

PDC Energy, Inc.
First Quarter 2017 Groundwater Monitoring Summary

April 18, 2017

Dechant 1-31A Tank Battery
SWSW Section 31 T3N R64W
Weld County, API # 05-123-11685
Facility ID # 444062
Remediation # 9365

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the Dechant 1-31A tank battery. On March 30, 2017, groundwater monitoring was conducted at fourteen monitoring well locations (MW02-R, MW03-R, MW05-R, MW07, MW10-R, MW13, MW17-R, MW18 - MW24). Fourteen groundwater samples were submitted to Summit Scientific Laboratories for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260B. Analytical results are summarized in Table 1 and the laboratory report is included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figure 1. Analytical results from the first quarter 2017 sampling event indicated that BTEX concentrations were above the COGCC regulatory standards in monitoring wells MW05-R, MW21, and MW23. BTEX concentrations were below COGCC regulatory standards at the remaining eleven well locations.

Enhanced fluid recovery (EFR) and air sparge (AS) events were initiated at the site during the third quarter 2015. Mobile EFR/AS events were discontinued following the fourth quarter 2015. A summary of EFR/AS operational data is provided in Table 2.

During the first quarter 2016, a soil vapor extraction (SVE) and AS system was installed on site in order to address remaining dissolved phase BTEX concentrations. The SVE/AS remediation well network is evaluated quarterly based on analytical data and modified to address monitoring well locations with persisting constituent concentrations in exceedance of regulatory standards. The SVE/AS remediation well network is illustrated on Figure 2. Volatile organic compound (VOC) samples are collected from the system effluent on a quarterly basis, in order to monitor performance and calculate the total contaminant mass removed. During the first quarter 2017, a total of 4.93 pounds of hydrocarbon mass were removed. To date, the SVE/AS system has removed approximately 153.35 pounds of hydrocarbon mass. Operation of the SVE/AS remediation system will continue as the selected remediation strategy through the second quarter 2017.

Second quarter 2017 groundwater sampling will be conducted during June 2017.

TABLE 1
DECHANT 1-31A TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
MW01	12/16/2009	<1.0	1.5	47	540	N/A
MW01	6/22/2010	Destroyed				
MW02	12/16/2009	62	1,300	610	5,600	N/A
MW02	6/22/2010	Destroyed				
MW02-R	1/25/2016	<1.0	<1.0	<1.0	<1.0	10.80
MW02-R	3/31/2016	<1.0	<1.0	<1.0	<1.0	9.98
MW02-R	6/30/2016	<1.0	<1.0	<1.0	<1.0	8.72
MW02-R	9/14/2016	<1.0	<1.0	<1.0	<1.0	9.96
MW02-R	12/16/2016	<1.0	<1.0	<1.0	<1.0	10.41
MW02-R	3/30/2017	<1.0	<1.0	<1.0	<2.0	10.30
MW03	12/16/2009	440	6,000	960	12,000	N/A
MW03	6/22/2010	Destroyed				
MW03-R	1/25/2016	<1.0	<1.0	5.7	160	11.32
MW03-R	3/31/2016	<1.0	<1.0	<1.0	<1.0	10.12
MW03-R	6/30/2016	<1.0	<1.0	<1.0	<1.0	8.86
MW03-R	9/14/2016	<1.0	<1.0	1.1	1.3	10.13
MW03-R	12/16/2016	<1.0	<1.0	<1.0	<1.0	10.51
MW03-R	3/30/2017	<1.0	<1.0	<1.0	<2.0	10.37
MW04	12/16/2009	<1.0	13	240	3,000	N/A
MW04	6/22/2010	<1.0	<1.0	23	260	18.05
MW04	9/17/2010	<1.0	<1.0	9.5	81	17.41
MW04	12/9/2010	<1.0	<1.0	1.4	6.7	16.88
MW04	3/10/2011	Destroyed				
MW05	12/16/2009	140	1,400	960	12,000	N/A
MW05	6/22/2010	Destroyed				
MW05-R	1/25/2016	<1.0	<1.0	300	14,000	10.77
MW05-R	3/31/2016	<1.0	<1.0	560	530	9.86
MW05-R	6/30/2016	<1.0	<1.0	250	12,000	8.60
MW05-R	9/14/2016	<1.0	<1.0	530	12,000	9.85
MW05-R	12/16/2016	380	<1.0	420	8,500	10.26
MW05-R	3/30/2017	<1.0	<1.0	550	7,700	10.13

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DECHANT 1-31A TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
MW07	12/16/2009	<1.0	<1.0	<1.0	<1.0	N/A
MW07	6/22/2010	<1.0	<1.0	<1.0	<1.0	21.45
MW07	9/17/2010	<1.0	<1.0	<1.0	<1.0	20.83
MW07	12/9/2010	<1.0	<1.0	<1.0	<1.0	20.32
MW07	3/10/2011	<1.0	<1.0	<1.0	<1.0	20.10
MW07	6/8/2011	<1.0	<1.0	<1.0	<1.0	20.00
MW07	9/26/2011	<1.0	<1.0	<1.0	<1.0	19.71
MW07	12/29/2011	NS	NS	NS	NS	N/A
MW07	3/7/2012	<1.0	<1.0	<1.0	<1.0	19.39
MW07	6/26/2012	<1.0	<1.0	<1.0	<1.0	18.55
MW07	9/20/2012	<1.0	<1.0	<1.0	<1.0	18.89
MW07	12/12/2012	<1.0	<1.0	<1.0	<1.0	18.56
MW07	6/21/2013	<1.0	<1.0	<1.0	<1.0	18.50
MW07	9/23/2013	<1.0	<1.0	<1.0	<1.0	18.71
MW07	12/18/2013	<1.0	<1.0	<1.0	<1.0	18.48
MW07	3/31/2014	<1.0	<1.0	<1.0	<1.0	18.28
MW07	6/17/2014	<1.0	<1.0	<1.0	<1.0	17.20
MW07	9/17/2014	<1.0	<1.0	<1.0	<1.0	16.62
MW07	12/2/2014	<1.0	<1.0	<1.0	<1.0	16.02
MW07	3/16/2015	<1.0	<1.0	<1.0	<1.0	15.23
MW07	6/25/2015	<1.0	<1.0	<1.0	<1.0	13.84
MW07	9/25/2015	<1.0	<1.0	<1.0	<1.0	14.51
MW07	12/16/2015	<1.0	<1.0	<1.0	<1.0	14.05
MW07	3/31/2016	<1.0	<1.0	<1.0	6.1	12.87
MW07	6/30/2016	<1.0	<1.0	<1.0	<1.0	11.56
MW07	9/14/2016	<1.0	<1.0	<1.0	<1.0	12.84
MW07	12/16/2016	<1.0	<1.0	<1.0	<1.0	9.83
MW07	3/30/2017	<1.0	<1.0	<1.0	<2.0	9.70
MW08	12/16/2009	<1.0	<1.0	<1.0	<1.0	N/A
MW08	6/22/2010	Destroyed				
MW09	12/16/2009	<1.0	<1.0	<1.0	<1.0	N/A
MW09	6/22/2010	<1.0	<1.0	<1.0	<1.0	17.62
MW09	9/17/2010	<1.0	<1.0	<1.0	<1.0	17.03

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Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
MW09	12/9/2010	<1.0	<1.0	<1.0	<1.0	16.51
MW09	3/10/2011	<1.0	<1.0	<1.0	<1.0	16.32
MW09	6/8/2011	<1.0	<1.0	<1.0	<1.0	15.15
MW09	9/26/2011	<1.0	<1.0	<1.0	<1.0	15.93
MW09	12/29/2011	<1.0	<1.0	<1.0	<1.0	15.65
MW09	3/7/2012	<1.0	<1.0	<1.0	<1.0	15.59
MW09	6/26/2012	<1.0	<1.0	<1.0	<1.0	14.73
MW09	9/20/2012	NS	NS	NS	NS	N/A
MW09	12/12/2012	<1.0	<1.0	<1.0	<1.0	14.83
MW09	6/21/2013	Destroyed				
MW10	12/16/2009	310	1,000	690	8,700	N/A
MW10	6/22/2010	8.4	5.1	30	720	17.95
MW10	9/17/2010	55	<1.0	45	280	17.36
MW10	12/9/2010	34	<1.0	780	3,700	16.83
MW10	3/10/2011	12	<1.0	870	2,600	16.60
MW10	6/8/2011	<1.0	<1.0	28	140	16.70
MW10	9/26/2011	4.3	5.2	220	3,100	16.29
MW10	12/29/2011	NS	NS	NS	NS	N/A
MW10	3/7/2012	27	12	700	5,300	15.89
MW10	6/26/2012	Destroyed				
MW10-R	8/17/2012	5.8	2.3	460	10,000	N/A
MW10-R	9/20/2012	5.4	<1.0	440	7.5	17.95
MW10-R	12/12/2012	5.8	<1.0	350	7,000	17.88
MW10-R	6/21/2013	5.5	<1.0	330	7,200	17.25
MW10-R	9/23/2013	4.4	<1.0	350	7,500	17.23
MW10-R	12/18/2013	3.4	<1.0	73	6,600	15.69
MW10-R	3/31/2014	8.8	<1.0	570	640	15.52
MW10-R	6/17/2014	4.2	<1.0	100	7,700	14.41
MW10-R	9/17/2014	<1.0	<1.0	450	6,200	13.90
MW10-R	12/2/2014	1.7	<1.0	1,000	13,000	13.23
MW10-R	3/16/2015	<1.0	<1.0	550	7,900	12.46
MW10-R	6/25/2015	<1.0	<1.0	230	2,700	11.09
MW10-R	9/25/2015	<1.0	<1.0	59	240	11.86

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Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
MW10-R	12/16/2015	<1.0	<1.0	130	530	11.41
MW10-R	3/31/2016	<1.0	<1.0	<1.0	3.0	10.22
MW10-R	6/30/2016	<1.0	<1.0	170	1,900	9.11
MW10-R	9/14/2016	<1.0	<1.0	28	140	10.35
MW10-R	12/16/2016	<1.0	<1.0	9.8	78	10.64
MW10-R	3/30/2017	<1.0	<1.0	150	1,100	10.51
MW11	1/18/2010	1.0	<1.0	4.9	<1.0	N/A
MW11	6/22/2010	<1.0	<1.0	<1.0	<1.0	18.70
MW11	9/17/2010	<1.0	<1.0	<1.0	<1.0	18.16
MW11	12/9/2010	<1.0	<1.0	<1.0	<1.0	17.55
MW11	3/10/2011	Destroyed				
MW12	1/18/2010	<1.0	<1.0	<1.0	<1.0	N/A
MW12	6/22/2010	<1.0	<1.0	<1.0	<1.0	18.85
MW12	9/17/2010	<1.0	<1.0	<1.0	<1.0	18.25
MW12	12/9/2010	<1.0	<1.0	<1.0	<1.0	17.69
MW12	3/10/2011	<1.0	<1.0	<1.0	<1.0	17.42
MW12	6/8/2011	<1.0	<1.0	<1.0	<1.0	17.33
MW12	9/26/2011	<1.0	<1.0	<1.0	<1.0	17.16
MW12	12/29/2011	NS	NS	NS	NS	N/A
MW12	3/7/2012	<1.0	<1.0	<1.0	<1.0	16.74
MW12	6/26/2012	Destroyed				
MW13	1/18/2010	35	<1.0	230	73	N/A
MW13	6/22/2010	5.1	<1.0	290	<1.0	18.56
MW13	9/17/2010	13	<1.0	160	<1.0	17.95
MW13	12/9/2010	4.4	<1.0	160	<1.0	17.42
MW13	3/10/2011	<1.0	<1.0	23	3.4	16.15
MW13	6/8/2011	<1.0	<1.0	110	<1.0	17.04
MW13	9/26/2011	2.1	<1.0	190	2.3	16.84
MW13	12/29/2011	<1.0	<1.0	190	<1.0	16.51
MW13	3/7/2012	<1.0	<1.0	150	<1.0	16.45
MW13	6/26/2012	<1.0	<1.0	150	13	15.64
MW13	9/20/2012	NS	NS	NS	NS	N/A

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Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
MW13	12/12/2012	<1.0	<1.0	110	<1.0	15.70
MW13	6/21/2013	2.2	<1.0	110	160	15.61
MW13	9/23/2013	7.2	<1.0	290	1,100	15.75
MW13	12/18/2013	1.6	<1.0	2.7	94	15.56
MW13	3/31/2014	<1.0	<1.0	<1.0	4.8	15.26
MW13	6/17/2014	3.5	<1.0	270	850	14.24
MW13	9/17/2014	<1.0	<1.0	190	120	13.43
MW13	12/2/2014	2.8	<1.0	610	280	13.09
MW13	3/16/2015	2.2	<1.0	530	210	12.31
MW13	6/25/2015	1.8	<1.0	260	310	10.91
MW13	9/25/2015	2.0	<1.0	570	710	11.61
MW13	12/16/2015	1.5	1.3	650	1,400	13.14
MW13	3/31/2016	1.6	1.8	400	1,200	10.33
MW13	6/30/2016	1.5	1.3	360	1,400	9.12
MW13	9/14/2016	1.0	<1.0	460	900	9.55
MW13	12/16/2016	<1.0	22	500	6,300	10.71
MW13	3/30/2017	<1.0	<1.0	410	700	10.58
MW14	1/18/2010	<1.0	<1.0	<1.0	<1.0	N/A
MW14	6/22/2010	<1.0	<1.0	<1.0	<1.0	19.06
MW14	9/17/2010	3.9	<1.0	180	25	18.49
MW14	12/9/2010	<1.0	<1.0	3.8	<1.0	17.94
MW14	3/10/2011	1.2	<1.0	8.8	<1.0	17.64
MW14	6/8/2011	<1.0	<1.0	1.3	<1.0	17.69
MW14	9/26/2011	2.8	<1.0	150	3.0	17.37
MW14	12/29/2011	<1.0	<1.0	26	<1.0	17.03
MW14	3/7/2012	<1.0	<1.0	<1.0	<1.0	16.95
MW14	6/26/2012	Destroyed				
MW15	2/10/2010	240	<1.0	340	1,600	N/A
MW15	6/22/2010	<1.0	<1.0	<1.0	<1.0	17.04
MW15	9/17/2010	Destroyed				
MW16	2/10/2010	44	<1.0	130	450	N/A
MW16	6/22/2010	<1.0	<1.0	4.4	12	16.72

TABLE 1
DECHANT 1-31A TANK BATTERY
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Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
MW16	9/17/2010	Destroyed				
MW17	3/31/2014	<1.0	<1.0	<1.0	<1.0	13.68
MW17	6/17/2014	<1.0	<1.0	<1.0	<1.0	12.58
MW17	9/17/2014	<1.0	<1.0	<1.0	<1.0	12.04
MW17	12/2/2014	<1.0	<1.0	<1.0	6.6	11.42
MW17	3/16/2015	<1.0	<1.0	1.5	2.0	10.61
MW17	6/25/2015	<1.0	<1.0	<1.0	<1.0	9.23
MW17	9/25/2015	<1.0	<1.0	<1.0	<1.0	9.92
MW17	12/16/2015	<1.0	<1.0	<1.0	<1.0	9.48
MW17 ⁽²⁾	3/31/2016	NS	NS	NS	NS	NM
MW17	6/30/2016	Destroyed				NM
MW17-R	9/14/2016	<1.0	<1.0	<1.0	<1.0	8.58
MW17-R	12/16/2016	<1.0	<1.0	<1.0	<1.0	8.98
MW17-R	3/30/2017	<1.0	<1.0	<1.0	<2.0	8.84
MW18	3/31/2014	<1.0	<1.0	<1.0	<1.0	14.00
MW18	6/17/2014	<1.0	<1.0	<1.0	<1.0	12.92
MW18	9/17/2014	<1.0	<1.0	<1.0	<1.0	12.40
MW18	12/2/2014	<1.0	<1.0	<1.0	<1.0	11.74
MW18	3/16/2015	<1.0	<1.0	<1.0	<1.0	10.95
MW18	6/25/2015	<1.0	<1.0	<1.0	<1.0	9.55
MW18	9/25/2015	<1.0	<1.0	<1.0	<1.0	10.35
MW18	12/16/2015	<1.0	<1.0	<1.0	<1.0	9.91
MW18	3/31/2016	<1.0	<1.0	<1.0	<1.0	8.66
MW18	6/30/2016	<1.0	<1.0	<1.0	<1.0	7.61
MW18	9/14/2016	<1.0	<1.0	<1.0	<1.0	8.96
MW18	12/16/2016	<1.0	<1.0	<1.0	<1.0	9.49
MW18	3/30/2017	<1.0	<1.0	<1.0	<2.0	9.37
MW19	3/31/2014	<1.0	<1.0	<1.0	<1.0	14.37
MW19	6/17/2014	<1.0	<1.0	<1.0	<1.0	13.29
MW19	9/17/2014	<1.0	<1.0	<1.0	<1.0	12.75
MW19	12/2/2014	<1.0	<1.0	<1.0	<1.0	12.10
MW19	3/16/2015	<1.0	<1.0	<1.0	<1.0	11.31

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COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
MW19	6/25/2015	<1.0	<1.0	<1.0	<1.0	9.93
MW19	9/25/2015	<1.0	<1.0	<1.0	<1.0	10.63
MW19	12/16/2015	<1.0	<1.0	<1.0	<1.0	10.19
MW19	3/31/2016	<1.0	<1.0	<1.0	<1.0	8.94
MW19	6/30/2016	<1.0	<1.0	<1.0	<1.0	8.28
MW19	9/14/2016	<1.0	<1.0	<1.0	<1.0	9.59
MW19	12/16/2016	<1.0	<1.0	<1.0	<1.0	10.05
MW19	3/30/2017	<1.0	<1.0	<2.0	<1.0	9.92
MW20	3/31/2014	<1.0	<1.0	<1.0	46	14.85
MW20	6/17/2014	<1.0	<1.0	<1.0	2.5	13.73
MW20	9/17/2014	<1.0	<1.0	<1.0	<1.0	13.21
MW20	12/2/2014	<1.0	<1.0	<1.0	<1.0	12.55
MW20	3/16/2015	<1.0	<1.0	<1.0	<1.0	11.77
MW20	6/25/2015	<1.0	<1.0	<1.0	<1.0	10.39
MW20	9/25/2015	<1.0	<1.0	<1.0	<1.0	11.16
MW20	12/16/2015	<1.0	<1.0	<1.0	<1.0	10.73
MW20	3/31/2016	<1.0	<1.0	<1.0	<1.0	9.97
MW20	6/30/2016	<1.0	<1.0	<1.0	<1.0	8.72
MW20	9/14/2016	<1.0	<1.0	<1.0	<1.0	9.96
MW20	12/16/2016	<1.0	<1.0	<1.0	<1.0	10.35
MW20	3/30/2017	<1.0	<1.0	<1.0	<2.0	10.21
MW21	3/31/2014	<1.0	<1.0	250	1,000	14.56
MW21	6/17/2014	<1.0	<1.0	470	3,200	13.47
MW21	9/17/2014	<1.0	<1.0	380	3,400	12.97
MW21	12/2/2014	2.5	2.2	1,400	18,000	12.31
MW21	3/16/2015	3.3	3.7	1,700	26,000	11.52
MW21	6/25/2015	4.5	4.9	1,300	21,000	10.14
MW21	9/25/2015	2.6	3.6	840	14,000	10.92
MW21	12/16/2015	1.6	2.6	590	8,400	10.49
MW21	3/31/2016	2.7	3.0	860	1,100	9.91
MW21	6/30/2016	1.8	2.7	630	8,900	8.66
MW21	9/14/2016	2.8	2.5	1,000	11,000	9.91
MW21	12/16/2016	2.7	1.4	100	820	10.32

TABLE 1
DECHANT 1-31A TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
MW21	3/30/2017	2.7	<1.0	1,100	7,300	10.20
MW22	3/31/2014	<1.0	<1.0	<1.0	<1.0	13.92
MW22	6/17/2014	<1.0	<1.0	<1.0	<1.0	12.82
MW22	9/17/2014	<1.0	<1.0	<1.0	<1.0	12.30
MW22	12/2/2014	<1.0	<1.0	<1.0	<1.0	11.62
MW22	3/16/2015	<1.0	<1.0	<1.0	12	10.83
MW22	6/25/2015	<1.0	<1.0	<1.0	12	9.46
MW22	9/25/2015	<1.0	<1.0	<1.0	<1.0	10.16
MW22	12/16/2015	<1.0	<1.0	<1.0	3.6	9.73
MW22	3/31/2016	<1.0	<1.0	<1.0	4.2	8.45
MW22	6/30/2016	<1.0	<1.0	<1.0	<1.0	7.14
MW22	9/14/2016	<1.0	<1.0	<1.0	<1.0	8.44
MW22	12/16/2016	<1.0	<1.0	<1.0	<1.0	9.09
MW22	3/30/2017	<1.0	<1.0	<1.0	<2.0	8.97
MW23	1/25/2016	18	7.9	1,300	13,000	11.03
MW23	3/31/2016	39	15	1,300	650	10.20
MW23	6/30/2016	1.0	1.6	200	3,700	9.00
MW23	9/14/2016	8.9	<1.0	390	4,500	10.22
MW23	12/16/2016	39	<1.0	210	1,700	10.67
MW23	3/30/2017	11	<1.0	330	1,800	10.52
MW24	1/25/2016	<1.0	<1.0	<1.0	2.5	11.19
MW24	3/31/2016	<1.0	<1.0	<1.0	7.0	10.30
MW24	6/30/2016	<1.0	<1.0	<1.0	<1.0	9.10
MW24	9/14/2016	<1.0	<1.0	<1.0	<1.0	10.30
MW24	12/16/2016	<1.0	<1.0	<1.0	2.5	10.79
MW24	3/30/2017	<1.0	<1.0	<1.0	<2.0	10.65

TABLE 1
DECHANT 1-31A TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective January 30, 2015.
2. Depth to water measurements collected prior to fourth quarter 2016 were measured from top of casing for monitoring well samples. Subsequent monitoring well measurements were collected from top of casing and adjusted using survey data and product thickness to reflect depth of water from ground surface.
3. Well inaccessible due to standing water during first quarter 2016 sampling event.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

(<) = Analytical result is less than the indicated laboratory reporting limit.

NS = Not sampled, well inaccessible

NM = Not measured

N/A = LT Environmental, Inc. field data not available

BOLD = Analytical result is not in compliance with COGCC groundwater standards.

TABLE 2
DECHANT 1-31A TANK BATTERY
EFR / AS OPERATIONAL SUMMARY TABLE

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Air Injection Pressure (psi)	Average Air Flow Rate (cfm)
Third Quarter 2015						
7/8/2015	MW10R, MW18, MW20, MW21	6	15	MW10R, MW21	20	20
7/22/2015		6	0		20	35
8/5/2015		6	0		20	35
8/19/2015		6	0		20	37.5
9/2/2015		6	0		20	35
9/16/2015		6	60		20	37.5
9/28/2015		6	0		20	40
Quarterly Totals		42	75		-	-
Fourth Quarter 2015						
10/14/2015	MW10R, MW18, MW20, MW21	6	10	MW10R, MW21	20	42.5
10/28/2015		6	0		20	30
11/14/2015	MW10R, MW18, MW21	6	4		20	40
11/25/2015	MW10R, MW18, MW20, MW21	6	15		20	30
12/10/2015		6	60		20	30
12/22/2015		6	10		20	30
Quarterly Totals		36	99			-

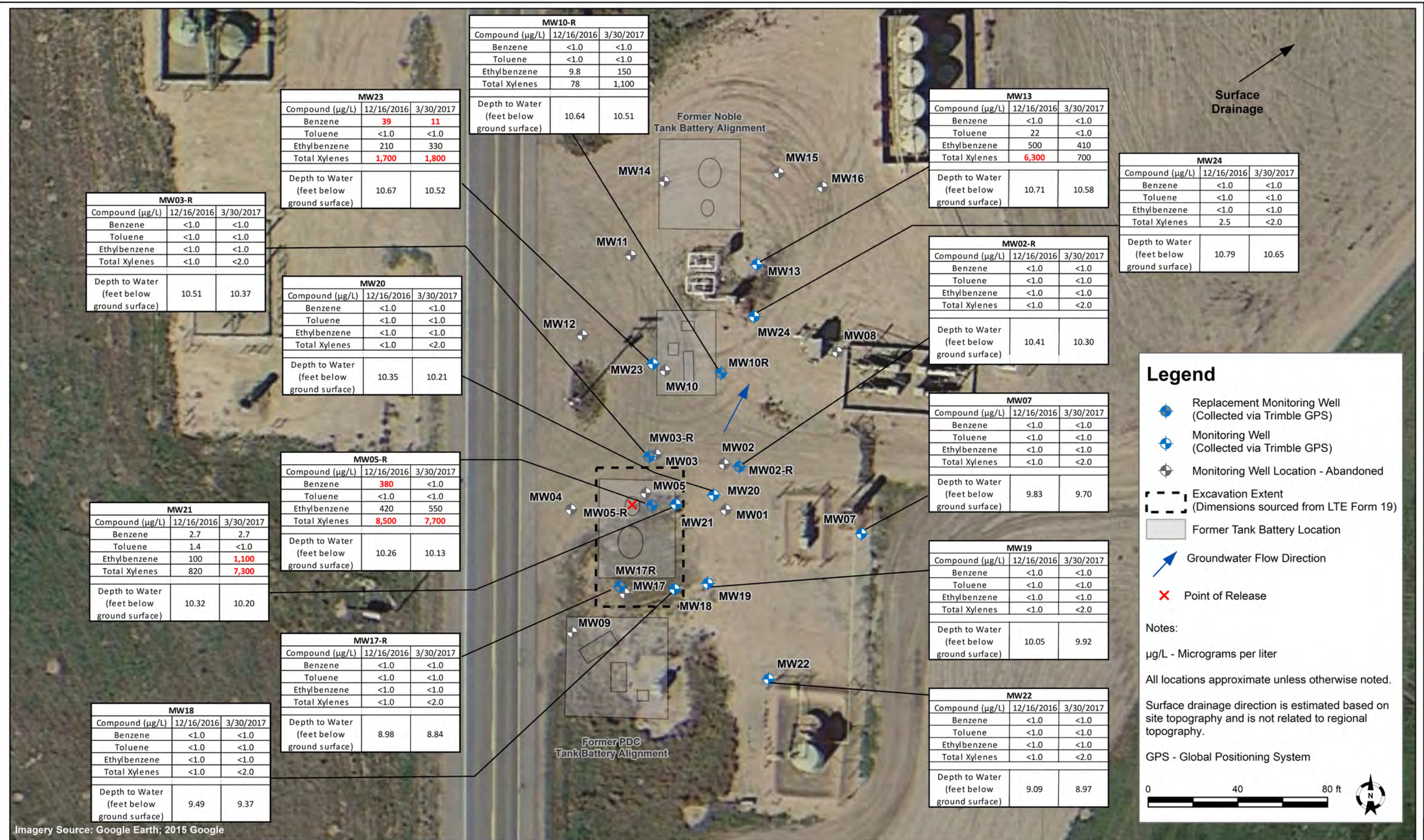
Notes:

EFR = Enhanced fluid recovery

AS = Air sparge

psi = Pounds per square inch

cfm = Cubic feet per minute





DATE:	April 2017
DESIGNED BY:	C. Hamlin
DRAWN BY:	D. Arnold



TASMAN
GEOSCIENCES

Tasman Geosciences, Inc.
6899 Pecos Street - Unit C
Denver, CO 80221

PDC Energy - DJ Basin
Dechant 1-31 A Tank Battery
SWSW Section 31, Township 3 North, Range 64 West
Weld County, Colorado

REMEDATION SYSTEM
OVERVIEW MAP

FIGURE
2

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 05, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Dechant 1-31A

Enclosed are the results of analyses for samples received by Summit Scientific on 03/30/17 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'Ben Shrewsbury', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury
Laboratory Manager



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW02R	1703302-01	Water	03/30/17 11:20	03/30/17 16:30
MW03R	1703302-02	Water	03/30/17 11:18	03/30/17 16:30
MW05R	1703302-03	Water	03/30/17 11:34	03/30/17 16:30
MW07	1703302-04	Water	03/30/17 11:37	03/30/17 16:30
MW10R	1703302-05	Water	03/30/17 11:07	03/30/17 16:30
MW13	1703302-06	Water	03/30/17 10:53	03/30/17 16:30
MW17R	1703302-07	Water	03/30/17 12:01	03/30/17 16:30
MW18	1703302-08	Water	03/30/17 12:18	03/30/17 16:30
MW19	1703302-09	Water	03/30/17 12:15	03/30/17 16:30
MW20	1703302-10	Water	03/30/17 11:55	03/30/17 16:30
MW21	1703302-11	Water	03/30/17 11:48	03/30/17 16:30
MW22	1703302-12	Water	03/30/17 12:39	03/30/17 16:30
MW23	1703302-13	Water	03/30/17 11:06	03/30/17 16:30
MW24	1703302-14	Water	03/30/17 10:50	03/30/17 16:30

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

Summit Scientific

1703302.1

741 Corporate Circle Suite 1 ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 2

Client: PDC / Tasman Geosciences

Address: 6899 Pecos St. Unit C

City/State/Zip: Denver, CO 80221

Phone: 303-487-1228 Fax:

Sampler Name: Max Garza, Mitch Weller

Project Manager: Mark Longhurst

E-Mail: mark.longhurst@pdce.com

Project Name: Dechant 1-31A

Project Number: N/A

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX - 8260			
MW02R	3/30/17	11:20	3			X		X				X			
MW03R		11:18													
MW05R		11:34													
MW07		11:37													
MW08R		11:07													
MW13		10:53													
MW17R		12:01													
MW18		12:18													
MW19		12:15													
MW20		11:55													

Relinquished by: Max Garza	Date/Time: 3/30/17 1630	Received by: MLD	Date/Time: 3/30/17 1630	Turn Around Time (Check)	Notes:
Relinquished by: MLD	Date/Time: 3/30/17 1710	Received by: OS 3-30	Date/Time: 1710	Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input checked="" type="checkbox"/> Standard	on ice
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	Sample Integrity: Temperature Upon Receipt: 1.7°C	
				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

Summit Scientific

1703302.2

741 Corporate Circle Suite 1 ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 2 of 2

Client: PDC / Tasman Geosciences
Address: 6899 Pecos St, Unit C
City/State/Zip: Denver, CO 80221
Phone: 303-487-1228 Fax:
Sampler Name: Max Garza, Mitch Weiler

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: Dechant 1-31A
Project Number: N/A

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions			
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX - 8260						
MW21	3/30/17	11:48	3			X		X				X						
MW22		12:39				X		X				X						
MW23		11:06				X		X				X						
MW24		11:50				X		X				X						
[Diagonal line across the table]																		
Relinquished by: Max Garza 3/30/17 1630				Date/Time: 3/30/17 1630				Received by: MD 3/30/17 1630				Date/Time: 3/30/17 1630				Turn Around Time (Check)		Notes: on ice
Relinquished by: MD 3/30/17 1710				Date/Time: 3/30/17 1710				Received by: MD 3/30/17 1710				Date/Time: 3/30/17 1710				Sample Integrity:		
Relinquished by:				Date/Time:				Received in Lab by:				Date/Time:				Temperature Upon Receipt: 1.7°C		
																Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

Sample Receipt Checklist

S2 Work Order: 1703302

Client: PDC/Tasman

Client Project ID: Dechant 1-31A

Shipped Via: PIU

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: _____
(Describe)

Cooler ID					
Temp (°C)	<u>1.7</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?				
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

Nakita
Custodian Printed Name

[Signature]
Signature of Initials of Custodian

3/30/17 1710
Date/Time



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW02R
1703302-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/30/17 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		102 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW03R
1703302-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 11:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/30/17 11:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		102 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW05R
1703302-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 11:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	550	100	"	100	"	"	"	"	
Xylenes (total)	7700	200	"	"	"	"	"	"	

Date Sampled: **03/30/17 11:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		97.5 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		104 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW07
1703302-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 11:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/30/17 11:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		101 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW10R
1703302-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 11:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	150	1.0	"	"	"	"	"	"	
Xylenes (total)	1100	50	"	25	"	"	"	"	

Date Sampled: **03/30/17 11:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.0 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		103 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW13
1703302-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	410	25	"	25	"	"	"	"	
Xylenes (total)	700	50	"	"	"	"	"	"	

Date Sampled: **03/30/17 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.6 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		103 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW17R
1703302-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 12:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/30/17 12:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.2 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		100 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW18
1703302-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 12:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/30/17 12:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		100 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW19
1703302-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/30/17 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		102 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW20
1703302-10 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/30/17 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW21
1703302-11 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	2.7	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	1100	100	"	100	"	"	"	"	
Xylenes (total)	7300	200	"	"	"	"	"	"	

Date Sampled: **03/30/17 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.4 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		100 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW22
1703302-12 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/30/17 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.5 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		99.1 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW23
1703302-13 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 11:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	11	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	330	100	"	100	"	"	"	"	
Xylenes (total)	1800	200	"	"	"	"	"	"	

Date Sampled: **03/30/17 11:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		91.8 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.7 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

MW24
1703302-14 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/30/17 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1703362	04/01/17	04/01/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **03/30/17 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.3 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1703362 - EPA 5030 Water MS

Blank (1703362-BLK1)

Prepared & Analyzed: 04/01/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.3	101	37-154				
Surrogate: Toluene-d8	13.6		"	13.3	102	45-149				
Surrogate: 4-Bromofluorobenzene	13.9		"	13.3	104	45-146				

LCS (1703362-BS1)

Prepared & Analyzed: 04/01/17

Benzene	29.3	1.0	ug/l	33.3	88.0	51-132				
Toluene	33.9	1.0	"	33.3	102	51-138				
Ethylbenzene	38.3	1.0	"	33.1	116	58-146				
m,p-Xylene	78.8	2.0	"	66.5	118	57-144				
o-Xylene	36.2	1.0	"	32.7	111	53-146				
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.3	103	37-154				
Surrogate: Toluene-d8	13.2		"	13.3	99.1	45-149				
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3	98.7	45-146				

Matrix Spike (1703362-MS1)

Source: 1703302-01

Prepared & Analyzed: 04/01/17

Benzene	29.4	1.0	ug/l	33.3	ND	88.3	34-141			
Toluene	33.9	1.0	"	33.3	ND	102	27-151			
Ethylbenzene	38.6	1.0	"	33.1	ND	117	29-160			
m,p-Xylene	80.4	2.0	"	66.5	ND	121	20-166			
o-Xylene	37.0	1.0	"	32.7	ND	113	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.0		"	13.3	105	37-154				
Surrogate: Toluene-d8	13.2		"	13.3	98.9	45-149				
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3	100	45-146				

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1703362 - EPA 5030 Water MS

Matrix Spike Dup (1703362-MSD1)	Source: 1703302-01			Prepared & Analyzed: 04/01/17						
Benzene	29.7	1.0	ug/l	33.3	ND	89.1	34-141	0.914	32	
Toluene	34.0	1.0	"	33.3	ND	102	27-151	0.501	25	
Ethylbenzene	38.0	1.0	"	33.1	ND	115	29-160	1.41	50	
m,p-Xylene	78.4	2.0	"	66.5	ND	118	20-166	2.56	36	
o-Xylene	36.2	1.0	"	32.7	ND	111	33-159	2.13	26	
Surrogate: 1,2-Dichloroethane-d4	14.5		"	13.3		109	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		101	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101	45-146			

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Dechant 1-31A

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/05/17 15:18

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference