laboratory Results or Well Symbols in Red Indicate Residual Hydrocarbon Concentrations Which Exceed MTCA Method A Cleanup Levels
- Laboratory Results or Well Symbols in Green Indicate Residual Hydrocarbon Concentrations Less Than MTCA Method A Cleanup Levels
- Laboratory Results Not Available for Numbers and Symbols in Black

BLAINE AVENUE

Former Service Station
(1944)

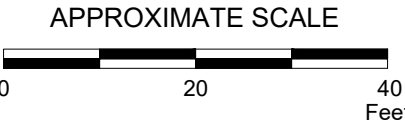
Former Service
Station (1960)

Area of Potentially
Decomissioned USTs

SOUTH 6TH STREET

Former Unknown Feature Labeled
"Oil" in 1960 Sanborn

SOURCE: Modified from maps
provided by EDR, Google
Earth, and Yakima County



FN 0312260002

PROPOSED WELL INSTALLATION LOCATION MAP

SAM'S MOBIL STATION
301 South 6th Street
Sunnyside, Washington

EXPLANATION

- MW3
● Groundwater Monitoring Well
- TMW4
■ Destroyed Temporary Groundwater Monitoring Well
- MW11
⊕ Proposed Groundwater Monitoring Well

PROJECT NO.

031226

PLATE

5

CPA: 03/09/21



TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS
 Sam's Mobil Station
 301 South 6th Street
 Sunnyside, Washington
 Page 1 of 2

Sample Name	Well ID / Location	Date	Sample Depth (feet bgs)	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	EDB (mg/kg)	EDC (mg/kg)	MTBE (mg/kg)	Total Pb (mg/kg)
Cardno - Lateral Delineation Report - November 16, 2020:														
S-5-MW1	MW1	08/17/20	5	140Z	1,100Z	1,600Z	0.37	0.12	6.2	26	<0.062	<0.062	<0.12	35.0
S-7.5-MW1	MW1	08/17/20	7.5	8,400Z	8,100Z	2,800Z	2.2	<1.6	150	480	<1.6	<1.6	<3.1	37.3
S-10-MW1	MW1	08/17/20	10	510Z	880Z	620Z	--c	--c	--c	--c	--c	--c	--c	25.2
S-12.5-MW1	MW1	08/17/20	12.5	7.6Z	59Z	59Z	0.023	<0.00084	0.086	0.21	<0.00084	<0.00084	<0.0017	6.87
S-15-MW1	MW1	08/17/20	15	0.89Z	99Z	150Z	0.0046	<0.00085	0.0022	0.0049	<0.00085	<0.00085	<0.0017	11.5
S-5-MW2	MW2	08/18/20	5	<0.26	51Z	60Z	<0.00080	<0.00080	<0.00080	<0.0024	<0.00080	<0.00080	<0.0016	3.53
S-7.5-MW2	MW2	08/18/20	7.5	<0.20	23Z	13Z	<0.00076	<0.00076	<0.00076	<0.0023	<0.00076	<0.00076	<0.0015	4.16
S-10-MW2	MW2	08/18/20	10	<0.22	6.8Z	<5.3	<0.00090	<0.00090	<0.00090	<0.0027	<0.00090	<0.00090	<0.0018	3.70
S-15-MW2	MW2	08/18/20	15	<0.27	5.2Z	<5.0	<0.00081	<0.00081	<0.00081	<0.0024	<0.00081	<0.00081	<0.0016	6.90
S-5-MW3	MW3	08/18/20	5	<0.21	43Z	47Z	<0.00078	<0.00078	<0.00078	<0.0023	<0.00078	<0.00078	<0.0016	3.86
S-7.5-MW3	MW3	08/18/20	7.5	<0.21	19Z	8.2Z	<0.00090	<0.00090	<0.00090	<0.0027	<0.00090	<0.00090	<0.0018	4.70
S-10-MW3	MW3	08/18/20	10	<0.21	16Z	<5.0	<0.00088	<0.00088	<0.00088	<0.0026	<0.00088	<0.00088	<0.0018	4.04
S-15-MW3	MW3	08/18/20	15	0.32Z	6.1Z	<5.0	<0.00083	<0.00083	<0.00083	<0.0025	<0.00083	<0.00083	<0.0017	5.24
S-5-TMW4	TMW4	08/17/20	5	<0.23	20Z	23Z	<0.0016	<0.0016	<0.0016	<0.0048	<0.0016	<0.0016	<0.0032	3.48
S-7.5-TMW4	TMW4	08/17/20	7.5	<0.22	5.9Z	<4.8	<0.00085	<0.00085	<0.00085	<0.0025	<0.00085	<0.00085	<0.0017	3.84
S-10-TMW4	TMW4	08/17/20	10	<0.16	6.0Z	<5.2	--c	--c	--c	--c	--c	--c	--c	4.05
S-15-TMW4	TWM4	08/17/20	15	<0.22	<4.8	<4.8	<0.00097	<0.00097	<0.00097	<0.0029	<0.00097	<0.00097	<0.0019	4.53

MTCA Method A Cleanup Levels	30/100 ^a	2,000	2,000	0.03	7	6	9	0.005	480 ^b	0.1	250
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Continued on Page 2

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS
 Sam's Mobil Station
 301 South 6th Street
 Sunnyside, Washington
 Page 2 of 2

Sample Name	Well ID / Location	Date	Sample Depth (feet bgs)	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	EDB (mg/kg)	EDC (mg/kg)	MTBE (mg/kg)	Total Pb (mg/kg)
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EXPLANATION:

feet bgs = Feet below ground surface

mg/kg = Milligrams per kilogram

TPHg = Total Petroleum Hydrocarbons as Gasoline in accordance with Ecology Method NWTPH-Gx

TPHd, TPHmo = Total Petroleum Hydrocarbons as Diesel and as Oil, respectively, in accordance with Ecology Method NWTPH-Dx

B = Benzene; T = Toluene; E = Ethylbenzene; X = Total Xylenes

BTEX = Aromatic compounds in accordance with EPA Method 8260B or 8260C - refer to laboratory reports

EDB = 1,2-Dichloroethane in accordance with EPA Method 8260B

EDC = 1,2-Dichloroethane in accordance with EPA Method 8260B or 8260C - refer to laboratory reports

MTBE = Methyl Tertiary Butyl Ether in accordance with EPA Method 8260B

Total Pb = Total Lead in accordance with EPA Methods 6010B - refer to laboratory reports

< = Less than the stated laboratory reporting limit; -- = Not Analyzed; N/A = Not Applicable

Shaded and bolded equal or exceed the MTCA Method A Cleanup Levels

a = TPHg soil cleanup level is 100 mg/kg unless benzene is detected in the sample, or if the toluene, ethylbenzene, and total xylenes constitute greater than 1% of the TPHg present in the sample

b = No published MTCA Method A Cleanup Level, the MTCA Method B Cleanup Level used as the point of compliance

c = Insufficient soil volume submitted to laboratory to perform requested analyses

Z = The chromatographic response does not resemble a typical fuel pattern

TABLE 2
WELL CONSTRUCTION DETAILS

Sam's Mobil Station
301 South 6th Street
Sunnyside, Washington
Page 1 of 1

Well ID	Date of Installation	Date of Destruction	Borehole/Casing Diameter (Inches)	Wellhead Elevation (Feet amsl)	Well Casing Material	Filter Pack Material	Screened Interval (Feet bgs)	Total Well Depth (Feet bgs)	Slot Size (Inches)	Location Relative to Site	Well Owner
MW1	August 17, 2020	NA	8/2	NE	Schedule 40 PVC	12/20 Colorado Sand	5-15	15	0.020	Site	ExxonMobil
MW2	August 18, 2020	NA	8/2	NE	Schedule 40 PVC	12/20 Colorado Sand	5-15	15	0.020	South	ExxonMobil
MW3	August 18, 2020	NA	8/2	NE	Schedule 20 PVC	12/20 Colorado Sand	5-15	15	0.020	South	ExxonMobil
TMW4	August 17, 2020	August 18, 2020	8/2	NE	Schedule 20 PVC	12/20 Colorado Sand	5-15	15	0.020	Site	ExxonMobil

EXPLANATION:

Feet amsl = Feet above mean sea level

Feet bgs = Feet below ground surface

-- = Information not available

NE = Not Established; NA = Not Applicable

TABLE 3
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS
Sam's Mobil Station
301 South 6th Street
Sunnyside, Washington
Page 1 of 2

Well ID	Sample Date	Wellhead Elev	DTW	GW Elev	TPHg (µg/L)	TPHd (µg/L)	TPHmo (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	EDB (µg/L)	EDC (µg/L)	MTBE (µg/L)	Total Pb (µg/L)	Diss Pb (µg/L)
Cardno - Lateral Delineation Report - November 16, 2020:																
MW1	08/18/20	NE	8.38	--	2,100Z	980Z	<91	420	<5.0	180	250	<5.0	<2.5	<5.0	<1.00	<1.00
MW2	08/18/20	NE	8.75	--	<100	<91	<91	<0.50	<1.0	<1.0	<3.0	<1.0	<0.50	<1.0	<1.00	<1.00
MW3	08/18/20	NE	9.16	--	<100	<91	<91	<0.50	<1.0	<1.0	<3.0	<1.0	0.94	<1.0	4.72	<1.00
TMW4	08/18/20	NE	9.00	--	<100	160z	<91	<0.50	<1.0	<1.0	<3.0	<1.0	<0.50	<1.0	1.49	<1.00
	Destroyed															

MTCA Method A Cleanup Levels

800/1,000^a

500

500

5

1,000

700

1,000

0.01

5

20

15

15

Continued on Page 2

TABLE 3
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS

Sam's Mobil Station
301 South 6th Street
Sunnyside, Washington
Page 2 of 2

Well ID	Sample Date	Wellhead Elev	DTW	GW Elev	TPHg (µg/L)	TPHd (µg/L)	TPHmo (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	EDB (µg/L)	EDC (µg/L)	MTBE (µg/L)	Total Pb (µg/L)	Diss Pb (µg/L)
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EXPLANATION:

feet bgs = Feet below ground surface

(µg/L) = Micrograms per liter

TPHg = Total Petroleum Hydrocarbons as Gasoline in accordance with Ecology Method NWTPH-Gx

TPHd, TPHmo = Total Petroleum Hydrocarbons as Diesel and as Oil, respectively, in accordance with Ecology Method NWTPH-Dx

B = Benzene; T = Toluene; E = Ethylbenzene; X = Total Xylenes

BTEX = Aromatic compounds in accordance with EPA Method 8260B - refer to laboratory reports

EDB = 1,2-Dichloroethane in accordance with EPA Method 8260B

EDC = 1,2-Dichloroethane in accordance with EPA Method 8260B or 8260C - refer to laboratory reports

MTBE = Methyl Tertiary Butyl Ether in accordance with EPA Method 8260B

Total and Diss Pb = Total and Dissolved Lead analyzed in accordance with EPA Method 6010B, 6010C, or 6020 - refer to laboratory reports

NM = Not Measured; < = Less than the stated laboratory reporting limit; -- = Not Analyzed; N/A = Not Applicable

Shaded and bolded equal or exceed the MTCA Method A Cleanup Levels

a = TPHg cleanup level for groundwater is 800 µg/L if benzene is present, or 1,000 µg/L if benzene is not present

Z = The chromatographic response does not resemble a typical fuel pattern

Sam's Mobil Station
Cardno 03122602.W01

APPENDIX A

FIELD PROTOCOLS

**Cardno
Soil Boring and Well Installation
Field Protocol**

Preliminary Activities

Prior to the onset of field activities at the site, Cardno obtains the appropriate permit(s) from the governing agency(s). Advance notification is made as required by the agency(s) prior to the start of work. Cardno marks the borehole locations and contacts the local one call utility locating service at least 48 hours prior to the start of work to mark buried utilities. Borehole locations may also be checked for buried utilities by a private geophysical surveyor. Prior to drilling, the borehole location is cleared in accordance with the client's procedures. Fieldwork is conducted under the advisement of a registered professional geologist and in accordance with an updated site-specific safety plan prepared for the project, which is available at the job site during field activities.

Drilling and Soil Sampling Procedures

Cardno contracts a licensed driller to advance the boring and collect soil samples. The specific drilling method (e.g., hollow-stem auger, direct push method, or sonic drilling), sampling method [e.g., core barrel or California-modified split spoon sampler (CMSSS)] and sampling depths are documented on the boring log and may be specified in a work plan. Soil samples are typically collected at the capillary fringe and at 5-foot intervals to the total depth of the boring. To determine the depth of the capillary fringe prior to drilling, the static groundwater level is measured with a water level indicator in the closest monitoring well to the boring location, if available.

The borehole is advanced to just above the desired sampling depth. For CMSSSs, the sampler is placed inside the auger and driven to a depth of 18 inches past the bit of the auger. The sampler is driven into the soil with a standard 140-pound hammer repeatedly dropped from a height of 30 inches onto the sampler. The number of blows required to drive the sampler each 6-inch increment is recorded on the boring log. For core samplers (e.g., direct push), the core is driven 18 inches using the rig apparatus.

Soil samples are preserved in the metal or plastic sleeve used with the CMSSS or core sampler, in glass jars or other manner required by the local regulatory agency (e.g., Environmental Protection Agency Method 5035). Sleeves are removed from the sample barrel, and the lowermost sample sleeve is immediately sealed with Teflon™ tape, capped and labeled. Samples are placed in a cooler chilled to 4° Celsius and transported to a state-certified laboratory. The samples are transferred under chain-of-custody (COC) protocol.

Field Screening Procedures

Cardno places the soil from the middle of the sampling interval into a plastic re-sealable bag. The bag is placed away from direct sunlight for approximately 20 minutes, after which the tip of a photo-ionization detector (PID) or similar device is inserted through the plastic bag to measure organic vapor concentrations in the headspace. The PID measurement is recorded on the boring log. At a minimum, the PID or other device is calibrated on a daily basis in accordance with manufacturer's specifications using a hexane or isobutylene standard. The calibration gas and concentration are recorded on a calibration log. Instruments such as the PID are useful for evaluating relative concentrations of volatilized hydrocarbons, but they do not measure the concentration of petroleum hydrocarbons in the soil matrix with the same precision as laboratory analysis. Cardno trained personnel describe the soil in the bag according to the Unified Soil Classification System and record the description on the boring log, which is included in the final report.

Air Monitoring Procedures

Cardno performs a field evaluation for volatile hydrocarbon concentrations in the breathing zone using a calibrated PID or lower explosive level meter.

Groundwater Sampling

A groundwater sample, if desired, is collected from the boring by using Hydropunch™ sampling technology or installing a well in the borehole. In the case of using Hydropunch™ technology, after collecting the capillary fringe soil sample, the boring is advanced to the top of the soil/groundwater interface and a sampling probe is pushed to approximately 2 feet below the top of the static water level. The probe is opened by partially withdrawing it and thereby exposing the screen. A new or decontaminated bailer is used to collect a water sample from the probe. The water sample is then emptied into laboratory-supplied containers constructed of the correct material and with the correct volume and preservative to comply with the proposed laboratory test. The container is slowly filled with the retrieved water sample until no headspace remains and then promptly sealed with a Teflon-lined cap, checked for the presence of bubbles, labeled, entered onto a COC record and placed in chilled storage at 4° Celsius. Laboratory-supplied trip blanks accompany the water samples as a quality assurance/quality control procedure. Equipment blanks may be collected as required. The samples are kept in chilled storage and transported under COC protocol to a client-approved, state-certified laboratory for analysis.

Backfilling of Soil Boring

If a well is not installed, the boring is backfilled from total depth to approximately 5 feet below ground surface (bgs) with either neat cement or bentonite grout using a tremie pipe. The boring is backfilled from 5 feet bgs to approximately 1 foot bgs with hydrated bentonite chips. The borehole is completed from 1 foot bgs to surface grade with material that best matches existing surface conditions and meets local agency requirements. Site-specific backfilling details are shown on the respective boring log.

Well Construction

A well (if constructed) is completed using materials documented on the boring log or specified in a work plan. The well is constructed with slotted casing across the desired groundwater sampling depth(s) and completed with blank casing to within 6 inches of surface grade. No further construction is conducted on temporary wells. For permanent wells, the annular space of the well is backfilled with Monterey sand from the total depth to approximately 2 feet above the top of the screened casing. A hydrated granular bentonite seal is placed on top of the sand filter pack. Grout may be placed on top of the bentonite seal to the desired depth using a tremie pipe. The well may be completed to surface grade with a 1-foot thick concrete pad. A traffic-rated well vault and locking cap for the well casing may be installed to protect against surface-water infiltration and unauthorized entry. Site-specific well construction details including type of well, well depth, casing diameter, slot size, length of screen interval and sand size are documented on the boring log or specified in the work plan.

Well Development and Sampling

If a permanent groundwater monitoring well is installed, the grout is allowed to cure a minimum of 48 hours before development. Cardno personnel or a contracted driller use a submersible pump or surge block to develop the newly installed well. Prior to development, the pump is decontaminated by allowing it to run and re-circulate while immersed in a non-phosphate solution followed by successive immersions in potable water and de-ionized water baths. The well is developed until sufficient well casing volumes are removed so that turbidity is within allowable limits and pH, conductivity and temperature levels stabilize in the purge water. The volume of groundwater extracted is recorded on a log.

Following development, groundwater within the well is allowed to recharge until at least 80% of the drawdown is recovered. A new or decontaminated bailer is slowly lowered past the air/water interface in the well, and a water sample is collected and checked for the presence of non-aqueous phase liquid, sheen or emulsions. The water sample is then emptied into laboratory-supplied containers as discussed above.

Surveying

If required, wells are surveyed by a licensed land surveyor relative to an established benchmark of known elevation above mean sea level to an accuracy of +/- 0.01 foot. The casing is notched or marked on one side to identify a consistent surveying and measuring point.

Decontamination Procedures

Cardno or the contracted driller decontaminates soil and water sampling equipment between each sampling event with a non-phosphate solution, followed by a minimum of two tap water rinses. De-ionized water may be used for the final rinse. Downhole drilling equipment is steam-cleaned prior to drilling the borehole and at completion of the borehole.

Waste Treatment and Soil Disposal

Soil cuttings generated from the drilling or sampling are stored on site in labeled, Department of Transportation-approved, 55-gallon drums or other appropriate storage container. The soil is removed from the site and transported under manifest to a client- and regulatory-approved facility for recycling or disposal. Decontamination fluids and purge water from well development and sampling activities, if conducted, are stored on site in labeled, regulatory-approved storage containers. Fluids are subsequently transported under manifest to a client- and regulatory-approved facility for disposal or treated with a permitted mobile or fixed-base carbon treatment system.

Cardno
Groundwater Sampling Field Protocol – Low-flow Sampling

The static water level and non-aqueous phase liquid (NAPL) level, if present, in each groundwater monitoring well that contained water and/or NAPL are measured with an interface probe accurate to the nearest 0.01 foot. To calculate groundwater elevations and evaluate groundwater gradient, depth to water (DTW) levels are subtracted from wellhead elevations.

Before water samples are collected from the groundwater monitoring wells, the wells are purged using a peristaltic or a down-well pump at rates not exceeding 1 liter per minute (L/min) until stabilization of the dissolved oxygen (DO), pH, conductivity, and temperature are obtained. Readings of these parameters are taken and recorded every three minutes while the water is purged, and DTW readings are collected every three minutes to ensure drawdown in the well is less than 0.33 feet. If drawdown occurs too quickly, the rate of withdrawal will be reduced.

Purging will continue until three consecutive readings indicate the following:

- Temperature has a change of less than ± 1 degree Celsius
- Conductivity has a change of less than $\pm 3\%$
- pH has a change of less than ± 0.10
- DO has a change of less than $\pm 10\%$ in concentrations (or less than ± 0.3 milligram per liter (mg/L) DO, whichever occurs first)

These are indicators of stabilized conditions.

Once groundwater conditions have stabilized, groundwater samples are carefully collected in 40-milliliter (ml) glass vials, which are filled so as to produce a positive meniscus. Each vial is preserved with hydrochloric acid, sealed with a cap containing a Teflon[®] septum, and subsequently examined for air bubbles to avoid headspace, which would allow volatilization to occur. Additional samples may be collected in other sampling containers. The samples are promptly transported in iced storage in a thermally insulated ice chest, accompanied by chain of custody documentation, to a state-certified laboratory.

Cardno is an ASX-200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage, and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD].

Cardno Zero Harm

Cardno
ZERO
HARM
EVERY JOB. EVERY DAY.

At Cardno, our primary concern is to develop and maintain safe and healthy conditions for anyone involved at our project worksites. We require full compliance with our Health and Safety Policy Manual and established work procedures and expect the same protocol from our subcontractors. We are committed to achieving our Zero Harm goal by continually improving our safety systems, education, and vigilance at the workplace and in the field.

Safety is a Cardno core value and through strong leadership and active employee participation, we seek to implement and reinforce these leading actions on every job, every day.