

SR 520 Bridge Replacement and HOV Program 999 3rd Avenue, Ste. 2200, MS: NB82-99 Seattle, WA 98104

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May 23, 2022

LTR-PR 3105

Michael R. Warfel Site Manager, Voluntary Cleanup Program Department of Ecology Northwest Regional Office (NWRO) P.O. Box 330316 Shoreline, WA 98133-9716

RE: VCP NW 3242 – Montlake Gas Station – Monitoring well installation information

Dear Mr. Warfel:

In response to Washington State Department of Ecology's (Ecology) email dated March 31, 2022, WSDOT is submitting monitoring well installation information, including well construction diagrams, geologic logs, and well development documentation.

Four new groundwater monitoring wells were installed at the former Montlake Gas Station (site) located in Seattle, Washington as part of the post remediation Compliance Groundwater Monitoring Plan (Shannon & Wilson, 2021). The four new monitoring wells are designated MW-6-22, MW-7-22, MW-8-22, and MW-9-22, and are approximately located as depicted on Exhibit 1. The wells were installed using rotary-sonic drilling methods on April 19 and 20, 2022 and subsequently developed on April 27, 2022. Because of remedial action completed at the site during the summer of 2021 (PBS, 2021), soil types encountered during drilling were predominately sand and gravel backfill.

Following Ecology's review of the Compliance Monitoring Plan, the well installation approach was amended from that proposed in the plan. Following Ecology's recommendation (Ecology, 2022), the new monitoring wells were installed with the top of the screen interval above the seasonal high-water level and the bottom of the screen interval set to accommodate sampling during the seasonal low-water level with much of the well screen interval within the newly emplaced backfill.

The soil conditions encountered and well construction details for each of the new wells are provided as Boring and Well Construction Logs (Exhibit 2). The well development detail for each of the new wells is provided in the Well Development Forms (Exhibit 3).

PR: 3105 May 23, 2022

References:

PBS Engineering and Environmental, 2021, Remedial Action Completion Report, Montlake Gas Station, Seattle, December 20.

Shannon & Wilson, Inc, 2021, Compliance Groundwater Monitoring Plan, Montlake Gas Station (Appendix G of PBS 2021), December 7.

Washington State Department of Ecology, 2022, email dated March 21, 2022 with comments on the Shannon & Wilson 2021 Compliance Groundwater Monitoring Plan.

We appreciate Ecology's continued coordination on this matter. Should you have any questions, please contact me at kucharm@wsdot.wa.gov or 206-498-0508.

Sincerely,

Margaret Kucharski

Margaret Kucharski

WSDOT Megaprograms Environmental Manager

Enclosure: Exhibits

cc:

Robyn Boyd Dave Becher Meg Strong

Shannon & Wilson, Inc. (S&W), uses a soil classification system modified from the Unified Soil Classification System (USCS). Elements of the USCS and other definitions are provided on this and the following page. Soil descriptions are based on visual-manual procedures (ASTM D 2488-93) unless otherwise noted.

S&W CLASSIFICATION OF SOIL CONSTITUENTS

- MAJOR constituents compose more than 50 percent, by weight, of the soil. Major consituents are capitalized (i.e., SAND).
- Minor constituents compose 12 to 50 percent of the soil and precede the major constituents (i.e., silty SAND). Minor constituents preceded by "slightly" compose 5 to 12 percent of the soil (i.e., slightly silty SAND).
- Trace constituents compose 0 to 5 percent of the soil (i.e., slightly silty SAND, trace of gravel).

MOISTURE CONTENT DEFINITIONS

| Dry | Absence of moisture, dusty, dry to the touch | |
|-------|--|--|
| Moist | Damp but no visible water | |
| Wet | Visible free water, from below water table | |

ABBREVIATIONS

| | ADDITETIATION |
|-------|--------------------------------------|
| ATD | At Time of Drilling |
| Elev. | Elevation |
| ft | feet |
| FeO | Iron Oxide |
| MgO | Magnesium Oxide |
| HSA | Hollow Stem Auger |
| ID | Inside Diameter |
| in | inches |
| lbs | pounds |
| Mon. | Monument cover |
| N | Blows for last two 6-inch increments |
| NA | Not applicable or not available |
| NP | Non plastic |
| OD | Outside diameter |
| OVA | Organic vapor analyzer |
| PID | Photo-ionization detector |
| ppm | parts per million |
| PVC | Polyvinyl Chloride |
| SS | Split spoon sampler |
| SPT | Standard penetration test |
| USC | Unified soil classification |
| WOH | Weight of hammer |
| WOR | Weight of drill rods |
| WLI | Water level indicator |

GRAIN SIZE DEFINITION

| DESCRIPTION | SIEVE NUMBER AND/OR SIZE |
|--------------------------------|---|
| FINES | < #200 (0.08 mm) |
| SAND* - Fine - Medium - Coarse | #200 to #40 (0.08 to 0.4 mm) #40 to #10 (0.4 to 2 mm) #10 to #4 (2 to 5 mm) |
| GRAVEL* - Fine - Coarse | #4 to 3/4 inch (5 to 19 mm) 3/4 to 3 inches (19 to 76 mm) |
| COBBLES | 3 to 12 inches (76 to 305 mm) |
| BOULDERS | > 12 inches (305 mm) |

^{*} Unless otherwise noted, sand and gravel, when present, range from fine to coarse in grain size.

RELATIVE DENSITY / CONSISTENCY

| COARSE-GR | AINED SOILS | FINE-GRA | AINED SOILS |
|----------------------|---------------------|----------------------|-------------------------|
| N, SPT, BLOWS/FT. | RELATIVE DENSITY | N, SPT, BLOWS/FT. | RELATIVE CONSISTENCY |
| 0 - 4 | Very loose | Under 2 | Very soft |
| 4 - 10 | Loose | 2 - 4 | Soft |
| 10 - 30 | Medium dense | 4 - 8 | Medium stiff |
| 30 - 50 | Dense | 8 - 15 | Stiff |
| Over 50 | Very dense | 15 - 30 | Very stiff |
| | | Over 30 | Hard |

WELL AND OTHER SYMBOLS

| Bent. Cement Grout | V. 10 2 V. 10 10 V. 10 V | Surface Cement Seal |
|--------------------|---|------------------------|
| Bentonite Grout | | Asphalt or Cap |
| Bentonite Chips | | Slough |
| Silica Sand | | Bedrock |
| PVC Screen | | |
| Vibrating Wire | | |

Montlake Gas Station VCP Compliance Groundwater Monitoring 2625 East Montlake Place East, Seattle, WA

SOIL CLASSIFICATION AND LOG KEY

May 2022

21-1-22242-104

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Exhibit 2
Sheet 1 of 2

| UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) (From USACE Tech Memo 3-357) | | | | | | | | | | | |
|--|--|------------------------------------|----------------|---------------|--|--|--|--|--|--|--|
| | MAJOR DIVISIONS | ; | GROUP/C SYM | RAPHIC BOL | TYPICAL DESCRIPTION | | | | | | |
| | | Clean Gravels | GW | X | Well-graded gravels, gravels, gravel/sand mixtures, little or no fines. | | | | | | |
| | Gravels (more than 50% of coarse fraction retained on No. 4 sieve) | (less than 5% fines) | GP | | Poorly graded gravels, gravel-sand mixtures, little or no fines | | | | | | |
| | | Gravels with Fines | GM | | Silty gravels, gravel-sand-silt mixtures | | | | | | |
| COARSE- GRAINED SOILS | | (more than 12% fines) | GC | | Clayey gravels, gravel-sand-clay mixtures | | | | | | |
| (more than 50% retained on No. 200 sieve) | | Clean Sands | SW | | Well-graded sands, gravelly sands, little or no fines | | | | | | |
| | Sands (50% or more of coarse fraction passes the No. 4 sieve) | (less than 5% fines) | SP | | Poorly graded sand, gravelly sands, little or no fines | | | | | | |
| | | Sands with Fines | SM | | Silty sands, sand-silt mixtures | | | | | | |
| | | (more than 12% fines) | sc | | Clayey sands, sand-clay mixtures | | | | | | |
| | | Inorgania | ML | | Inorganic silts of low to medium plasticity, rock flour, sandy silts, gravelly silts, or clayey silts with slight plasticity | | | | | | |
| | Silts and Clays (liquid limit less than 50) | Inorganic | CL | | Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays | | | | | | |
| FINE-GRAINED SOILS (50% or more | | Organic | OL | | Organic silts and organic silty clays of low plasticity | | | | | | |
| passes the No. 200 sieve) | | Inorgania | МН | | Inorganic silts, micaceous or diatomaceous fine sands or silty soils, elastic silt | | | | | | |
| | Silts and Clays (liquid limit 50 or more) | Inorganic | СН | | Inorganic clays or medium to high plasticity, sandy fat clay, or gravelly fat clay | | | | | | |
| | | Organic | ОН | | Organic clays of medium to high plasticity, organic silts | | | | | | |
| HIGHLY- ORGANIC SOILS | Primarily organicolor, and | ic matter, dark in organic odor | PT | | Peat, humus, swamp soils with high organic content (see ASTM D 4427) | | | | | | |

NOTE: No. 4 size = 5 mm; No. 200 size = 0.075 mm

NOTES

- 1. Dual symbols (symbols separated by a hyphen, i.e., SP-SM, slightly silty fine SAND) are used for soils with between 5% and 12% fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart.
- Borderline symbols (symbols separated by a slash, i.e., CL/ML, silty CLAY/clayey SILT; GW/SW, sandy GRAVEL/gravelly SAND) indicate that the soil may fall into one of two possible basic groups.

Montlake Gas Station VCP Complicance Groundwater Monitoring 2625 East Montlake Place East, Seattle, WA

SOIL CLASSIFICATION AND LOG KEY

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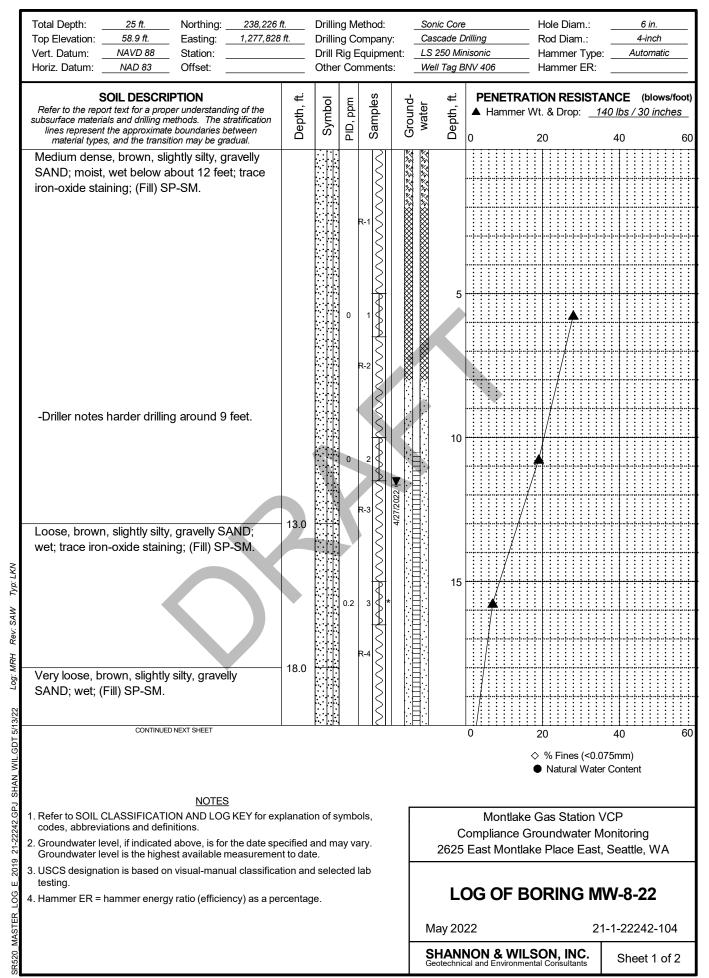
Exhibit 2
Sheet 12 of 2

Total Depth: 25 ft. Northing: 238,268 ft. Drilling Method: Sonic Core Hole Diam .: 6 in. Top Elevation: 59.7 ft. Easting: 1,277,835 ft. **Drilling Company:** Cascade Drilling Rod Diam .: 4-inch Vert. Datum: NAVD 88 Drill Rig Equipment: LS 250 MiniSonic Hammer Type: Automatic Station: Other Comments: Well Tag BNV 407 Hammer ER: Horiz. Datum: NAD 83 Offset: PENETRATION RESISTANCE (blows/foot) SOIL DESCRIPTION ₽ Symbol Samples PID, ppm **Ground** water Depth, Depth, Refer to the report text for a proper understanding of the ▲ Hammer Wt. & Drop: <u>140 lbs / 30 inches</u> subsurface materials and drilling methods. The stratification lines represent the approximate boundaries between 60 material types, and the transition may be gradual. Dense, brown, slightly silty, gravelly SAND; moist; (Fill) SP-SM. 0.1 8.0 Loose, brown, slightly silty, gravelly SAND; moist to wet; (Fill) SP-SM. 10 12.0 Dense, brown, slightly silty, gravelly SAND; wet; (Fill) SP-SM. Typ: LKN 0.3 SAW Rev. MRH Log: GDT 5/13/22 CONTINUED NEXT SHEET ♦ % Fines (<0.075mm)</p> M Natural Water Content SHAN **NOTES** Montlake Gas Station VCP 1. Refer to SOIL CLASSIFICATION AND LOG KEY for explanation of symbols, codes, abbreviations and definitions. Compliance Groundwater Monitoring 2. Groundwater level, if indicated above, is for the date specified and may vary. 2625 East Montlake Place East, Seattle, WA Groundwater level is the highest available measurement to date. 2019 3. USCS designation is based on visual-manual classification and selected lab **LOG OF BORING MW-6-22** 4. Hammer ER = hammer energy ratio (efficiency) as a percentage. May 2022 21-1-22242-104 SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants Sheet 1 of 2

Total Depth: 25 ft. Northing: 238,268 ft. Drilling Method: Sonic Core Hole Diam .: 6 in. Top Elevation: 59.7 ft. Easting: 1,277,835 ft. **Drilling Company:** Cascade Drilling Rod Diam .: 4-inch Vert. Datum: NAVD 88 Drill Rig Equipment: LS 250 MiniSonic Hammer Type: Automatic Station: Other Comments: Well Tag BNV 407 Hammer ER: Horiz. Datum: NAD 83 Offset: PENETRATION RESISTANCE (blows/foot) **SOIL DESCRIPTION** ₽ PID, ppm Samples Symbol Ground water Depth, Depth, Refer to the report text for a proper understanding of the Hammer Wt. & Drop: <u>140 lbs / 30 inches</u> subsurface materials and drilling methods. The stratification lines represent the approximate boundaries between 40 60 material types, and the transition may be gradual. 0.1 22.0 Gray-brown, silty, gravelly SAND; moist to wet; slight diamict texture, trace iron-oxide staining; (Native) SM. **BOTTOM OF BORING** COMPLETED 4/19/2022 Notes: a) Mixing of native and fill material is possible near the contact shown on this boring log and should be considered an approximate contact based on visual inspection of SPT and sonic core samples, photographs, and noted drill action. b) Well settled during emplacement into underlying soil which may have been disturbed by drill action. Typ: LKN SAW Rev. Log: GDT 5/13/22 ♦ % Fines (<0.075mm)</p> M Natural Water Content SHAN **NOTES** Montlake Gas Station VCP 1. Refer to SOIL CLASSIFICATION AND LOG KEY for explanation of symbols, codes, abbreviations and definitions. Compliance Groundwater Monitoring 2. Groundwater level, if indicated above, is for the date specified and may vary. 2625 East Montlake Place East, Seattle, WA Groundwater level is the highest available measurement to date. 2019 3. USCS designation is based on visual-manual classification and selected lab **LOG OF BORING MW-6-22** 4. Hammer ER = hammer energy ratio (efficiency) as a percentage. May 2022 21-1-22242-104 SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants Sheet 2 of 2

Total Depth: 25 ft. Northing: 238,273 ft. Drilling Method: Sonic Core Hole Diam .: 6 in. Top Elevation: 59.7 ft. Easting: 1,277,874 ft. **Drilling Company:** Cascade Drilling Rod Diam .: 4-inch Vert. Datum: NAVD 88 Drill Rig Equipment: LS 250 MiniSonic Hammer Type: Automatic Station: Other Comments: Well Tag BNV 409 Hammer ER: Horiz. Datum: NAD 83 Offset: PENETRATION RESISTANCE (blows/foot) SOIL DESCRIPTION ₽ Symbol Samples PID, ppm **Ground** water Depth, Depth, Refer to the report text for a proper understanding of the Hammer Wt. & Drop: <u>140 lbs / 30 inches</u> subsurface materials and drilling methods. The stratification lines represent the approximate boundaries between 40 60 material types, and the transition may be gradual. Dense, brown, slightly silty, gravelly SAND; moist, wet below about 12.5 feet; (Fill) SP-SM. 0.1 - Trace iron-oxide staining at 11 feet. Typ: LKN 0.6 SAW Rev. MRH Log: .GDT 5/13/22 CONTINUED NEXT SHEET 60 ♦ % Fines (<0.075mm)</p> M Natural Water Content SHAN **NOTES** Montlake Gas Station VCP 1. Refer to SOIL CLASSIFICATION AND LOG KEY for explanation of symbols, codes, abbreviations and definitions. Compliance Groundwater Monitoring 2. Groundwater level, if indicated above, is for the date specified and may vary. 2625 East Montlake Place East, Seattle, WA Groundwater level is the highest available measurement to date. 2019 3. USCS designation is based on visual-manual classification and selected lab **LOG OF BORING MW-7-22** 4. Hammer ER = hammer energy ratio (efficiency) as a percentage. May 2022 21-1-22242-104 SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants Sheet 1 of 2

Total Depth: 25 ft. Northing: 238,273 ft. Drilling Method: Sonic Core Hole Diam .: 6 in. Top Elevation: 59.7 ft. Easting: 1,277,874 ft. **Drilling Company:** Cascade Drilling Rod Diam .: 4-inch Vert. Datum: NAVD 88 Drill Rig Equipment: LS 250 MiniSonic Hammer Type: Automatic Station: Other Comments: Well Tag BNV 409 Hammer ER: Horiz. Datum: NAD 83 Offset: PENETRATION RESISTANCE (blows/foot) **SOIL DESCRIPTION** ₽ Symbol Samples PID, ppm Ground water Depth, Depth, Refer to the report text for a proper understanding of the Hammer Wt. & Drop: <u>140 lbs / 30 inches</u> subsurface materials and drilling methods. The stratification lines represent the approximate boundaries between 40 60 material types, and the transition may be gradual. 20.0 Dense, gray, silty, gravelly SAND; wet; trace diamict clasts, possible mixed fill and native 0.4 21.0 materials; (Fill) SM. Dense, gray-brown, slightly silty, gravelly SAND; moist to wet; trace iron oxide staining; (Fill) SP-SM. 25.0 **BOTTOM OF BORING** COMPLETED 4/20/2022 Notes: a) Mixing of native and fill material is possible near the contact shown on this boring log and should be considered an approximate contact based on visual inspection of SPT and sonic core samples, photographs, and noted drill action. b) Well settled during emplacement into underlying soil which may have been disturbed by drill action. SAW Rev. Log: GDT 5/13/22 ♦ % Fines (<0.075mm)</p> Natural Water Content SHAN **NOTES** Montlake Gas Station VCP 1. Refer to SOIL CLASSIFICATION AND LOG KEY for explanation of symbols, codes, abbreviations and definitions. Compliance Groundwater Monitoring 2. Groundwater level, if indicated above, is for the date specified and may vary. 2625 East Montlake Place East, Seattle, WA Groundwater level is the highest available measurement to date. 2019 3. USCS designation is based on visual-manual classification and selected lab **LOG OF BORING MW-7-22** 4. Hammer ER = hammer energy ratio (efficiency) as a percentage. May 2022 21-1-22242-104 SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants Sheet 2 of 2



Total Depth: 25 ft. Northing: 238,226 ft. Drilling Method: Sonic Core Hole Diam .: 6 in. Top Elevation: 58.9 ft. Easting: 1,277,828 ft. **Drilling Company:** Cascade Drilling Rod Diam .: 4-inch Vert. Datum: NAVD 88 Drill Rig Equipment: LS 250 Minisonic Hammer Type: Automatic Station: Horiz. Datum: Other Comments: Well Tag BNV 406 Hammer ER: NAD 83 Offset: PENETRATION RESISTANCE **SOIL DESCRIPTION** ₽ (blows/foot) Symbol PID, ppm Samples Ground water Depth, Depth, Refer to the report text for a proper understanding of the Hammer Wt. & Drop: <u>140 lbs / 30 inches</u> subsurface materials and drilling methods. The stratification lines represent the approximate boundaries between 60 material types, and the transition may be gradual. -After drilling to 20 feet hole collapsed to 12 feet and driller had to redrill prior to taking 0.1 the S-4 sample. 24.0 Gray, silty, gravelly SAND; moist; diamict; (Native) SM. 25.0 **BOTTOM OF BORING** COMPLETED 4/19/2022 Notes: a) Mixing of native and fill material is possible near the contact shown on this boring log and should be considered an approximate contact based on visual inspection of SPT and sonic core samples, photographs, and noted drill action. b) Well settled during emplacement into underlying soil which may have been disturbed by drill action. Typ: LKN SAW Rev. MRH Log: GDT 5/13/22 ♦ % Fines (<0.075mm)</p> M Natural Water Content SHAN **NOTES** Montlake Gas Station VCP 1. Refer to SOIL CLASSIFICATION AND LOG KEY for explanation of symbols, codes, abbreviations and definitions. Compliance Groundwater Monitoring 2. Groundwater level, if indicated above, is for the date specified and may vary. 2625 East Montlake Place East, Seattle, WA Groundwater level is the highest available measurement to date. 2019 3. USCS designation is based on visual-manual classification and selected lab **LOG OF BORING MW-8-22** 4. Hammer ER = hammer energy ratio (efficiency) as a percentage. May 2022 21-1-22242-104 SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants Sheet 2 of 2

Total Depth: 25 ft. Northing: 238,233 ft. Drilling Method: Sonic Core Hole Diam .: 6 in. Top Elevation: 59.9 ft. Easting: 1,277,912 ft. **Drilling Company:** Cascade Drilling Rod Diam .: 4-inch Vert. Datum: NAVD 88 Drill Rig Equipment: LS 250 Minisonic Hammer Type: Automatic Station: Other Comments: Well Tag BNV 408 Hammer ER: Horiz. Datum: NAD 83 Offset: PENETRATION RESISTANCE (blows/foot) **SOIL DESCRIPTION** ₽ Symbol Samples PID, ppm **Ground** water Depth, Depth, Refer to the report text for a proper understanding of the ▲ Hammer Wt. & Drop: <u>140 lbs / 30 inches</u> subsurface materials and drilling methods. The stratification lines represent the approximate boundaries between 60 material types, and the transition may be gradual. Medium dense, brown, slightly silty, gravelly SAND; moist; trace iron-oxide staining; (Fill) SP-SM. 0.4 8.0 Loose, brown, slightly silty, gravelly SAND; moist, wet at about 12 feet; (Fill) SP-SM. 10 0.5 13.0 Dense, brown, slightly silty, gravelly SAND; moist; trace iron-oxide staining; (Fill) SP-SM. Typ: LKN 0.3 SAW Rev. Log: GDT 5/13/22 CONTINUED NEXT SHEET ♦ % Fines (<0.075mm)</p> M Natural Water Content SHAN **NOTES** Montlake Gas Station VCP 1. Refer to SOIL CLASSIFICATION AND LOG KEY for explanation of symbols, codes, abbreviations and definitions. Compliance Groundwater Monitoring 2. Groundwater level, if indicated above, is for the date specified and may vary. 2625 East Montlake Place East, Seattle, WA Groundwater level is the highest available measurement to date. 2019 3. USCS designation is based on visual-manual classification and selected lab **LOG OF BORING MW-9-22** 4. Hammer ER = hammer energy ratio (efficiency) as a percentage. May 2022 21-1-22242-104 SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants Sheet 1 of 2

| Total Depth: Top Elevatio Vert. Datum Horiz. Datur | n: <u>59.9 ft.</u> : NAVD 88 | Northing: _ Easting: _ Station: _ Offset: _ | 238,233 f 1,277,912 | | Drillir Drill F | ng Co Rig E | ethod: ompany: quipme nments | nt: LS | nic Core scade D 250 Mir II Tag B | rilling nison | nic | | | Rod Han | | | e: | | 6 in. 4-incl Itoma | h | |
|--|---|---|---|--------------------------------|--------------------|----------------|---|------------------|--|------------------|--------------|------------|---------------|-------------|-------------------|-------------------|----------------------|-----------------|--------------------------|-------|----|
| subsurface m lines repre | SOIL DESCR report text for a pro aterials and drilling i sent the approxima types, and the trans | per understandii methods. The st te boundaries be | ratification etween | Depth, ft. | Symbol | PID, ppm | Samples | Ground- water | Depth, ft. | | | | | | | | ANC 140 ll | bs/ | • | ws/fo | ′ |
| Dense, br moist to w materials, SP-SM. Dense, gr trace of cl staining and Notes: a) Mixing near the cl and shoul contact ba and sonic noted drill b) Well se underlying | bown, slightly silt ret; possible mixtrace iron-oxide ay, silty, gravelly ay, slight diamic round 21 feet; (BOTTOM OF COMPLETED and fill ontact shown of the considered ased on visual in core samples, | y, gravelly SA ked fill and na e staining; (Fi y SAND; moi et texture, iron Native) SM. BORING 4/20/2022 material is pron this boring d an approximal photographs placement in | aND; stive II) st; n-oxide ossible log mate SPT , and | 20.0 21.0 25.0 | | 0.4 | 4 A A A A A A A A A A A A A A A A A A A | | 25 | | | | | | | | | | | | |
| 27.5 TOB. WAY! NOV. 34.6 TOB. | • | | | | | | | | 35 | | | | | | | | | | | | |
| AN WIL GD 1973 | | | | | | | | | | 0 | • • | • | | | | • | 4 075m er Co | nm) | t | | 60 |
| codes, abb 2. Groundwar Groundwar 3. USCS desi testing. | OIL CLASSIFICAT reviations and def er level, if indicate er level is the high gnation is based o | initions. ed above, is for lest available m on visual-manua | the date spe leasuremen al classificat | ecified t to dat tion an | and mate. | ay va | ary. | - | 2625 | DG | plia st N | nce lon | e Gr ntlak | oun e Pl | dwa ace IN(| Eas Refer Market | 1W - | torir eattle | 22 | 104 | |

| OWNER / LOCATIO | on: | USPOT | Monto | nke Gas | Station | * | DATE: | 27/2022 |
|-----------------------------|-----------|----------------------|-----------------|-----------------------|-----------------------|--|---------------------------|---------|
| VELL NO: MW- | 6-26 | WEATHER: | Llo | udu Lo | W 50s | | PERSONNEL: | MIZH |
| COLOGY TAG NO | o: BNV | 407 | MEA | SURING POINT | (MP): | 1100 | · · | |
| | | | | | | • | E / PID HEADSPACE: | |
| | | | | | | | UMENT TYPE & DIA: | |
| | | | | | | | JREMENT METHOD: | ·= |
| IME / STATIC WL | < MP:\? | 1.15_ft. | DEVELOPME | ENT METHOD: | (Bailer-SS, Teflon, H | IDPE) (Hand Waterra)(| (Powered Waterra) (Other_ | |
| | | | | | | | DECON, METHOD: | |
| | | - | | | | | VOLUME IN WELL: | |
| | | | | | | | REPAIRS NEEDED? | |
| EANS OF SEDIMI | ENT MEASU | REMENT IN PU | JRGE WATER | e: Pricke | it checkin | 4 | SCREEN LENGTH: | S |
| | | | | | | * | | |
| | | | | FIELD PAR | RAMETERS | | | |
| START TIME/ WATER VOLUME | END | INTERVAL SURGED/ | TOTAL VOLUME | SEDIMENT THICKNESS | COLOR/ ODOR/ | FIE | .D PARAMETERS, if a | ny |
| ADDED, if any (gal) | TIME | PURGED (ft > TD*) | PURGED (gal) | (in or ml) | SHEEN? | Do | (including units) PH | 02P |
| 1122 | | 13.0-14.0 | | | Light brown | | | |
| 1129 | 1136 | 12.0-13.0 | | Trace | l la 1 | | 8.08 | -49.4 |
| 1138 | 1144 | 11.0-12.0 | | <i></i> | Lt brown - (| | | |
| 1152 | 1156 | 9 - 10 | <u> </u> | | Brown Brown | | | |
| 1157 | 1201 | 8-9 | 1 | | Brown | | | |
| 1202 | 1206 | 7-8 | | . (| - | | | |
| 1207 | 12/2 | 6-7 | | \· | | | | |
| 1219 | 1223 | 5-6 | 1 | } | | | | .e |
| 1224 | 1227 | 2, -4 | | / | | | | |
| 12.29 | 1232 | 2-3 | 1 | | | 1.84 | 8.21 | -3923 |
| 1233 | 1237 | 1-0 | | | | | | |
| 1239 | 1243 | 0 -1 | | V | V | | | |
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PAGE ___ OF ___

WELL NO: MW-6-22

WAS ALL SEDIMENT REMOVED?

| OWNER / LOCATIO WELL NO: WWW ECOLOGY TAG NO LOCK NO. OR COM CASING STICKDOW SURGE BLOCK TYP | N: N. P. P. P. C. MP: 12.3 | WEATHER: 409 MON. RIM: PI | MONT AND MEAS CASING DIA 0,35 | L GAS A SUVING POINT (The control of the control | STANON LOW 50 (MP): N CASING: 0.10 DN. HEIGHT: ft. F Bailer-SS, Teflon, H | gal / ft. TIMI ft. MON PRODUCT MEASI DPE) (Hand Waterra) | DATE: PERSONNEL E / PID HEADSPACE. UMENT TYPE & DIA: UREMENT METHOD: (Powered Waterra) (Other | 2 = Inturpace pro |
|---|--|---|------------------------------------|--|--|---|---|-------------------|
| | 15.15 | ft. (Hard or Soft | ?) | WATER COLU | IMN HEIGHT: | 12.83 ft. | DECON. METHOD: VOLUME IN WELL: REPAIRS NEEDED? SCREEN LENGTH: | 2.05 g |
| | | | | FIELD PAR | | | | 1 2 0 |
| START TIME/ WATER VOLUME ADDED, if any (gal) | END TIME | PURGED (ft > TD*) | TOTAL VOLUME PURGED (gal) | SEDIMENT THICKNESS (in or ml) | COLOR/ ODOR/ SHEEN? | 00 | LD PARAMETERS, if (including units) | any ORP |
| 1451 1455 1459 1501 1504 1500 1507 1512 1514 | 1454 1458 1501 1504 1509 1509 1512 1514 1514 1521 | 12-13 11-12 10-11 9-10 8-9 7-8 5-6 4-5 4-5 4-5 | | Trace 1/8 in 1/8 in | Brown | 1,73 | 7.73 | -186.9 |
| (52) 1524 1528 | 1540 | 0-1 | 1 | 74 in | | 1.5 | 7.79 | -2 3.3 |
| PURGE WATER DIS | | | Brown | N D | RUM NUMBER | S/LOCATION: _ < MP: 25.\5 | Staged on | Site Non |

PAGE _

CASING CAP LEFT LOOSE OR TIGHT?

WELL NO: WW-9-1 of 1

WAS ALL SEDIMENT REMOVED?

SHANNON & WILSON, INC. WELL DEVELOPMENT LOG

| | | | | | | | DATE: $\frac{42}{2}$ PERSONNEL: | |
|-----------------------------|-------------|---------------------|------------------|---------------------------------------|------------------------|---|---------------------------------|---------------------------------------|
| | - | | • | | J | | PERSONNEL: | PWOITINI |
| ECOLOGY TAG NO | | | | | | | <u> </u> | |
| LOCK NO. OR COM | BINATION: | Name and Property. | CASING DIA | : in. | CASING: UNIV | 2_gal/ft. TIN | MET PID HEADSPACE: | |
| CASING STICKDOW | /N < OPEN i | MON. RIM: | 0.35 | ft. Mo | ON. HEIGHT: 🗘 | Ž_ft. MOI | NUMENT TYPE & DIA: | |
| SURGE BLOCK TYF | PE: PV | <u></u> | RODUCT THI | CKNESS: | ft. P | RODUCT MEAS | SUREMENT METHOD: | Interface p |
| TIME / STATIC WL < | : MP: | <u>,30</u> ft. 1 | DEVELOPME | NT METHOD: | (Bailer-SS, Teflon, HD | PE) (Hand Waterra | (Powered Waterra) (Other_ | |
| TIME / VWP READIN | IG: | (Digi | ts, Temp.) | VWP READOL | JT BOX ID: | And the filter of the state of | DECON. METHOD: | |
| WELL DEPTH < MP: | 26.05 | _ ft. (Hard or Soft | ?) | WATER COLU | JMN HEIGHT: 🎹 | 1.75 ft. | VOLUME IN WELL: | 1.88 |
| WATER VOLUME AL | DDED? | (Tap | or Distilled?) | VOLUN | ME PURGED: | \ | REPAIRS NEEDED? | Moru |
| | | | | | | | SCREEN LENGTH: | 15 |
| VILANO OF GLIDING | IVI WILLIOU | I CEMENT ATT | | | |) | | |
| | | | | FIELD PAR | RAMETERS | | | |
| START TIME/ WATER VOLUME | END | INTERVAL SURGED/ | TOTAL VOLUME | SEDIMENT | COLOR/ | FII | ELD PARAMETERS, if | anv |
| ADDED, if any (gal) | END TIME | PURGED (ft > TD*) | PURGED (gal) | THICKNESS (in or ml) | ODOR/ SHEEN? | Do | (including units) | ORP |
| 1 345 | - | (10) | (941) | | | | | T |
| 0921 | 0930 | 0-1.0 | | 0 | Brown | | | |
| 0933 | 0944 | 1.0-2.0 | 1 | O | Brown | 7.28 | 7.82 | -15.3 |
| 0946 | 0950 | 2.0-3.0 | l | Trace | Brown | | | |
| 0951 | 0955 | 3.0-4.0 | | Trace | Brown | | | |
| 0956 | 1000 | 4.0-5.0 | <u> </u> | Trace | Brown | | | |
| 1001 | 1005 | 5.0-60 | 1 | Trace | Brown | | | |
| 1000 | 1000 | 6.0-7.0 | | TYGUL | Brown | · | | |
| 1012 | 1015 | 7.0-8.0 | | Tyace | Brown | | | - |
| 1015 | 1017 | 9.0-1.0 | 1. | Trace | Brown | | | |
| 1022 | 1024 | 10,0-11.0 | 1 | Trace | Brown | | | |
| 1024 | 1027 | 11.0-12.0 | | Trace | Brown | : | £ | |
| 1028 | 1031 | 12.0-13.0 | | TYALL | u Briwn | 3.05 | 7.80 | 297.1 |
| 1032 | 1035 | 13.0-14.0 | | TYALC | LY Brown | , | | |
| 1036 | 1038 | 14.0-14.5 | Ì | | U Brown | | | |
| 1039 | 1045 | 14.5-15.0 | | Trace | 4 Brown | (By | hand) | 1 |
| | | | | • | | | | |
| ,, | | | | | | | | |
| | | | | | | | | |
| | | <u> </u> | | | | | | |
| | | *TD = Total D | epth of Well | | \$ | | | |
| PURGE WATER DIS | POSITION: | Brown | , | r | DRUM NUMBERS | S/LOCATION: | Staged on Sil | e |
| DELATIVE DECOVE | | Moderate 1F | tapid - Moderate | -Slow) FINA | NEIL DEPTH | < MP: 26.0 | S ft. SHEEN/OF | OR? NO |
| COMMENTS MIS | Soul lock | ied thing | H SUL I | to same | - TAN'T OFOL | ure Water. | USIN MUTAL SUI | aha from a |
| MAINERALO ALALL | J. Cal 1929 | TOTAL STATE | 14 1/23 | · · · · · · · · · · · · · · · · · · · | Y | - 10.00 | LL SEDIMENT REMOV | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ |

| PURGE WATER DIS | | youdy | Depth of Well OV) W W | E)Slow) FINA | DRUM NUMBER | s/LOCATION: _ I <mp: _25.3<="" th=""><th>Staged 0 7 ft. SHEEN/O</th><th>n Sife</th></mp:> | Staged 0 7 ft. SHEEN/O | n Sife |
|--|---|--|--|--|---|--|---|--|
| 1333 1347 1349 1354 1418 1418 1420 1420 1435 | 1340 1349 1353 1401 1412 1425 1429 1431 1435 1438 | 9-10 8-9 7-8 6-7 5-9 4-5 1-2 0-1 | | 1/8in | | (- wo s | re hok in svra witch to a | -320 S |
| START TIME/WATER VOLUME ADDED, if any (gal) 1305 1312 1319 | 1310 1318 1323 1331 | INTERVAL SURGED/ PURGED (ft > TD*) 13-13.5 12-13 11-12 | VOLUME PURGED (gal) | SEDIMENT THICKNESS (in or ml) | COLOR/ ODOR/ SHEEN? | 5.11 | D PARAMETERS, if (including units) PH 7.85 | ORP -103.1 |
| | | INTERVAL | TOTAL | FIELD PAR | | | | |
| CASING STICKDOW | BNV BINATION: /N < OPEN M PE: P <mp: 12.6="" dded?<="" ig:="" td=""><td>WEATHER: 409 MON. RIM: PF ft. (Dig _ft. (Hard)or Soft</td><td>MEAS CASING DIA CASING DIA CODUCT THIS DEVELOPME its, Temp.) ?) or Distilled?)</td><td>URING POINT (I : in. C ft. MO CKNESS: NT METHOD: (I VWP READOU WATER COLUM</td><td>CASING: 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>gal / ft. TIME ft. MONU RODUCT MEASU PE) (Hand Waterra) (I 3.52 ft. 3.5 gal. F</td><td>PERSONNEL: / PID HEADSPACE: JMENT TYPE & DIA: REMENT METHOD: Powered Waterra (Other_ DECON. METHOD: VOLUME IN WELL: REPAIRS NEEDED? SCREEN LENGTH:</td><td>ppr &-Inch in injurface proba) 2.13 gal None</td></mp:> | WEATHER: 409 MON. RIM: PF ft. (Dig _ft. (Hard)or Soft | MEAS CASING DIA CASING DIA CODUCT THIS DEVELOPME its, Temp.) ?) or Distilled?) | URING POINT (I : in. C ft. MO CKNESS: NT METHOD: (I VWP READOU WATER COLUM | CASING: 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | gal / ft. TIME ft. MONU RODUCT MEASU PE) (Hand Waterra) (I 3.52 ft. 3.5 gal. F | PERSONNEL: / PID HEADSPACE: JMENT TYPE & DIA: REMENT METHOD: Powered Waterra (Other_ DECON. METHOD: VOLUME IN WELL: REPAIRS NEEDED? SCREEN LENGTH: | ppr &-Inch in injurface proba) 2.13 gal None |

> __ OF ___ PAGE _

WELL NO: WW-7-22