



City of Seattle

Edward B. Murray, Mayor

Seattle City Light

Jorge Carrasco, General Manager and CEO

November 10, 2014

Rick Thomas
Toxics Cleanup Program
Washington State Department of Ecology
3190 160th Ave. SE
Bellevue, WA 98008-5452

Subject: T-117 Monitoring Well Decommissioning

Dear Mr. Thomas:

The City of Seattle (City) is preparing to implement a removal action in the Adjacent Streets portion of the T-117 Early Action Area (EAA) of the Lower Duwamish Waterway Superfund site. As required by the U.S. Environmental Protection Agency, the City will remove soil to depths of 2 to 6 feet below ground surface from portions of the streets, including areas where monitoring wells are located.

This letter is to inform you that the City will be decommissioning groundwater monitoring wells located in removal areas of the Adjacent Streets portion of the T-117 EAA in November or December 2014, including three wells installed by the Washington State Department of Ecology (Ecology). Monitoring wells MW-01, MW-12, and MW-13 were installed by Ecology in 1991 and 2009 to document groundwater flow and quality around the Basin Oil property; the wells were later sampled as part of the T-117 interim groundwater monitoring program. The City will decommission the monitoring wells in accordance with WAC 173-160-460. Additional information on the well decommissioning, including a figure showing the well locations, is provided in the enclosed memorandum.

Please feel free to contact me if you have any questions.

Sincerely,

Mary Mitchener
T-117 Project Coordinator
Seattle City Light
City of Seattle

Distribution List:

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U.S. Environmental Protection Agency: Piper Peterson (electronic only)
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MEMORANDUM

To:	Mary Mitchener, Seattle City Light
From:	Susan FitzGerald
cc:	Piper Peterson, U.S. EPA
Date:	November 10, 2014
Subject:	Adjacent Streets Monitoring Well Decommissioning
Project No.:	A0006-15V

The City of Seattle (City) has completed design work for remediation and reconstruction of the Adjacent Streets portion of the T-117 Early Action Area (EAA). Existing groundwater monitoring wells are located within the removal area and cannot reasonably be protected during construction. As such, these wells will be decommissioned prior to construction. This memorandum presents the proposed approach for well decommissioning.

1. MONITORING WELL DECOMMISSIONING APPROACH—STREETS REMOVAL AREA

Eight monitoring wells are located within the Adjacent Streets removal areas. Table 1 and Figure 1 provide well location and construction information. The lead parties on the original well installations are as follows:

- **Washington State Department of Ecology (Ecology):** MW-01, MW-12, and MW-13
- **Port of Seattle (Port):** MW-09, MW-10, and MW-11
- **City of Seattle (City):** MW-14 and MW-15.

As discussed in the Interim Groundwater Monitoring Completion Report (Sealaska and Crete 2012), cleanup activities will require decommissioning of all existing wells. All parties associated with these wells have reviewed this report and should be aware of this requirement. The City will notify Ecology and the Port to inform them that the wells are being decommissioned before decommissioning activities begin.

2. MONITORING WELL DECOMMISSIONING METHODS

Wells are to be decommissioned by a licensed well driller in accordance with WAC 173-160-460. Monitoring well logs are available for all wells (Attachment 1).

Table 1 summarizes location and construction information, and the rationale for decommissioning method selection for each well. Decommissioning method selection depended primarily on the thickness of well seal that will remain after soil removal to the specified excavation depth. Where the planned excavation will leave a well seal more than 3 ft thick intact, the well will be decommissioned by backfilling the casing with bentonite. Where the planned excavation will potentially compromise the well seal by reducing its thickness to 3 feet or less, the well will be decommissioned by removing the well by overdrilling then backfilling the boring with bentonite. Four wells are identified for backfilling the well casing with bentonite, and four wells are identified for overdrilling (Table 1).

The two decommissioning methods are described in more detail below:

- **Backfilling:** Backfilling involves filling the well casing from the bottom to land surface with bentonite. Before being backfilled, the well will be inspected and its condition noted. The well will be sounded to confirm its depth, and the water level will be documented. The well will then be backfilled to the top of casing. The well monument, casing, and annular materials will remain until the T-117 removal action is implemented at which time the monument and upper portion of the well will be removed.
- **Overdrilling:** Overdrilling involves drilling out the well casing, annular grout, and sand pack using a hollow stem auger drill rig equipped with augers of at least the same diameter as the original well borehole. The former well borehole shall then be backfilled with bentonite in accordance with WAC 173-160-460. The well monument and surface completion concrete shall be removed before the drilling subcontractor begins overdrilling. The cuttings from overdrilling shall be placed in drums and handled per the investigation-derived waste (IDW) procedures described in Section 4 below. The ground surface shall be restored to the approximate condition of the surrounding area following well decommissioning using soil fill, gravel, or a concrete/asphalt patch as appropriate.

Details of the well decommissioning field activities and procedures for each well will be recorded on a field form (Attachment 2).

No Toxic Substances Control Act (TSCA) waste will be generated during decommissioning. Wells to be overdrilled are all located outside of the defined TSCA soil prisms. Well MW-

15, which will be decommissioned by backfilling, is located within a TSCA prism, but soils around this well will not be disturbed, and IDW will not be generated during the backfilling operation.

3. HEALTH AND SAFETY

Integral staff and the drilling subcontractor shall comply with procedures discussed in the T-117 Adjacent Streets and Stormwater Construction Quality Assurance Health and Safety Plan (HASP, Appendix C of the Removal Action Design Report) and the Community HASP (Appendix D of the Removal Action Design Report) (Integral et al. 2014). On the first morning of field activities, prior to starting work, all subcontractor and Integral personnel onsite shall attend a safety meeting led by the Integral and subcontractor crew leaders.

All subcontractor personnel working onsite must have at least 40 hours of health and safety training in accordance with Occupational Safety and Health Administration 29 CFR 1910.120, be enrolled in a medical surveillance program, and comply with the site Construction Quality Assurance HASP. The contractor is required to provide health and safety training records to verify that training and medical monitoring are current prior to initiating fieldwork.

Work zones including an exclusion zone, contamination reduction zone, and support zone shall be set up around each well before decommissioning activities begin. Work zones will be delineated using traffic cones, tape, and signage. The subcontractor will procure traffic signage and street use permits to mark work zones in the right-of-way around the well decommissioning areas.

Integral will arrange for a private utility clearance before initiating fieldwork, and will notify the Washington Utility Notification Center (1-800-424-5555 or 811) at least 48 hours (2 business days) before the work begins.

4. EQUIPMENT DECONTAMINATION

The drilling subcontractor shall decontaminate all equipment and tools used for well decommissioning before and after the decommissioning of each well. Decontamination will be performed within the contamination reduction zone using a hot-water pressure washer on a decontamination pad or trailer that will contain all decontamination water.

5. IDW HANDLING AND DISPOSAL

IDW will include well debris (e.g., removed well monuments and surface completion concrete), cuttings from the overdrilling process (soil and well materials brought to the surface by the augers), and decontamination water. All cuttings shall be collected as the overdrilling is conducted. All IDW shall be containerized in 55-gallon drums and disposed at a Subtitle D landfill. Disposal characterization will be based on available soil data from samples collected during well installation. The drums shall be staged in a secure area to await disposal.

6. SCHEDULE

Well decommissioning must be completed prior to contractor mobilization for the Streets removal, which is planned for May 2015. Integral recommends decommissioning be performed in November or December 2014.

REFERENCES

Integral, DCG, and Moffatt & Nichol. 2014. Final Removal Action Design Report, Adjacent Streets and Stormwater, Lower Duwamish Waterway Superfund Site Terminal 117 Early Action Area. Prepared for the City of Seattle. October 1, 2014.

Sealaska and Crete. 2012. Interim Groundwater Monitoring Completion Report–Non-Time Critical Removal Action, Lower Duwamish Waterway Superfund Site Terminal 117 Early Action Area. Prepared for the Port of Seattle and the City of Seattle. September 17, 2012.



Figure 1.
Adjacent Streets Monitoring Wells to Be Decommissioned

Table 1. Monitoring Wells and Decommissioning Method Rationale.

Well ID	X	Y	Installed By	Contractor Performing Boring/Well Logging	Borehole Diameter (inches)	Casing Diameter (inches)	Screened Interval (ft bgs)	Bottom of Well Seal (ft bgs)	Bottom of Sand Pack (ft bgs)	Excavation Unit (EU)	Target EU Removal Depth (ft bgs) ^a	Decommissioning Method and Rationale
MW-01	1275314.87	195287.31	Washington State Dept. of Ecology	Paramax--> Mathes--> 05/01/1991 Project Name: Malarkey Asphalt	8	not recorded	5–15	4	15	EU07	4	The target removal excavation will leave insufficient (<3 ft) well seal in place. Decommission well by overdrilling well and backfilling borehole with bentonite.
MW-09	1275223.31	195471.13	Port of Seattle	Cascade Drilling --> Scott Kruger --> 02/27/2008 Project Name: Terminal 117	8.25	2	5–15	4	15.5	EU05	4	The target removal excavation will leave insufficient (<3 ft) well seal in place. Decommission well by overdrilling well and backfilling borehole with bentonite.
MW-10	1275269.96	195387.20	Port of Seattle	Cascade Drilling --> Andy Flagan/Scott Kruger --> 02/28/2008 Project Name: Terminal 117	8.25	2	5–15	4	15.5	EU06	6	The target removal excavation will leave insufficient (<3 ft) well seal in place. Decommission well by overdrilling well and backfilling borehole with bentonite.
MW-11	1275267.28	195393.34	Port of Seattle	Cascade Drilling --> Andy Flagan --> 09/02/2008 Project Name: Terminal 117	4.25	2	13–23	11	25	EU06	6	The removal excavation will leave 5-ft seal in place. Decommisison well by backfilling casing with bentonite.
MW-12	1275175.16	195328.67	Washington State Dept. of Ecology	Cascade Drilling --> 05/14/2009	8.25	2	15.45–25.45	13.5	27.5	EU10	6	The removal excavation will leave 7.5-ft seal in place. Decommisison well by backfilling casing with bentonite.
MW-13	1275198.10	195239.41	Washington State Dept. of Ecology	Cascade Drilling --> 05/14/2009	8.25	2	3.5–13.5	2.5	15.5	EU09	3	The target removal excavation will leave insufficient (<3 ft) well seal in place. Decommission well by overdrilling well and backfilling borehole with bentonite.
MW-14	1275012.43	195632.03	City of Seattle	Major Drilling Inc. --> 08/25/2010	4.5	2	11–21	10	21	EU04	6	The removal excavation will leave 4-ft seal in place. Decommisison well by backfilling casing with bentonite.
MW-15	1275142.23	195532.71	City of Seattle	Major Drilling Inc. --> 08/25/2010	4.5	2	8–18	7	18	EU13	2	The removal excavation will leave 5-ft seal in place. Decommisison well by backfilling casing with bentonite.

Notes:
Coordinate System: NAD_1983_StatePlane_Washington_North_FIPS_4601_Feet
Bold text indicates well is located in a TSCA soil area.
bgs = below ground surface
^a Target excavation depth is based on target excavation elevation shown in final design drawings (Integral et al. 2014).

ATTACHMENT 1

MONITORING WELL LOGS

Exploratory Boring Log

Boring #: MW-01
 Total Depth: 15.3'
 Sheet 1 of 1

Location:

Project #: 55-1738-15 Date Started: 5/1/91
 Project Name: Malarkey Asphalt Date Completed: 5/1/91
 Location: Seattle, WA Driller: Mathes
 PMX Rep: G. Hayman Drilling Method: HSA
 Sampling Method: 2.5" Split Spoon Drill Rig: CME 75

Surface Elevation: 98.76'
 Datum: Assumed Elevation
 Hole Diameter: 8"

Water Level	7.65'	7.57'	7.83'	7.74'		
Time	4:25P	12:10P	9:30A	10:54A		
Date	5/1/91	5/2/91	5/3/91	5/6/91		

Well Installation Data: 0.020" slotted pvc 15' to 5.0', blank pvc 5' to 0', sand 15' to 4', benonite 4' to 2', concrete 2' to 0', flush monument

INSTRUMENT READING (PPM)	BLOWS/FT	SAMPLE TYPE AND NUMBER	% RECOVERY	DEPTH (FT)	SAMPLE INTERVAL	USCS SOIL GROUP	DESCRIPTION	WELL DETAIL
							SOIL: Soil type; color; % and plasticity of fines; % of coarse; % of oversize; consistency or compaction; water content; misc. ROCK: Rock type; color; mineralogy, textural, structural features; physical condition (fracturing, hardness, weathering); water content; misc.	
						GP	Gray sandy gravel, crushed rock, fill, dense, damp	
1.6	31	1.5	30					
						ML	Dark gray sandy silt, soft, damp	
1.6	19	3.0	60					
1.6	17	4.5	70					
				5		SM/SP	Dark gray fine sand, some brown mottling, soft, damp	
1.6	17	6.0	50					
1.6	16	7.5	60				Some silt layers, wet (first encountered groundwater at time of drilling)	
1.6	9	-	60					
1.6	6	-	50	10				
						GM	Gravel stringer	
						SM	Gray silty sand, wet	
						GM	Sandy to silty gravel, brown, very fine sand, well rounded gravel,	
				15				

Boring/Well Log

Well #: MW-09

Sheet 1 of 2

Project: Terminal 117	Monument: Flush mount	Stick Up: -
Project #: 05482-023-400	Northing: - Easting: -	Ground Elevation: -
Location: South Park, WA	Drill Rig Type: HSA CME 75	MP Elevation: -
Client: Port of Seattle	Method: HSA	Total Depth: 15.5'
Start Date & Time: 2/27/08 1315	Casing ID: 2"	Filter Pack: 10/20 silica sand
Finish Date & Time: 2/27/08 1346	Boring ID: 8.25'	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: 4.25" HSA	Grout: -
Operator: Scott Kruger	Logged By: R. Kencht	Screen: 0.010" slot, Sch. 40 PVC, 5-15 ft-bgs

Sample					Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme:	Elevation (ft.)	Comments & Samples
Type & Number	Depth Range	% Rec	Blows per 6"	PID (ppm)						
SS -1	0.5 -2.0'	38	11	0.2			(0.0-0.5) ASPHALT AND ROAD BASE.	0	Flush mount monument 2-inch Sch. 40 PVC casing from 0.0-5.0 ft-bgs	
			7	(0.5-2.0) SW: WELL GRADED SAND, brown and gray, fine to medium, medium dense, dry. 30% sub rounded, fine gravel. Trace silt. Brick in shoe. No odor or visible contamination.						
			7	(2.0-2.5) Not Sampled.						
SS -2	2.5 -4.0'	100	7	0.1				(2.5-4.0) SP: POORLY GRADED SAND, grayish brown, fine, medium dense, moist. Trace rootlets. At 2.7', lense of shiny, black coal-like material, anthropogenic. Gray grading to brownish gray mottles from 2.7-4'. Trace sub rounded, fine gravel from 2.5-2.7'. No odor or visible contamination.		0.5-2.0': Sampled for analytical
			7	(4.0-5.0) Not Sampled.				Bentonite chip seal from 1.5-4.0 ft-bgs		
			7	(5.0-6.5) SP: POORLY GRADED SAND, brownish gray grading to gray at 5.25', fine, medium dense, moist. Trace sub rounded, fine gravel. No odor or visible contamination.				2.5-4.0': Sampled for analytical		
SS -3	5.0 -6.5'	100	6	0.2				(6.5-7.5) Not Sampled.	-5	5.0-6.5': Sampled for analytical
			7	(7.5-9.0) SP: POORLY GRADED SAND, gray to brownish gray, fine, medium dense, moist. 10% silt from 8-8.75'. Light gray, iron stained and yellowish brown laminations. Lense of medium sand from 8.75-8.9'. Trace mica. No odor or visible contamination.				7.5-9.0': Sampled for analytical		
			8							
SS -4	7.5 -9.0'	100	8	0.3						10-11.5': Sampled for analytical
			9							
			12							

Remarks and Datum Used:		Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
ft-bgs - feet below ground surface			Date	Time	Depth (ft.)
ENSR			3/27/08	1443	14.68'
1011 SW Klickitat Way, Suite 207					
Seattle, WA 98134-1162					
Phone: (206) 624-9349					
Fax: (206) 624-2839					
Sch. - Schedule					

Boring/Well Log

Well #: MW-09

Sheet 2 of 2

Project: Terminal 117	Monument: Flush mount	Stick Up: -
Project #: 05482-023-400	Northing: - Easting: -	Ground Elevation: -
Location: South Park, WA	Drill Rig Type: HSA CME 75	MP Elevation: -
Client: Port of Seattle	Method: HSA	Total Depth: 15.5'
Start Date & Time: 2/27/08 1315	Casing ID: 2"	Filter Pack: 10/20 silica sand
Finish Date & Time: 2/27/08 1346	Boring ID: 8.25'	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: 4.25" HSA	Grout: -
Operator: Scott Kruger	Logged By: R. Kencht	Screen: 0.010" slot, Sch. 40 PVC, 5-15 ft-bgs

Sample					Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme:	Elevation (ft.)	Comments & Samples
Type & Number	Depth Range	% Rec	Blows per 6"	PID (ppm)						
SS -5	10.0 -11.5'	100	7 8 12	0.3			10	(9.0-10.0) Not sampled.	-10	12.5-14.0': Sampled for analytical
								(10.0-11.1) SP: POORLY GRADED SAND, gray with light gray and iron stained mottles, fine, medium dense, wet. No odor or visible contamination.		10/20 silica sand pack from 4.0-15.5 ft-bgs
								(11.1-11.5) SP: POORLY GRADED SAND, slightly brownish dark gray, medium, sub rounded, medium dense, wet. 20% fine sand. No odor or visible contamination.		
								(11.5-12.5) Not Sampled		0.010-inch slot, 2-inch, Sch. 40, PVC screen from 5.0-15.0 ft-bgs
SS -6	12.5 -14.0'	100	11 9 9	0.3				(12.5-14.0) SW: WELL GRADED SAND, brown to dark brown, fine to medium, medium dense, wet. Trace sub rounded, coarse sand, content increases to 10% at 14'. No odor or visible contamination.		
							15	(14.0-15.5) Not Sampled.	-15	2-inch, Sch. 40, PVC bottom cap from 15.0-15.475 ft-bgs.

Remarks and Datum Used:		Sample Type	Groundwater		
ft-bgs - feet below ground surface			Date	Time	Depth (ft.)
ENSR			N = SPT		
1011 SW Klickitat Way, Suite 207			DP = Direct Push		
Seattle, WA 98134-1162			SS = Split Spoon		
Phone: (206) 624-9349		C = Core			
Fax: (206) 624-2839					
Sch. - Schedule					

Boring/Well Log

Well #: MW-10

Sheet 1 of 2

Project: Terminal 117	Monument: Flush mount	Stick Up: -
Project #: 05482-023-400	Northing: - Easting: -	Ground Elevation: -
Location: South Park, WA	Drill Rig Type: HSA CME 85	MP Elevation: -
Client: Port of Seattle	Method: HSA	Total Depth: 15.5'
Start Date & Time: 2/28/08 1249	Casing ID: 2"	Filter Pack: 10/20 silica sand
Finish Date & Time: 2/28/08 1330	Boring ID: 8.25'	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: 4.25" HSA	Grout: -
Operator: Andy Flagan/Scott Kruger	Logged By: R. Kencht	Screen: 0.010" slot, Sch. 40 PVC, 5-15 ft-bgs

Sample					Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme:	Elevation (ft.)	Comments & Samples
Type & Number	Depth Range	% Rec	Blows per 6"	PID (ppm)						
SS -1	0.5 -2.0'	100	2 50/2"	0.0			0	(0.0-0.5) ASPHALT AND ROAD BASE.	0	Flush mount monument 2-inch Sch. 40 PVC casing from 0.0-5.0 ft-bgs
SS -2	2.5 -4.0'	61	6	0.0				(0.5-0.7) GP: POORLY GRADED GRAVEL, gray, fine, sub rounded to sub angular, very dense but appears to be loose, dry. 30% sand. No odor or visible contamination.		0.5-2.0': Sampled for analytical
			7					(0.7-2.0) SW: WELL GRADED SAND, light grayish brown, fine, very dense, dry. 10% sub angular to sub rounded, coarse sand and fine gravel. No odor or visible contamination.		
			8					(2.0-2.5) Not Sampled.		
SS -3	5.0 -6.5'	61	4	0.0				(2.5-3.25) SW: WELL GRADED SAND, dark brown, medium to coarse, sub angular to sub rounded to rounded, medium dense, wet perched zone. 15-20% fine, rounded gravel. No odor or visible contamination.		Bentonite chip seal from 2.0-4.0 ft-bgs
			5					(3.25-4.0) SP: POORLY GRADED SAND, brown, fine, medium dense, moist. 10% silt. Trace fine gravel. 2-4mm thick laminations of gray, yellowish brown, and red iron staining. No odor or visible contamination.	-5	
			6					(4.0-5.0) Not Sampled.		2.5-4.0': Sampled for analytical
								(5.0-6.5) SP: POORLY GRADED SAND, gray, fine, medium dense, moist. At 6.0-6.5, few light gray and iron stained laminations, up to 1/8" thick. No odor or visible contamination.		
SS -4	7.5 -9.0'	38	7	0.2				(6.5-7.5) Not Sampled.		5.0-6.5': Sampled for analytical
			6					(7.5-8.6) SP: POORLY GRADED SAND, brownish gray, fine, loose, moist. Trace sub rounded, coarse sand. Sharp contact with underlying lithology at 8.6'. No odor or visible contamination.		
										7.5-9.0': Sampled for analytical

Remarks and Datum Used:		Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
ft-bgs - feet below ground surface			Date	Time	Depth (ft.)
ENSR 1011 SW Klickitat Way, Suite 207 Seattle, WA 98134-1162 Phone: (206) 624-9349 Fax: (206) 624-2839			3/28/08	1402	13.47'
Sch. - Schedule					

Boring/Well Log

Well #: MW-10
Sheet 2 of 2

Project: Terminal 117	Monument: Flush mount	Stick Up: -
Project #: 05482-023-400	Northing: - Easting: -	Ground Elevation: -
Location: South Park, WA	Drill Rig Type: HSA CME 85	MP Elevation: -
Client: Port of Seattle	Method: HSA	Total Depth: 15.5'
Start Date & Time: 2/28/08 1249	Casing ID: 2"	Filter Pack: 10/20 silica sand
Finish Date & Time: 2/28/08 1330	Boring ID: 8.25'	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: 4.25" HSA	Grout: -
Operator: Andy Flagan/Scott Kruger	Logged By: R. Kencht	Screen: 0.010" slot, Sch. 40 PVC, 5-15 ft-bgs

Sample					Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme:	Elevation (ft.)	Comments & Samples
Type & Number	Depth Range	% Rec	Blows per 6"	PID (ppm)						
SS-5	10.0 -11.5'	66	4	0.2			10	(8.6-9.0) SP: POORLY GRADED SAND, gray to brownish gray, medium, sub rounded, loose, moist. No odor or visible contamination.	-10	10/20 silica sand pack from 4.0-15.5 ft-bgs
			4					(9.0-10.0) Not Sampled.		10-11.5': Sampled for analytical
			5					(10.0-11.0) SW: WELL GRADED SAND, dark grayish brown, medium to fine, loose, moist to wet. 2" thick very fine sand lense at 10.4'. No odor or visible contamination.		12.5-14.0': Sampled for analytical
								(11.0-11.5) SP: POORLY GRADED SAND, gray to dark gray, fine, loose, wet. 1/4" thick layers of brownish gray and gray, not well defined. No odor or visible contamination.		
SS-6	12.5 -14.0'	72	5	0.3			15	(11.5-12.5) Not Sampled.	-15	0.010-inch slot, 2-inch, Sch. 40, PVC screen from 5.0-15.0 ft-bgs
			7					(12.5-12.75) SP: POORLY GRADED SAND, gray, fine, medium dense, wet. thin iron stained bed between fine sand and underlying lithology. At contact, sub rounded, fine gravel, up to 1" thick. No odor or visible contamination.		2-inch, Sch. 40, blank PVC tail pipe from 15.0-15.475 ft-bgs.
			9					(12.75-14.0) SW: WELL GRADED SAND, dark gray to black, medium to coarse, sub rounded, medium dense, wet. Trace rounded, fine gravel, coarsening down section. No odor or visible contamination.		
								(14.0-15.5) Not Sampled.		

Remarks and Datum Used:	ft-bgs - feet below ground surface	Sample Type	Groundwater		
			Date	Time	Depth (ft.)
ENSR 1011 SW Klickitat Way, Suite 207 Seattle, WA 98134-1162 Phone: (206) 624-9349 Fax: (206) 624-2839	Sch. - Schedule	N = SPT	3/28/08	1402	13.47'
		DP = Direct Push			
		SS = Split Spoon			
		C = Core			

Boring/Well Log

Well #: MW-11
Sheet 1 of 2

Project: Terminal 117	Monument: Flush Mount	Stick Up: -
Project #: 05482-023-300	Northing: 195393.337 Easting: 1275267.281	Ground Elevation: 23.31
Location: South Park, WA	Drill Rig Type: CME85	MP Elevation: 23.07
Client: Port of Seattle	Method: HSA	Total Depth: 24'
Start Date & Time: 09/02/2008 0910	Casing ID: 2"	Filter Pack: 10/20 Silica sand pack
Finish Date & Time: 09/02/2008 1000	Boring ID: 4.25"	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: 4.25" HSA	Grout: -
Operator: Andy Flagan	Logged By: R. Knecht	Screen: 0.010" slot, Sch.40 PVC from 13-23'

Sample					Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation (ft.)	Comments
Type &	Depth Range	% Rec	Blows per 6"	PID (ppm)						
SS -1	5-6.5	50	4 4 4	0.0			5	(0.0-5.0) Not sampled.	20	Flush mount monument. 2-inch Sch. 40 PVC riser from 0.4-13 ft-bgs. Bentonite chip seal from 3-11 ft-bgs.
								(5.0-6.5) SP: POORLY GRADED SAND, grayish brown, very fine, loose, moist. Trace gravel from 5-5.2'. Trace red and brown layers up to 2mm thick. Trace silt. No odor or visible contamination.		
SS -2	10-11.5	61	4 6 6	0.0			10	(6.5-10.0) Not sampled.	15	10/20 silica sand pack from 11-24 ft-bgs.
								(10.0-11.5) SP: POORLY GRADED SAND, grayish brown, very fine, medium dense, moist. Trace red and brown layering up to 2mm thick. At 10.5', sharp contact of fine grained sand. No odor or visible contamination.		
								(11.5-15.0) Not sampled.		

Remarks and Datum Used:
HSA = hollow stem auger
Sample Type

N = SPT
DP = Direct Push
SS = Split Spoon
C = Core

Groundwater

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

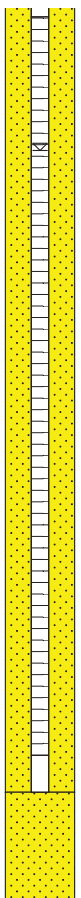
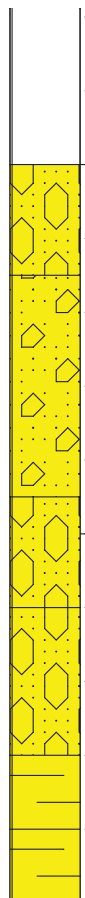
ft-bgs = feet below ground surface
Sch. = schedule

Date	Time	Depth (ft.)
09/11/08	1130	14.81'

Boring/Well Log

Well #: MW-11
Sheet 2 of 2

Project: Terminal 117	Monument: Flush Mount	Stick Up: -
Project #: 05482-023-300	Northing: 195393.337 Easting: 1275267.281	Ground Elevation: 23.31
Location: South Park, WA	Drill Rig Type: CME85	MP Elevation: 23.07
Client: Port of Seattle	Method: HSA	Total Depth: 24'
Start Date & Time: 09/02/2008 0910	Casing ID: 2"	Filter Pack: 10/20 Silica sand pack
Finish Date & Time: 09/02/2008 1000	Boring ID: 4.25"	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: 4.25" HSA	Grout: -
Operator: Andy Flagan	Logged By: R. Knecht	Screen: 0.010" slot, Sch.40 PVC from 13-23'

Sample					Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation (ft.)	Comments	
Type &	Depth Range	% Rec	Blows per 6"	PID (ppm)							
SS -3	15-16.5	88	6 7 6	0.0			15	(15.0-16.5) SW: WELL GRADED SAND, dark brown, fine to coarse, medium dense, wet. Trace, rounded, fine gravel. No odor or visible contamination.	10	0.010-inch slot, 2-inch Sch. 40 PVC screen from 13-23 ft-bgs. Sample MW-11-22.75-23 taken for analytical. 4.5-inch bottom cap from 23-23.45 ft-bgs.	
SS -4	16.5-18.0	100	4 6 7	0.0			(16.5 - 19.5) GW: WELL GRADED GRAVEL WITH SAND, light brown, medium dense, wet. 30% fine to coarse sand. 10-15% silt. Gravel is up to 2.5" in diameter, rounded, elongate and broken. No odor or visible contamination.				
SS -5	18.0-19.5	100	4 5 5	0.0			5				
SS -6	19.5-21.0	100	7 8 8	0.0			20	(19.5-21.0) SW: WELL GRADED SAND WITH GRAVEL, light brown, fine to coarse, sub rounded to rounded, equant, medium dense, wet. 30% gravel. 10% silt. No odor or visible contamination.	5		
SS -7	21.0-22.5	100	7 11 12	0.0			(21.0-23.0) SW: WELL GRADED SAND WITH GRAVEL, brown, fine to coarse, sub rounded, equant, medium dense, wet. 20% gravel, trace silt. No odor or visible contamination.				
SS -8	22.5-24.0	100	12 50/6"	0.0			(23.0-24.0) ML: SILT, gray, non dilatent, non plastic, hard, dry. Trace to 10% rounded, fine, gravel. No odor or visible contamination.				
SS -9	24.0-25.0	100	21 32	0.0			25	(24.0-25.0) ML: SILT, gray, non dilatent, non plastic, hard, dry. Trace to 10% rounded, fine gravel and fine sand. No odor or visible contamination.	0		

Remarks and Datum Used:
HSA = hollow stem auger
Sample Type

N = SPT
DP = Direct Push
SS = Split Spoon
C = Core

Groundwater

The RETEC Group, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162
Phone: (206) 624-9349
Fax: (206) 624-2839

ft-bgs = feet below ground surface
Sch. = schedule

Date	Time	Depth (ft.)
09/11/08	1130	14.81'



18912 North Creek Parkway, Suite 101
Bothell, WA 98011

Monitoring Well: MW-12

Project: Basin Oil
Client: Dept. of Ecology
Location: 8661 Dallas Ave S, Seattle, WA
Logged By: G. Cisneros

Date Started: 5/14/2009
Date Completed: 5/15/2009
Driller: Cascade Inc.
Drill Method: Hollow-Stem

Total Boring Depth: 28 ft
Hole Diameter: 8.25 in.
Well Depth: 25.45 ft
TOC Elevation: ft

Well Diameter: 2 in
Well Screen: 15.45 - 25.45 ft
Filter Pack: 2/12 Monterey
Well Casing: Sch. 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	BLOWS/6"	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION	WELL DIAGRAM
Wet	0			MW-12-0-6	GP		0	Asphalt top 2 inches.	
Sat.					GP		1	(GP) Dark gray to black Pea-Gravel; no odor; no sheen.	
					ML		2	(ML) Orangish-brown with some gray, soft SILT with 5% gravel; no odor; no sheen.	
Wet	0				ML		3	(ML) Brown, soft, coarse SILT with 30% sand; no odor; no sheen.	
Moist	0			MW-12-2.5	ML		4	(ML) Brownish-gray, soft, coarse SILT with 20% fine to medium sand and 5% gravel; no odor; no sheen.	
	0				ML		5	(ML) Light brown with iron oxide staining, soft, coarse SILT with 15% fine sand, <5% gravel, and no plasticity; no odor; no sheen.	
Moist	0				ML		6	(ML) Same as above; no odor; no sheen.	
Wet	0	9 8 9		MW-12-5	ML		7	(SW-SM) Gray, dense, silty, gravelly SAND with fine to coarse SAND, 15% gravel up to 3 inches in diameter, and 15% silt; no odor; no sheen.	
					SW-SM		8	(ML) Olive-gray, very hard, coarse SILT with 15% fine sand, low plasticity, and 20% fine gravel; no odor; no sheen.	
Wet	0	50		MW-12-7.5	ML		9	(ML) Olive gray, very hard, coarse SILT with low plasticity, 10% gravel up to 2 inches in diameter, and 15% fine to medium sand; no odor; no sheen.	
					ML		10	(ML) Olive gray, very hard, coarse SILT with low plasticity, 10% gravel up to 2 inches in diameter, and 15% fine to medium sand; no odor; no sheen.	
Moist	0	50		MW-12-10	ML		11	(ML) Olive gray, very hard, coarse SILT with low plasticity, 10% gravel up to 2 inches in diameter, and 15% fine to medium sand; no odor; no sheen.	
					ML		12	(ML) Olive gray, very hard, coarse SILT with low plasticity, 10% gravel up to 2 inches in diameter, and 15% fine to medium sand; no odor; no sheen.	
Moist	0	50		MW-12-12.5	ML		13	(ML) Olive gray, very hard, coarse SILT with low plasticity, 10% gravel up to 2 inches in diameter, and 15% fine to medium sand; no odor; no sheen.	
					ML		14	(ML) Olive gray, very hard, coarse SILT with low plasticity, 10% gravel up to 2 inches in diameter, and 15% fine to medium sand; no odor; no sheen.	



18912 North Creek Parkway, Suite 101
Bothell, WA 98011

Monitoring Well: MW-12

Project: Basin Oil
Client: Dept. of Ecology
Location: 8661 Dallas Ave S, Seattle, WA
Logged By: G. Cisneros

Date Started: 5/14/2009
Date Completed: 5/15/2009
Driller: Cascade Inc.
Drill Method: Hollow-Stem

Total Boring Depth: 28 ft
Hole Diameter: 8.25 in.
Well Depth: 25.45 ft
TOC Elevation: ft

Well Diameter: 2 in
Well Screen: 15.45 - 25.45 ft
Filter Pack: 2/12 Monterey
Well Casing: Sch. 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	BLOWS/6"	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION	WELL DIAGRAM
Moist	0	50/4"	X	MW-12-15	ML		15	(ML) Olive gray, very hard, coarse SILT with low plasticity, 10% gravel up to 2 inches in diameter, and 15% fine to medium sand; no odor; no sheen. (continued)	Pre-Pack (2/12 Sand)
					ML		16	(ML) Same as above; no odor; no sheen.	
Moist Sat	0	50	X	MW-12-17.5	ML		17		0.010 Slotted PVC Screen
					ML		18		
Sat. Wet Moist	0	25 50	X	MW-12-20	GW		19	(GW) Olive gray, medium dense, sandy, silty, fine to large GRAVEL up to 3 inches in diameter, 15% medium sand, and 30% silt; no odor; no sheen.	0.010 Slotted PVC Screen
					GW		20		
Sat. Wet Moist	0	24 50	X	MW-12-22.5	ML		21	(ML) Olive gray, very hard, coarse SILT with 15% fine sand and 15% gravel up to 2 inches in diameter; no odor; no sheen.	2/12 Monterey Sand
					ML		22		
Sat. Wet	0	24 50	X	MW-12-25	SW		23	(SW) Gray, very dense, silty, gravelly, fine to coarse SAND with 20% silty and 30% gravel up to 2 inches in diameter; no odor; no sheen.	Bentonite Chips
					SW		24		
Wet Moist	0	50	X	MW-12-27.5	SW		25	(SW) Same as above; no odor; no sheen.	Bentonite Chips
					SW		26		
Moist	0	50	X	MW-12-27.5	ML		27	(ML) Olive gray, very hard, coarse SILT with 20% fine sand and 20% fine gravel; no odor; no sheen.	Bentonite Chips
					ML		28		

Bottom of borehole at 28.0 feet.



18912 North Creek Parkway, Suite 101
Bothell, WA 98011

Monitoring Well: MW-13

Project: Basin Oil
Client: Dept. of Ecology
Location: 8661 Dallas Ave S, Seattle, WA
Logged By: G. Cisneros

Date Started: 5/14/2009
Date Completed: 5/15/2009
Driller: Cascade Inc.
Drill Method: Hollow-Stem

Total Boring Depth: 30.5 ft
Hole Diameter: 8.25 in.
Well Depth: 13.50 ft
TOC Elevation: ft

Well Diameter: 2 in
Well Screen: 3.5 - 13.5 ft
Filter Pack: 2/12 Monterey
Well Casing: Sch. 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	BLOWS/6"	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION	WELL DIAGRAM
Wet	0			MW-13-0-6	GP		0	Asphalt top 2 inches.	
Sat.	0				GP		1	(GP) Light brown to gray, loose, silty, sandy, crushed GRAVEL (FILL); no odor; no sheen.	
Wet	0				GW		2	(GP) Crushed gravel and pea gravel. (GW) Dark gray to black crushed gravel.	
	0			MW-13-2.5	ML		3	(ML) Light brown, hard, sandy, coarse SILT with 20% fine sand and 5% gravel; no odor; no sheen.	
Moist	0				ML		4	(ML) Same as above; no odor; no sheen.	
Wet	0				ML		5	(ML) Brown, hard, sandy, gravelly SILT with 30% fine to medium sand and 30% gravel; no odor; no sheen.	
Wet	0	27 50		MW-13-5	SW		6	(SW) Light brown, very dense, silty, gravelly, fine to coarse SAND with 30% silt and 20% gravel; no odor; no sheen.	
							7		
Moist	0	50		MW-13-7.5	ML		8	(ML) Light brown, very hard, gravelly, sandy, coarse SILT with 30% fine to medium sand and 15% fine gravel; no odor; no sheen.	
							9		
Moist	0	50		MW-13-10	ML		10	(ML) Gray, very hard, coarse SILT with 15% fine to medium sand, low plasticity, and 20% matrix supported gravel; no odor; no sheen.	
							11		
							12	(ML) No recovery.	
		50/1"			ML		13		
							14		
		50/1"			ML		15	(ML) No recovery; very hard.	
							16		

Project: Basin Oil
Client: Dept. of Ecology
Location: 8661 Dallas Ave S, Seattle, WA
Logged By: G. Cisneros

Date Started: 5/14/2009
Date Completed: 5/15/2009
Driller: Cascade Inc.
Drill Method: Hollow-Stem

Total Boring Depth: 30.5 ft
Hole Diameter: 8.25 in.
Well Depth: 13.50 ft
TOC Elevation: ft

Well Diameter: 2 in
Well Screen: 3.5 - 13.5 ft
Filter Pack: 2/12 Monterey
Well Casing: Sch. 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	BLOWS/6"	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION	WELL DIAGRAM	
Moist	0	60/3"	X	MW-13-17.5	ML		17	(ML) No recovery; very hard. (continued)		Bentonite Chips
					ML		18	(ML) Olive gray, very hard, gravelly, sandy SILT with 20% gravel up to 4 inches in diameter, 15% fine sand, and low plasticity; no odor; no sheen.		
Moist	0	50/4"	X	MW-13-20	ML		19			
					ML		20	(ML) Olive gray, very hard, sandy SILT with 15% fine sand, 10% medium sand, 5% coarse sand, 20% gravel, and no to low plasticity; no odor; no sheen.		
					ML		21			
Moist	0	50	X	MW-13-22.5	ML		22	(ML) Olive gray, very hard SILT with 20% matrix supported gravel up to 3 inches in diameter and 15% fine sand; no odor; no sheen.		
					ML		23			
					ML		24			
Moist	0	50	X	MW-13-25	ML		25	(ML) Same as above; no odor; no sheen.		
					ML	26				
					ML	27				
Moist	0	50 50	X	MW-13-27.5	ML	28	(ML) Same as above; no odor; no sheen.			
					ML	29				
					ML	30	(ML) Olive gray, very hard SILT with medium plasticity, 5% fine sand, and <5% gravel; no odor; no sheen.			
Moist	0	50	X	MW-13-30	ML					
							31	Bottom of borehole at 30.5 feet.		
							32			



411 1st Avenue S, Suite 550
Seattle, WA 98104

(206) 230-9600 FAX (206) 230-9601

BORING ID

PROJECT

LOCATION

PROJECT NUMBER

LOGGED BY

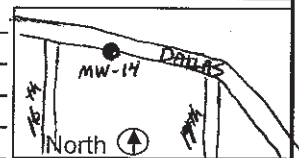
MW-14

T-117 EAA MW Installation

Dallas Ave S, South Park, Seattle

A0006-15B

B. Lawrence



Page 1 of 2

SAMPLE INFORMATION							STRATA	DESCRIPTION	Well
Sample ID	Photo No.	% Recov.	40 g K ₂ CO ₃	PID	Sheen	Depth Feet			
-0	1	1	1				GM	lt gray silty 10% sandy 30% gravel, 1" minus angular, no odor, dry	WELL CONSTRUCTION (all depths in feet bgs) Borehole Total Depth: Borehole Diameter: Casing: Screen: 11-21 Sump: Sand Pack: 10-21 Bentonite chips: Bentonite grout: Concrete: WELL MATERIALS Monument: Cap: Concrete: Bentonite: Casing: Well Screen: Monoflex Mfg. Sand Pack: End Cap:
-2	290	100	20	2.1		1	SM	DK olive to black silty sand w/gravel, 2" thick wood debris	
-4	1	1	1			2	ML	DK grayish brn and lt brownish gray silt, firm, damp, mottled, no odor	
-6	1	1	1			3			
-8	1	1	1			4	SM	lt olive and olive yellow silty fine sand loose, damp, no odor	
-10	294	100	30	2.0		5	SP	Very dk gray fine to med sand, damp, very loose, no odor	
-12	1	1	1			6		same, no odor	
-14	1	1	1			7		same, trace gravel @ 8.5, no odor	
-16	1	1	1			8		same, no odor	
-18	1	1	1			9		same, no odor	
-20	1	1	1			10		same, no odor	
-22	1	1	1			11		same, no odor	
-24	1	1	1			12	SP	same, damp, no odor	
-26	1	1	1			13		same, damp, no odor	
-28	1	1	1			14		same, damp, no odor	
-30	1	1	1			15	SP	trace dk grayish brn silt @ 15.1 to 15.3	
-32	1	1	1			16		same, wet, no odor	
-34	1	1	1			17			

DRILLING CONTRACTOR
DILLING METHOD
SAMPLING EQUIPMENT
DRILLING STARTED

Major Drilling, Inc.
Direct Push

0931 on 8-24-10

COORDINATES

SURFACE ELEVATION

CASING ELEVATION

DATUM



411 1st Avenue S, Suite 550
Seattle, WA 98104

(206) 230-9600 FAX (206) 230-9601

BORING ID

PROJECT

LOCATION

PROJECT NUMBER

LOGGED BY

MW-14

T-117 EAA MW Installation

Dallas Ave S, South Park, Seattle

A0006-15B

B. Lawrence

North

Page 2 of 2

SAMPLE INFORMATION

DESCRIPTION

Well

USCS group name, color, grain size range, minor constituents, plasticity, odor, sheen, moisture content, texture, weathering, cementation, geologic interpretation, etc.

SP

same v dark gray fine to med sand w/ trace coarse sand, loose, wet, no odor

same, no odor

same, no odor

GM Gray gravelly silt w trace sand, wet, very dense gravel 1.5" minus (fill)

damp, no odor

dry
Bott e 24

N - none detected

WELL CONSTRUCTION

(all depths in feet bgs)

Borehole Total Depth:

Borehole Diameter:

Casing:

Screen:

Sump:

Sand Pack:

Bentonite chips:

Bentonite grout:

Concrete:

WELL MATERIALS

Monument:

Cap:

Concrete:

Bentonite:

Casing:

Well Screen:

Monoflex Mfg.

Sand Pack:

End Cap:

DRILLING CONTRACTOR
DILLING METHOD
SAMPLING EQUIPMENT
DRILLING STARTED

Major Drilling, Inc.
Direct Push

0931 on 8-24-10

COORDINATES

SURFACE ELEVATION

CASING ELEVATION

DATUM

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission

☒ Construction

☐ Decommission ORIGINAL INSTALLATION Notice
of Intent Number _____

Consulting Firm Integral Consulting

Unique Ecology Well ID
Tag No. BCC917

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for
construction of this well, and its compliance with all Washington well construction standards

Materials used and the information reported above are true to my best knowledge and belief

☒ Driller ☐ Trainee Name (Print) Don "Greg" Farmer

Driller/Trainee Signature Don D. Farmer

Driller/Trainee License No. 2962

If trainee, licesned drillers' _____

Signature and License No. _____

CURRENT

Notice of Intent No. RED 4861

Type of Well

☒ Resource Protection

☐ Geotechnical Soil Boring

Property Owner City of Seattle

Site Address 16th Ave. South & Dalles Ave.

City Seattle County King

Location 1/4 NE 1/4 SE Sec 32 Twn 24 R 4 or EWM
WWM

Lat/Long (s,t,r Lat Deg _____ Lat Min/Sec _____

still Required) Long Deg _____ Long Min/Sec _____

Tax Parcel No. ROW

Cased or Uncased Diameter 4 Static Level 14.2'

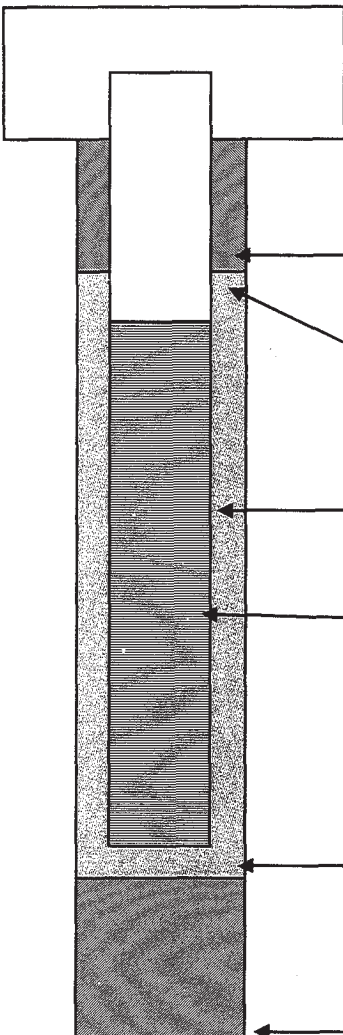
Work/Decommission Start Date 8/24/10

Work/Decommission End Date 8/24/10

Construction/Design

Well Data

Formation Description

Construction/Design	Well Data	Formation Description
	<u>MW-14</u>	
	Concrete Surface Seal Depth <u>0-1</u> FT	<u>0 - 1.5</u> FT <u>(GRAVEL fill)</u>
	Blank Casing (dia x dep) <u>2" 0-11'</u>	
	Material <u>PVC</u>	
	Backfill <u>—</u> FT	
	Type <u>—</u>	
	Seal <u>1-10'</u>	<u>1.5 - 5</u> FT <u>SANDY SILT</u>
	Material <u>BENTONITE CHIPS</u>	
	Gravel Pack <u>10-21</u> FT	
	Material <u>10/20 SAND</u>	
Screen (dia x dep) <u>2" 11-21'</u>		
Slot Size <u>.010</u>		
Material <u>PVC</u>		
Well Depth <u>21</u> FT		
Backfill <u>—</u>		
Material <u>—</u>		
Total Hole Depth <u>21</u> FT		



411 1st Avenue S, Suite 550
Seattle, WA 98104

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BORING ID

PROJECT

LOCATION

PROJECT NUMBER

LOGGED BY

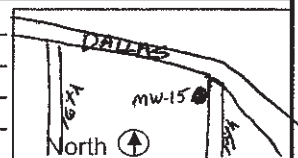
MW-15

T-117 EAA MW Installation

Dallas Ave S, South Park, Seattle

A0006-15B

B. Lawrence



Page 1 of 2

SAMPLE INFORMATION							STRATA	DESCRIPTION <small>USCS group name, color, grain size range, minor constituents, plasticity, odor, sheen, moisture content, texture, weathering, cementation, geologic interpretation, etc.</small>	Well	
Sample ID	Photo No.	% Recov.	% fines	Mo	Sheen	Depth Feet				
0-2	1	1	1			1	AS	Asphalt		WELL CONSTRUCTION (all depths in feet bgs) Borehole Total Depth: Borehole Diameter: Casing: Screen: 8-18 Sump: Sand Pack: 7-18 Bentonite chips: Bentonite grout: Concrete:
							GM	lt olive brn silty sandy gravel, loose, no odor		
	296	20	80	6.5		2	SM	Black to olive brn sandy silt, very soft, damp, v poor recovery		
-2-4						3				
						4	ML	olive brn and grayish brn silt, soft, damp, mottled, no odor		
-4-6						5				
						6		grades to lt brownish gray, trace fine sand microlayering and 1/2" thick lenses - 1 per 6" no odor		
-6-8	297	100	25			7	SP	olive brn fine to med sand, damp, v loose no odor		
-8-10						8		fine sand (sw) @ 8.4 to 8.6		
						9		grades to v dark grayish brown		
-10-12	298	100	25			10				WELL MATERIALS Monument: Cap: Concrete: Bentonite: Casing: Well Screen: Monoflex Mfg. Sand Pack: End Cap:
						11		same, no odor		
-12-14						12				
						13		same, no odor		
-14-16	299	100	25			14				
						15		same, wet, no odor		
-16-18						16		trace silt (1/4" layer) @ 15.9		
						17		same, wet, no odor		

DRILLING CONTRACTOR
DILLING METHOD
SAMPLING EQUIPMENT
DRILLING STARTED

Major Drilling, Inc.
Direct Push

0810 on 8-25-10

COORDINATES

SURFACE ELEVATION

CASING ELEVATION

DATUM



411 1st Avenue S, Suite 550
Seattle, WA 98104

(206) 230-9600 FAX (206) 230-9601

BORING ID
PROJECT
LOCATION
PROJECT NUMBER
LOGGED BY

MW-15
T-117 EAA MW Installation
Dallas Ave S, South Park, Seattle
A0006-15B
B. Lawrence

North

Page 2 of 2

SAMPLE INFORMATION							STRATA	DESCRIPTION <small>USCS group name, color, grain size range, minor constituents, plasticity, odor, sheen, moisture content, texture, weathering, cementation, geologic interpretation, etc.</small>	Well
Sample ID	Photo No.	% Recov.	% Compaction	FB	Sheen	Depth Feet			
							SP	same fine to med sand, no odor	WELL CONSTRUCTION (all depths in feet bgs) Borehole Total Depth: Borehole Diameter: Casing: Screen: Sump: Sand Pack: Bentonite chips: Bentonite grout: Concrete:
18-20	—	100	30			18			
						19	GM	gray gravelly silt w trace sand, wet, very dense gravel 1.5" minus	
20-22						20			
						21		damp, no odor	
22-24	—	100	0			22		same, damp	
						23			
						24	ML	gray silt, hard, dry, no odor	
						25		Bot @ 24	
						26			
						27			
						28			
						29			
						30			
						31			
						32			
						33			

Bill Lawrence

DRILLING CONTRACTOR
DILLING METHOD
SAMPLING EQUIPMENT
DRILLING STARTED

Major Drilling, Inc.
Direct Push
0810 on 8-25-10

COORDINATES
SURFACE ELEVATION
CASING ELEVATION
DATUM

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No.

RE04861

Construction/Decommission

☒ Construction

☐ Decommission ORIGINAL INSTALLATION Notice
of Intent Number _____

Type of Well

☒ Resource Protection

☐ Geotechnical Soil Boring

Property Owner

City of Seattle

Site Address

16th Ave. South & Dalles Ave.

City

Seattle

County

King

Consulting Firm

Integral Consulting

Unique Ecology Well ID

Tag No.

BCC918

Location

1/4 NE 1/4 SE Sec 32 Twn 24 R 4 ^{EWM} or WWM

Lat/Long (s,t,r

Lat Deg

Lat Min/Sec

still Required)

Long Deg

Long Min/Sec

Tax Parcel No.

ROW

Cased or Uncased Diameter

4

Static Level 14.8

Work/Decommission Start Date

8/25/10

Work/Decommission End Date

8/25/10

☒ Driller ☐ Trainee Name (Print)

Don "Greg" Farmer

Driller/Trainee Signature

Don G. Farmer

Driller/Trainee License No.

2962

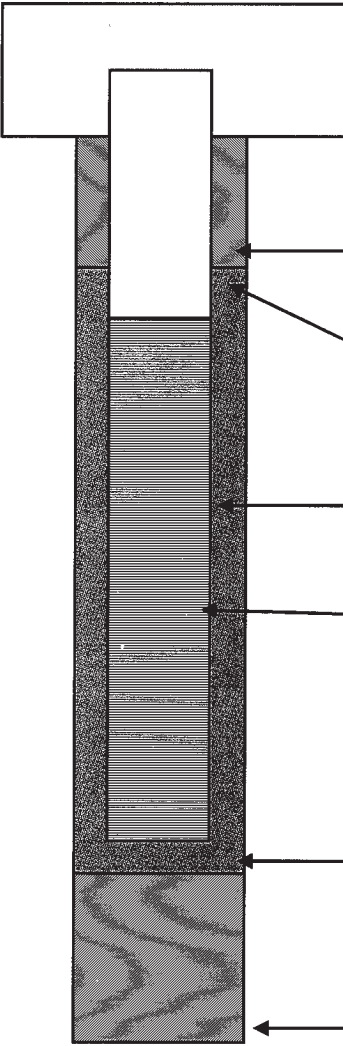
If trainee, licensed drillers'

Signature and License No.

Construction/Design

Well Data

Formation Description

Construction/Design	Well Data	Formation Description
	<u>MW-15</u>	
	Concrete Surface Seal	
	Depth <u>0-1</u> FT	<u>0 - 1.5</u> FT ASPHALT & GRAVEL FILL
	Blank Casing (dia x dep) <u>2" 0-8'</u>	
	Material <u>PVC</u>	
	Backfill <u>—</u> FT	
	Type <u>—</u>	
	Seal <u>1'-7'</u>	<u>1.5-7</u> FT silty SAND
	Material <u>BENTONITE CHIPS</u>	
	Gravel Pack <u>7-18</u> FT	
Material <u>10/20 SAND</u>		
Screen (dia x dep) <u>2" 8'-18'</u>		
Slot Size <u>.010</u>		
Material <u>PVC</u>		
Well Depth <u>18</u> FT	<u>7-18</u> FT SAND	
Backfill <u>—</u>		
Material <u>—</u>		
Total Hole Depth <u>18</u> FT		

Scale 1" = _____

Page _____ of _____

ECY 050-12 (Rev=v 2/01)

ATTACHMENT 2

WELL DECOMMISSIONING FIELD FORM

Signature: _____