May 21, 2021

Washington State Department of Ecology
Toxics Cleanup Program, Northwest Region
3190 160th Avenue Southeast
Bellevue, Washington 98008

Attn: Heather Vick

Re: **Groundwater Monitoring Well Replacement Workplan**
Alexan Alderwood
2927 Alderwood Mall Boulevard
Lynnwood, Washington
Facility/Site No.: 56638923
VCP Project No.: NW3312
Terracon Project No.: 81197522

Dear Ms. Vick:

Terracon Consultants, Inc. (Terracon) is pleased to present you with this Groundwater Monitoring Well Replacement Workplan (Workplan) for groundwater monitoring well replacement activities at the above-referenced site. The scope of services included herein provides for the installation of six groundwater monitoring wells, which will be situated in areas across the Site in order to provide representative compliance groundwater monitoring results. It is Terracon's understanding that the future compliance groundwater monitoring will require analyses of groundwater samples from the six installed replacement wells for review and approval of diesel-range total petroleum hydrocarbons (TPH) and arsenic (total and dissolved); however, Terracon will set forth the details associated with all future compliance groundwater monitoring activities in a separate work plan for the Washington State Department of Ecology (Ecology).

## 1.0 PROJECT INFORMATION

The site, which is the former Edmonds School District (ESD) No. 15 Former Maintenance and Transportation Facility (ESD No. 15 Maint and Trans Dept), is located at 2927 Alderwood Mall Boulevard in Lynnwood, Washington. Since 1991, numerous investigations and remediation efforts of hazardous substances in the soil and groundwater at this site. All remedial actions previously performed on-site by others are detailed in prior reports on file at Ecology.

Following these prior remedial actions on-Site by others, quarterly monitoring was initiated in 2018. In total, groundwater from 23 monitoring wells were analyzed on-Site. VOCs were not identified in any wells at concentrations exceeding Washington State Model Toxics Control Act (MTCA) Cleanup Levels (CULs); however, arsenic was detected at concentrations exceeding MTCA Method A Cleanup levels in one or more sampling quarters in the north and northwest

portions of the site (EB-46, EB- 45, EB-43, and EB-42) and in the southwestern portion of the site (EB-32, EB-21, and EB-22). In addition, diesel-range TPH concentrations exceeded MTCA Method A cleanup levels in one or more of the four sampling quarters in the southeast portion of the site (EB-38 and EB-37) and in the northwest portion of the site (EB-46).

In March 2021, ESD's consultant, EHSI, decommissioned all wells in preparation for ESD to transfer the site, with Ecology's concurrence, to Alderwood Apartments, LLC, the current site owner. As a result of conversations with Ecology, the new owner will install replacement wells to allow for future compliance monitoring of arsenic and diesel. The new owner has retained Terracon to perform any required work to achieve a no further action letter.

Terracon proposes the following well locations based on the data from EHSI and with consideration of the redevelopment plan: four buildings, parking and landscaping. The selected monitoring well locations and depths are based on the data presented in Table 1 (attached), which sets forth well construction details and the highest reported groundwater concentrations reported by EHSI during the last four quarterly groundwater monitoring events. The configuration of proposed groundwater monitoring wells, location of former groundwater monitoring wells, groundwater flow directions, and the proposed groundwater monitoring well locations are depicted on Exhibit 1 attached and described below:

- TMW-1 is centrally located within the vicinity of former wells B-2 and EB-46, which historically have demonstrated elevated concentrations of arsenic and diesel-range TPH, respectively. This well also is in the vicinity of former well EB-45, which historically contained elevated concentrations of arsenic.
- TMW-2 is centrally located within the vicinity of former wells EB-42 and EB-43, which historically have contained elevated concentrations of both arsenic and diesel-range TPH.
- TMW-3 will replace former EB-40. While this well historically did not contain elevated concentrations of TPH or arsenic, this well is situated within the vicinity, and potentially down to cross gradient, of the historical source removal excavations, and therefore would be a good point of compliance well.
- TMW-4 will replace former AB-20, which historically has had diesel-range TPH impacts, but also is in the vicinity and down- to cross-gradient of historical remedial excavation areas.
- TMW-5 and TMW-6 will replace wells along the southeastern site boundary where elevated concentrations of diesel-range TPH have been reported. These well locations would be ideal point of compliance wells given their locations where impacts have been identified.

# 2.0 WORKPLAN

## 2.1 Soil Borings and Sampling

Terracon will oversee the advancement of six soil borings on-Site by a subcontracted Washington State-licensed driller utilizing a hollow stem auger drill rig. The monitoring well borings will be advanced using a truck/track-mounted hollow stem auger (HSA) drill rig to anticipated maximum depths of 15 feet bgs, to a depth of approximately 5 feet below the apparent groundwater interface, or to refusal, whichever is shallower.

Terracon will observe soil and document subsurface conditions and visual or olfactory indications of impacts. In addition, Terracon will screen the samples in the field with a calibrated photoionization detector (PID) to qualitatively evaluate for the potential presence of petroleum hydrocarbons. Field screening will be performed by utilizing the “headspace method” and/or by separating the soil in the sampler with a decontaminated steel trowel and placing the probe of the PID in the space between the soil to estimate the concentration of volatile components.

The soil also will be field-screened by sheen test. This test will be performed by placing a small volume of soil from each sampling interval into a shallow bowl containing potable water and observed to see if a sheen is present on the water’s surface.

Terracon will collect one sample from each boring and submit them to the for laboratory for analyses discussed below. Terracon will collect soil samples by hand with a nitrile glove, place them into appropriate containers provided by the laboratory and immediately place them into a cooler containing ice or ice substitute. Samples will be delivered to a Washington State-accredited analytical laboratory in strict accordance with the industry standard chain-of-custody protocol.

All non-disposable sampling equipment will be decontaminated with a non-phosphate soap wash followed by a potable water rinse prior to the beginning of field activities and after each sampling effort.

Upon completion, the soil borings will be converted to permanent groundwater monitoring wells, as detailed below.

***Groundwater Monitoring Well Installation***
The six borings will be converted to groundwater monitoring wells (TMW-1 through TMW-6) to facilitate the collection of groundwater samples. The anticipated well construction will be completed in accordance with WAC Chapter 173-160, *Minimum Standards for Construction and Maintenance of Wells*, as detailed below:

- The borings will be extended to a maximum depth of 15 feet bgs.
- The groundwater monitoring well will be completed with 15 feet of 0.010-inch slotted 2-inch diameter PVC screen and solid 2-inch diameter PVC riser to the ground surface. The annular space will be backfilled with #10/20 silica sand to approximately two feet above the screened interval and overlain by hydrated bentonite chips and concrete.
- The groundwater monitoring wells will be completed with a locking plug secured with a ground surface flush monument plate.
- The location and elevation of the groundwater monitoring wells will be surveyed utilizing a subcontracted licensed surveyor.

To reduce the risk that turbid groundwater will be collected at the time of sampling, each groundwater monitoring well will be developed by the driller by surging with an electric down-hole submersible pump and pumping turbid groundwater. Development water will be containerized, labeled, and left on-site pending analytical results.

Following the installation of the groundwater monitoring wells, in order to establish the groundwater gradient, a surveying professional will be contracted to survey the top-of-casing (TOC) elevations of each groundwater monitoring well.

### Investigation Derived Waste (IDW) Services

Soil cuttings and sampling/drilling equipment decontamination water will be contained in Department of Transportation (DOT) approved drums as investigation-derived waste (IDW), properly labeled and staged on-site pending future disposal following review of laboratory analytical data. For the purposes of this proposal, Terracon estimates that approximately 10 55-gallon drums of soil cuttings and 4 55-gallon drums of decontamination water will be generated as part of the investigation. Composite samples will be collected from the drums and analyzed as needed, pending initial grab sample results. Once laboratory data is received, Terracon will arrange for disposal of the IDW.

## 3.0 REPORTING

Terracon does not intend to provide a stand-alone groundwater monitoring well installation report; however, Terracon will summarize monitoring well installation details in a future report once an initial round of groundwater samples have been collected. The ultimate date of the first round of groundwater sampling has not been determined at this time, but Terracon anticipates that replacement groundwater monitoring wells will be installed in the fourth of 2021, if not sooner, and groundwater monitoring activities will commence subsequent to installation.

## 4.0 CLOSING

Terracon appreciates the opportunity to submit this workplan for review to Ecology and request approval in the form of an opinion letter regarding the proposed number of replacement wells and their locations, as detailed herein. If you have any questions or comments pertaining to the material presented herein, please contact either of the undersigned.

Sincerely,
**Terracon Consultants, Inc.**

Taylor Blackbourn
Project Manager

Matt Wheaton, L.G., P.E.
Senior Principal

Attachments: Exhibit 1 - Site Diagram
Table 1 – Historical Groundwater Monitoring Well Details

LOT 7
ALDERWOOD
MANOR BLOCK 1

LOT 3
ALDERWOOD
MANOR BLOCK 1

LOT 5
ALDERWOOD
MANOR BLOCK 1

BUILDING

B-2
TMW-1
EB-46
TMW-2
EB-45
EB-43
EB-44
EB-23
EB-21
EB-22
EB-47
EB-25
EB-42
B-1
EB-41
EB-30
EB-40
TMW-1
EB-39
B-3
12" CPP CULVERT
IE=386.5
TMW-6
EB-37
EB-38
TMW-4
AB-20
EB-33
AB-19B
TMW-5
EB-36

## LEGEND

| | |
|---|---|
| TMW-1 | TERRACON PROPOSED GROUNDWATER MONITORING WELL LOCATIONS |
| B-1 / EB-30 | FORMER GROUNDWATER MONITORING WELL LOCATIONS |
| | APPROXIMATE DIRECTION OF GROUNDWATER FLOW FROM 2018 EHSI FIGURE |

N

32 0 8 16 32
SCALE IN FEET

| REV | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

ALEXAN ALDERWOOD - PROPOSED DEVELOPMENT PLAN

# ALEXAN ALDERWOOD

2927 ALDERWOOD MALL BOULEVARD
LYNNWOOD, WASHINGTON


Terracon
Consulting Engineers and Scientists
21905 64th Avenue W. Ste 100
Mountlake Terrace, WA 98043
PH. (425) 771-3304
FAX. (425) 771-3549


## Exhbit 1

| | |
|---|---|
| Project Mngr: | MYW |
| Drawn By: | AMP |
| Checked By: | TRB |
| Approved By: | MYW |
| Scale: | 1/32" = 1'-0" |
| Date: | April 2021 |
| JOB NO. | 81197522 |
| SHEET NO.: | 1 OF 1 |

**TABLE 1 - FORMER GROUNDWATER MONITORING WELL CONSTRUCTION DETAILS & HIGHEST DIESEL AND ARSENIC GROUNDWATER CONCENTRATION FROM LAST FOUR QUARTERLY MONITORING EVENTS**

| Well ID | Diameter | Depth (ft) | Screened Interval (ft) | Depth to Groundwater (ft)[1] | Drilling Method | Arsenic Total (µg/L)[2] | Arsenic Dissolved (µg/L)[2] | Diesel (µg/L)[2] |
|---|---|---|---|---|---|---|---|---|
| B-1 | - | - | - | 8.22 | - | BM | BM | BM |
| B-2 | - | - | - | 6.98 | - | **34.5** | **27.1** | BM |
| B-3 | - | - | - | 8.95 | - | BM | BM | BM |
| AB-19B | - | 14.5 | 3.85-8.85 | 8.54 | HSA | NS | NS | BM |
| AB-20 | - | 14.5 | 5.33-10.33 | 8.84 | HSA | NS | NS | BM |
| EB-21 | 2" | 15 | 5-15 | 4.59 | HSA | **18** | **6.88** | BM |
| EB-22 | 2" | 15 | 5-15 | 3.94 | HSA | **6.46** | **4.68** | BM |
| EB-23 | 1" | 15 | 5-10 | 5.65 | HSA | **6.8** | **4.99** | BM |
| EB-25 | 1" | 10 | 5-10 | 3.69 | HSA | NS | NS | BM |
| EB-26 | 2" | 10 | 5-10 | 7.31 | HSA | NS | NS | BM |
| EB-30 | 2" | 10 | 5-10 | 4.29 | HSA | BM | BM | BM |
| EB-36 | - | - | - | 8.26 | - | NS | NS | BM |
| EB-37 | 2" | 14.12 | 5-14.12 | 9.05 | HSA | NS | NS | **640** |
| EB-38 | 2" | 14.95 | 5-14.95 | 7.37 | HSA | NS | NS | **320** |
| EB-39 | 2" | 15.02 | 5-15.02 | 8.66 | HSA | NS | NS | BM |
| EB-40 | 2" | 15.12 | 5-15.12 | 6.29 | HSA | NS | NS | BM |
| EB-41 | 2" | 15.13 | 5-15.13 | 7.62 | HSA | BM | BM | BM |
| EB-42 | 2" | 15.15 | 5-15.15 | 6.2 | HSA | **8.46** | **8.33** | BM |
| EB-43 | 2" | 14.49 | 5-14.49 | 5.82 | HSA | **75.4** | **32.8** | BM |
| EB-44 | 2" | 14.98 | 5-14.98 | 5.58 | HSA | BM | BM | BM |
| EB-45 | 2" | 14.36 | 5-14.36 | 6.63 | HSA | **10.6** | **9.9** | BM |
| EB-46 | 2" | 14.36 | 5-14.36 | 7.28 | HSA | **6.37** | **6.15** | **760** |
| EB-47 | 2" | 12.12 | 3-12.12 | 3.51 | HSA | NS | NS | BM |

[1] Measured 10/2/2018

[2] Highest exceedance in 4 quarters, if applicable

BM = Below Washington State Model Toxics Act (MTCA) Method A Cleanup Levels

NS = Not Sampled

HSA = Hollow-Stem Auger

-- = no data