

VIA ELECTRONIC MAIL

12 September 2017

Mr. Kenneth Thiessen
Oregon Department of Environmental Quality
700 NE Multnomah Street, Suite 600
Portland, Oregon 97232

Subject: EW-16 Monitoring Conversion; Eastside Conveyance Line Decommissioning Request
East Multnomah County TSA Remedy, ECSI 1479
Fairview, Oregon

Dear Ken:

Geosyntec Consultants (Geosyntec) and Landau Associates have prepared this technical memorandum on behalf of Cascade Corporation (Cascade) and The Boeing Company (Boeing) to request DEQ approval to decommission the Eastside Conveyance Lines (“conveyance lines”) and conversion of EW-16 to future monitoring use. The conveyance lines are part of the joint Cascade and Boeing Troutdale Sandstone Aquifer (TSA) remedy infrastructure connecting extraction well EW-16 along with former extraction wells EW-11 and EW-15 to the Central Treatment System (CTS). Extraction well EW-16 and a portion of the conveyance lines are located in the eastern portion of the TSA Remedy in Zone D, and the CTS and remaining portion of the conveyance lines are located in the central portion of the TSA Remedy in Zone C (Figure 1). The TSA remedy is being implemented under the Department of Environmental Quality’s (DEQ’s) Consent Order No. WMCSR-NWR-96-08 (DEQ, 1997).

EW-16 History

Extraction well EW-16 started full-time operation in June 1998 to capture low level dissolved trichloroethene (TCE) concentrations in restoration Zone D. TCE concentrations at EW-16 range from non-detect at the laboratory reporting limit to a historical maximum concentration of 21 micrograms per liter ($\mu\text{g/L}$), which is slightly above the maximum contaminant limit (MCL) of 5 $\mu\text{g/L}$. TCE concentrations at nearby monitoring well CMW-26dg (restoration Zone D well) ranged from non-detect at the laboratory reporting limit to a historical maximum 19 $\mu\text{g/L}$. Historical TCE concentrations for EW-16 and CMW-26dg are shown on Figures 2 and 3 and summarized in Table 1.

EW-16 Shutdown

Due to reducing TCE concentrations to below the MCL in both EW-16 and CMW-26dg, quarterly cycling/pilot shutdown of extraction well EW-16 was approved by DEQ (DEQ, 2014) and commenced in November 2014 (Geosyntec, 2014). During the pilot shutdown of EW-16, TCE rebound effects have not been observed at either EW-16 or nearby well CMW-26dg, as shown on Figures 2 and 3.

This letter requests DEQ's approval for permanent conversion of EW-16 to monitoring well status. If approved, the EW-16 pump assembly will be removed and the well will remain in use for monitoring purposes only, as discussed in the 2016 Annual Performance Report for the TSA Remedy (Geosyntec, Landau Associates, and SSPA, 2017) approved by DEQ on 16 June 2017 (DEQ, 2017). EW-16 will continue to be monitored on a quarterly basis. Well CMW-26dg will continue to be monitored based on the current monitoring schedule, with semiannual water levels and quarterly water quality monitoring. This request supports the proposed decommissioning of the conveyance lines discussed in the following section.

Eastside Conveyance Lines

The conveyance lines include high voltage power for the extraction pumps, low voltage control lines for water level transducers, and treated water discharge lines from each of three extraction wells: EW-11, EW-15, and EW-16. Extraction wells EW-11 and EW-15 were taken off line in 2007 and 2010, respectively, and these two wells remain in use for groundwater monitoring. The conveyance lines are located in a single trench that extends from the CTS, along NE 201st Ave to the north, and eastward beneath private property to approximately NE 205th Ave (Figure 1). The power and water lines originally split off from each other near NE 205th Avenue and extend to each of the three extraction wells. Construction details for the trench and lines from 1998 are provided in Attachment A. The conveyance lines are located beneath the former Wirth and Zundel Properties.

The trench for the conveyance lines was initially constructed at 36 to 38 inches below ground surface (bgs; base of the pipes) for both the water and electrical lines. The trench was approximately 3 feet wide, and the water and power were placed on opposite sides, embedded in sand, and foil was placed above the lines to provide a visible indication for the lines and for utility locating, and the trench was backfilled with compacted native material. The high and low voltage power are located in separate conduits, constructed of 1-inch and 2-inch diameter schedule 40

TSA Remedy Eastside Conveyance Line Decommissioning

Page 3

12 September 2017

PVC, and tracing wire was installed with the power lines. The treated water lines are constructed of 40-inch diameter HDPE (SDR-11).

The electrical and treated water lines to/from EW-11 and EW-15 in NE 205th Avenue (and smaller streets) were abandoned in place (i.e. decommissioned), which included removal of power lines, valving, and equipment etc., and the pipe/conduit ends were cut and filled with concrete. The trenches and conduits were not removed from beneath the streets.

As part of the proposed decommissioning, the EW-16 low and high voltage power and treated water conveyance piping will remain in place, and a similar method of decommissioning is proposed. The decommissioning will include removal of the high and low voltage power lines, removal of valving and equipment from access vaults, removal of the vaults, and cutting the pipe/conduit ends and capping/filling with concrete.

Closure

Please don't hesitate to contact us with any questions. We look forward to DEQ's approval of this request.

Sincerely,

Geosyntec Consultants, Inc.



Cindy Bartlett, R.G.
Senior Geologist/Project Manager



Brent Miller, P.E.
Senior Principal

Cc: Jason Hegdahl, Cascade Corporation
Nick Garson, The Boeing Company
Chris Kimmel, Landau Associates

Attachments:

Figure 1: Site Plan

Figure 2: EW-16 TCE Concentration Profile

Figure 3: CMW-26dg TCE Concentration Profile

Table 1: EW-16 and CMW-26dg VOC Concentrations

Attachment A: Excerpts from Eastside Conveyance Line Construction Report

References

Geosyntec Consultants, Landau Associates, SSPA, 2017. Annual Performance Report, East Multnomah County Troutdale Sandstone Aquifer Remediation, 15 March 2017.

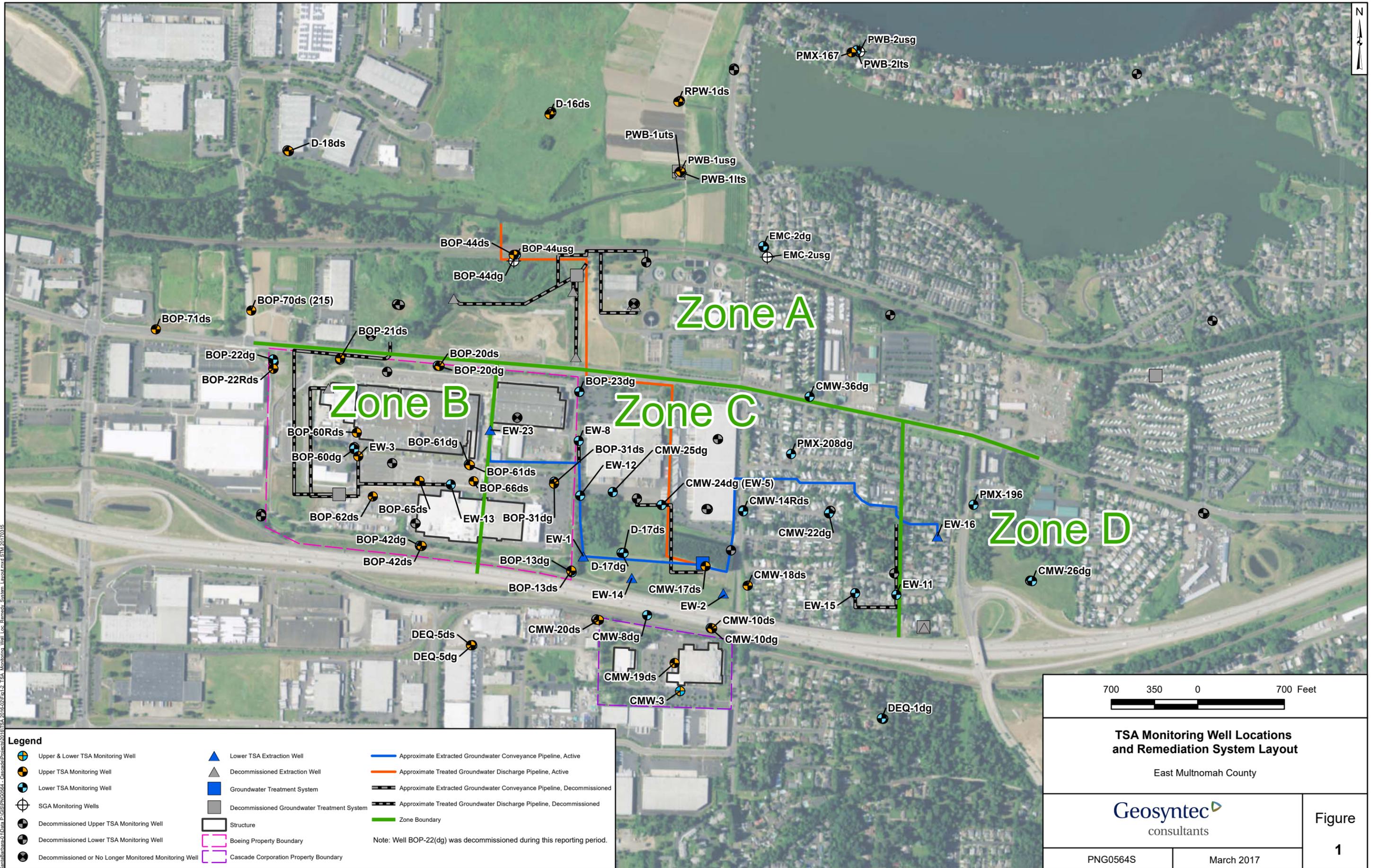
Geosyntec Consultants, 2014. TSA Remedy: EW-16 Cycle Operation Proposal, 30 October 2014.

Oregon Department of Environmental Quality (DEQ), 2017. Email from DEQ (B. Williams) RE: East Multnomah Co, TSA project (Approval of 2016 Annual Performance Report for the Troutdale Sandstone Aquifer Remedy), 16 June 2017.

Oregon Department of Environmental Quality (DEQ), 2014. Email from DEQ (B. Williams) Cascade TSA Remedy, Approval of EW-16 Cycle Operation Proposal, 2 November 2014.

Oregon Department of Environmental Quality (DEQ), 1997. TSA Remedy Order on Consent, WMCSR-NWR-96-08, 14 February 1997.

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Legend

- | | | |
|---|---|---|
| Upper & Lower TSA Monitoring Well | Lower TSA Extraction Well | Approximate Extracted Groundwater Conveyance Pipeline, Active |
| Upper TSA Monitoring Well | Decommissioned Extraction Well | Approximate Treated Groundwater Discharge Pipeline, Active |
| Lower TSA Monitoring Well | Groundwater Treatment System | Approximate Extracted Groundwater Conveyance Pipeline, Decommissioned |
| SGA Monitoring Wells | Decommissioned Groundwater Treatment System | Approximate Treated Groundwater Discharge Pipeline, Decommissioned |
| Decommissioned Upper TSA Monitoring Well | Structure | Zone Boundary |
| Decommissioned Lower TSA Monitoring Well | Boeing Property Boundary | <p>Note: Well BOP-22(dg) was decommissioned during this reporting period.</p> |
| Decommissioned or No Longer Monitored Monitoring Well | Cascade Corporation Property Boundary | |

700 350 0 700 Feet



TSA Monitoring Well Locations and Remediation System Layout

East Multnomah County

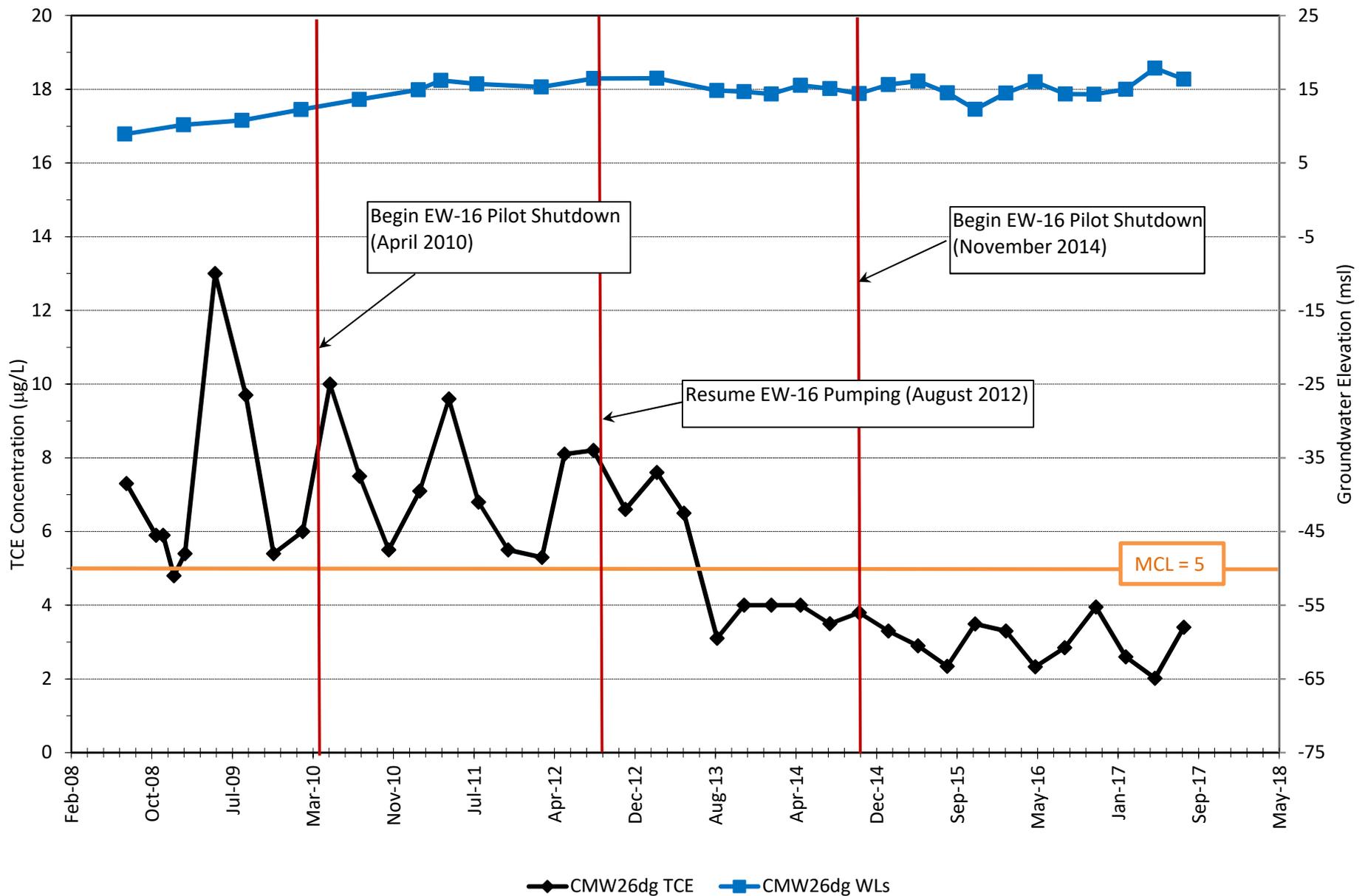
Geosyntec
consultants

PNG0564S

March 2017

Figure

1



Cascade Corporation Gresham, Oregon	Monitoring Well CMW-26dg TCE Concentration Profile TSA Remedy	Figure 3
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Table 1
Summary of VOCs in Groundwater at EW-16 and CMW-26dg
East Multnomah County TSA Remedy

Location	Date Sampled	Trichloroethene (TCE)	Tetrachloroethene (PCE)	cis-1,2-Dichloroethene	Vinyl Chloride
EW-16	1997-10-06	< 0.50	< 0.50	< 0.50	
EW-16	1997-10-06	< 0.50	< 0.50	< 0.50	
EW-16	1997-10-06	< 0.50	< 0.50	< 0.50	
EW-16	1997-10-06	< 0.50	< 0.50	< 0.50	
EW-16	1997-10-07	< 0.50	< 0.50	< 0.50	
EW-16	1997-10-07	< 0.50	< 0.50	< 0.50	
EW-16	1997-10-08	< 0.50	< 0.50	< 0.50	
EW-16	1997-10-08	< 0.50	< 0.50	< 0.50	
EW-16	1997-10-08	< 0.50	< 0.50	< 0.50	
EW-16	1997-10-24	0.60	< 0.50	< 0.50	
EW-16	1998-02-10	4.3	< 0.50	< 0.50	< 0.50
EW-16	1998-02-10	5.5	< 0.50	< 0.50	< 0.50
EW-16	1998-02-12	4.2	< 0.50	< 0.50	< 0.50
EW-16	1998-02-12	4.5	< 0.50	< 0.50	< 0.50
EW-16	1998-02-15	2.1	< 0.50	< 0.50	< 0.50
EW-16	1998-05-21	1.2	< 0.50	< 0.50	
EW-16	1998-08-14	5.7	< 0.50	< 0.50	< 0.50
EW-16	1998-11-03	2.6	< 0.50	< 0.50	< 0.50
EW-16	1999-02-04	2.1	< 0.50	< 0.50	< 0.50
EW-16	1999-05-13	1.6	< 0.50	< 0.50	
EW-16	1999-08-13	1.5	< 0.50	< 0.50	
EW-16	1999-11-04	2.0	< 1.0	< 1.0	
EW-16	2000-02-06	4.7	< 0.50	0.74	
EW-16	2000-05-04	7.2	0.60	1.0	
EW-16	2000-08-10	0.70	1.5	9.3	
EW-16	2000-11-02	21	1.0	2.4	< 0.50
EW-16	2003-02-12	3.1	< 0.50	< 0.50	< 0.50
EW-16	2003-05-05	2.3	< 0.50	< 0.50	< 0.50
EW-16	2003-08-18	2.2	< 0.50	< 0.50	< 0.50
EW-16	2003-11-11	2.3	< 0.50	< 0.50	< 0.50
EW-16	2004-02-10	1.8	< 0.50	< 0.50	< 0.50
EW-16	2004-05-12	1.4	< 0.50	< 0.50	< 0.50
EW-16	2004-08-09	1.3	< 0.50	< 0.50	< 0.50
EW-16	2004-11-08	1.2	< 0.50	< 0.50	< 0.50
EW-16	2005-02-07	1.1	< 0.50	< 0.50	< 0.50
EW-16	2005-05-11	0.96	< 0.50	< 0.50	< 0.50
EW-16	2005-08-11	1.1	< 0.50	< 0.50	< 0.50
EW-16	2005-11-07	0.97	< 0.50	< 0.50	< 0.50
EW-16	2006-02-08	0.87	< 0.50	< 0.50	< 0.50
EW-16	2006-05-11	0.65	< 0.50	< 0.50	< 0.50
EW-16	2006-08-14	0.64	< 0.50	< 0.50	< 0.50
EW-16	2006-11-06	0.74	< 0.50	< 0.50	< 0.50
EW-16	2007-02-08	0.60	< 0.50	< 0.50	< 0.50
EW-16	2007-05-16	< 0.50	< 0.50	< 0.50	< 0.50
EW-16	2007-08-14	< 0.50	< 0.50	< 0.50	< 0.50
EW-16	2007-11-05	0.52	< 0.50	< 0.50	< 0.50
EW-16	2008-02-06	< 0.50	< 0.50	< 0.50	< 0.50
EW-16	2008-05-07	< 0.50	< 0.50	< 0.50	< 0.50
EW-16	2008-08-07	< 0.50	< 0.50	< 0.50	< 0.50
EW-16	2008-11-11	< 0.50	< 0.50	< 0.50	< 0.50
EW-16	2009-02-05	< 0.50	< 0.50	< 0.50	< 0.50
EW-16	2009-08-12	< 0.50	< 0.50	< 0.50	< 0.50
EW-16	2010-02-10	< 0.50	< 0.50	< 0.50	< 0.50
EW-16	2010-05-05	6.4	< 0.50	0.86	< 0.50
EW-16	2010-05-26	6.2	< 0.50	0.78	< 0.50
EW-16	2010-06-23	6.5	0.50	0.75	< 0.50
EW-16	2010-06-23	5.8	< 0.50	0.69	< 0.50
EW-16	2010-08-05	4.8	< 0.50	0.67	< 0.50
EW-16	2010-08-05	6.0	< 0.50	0.62	< 0.50
EW-16	2010-08-05	5.8	< 0.50	0.59	< 0.50
EW-16	2010-08-05	7.1	< 0.50	0.78	< 0.50
EW-16	2010-08-05	5.4	< 0.50	0.58	< 0.50
EW-16	2010-08-05	5.5	< 0.50	0.58	< 0.50
EW-16	2010-08-05	5.7	< 0.50	0.61	< 0.50
EW-16	2010-08-05	5.6	< 0.50	0.58	< 0.50
EW-16	2010-11-03	7.8	0.55	0.94	< 0.50
EW-16	2011-02-07	4.5	< 0.50	0.59	< 0.50

Table 1
Summary of VOCs in Groundwater at EW-16 and CMW-26dg
East Multnomah County TSA Remedy

Location	Date Sampled	Trichloroethene (TCE)	Tetrachloroethene (PCE)	cis-1,2-Dichloroethene	Vinyl Chloride
EW-16	2011-05-09	7.2	< 0.50	1.1	< 0.50
EW-16	2011-05-09	7.3	< 0.50	1.0	< 0.50
EW-16	2011-08-09	7.3	0.50	0.99	< 0.50
EW-16	2011-11-08	6.3	< 0.50	0.89	< 0.50
EW-16	2011-11-08	6.3	< 0.50	0.87	< 0.50
EW-16	2012-02-21	5.2	< 0.50	0.80	< 0.50
EW-16	2012-05-02	8.2	0.62	1.1	< 0.50
EW-16	2012-05-02	8.3	0.57	1.1	< 0.50
EW-16	2012-07-30	11	0.57	1.2	< 0.50
EW-16	2013-02-14	0.93	< 0.50	< 0.50	< 0.50
EW-16	2013-05-08	0.70	< 0.50	< 0.50	< 0.50
EW-16	2013-05-08	0.81	< 0.50	< 0.50	< 0.50
EW-16	2013-08-20	< 1.0	< 1.0	< 1.0	< 1.0
EW-16	2013-11-11	< 1.0	< 1.0	< 1.0	< 1.0
EW-16	2014-02-03	< 1.0	< 1.0	< 1.0	< 1.0
EW-16	2014-05-05	< 1.0	< 1.0	< 1.0	< 1.0
EW-16	2014-08-04	< 1.0	< 1.0	< 1.0	< 1.0
EW-16	2014-11-03	< 1.0	< 1.0	< 1.0	< 1.0
EW-16	2015-02-02	< 1.0	< 1.0	< 1.0	< 1.0
EW-16	2015-05-05	< 1.0	< 1.0	< 1.0	< 1.0
EW-16	2015-08-03	< 1.0	< 1.0	< 1.0	< 1.0
EW-16	2015-10-29	< 1.00	< 1.00	< 1.00	< 1.00
EW-16	2016-02-02	< 1.00	< 1.00	< 1.00	< 1.00
EW-16	2016-05-03	< 1.00	< 1.00	< 1.00	< 1.00
EW-16	2016-08-04	2.98	< 1.00	< 1.00	< 1.00
EW-16	2016-11-01	4.94	< 1.00	< 1.00	< 1.00
EW-16	2017-02-08	3.90	< 1.00	< 1.00	< 1.00
EW-16	2017-05-09	4.53	< 1.00	< 1.00	< 1.00
EW-16	2017-08-07	4.92	< 1.00	< 1.00	< 1.00
CMW-26dg	1994-03-15	< 0.50	< 0.50	< 0.50	< 0.50
CMW-26dg	1994-05-16	< 0.50	< 0.50	< 0.50	< 0.50
CMW-26dg	1994-08-15	< 0.50	< 0.50	< 0.50	< 0.50
CMW-26dg	1994-12-01	< 0.50	< 0.50	< 0.50	< 0.50
CMW-26dg	1995-03-01	< 0.50	< 0.50	< 0.50	< 0.50
CMW-26dg	1995-10-28	< 0.50	< 0.50	< 0.50	< 0.50
CMW-26dg	1997-02-26	< 0.50	< 0.50	< 0.50	
CMW-26dg	1997-08-22	< 0.50	< 0.50	< 0.50	< 0.50
CMW-26dg	1998-03-27	< 0.50	< 0.50	< 0.50	< 0.50
CMW-26dg	1998-08-27	0.70	< 0.50	< 0.50	< 0.50
CMW-26dg	1999-08-24	0.60	< 0.50	< 0.50	
CMW-26dg	2000-08-07	1.6	< 0.50	< 0.50	
CMW-26dg	2001-08-08	3.4	< 0.50	< 0.50	< 0.50
CMW-26dg	2002-08-14	4.8	< 0.50	< 0.50	< 0.50
CMW-26dg	2003-08-13	7.1	< 0.50	< 0.50	< 0.50
CMW-26dg	2003-09-30	8.1	0.63	< 0.50	< 0.50
CMW-26dg	2003-11-13	11	0.62	< 0.50	< 0.50
CMW-26dg	2004-02-13	< 0.50	< 0.50	< 0.50	< 0.50
CMW-26dg	2004-05-13	7.3	< 0.50	< 0.50	< 0.50
CMW-26dg	2004-08-11	5.2	< 0.50	< 0.50	< 0.50
CMW-26dg	2004-08-11	4.9	< 0.50	< 0.50	< 0.50
CMW-26dg	2004-11-09	6.3	< 0.50	< 0.50	< 0.50
CMW-26dg	2004-11-09	5.9	< 0.50	< 0.50	< 0.50
CMW-26dg	2005-02-09	11	0.60	< 0.50	< 0.50
CMW-26dg	2005-02-09	11	0.66	< 0.50	< 0.50
CMW-26dg	2005-05-11	< 0.50	< 0.50	< 0.50	< 0.50
CMW-26dg	2005-06-23	10	0.51	< 0.50	< 0.50
CMW-26dg	2005-08-10	13	0.59	< 0.50	< 0.50
CMW-26dg	2005-08-10	12	0.61	< 0.50	< 0.50
CMW-26dg	2005-11-14	15	0.70	< 0.50	< 0.50
CMW-26dg	2005-11-14	15	0.73	< 0.50	< 0.50
CMW-26dg	2006-02-07	19	0.90	0.52	< 0.50
CMW-26dg	2006-02-07	17	0.92	< 0.50	< 0.50
CMW-26dg	2006-02-07	17	0.89	< 0.50	< 0.50
CMW-26dg	2006-05-10	17	0.65	< 0.50	< 0.50
CMW-26dg	2006-05-10	18	0.86	< 0.50	< 0.50

Table 1
Summary of VOCs in Groundwater at EW-16 and CMW-26dg
East Multnomah County TSA Remedy

Location	Date Sampled	Trichloroethene (TCE)	Tetrachloroethene (PCE)	cis-1,2-Dichloroethene	Vinyl Chloride
CMW-26dg	2006-05-10	18	0.87	< 0.50	< 0.50
CMW-26dg	2006-08-14	8.4	0.50	< 0.50	< 0.50
CMW-26dg	2006-08-14	8.3	< 0.50	< 0.50	< 0.50
CMW-26dg	2006-11-06	7.5	0.62	< 0.50	< 0.50
CMW-26dg	2006-11-06	7.7	0.58	< 0.50	< 0.50
CMW-26dg	2007-02-12	16	0.95	< 0.50	< 0.50
CMW-26dg	2007-02-12	15	0.91	< 0.50	< 0.50
CMW-26dg	2007-05-17	14	0.84	< 0.50	< 0.50
CMW-26dg	2007-05-17	15	0.90	< 0.50	< 0.50
CMW-26dg	2007-08-15	7.2	0.55	< 0.50	< 0.50
CMW-26dg	2007-08-15	7.2	0.56	< 0.50	< 0.50
CMW-26dg	2007-11-07	6.1	0.53	< 0.50	< 0.50
CMW-26dg	2007-11-07	5.9	< 0.50	< 0.50	< 0.50
CMW-26dg	2008-02-07	15	0.91	< 0.50	< 0.50
CMW-26dg	2008-02-07	16	0.91	< 0.50	< 0.50
CMW-26dg	2008-05-07	15	0.96	< 0.50	< 0.50
CMW-26dg	2008-05-07	15	1.0	< 0.50	< 0.50
CMW-26dg	2008-08-11	7.1	0.60	< 0.50	< 0.50
CMW-26dg	2008-08-11	7.3	0.62	< 0.50	< 0.50
CMW-26dg	2008-11-11	5.9	0.56	< 0.50	< 0.50
CMW-26dg	2008-11-11	5.9	0.54	< 0.50	< 0.50
CMW-26dg	2008-12-03	5.9	< 0.50	< 0.50	< 0.50
CMW-26dg	2009-01-05	4.8	< 0.50	< 0.50	< 0.50
CMW-26dg	2009-02-09	5.4	< 0.50	< 0.50	< 0.50
CMW-26dg	2009-02-09	5.3	< 0.50	< 0.50	< 0.50
CMW-26dg	2009-05-13	13	0.80	< 0.50	< 0.50
CMW-26dg	2009-05-13	12	0.79	< 0.50	< 0.50
CMW-26dg	2009-08-17	7.9	0.63	< 0.50	< 0.50
CMW-26dg	2009-08-17	9.7	0.73	< 0.50	< 0.50
CMW-26dg	2009-11-11	5.4	< 0.50	< 0.50	< 0.50
CMW-26dg	2009-11-11	5.3	0.53	< 0.50	< 0.50
CMW-26dg	2010-02-09	6.0	< 0.50	< 0.50	< 0.50
CMW-26dg	2010-02-09	6.0	< 0.50	< 0.50	< 0.50
CMW-26dg	2010-05-05	10	< 0.50	< 0.50	< 0.50
CMW-26dg	2010-05-05	9.9	< 0.50	< 0.50	< 0.50
CMW-26dg	2010-08-05	7.0	< 0.50	< 0.50	< 0.50
CMW-26dg	2010-08-05	7.5	0.52	< 0.50	< 0.50
CMW-26dg	2010-08-05	6.9	< 0.50	< 0.50	< 0.50
CMW-26dg	2010-08-05	6.7	< 0.50	< 0.50	< 0.50
CMW-26dg	2010-08-05	7.0	< 0.50	< 0.50	< 0.50
CMW-26dg	2010-08-05	6.9	< 0.50	< 0.50	< 0.50
CMW-26dg	2010-08-05	6.8	< 0.50	< 0.50	< 0.50
CMW-26dg	2010-11-03	5.5	< 0.50	< 0.50	< 0.50
CMW-26dg	2010-11-03	5.4	< 0.50	< 0.50	< 0.50
CMW-26dg	2011-02-08	7.0	0.51	< 0.50	< 0.50
CMW-26dg	2011-02-08	7.1	0.51	< 0.50	< 0.50
CMW-26dg	2011-05-09	9.5	0.56	< 0.50	< 0.50
CMW-26dg	2011-05-09	9.6	0.54	< 0.50	< 0.50
CMW-26dg	2011-08-09	6.8	< 0.50	< 0.50	< 0.50
CMW-26dg	2011-08-09	6.7	< 0.50	< 0.50	< 0.50
CMW-26dg	2011-11-09	5.4	< 0.50	< 0.50	< 0.50
CMW-26dg	2011-11-09	5.5	< 0.50	< 0.50	< 0.50
CMW-26dg	2012-02-22	5.3	< 0.50	< 0.50	< 0.50
CMW-26dg	2012-02-22	5.2	< 0.50	< 0.50	< 0.50
CMW-26dg	2012-05-02	8.1	0.51	< 0.50	< 0.50
CMW-26dg	2012-05-02	8.1	0.52	< 0.50	< 0.50
CMW-26dg	2012-07-31	8.2	< 0.50	< 0.50	< 0.50
CMW-26dg	2013-02-13	7.5	< 0.50	< 0.50	< 0.50
CMW-26dg	2013-02-13	7.6	< 0.50	< 0.50	< 0.50
CMW-26dg	2013-05-08	6.5	< 0.50	< 0.50	< 0.50
CMW-26dg	2013-05-08	6.4	< 0.50	< 0.50	< 0.50
CMW-26dg	2013-08-19	3.1	< 1.0	< 1.0	< 1.0
CMW-26dg	2013-11-11	4.0	< 1.0	< 1.0	< 1.0
CMW-26dg	2014-02-03	4.0	< 1.0	< 1.0	< 1.0
CMW-26dg	2014-05-05	4.0	< 1.0	< 1.0	< 1.0
CMW-26dg	2014-08-04	3.5	< 1.0	< 1.0	< 1.0

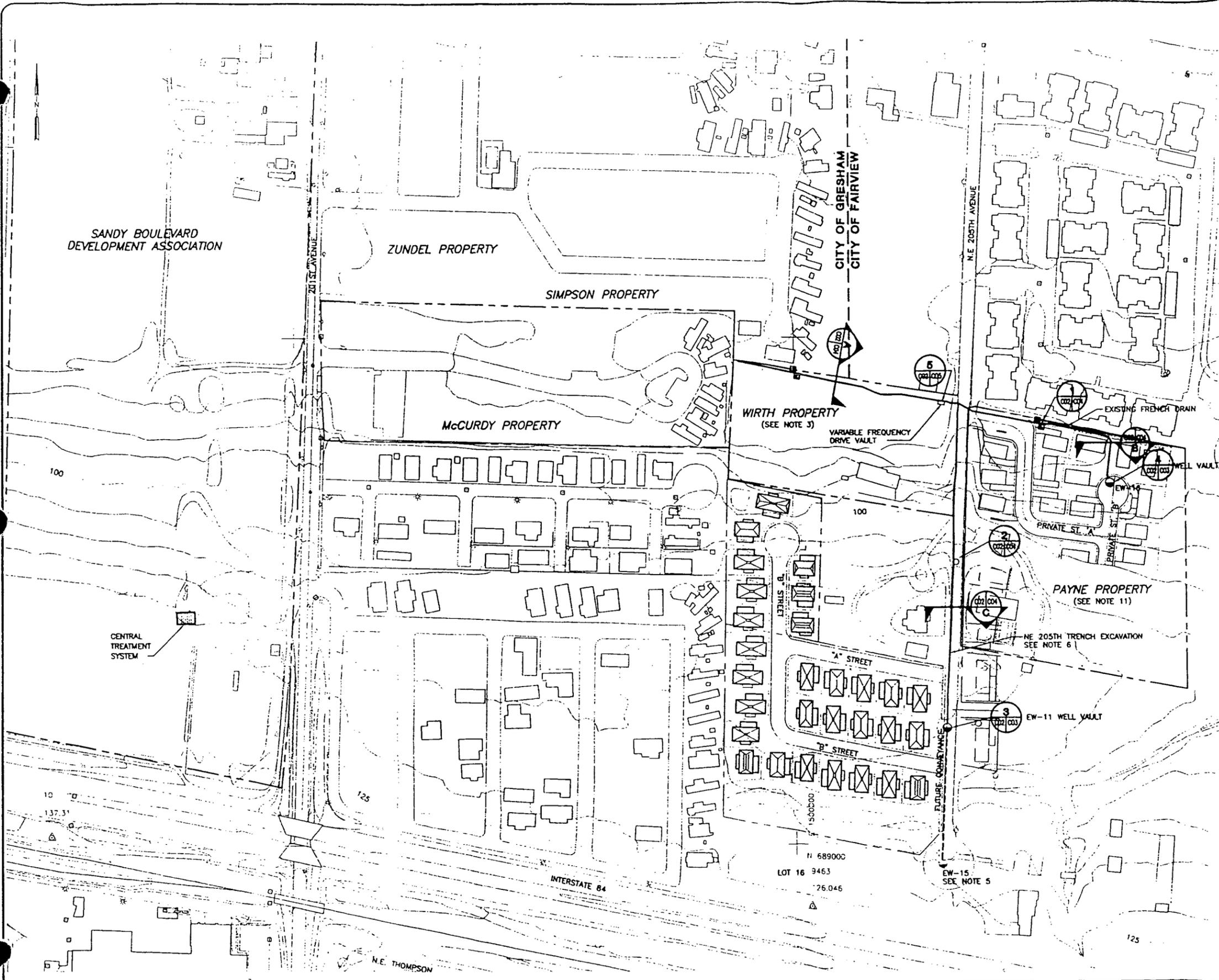
Table 1
 Summary of VOCs in Groundwater at EW-16 and CMW-26dg
 East Multnomah County TSA Remedy

Location	Date Sampled	Trichloroethene (TCE)	Tetrachloroethene (PCE)	cis-1,2-Dichloroethene	Vinyl Chloride
CMW-26dg	2014-11-03	3.8	< 1.0	< 1.0	< 1.0
CMW-26dg	2015-02-02	3.3	< 1.0	< 1.0	< 1.0
CMW-26dg	2015-05-05	2.9	< 1.0	< 1.0	< 1.0
CMW-26dg	2015-08-04	2.3	< 1.0	< 1.0	< 1.0
CMW-26dg	2015-08-04	3.0	< 1.0	< 1.0	< 1.0
CMW-26dg	2015-10-29	3.49	< 1.00	< 1.00	< 1.00
CMW-26dg	2016-02-02	3.30	< 1.00	< 1.00	< 1.00
CMW-26dg	2016-05-03	2.33	< 1.00	< 1.00	< 1.00
CMW-26dg	2016-08-02	2.85	< 1.00	< 1.00	< 1.00
CMW-26dg	2016-11-01	3.95	< 1.00	< 1.00	< 1.00
CMW-26dg	2017-02-08	2.60	< 1.00	< 1.00	< 1.00
CMW-26dg	2017-05-09	2.02	< 1.00	< 1.00	< 1.00
CMW-26dg	2017-08-07	3.40	< 1.00	< 1.00	< 1.00

Notes:

Results are in micrograms per liter
 < = less than the detection limit shown

Attachment A
Excerpts from Eastside Conveyance Line
Construction Report

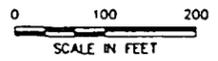


NOTES

1. ELEVATIONS ARE REFERENCED IN FEET TO THE NATIONAL VERTICAL DATUM OF 1929 (FT-MVD), AND NORTHING AND EASTING COORDINATES ARE REFERENCED TO THE OREGON STATE PLANE COORDINATE NORTH ZONE, NORTH AMERICAN DATUM OF 1927.
2. GROUND CONTOURS AND FEATURES ARE BASED UPON 1995 AERIAL MAPPING PERFORMED BY SPENCER GROSS AND ASSOCIATES, AND MAY NOT BE CONSISTENT WITH CURRENT FEATURES. PAYNE PROPERTY FEATURES AND GEOMETRIC COORDINATES ARE APPROXIMATE.
3. WIRTH PROPERTY TREES AND STUMPS TO BE REMOVED AS NECESSARY, FOR THE INSTALLATION OF UTILITIES WITHIN 5' FEET OF THE NORTH PROPERTY LINE.
4. WELL EW-15 MAY BE INSTALLED IN THE FUTURE DEPENDING ON TSA EXTRACTION PERFORMANCE OF EW-11. WATER DISCHARGE PIPING AND ELECTRICAL POWER AND CONTROL CONDUITS WILL BE TERMINATED AT EW-11 FOR EW-15, IN CASE INSTALLATION AND GROUNDWATER EXTRACTION IS REQUIRED.
5. TRENCHING ALONG NE 205 TH WILL BE ALONG THE WESTERN EDGE OF PAVEMENT.
6. EROSION CONTROL EFFORTS USING HAY BALS, SILT FENCES, AND COVERING STOCKPILES WILL BE UTILIZED AT ALL TIMES. NON-PAVED AREAS WILL BE RESTORED TO EXISTING GRADES AND HYDRO-SEEDED. AT UTILITY TRENCHES IN PAVED AREAS, EXCAVATED MATERIAL WILL BE REMOVED DAILY AND IMPORTED CRUSHED ROCK WILL BE IMPORTED AS BACKFILL. THE TRENCHES WILL BE BACKFILLED AS NECESSARY, AND OPEN DITCH WILL BE MINIMIZED AND COVERED WITH A STEEL PLATE DURING NON WORKING PERIODS. DAILY STREET SWEEPING WILL BE PERFORMED AROUND WORK AREAS.
7. A TRAFFIC CONTROL PLAN WILL BE SUBMITTED TO NECESSARY MUNICIPALITIES TO ADDRESS ROAD RIGHT OF WAY WORK.
8. IF AN ARCHEOLOGICAL SITE OR OBJECT IS DISCOVERED DURING ANY SITE ACTIVITIES THE ENGINEER SHALL NOTIFY THE CITY OF GRESHAM OR FAIRVIEW IMMEDIATELY AND DEVELOPMENT ACTIVITY ON THE SITE SHALL BE SUSPENDED.
9. UTILITIES WILL BE FIELD LOCATED AND VERIFIED WITH PROPOSED ALIGNMENT. EXISTING UTILITIES LOCATION MAY WARRANT ALTERNATIVE ALIGNMENT OF PROPOSED CENTRAL TREATMENT SYSTEM UTILITY TRENCH. EMCON WILL NOTIFY THE 'ONE CALL' UTILITY LOCATING SERVICE, AT LEAST 48 HOURS PRIOR TO ANY WORK PER ORS 757.541 TO 757.571.
10. PAYNE PROPERTY CONCRETE CURBING, CONCRETE SIDEWALK, EXISTING FRENCH DRAIN, AND LANDSCAPING TO BE RESTORED TO PRE-CONSTRUCTION CONDITIONS.
11. ALL BACKFILL UNDER PAVED OR CONCRETE SURFACES WILL BE COMPACTED TO 95% OF ASTM 1557 (MODIFIED PROCTOR). FILL WILL BE PLACED IN 6" LIFTS.

LEGEND

- EASTSIDE EXPANSION UTILITY TRENCH
- - - FUTURE UTILITY TRENCH
- ⊙ PROPOSED LOWER TSA EXTRACTION WELL
- - - APPROXIMATE PROPERTY BOUNDARIES
- ⊞ NON-TRAFFIC ELECTRICAL PULL BOX
- TRAFFIC RATED ELECTRICAL PULL BOX

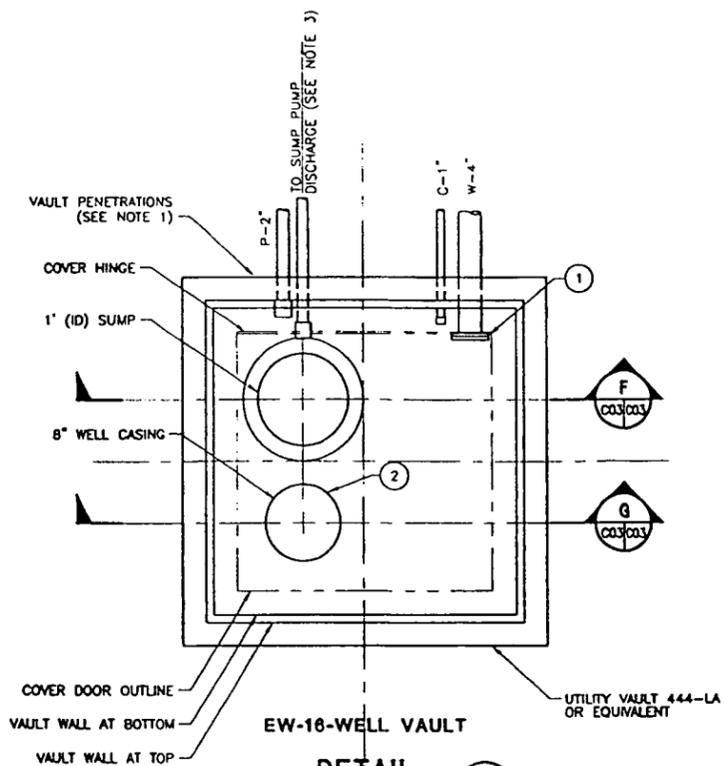


C	5/1/98	AS CONSTRUCTED				
B	10/7/97	ISSUE FOR EASMENT				
A	9/11/97	ISSUE FOR REVIEW				
REV	DATE	DESCRIPTION	OWN BY	DES BY	CHK BY	APP BY
			APS		MYW	
	SEPT 1997		LW		LAD	

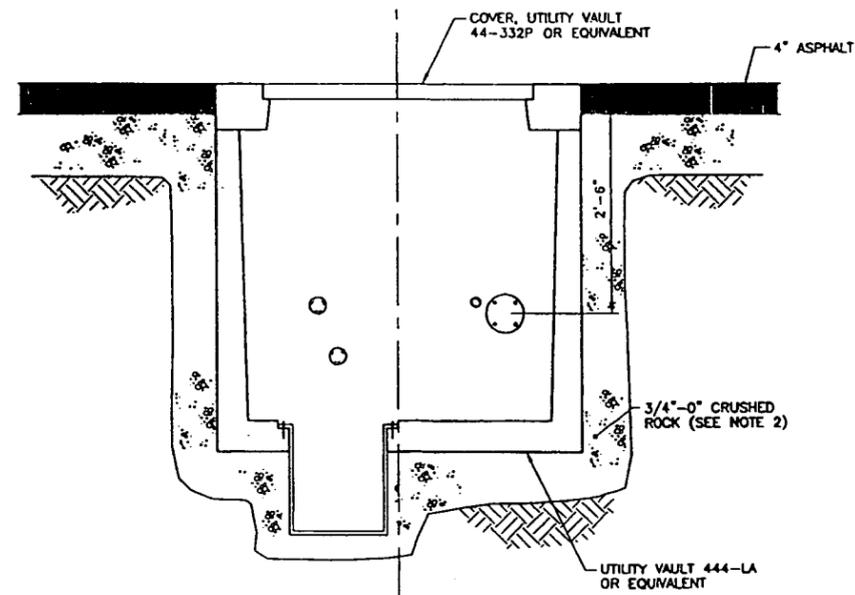


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GRESHAM & FAIRVIEW, OREGON
PHASE 2 TSA REMEDY IMPLEMENTATION
EASTSIDE EXPANSION
SITE PLAN

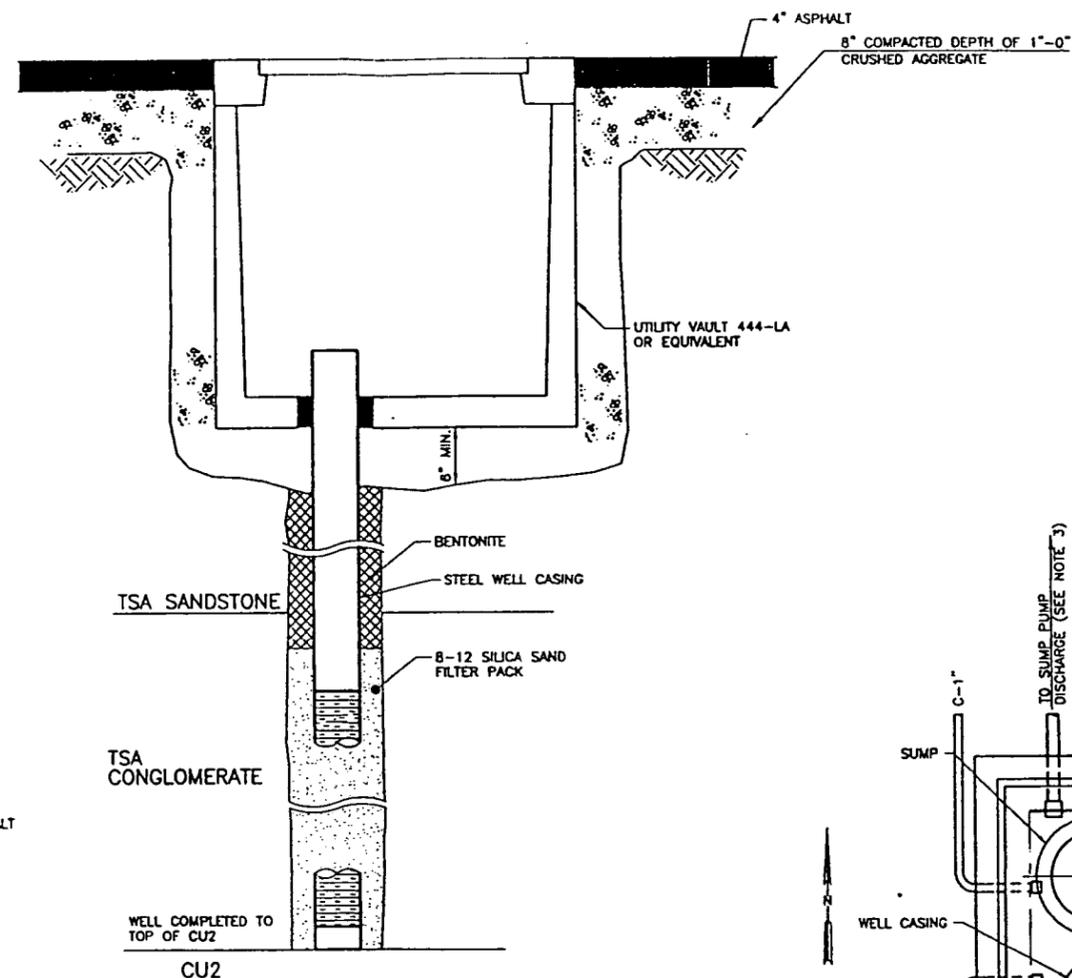
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C02
PROJECT NO.
40683-008.035



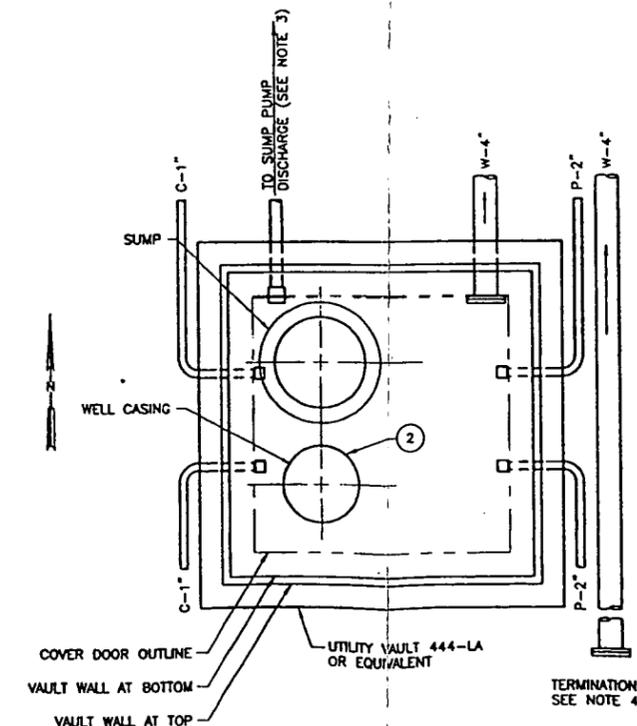
EW-16 WELL VAULT
DETAIL
 SCALE: 1" = 1'-0"
 CO2/CO3



EW-16 WELL VAULT
SECTION
 SCALE: 1" = 1'-0"
 CO2/CO3



WELL VAULT
ELEVATION AT WELL
SECTION
 SCALE: 1" = 1'-0"
 CO2/CO3



EW-11 WELL VAULT
DETAIL
 SCALE: 1" = 1'-0"
 CO2/CO3

NOTES

- ALL VAULT PENETRATIONS AND COVER TO BE SEALED WITH A NON-SHRINK CONCRETE GROUT OR CONCRETE SEALANT.
- OVER EXCAVATE BY A 1' MINIMUM AT WELL VAULT LOCATIONS AND BACKFILL WITH COMPACTED 3/4"-0" CRUSHED ROCK PRIOR TO VAULT PLACEMENT. FOLLOWING VAULT PLACEMENT COMPACT CRUSHED ROCK IN 12" MAXIMUM LIFTS AROUND THE VAULT TO THE SURFACE.
- SUMP PUMP 1 1/2" GI PIPE DISCHARGE TO CAPPED 6" SCH 40 PVC PERFORATED PIPE SET IN VAULT CRUSHED ROCK BACKFILL ACTING AS VAULT RAIN WATER DRY WELL.
- TERMINATE, CAP, AND BURY EW-15 PVC CONDUITS AND HDPE PIPE 5' SOUTH OF EW-11 VAULT.
- ALL BACKFILL UNDER PAVED OR CONCRETE SURFACES WILL BE COMPACTED TO 95% OF ASTM 1557 (MODIFIED PROCTOR). FILL WILL BE IN 6" LIFTS.

EQUIPMENT

- HDPE FLANGE ADAPTER - BLIND FLANGED.
- VAULT BOTTOM TO BE POURED OR CORED WITH A 12" DIAMETER HOLE FOR EXTENSION OF THE WELL CASING INTO THE VAULT.

LEGEND

- P-2" ELECTRICAL POWER CONDUIT, 2" PVC SCH 40
 C-1" CONTROL CONDUIT, 1" PVC SCH 40
 W-4" WELL DISCHARGE, 4" HDPE, SDR 11

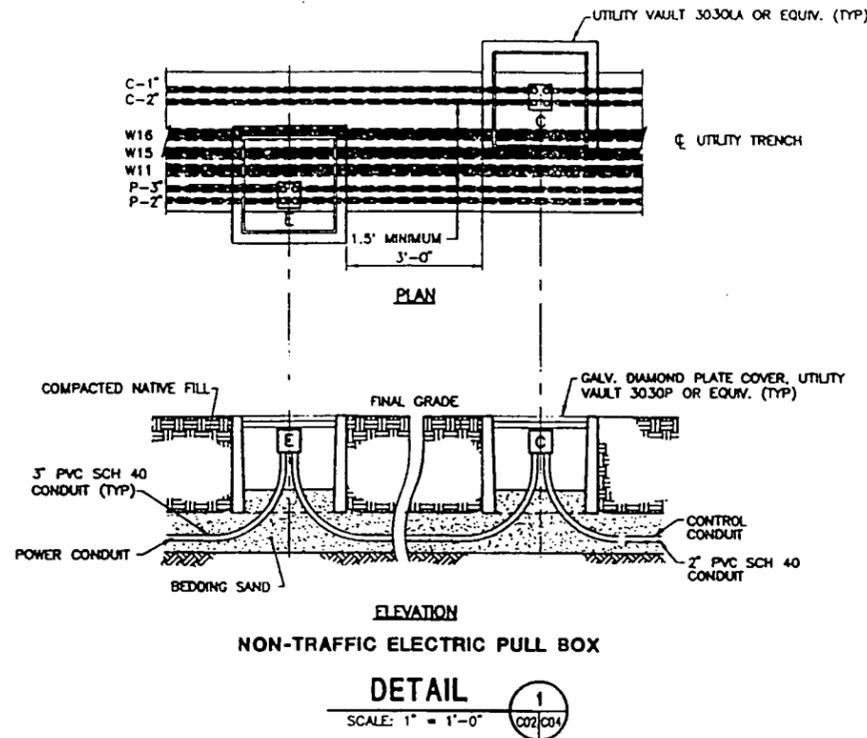
13.035\VAULT\DWG 4/27/98

REV	DATE	DESCRIPTION	OWN BY	DES BY	CHK BY	APP BY	
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B	10/7/97	ISSUE FOR PERMIT		EK			
A	9/11/97	ISSUE FOR REVIEW		EK			
DATE OF ISSUE	SEP 1997	DES BY	L. CURKIN	CHK BY	MVW	APP BY	LAD



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 AND THE BOEING COMPANY
 GRESHAM AND FAIRVIEW, OREGON
PHASE 2 TSA REMEDY IMPLEMENTATION
EASTSIDE EXPANSION
VAULT DETAILS & SECTIONS

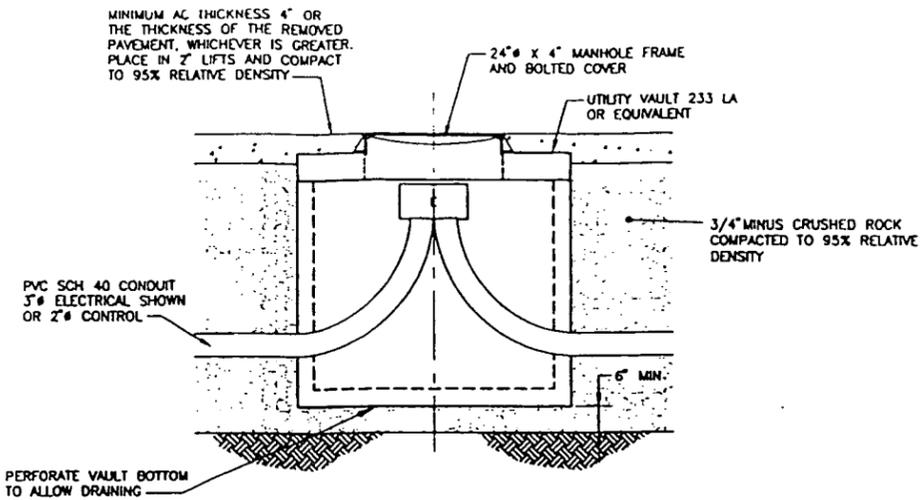
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C03
 PROJECT NO.
 40683-008.035



NON-TRAFFIC ELECTRIC PULL BOX

DETAIL

SCALE: 1" = 1'-0"

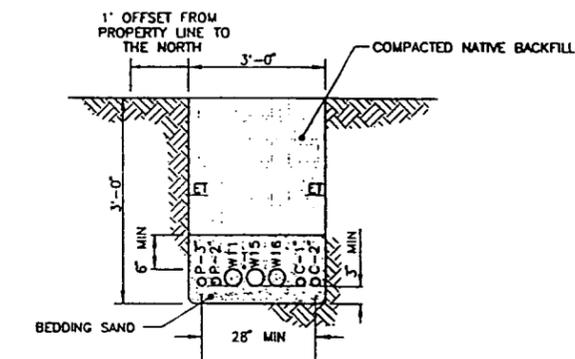


TRAFFIC ELECTRICAL PULL BOX (SEE NOTE 4)

(ROAD SECTION ELEVATION)

DETAIL

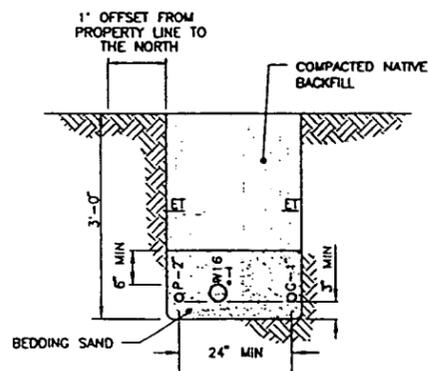
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EW-11 & 15,16 UTILITY TRENCH (SEE NOTE 3)

SECTION

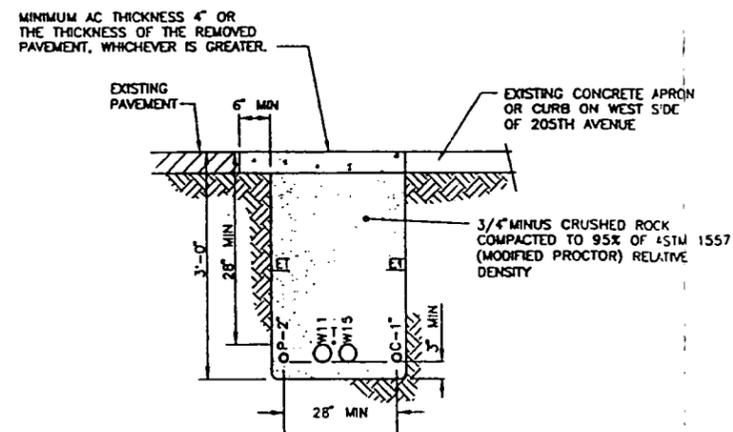
SCALE: NTS



EW-16 UTILITY TRENCH

SECTION

SCALE: NTS



EW-11 & 15 UTILITY TRENCH (ROAD SECTION)

SECTION

SCALE: NTS



LEGEND

P-3	ELECTRICAL POWER CONDUIT, 3" PVC - SCH 40
P-2	ELECTRICAL POWER CONDUIT, 2" PVC - SCH 40
W-11	EW-11 WATER DISCHARGE, 4" HDPE - SDR 11
W-15	EW-15 WATER DISCHARGE, 4" HDPE - SDR 11
W-16	EW-16 WATER DISCHARGE, 4" HDPE - SDR 11
ET	ELECTRICAL WARNING BURIAL TAPE
C-1	CONTROL CONDUIT, 1" PVC - SCH 40
C-2	CONTROL CONDUIT, 2" PVC - SCH 40
T	TRACER WIRE, 14 GAUGE THIN, GREEN, STRANDED

NOTES:

- CRUSHED ROCK UTILITY TRENCH BACKFILL COMPACTED IN 12" MAXIMUM LIFTS.
- ELECTRICAL POWER CONDUIT AND CONTROL CONDUIT TO BE SEPARATED BY A MINIMUM OF 1.5' AND SHOULD CROSS ONLY AT 90 DEGREES.
- CONTROL PULL BOX INSTALLATION IDENTICAL EXCEPT FOR CONDUIT SIZE.
- ADDITIONAL P-2" AND C-1" CONDUITS RUN FROM VFD VAULT TO THE PROPOSED EW-16 FOR POWER AND CONTROL.
- ALL BACKFILL UNDER PAVED OR CONCRETE SURFACES WILL BE COMPACTED TO 95% OF ASTM 1557 (MODIFIED PROCTOR). FILL WILL BE IN 6" LIFTS.
- STREET CUTS AROUND THE PULL BOXES AND EXTRACTION WELL COVERS WILL BE AT RIGHT ANGLES.
- PAVEMENT RESTORATION WILL BE SMOOTH AND PROMOTE DRAINAGE EQUIVALENT TO THE DRAINAGE PRIOR TO THE INSTALLATION OF THE SYSTEM COMPONENTS.

REV	DATE	BY	CHK BY	APP BY
C	5/1/98	AS CONSTRUCTED	MK	
B			EK	
A			EK	
DATE OF ISSUE	DESIGNED BY	CHECKED BY	APPROVED BY	
SEPT 1997	M. KELLY	J. BOY	L. DUBKIN	



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PHASE 2 TSA REMEDY IMPLEMENTATION
EASTSIDE EXPANSION
TRENCH SECTIONS & DETAILS

DRAWING NO.

C04

PROJECT NO.
40683-008.035

