

AP - 111

AGWMR (2)

2018

APPENDIX A
SEPARATE PHASE HYDROCARBON RECOVERY LOGS

APPENDIX A - RW-1 HYDROCARBON RECOVERY LOG
2/22/05 thru 2018

Measurement Date	Time	Quarter	Method	Status	Depth to Product (ft)	Depth to Water (ft)	Product Thickness Level ² (ft)	Product Bailed or Purged ² (gal)	Water Purged ² (gal)
2/22/2005	8:30	1st	NR	Start	32.46	36.5	4.04	14	NR
3/2/2005	7:45	1st	NR	Start	32.42	36.44	4.02	9	NR
3/8/2005	8:30	1st	NR	Start	31.92	36.35	4.43	15	NR
3/9/2005	830	1st	NR	Start	31.92	37.5	5.58	4	NR
3/11 to 3/18/05	NR	1st	NR	Start	NR	NR	NR	74	NR
3/18 to 3/23/05	NR	1st	Pump	Continue pumping	NR	NR	NR	48	NR
3/23 to 4/1/05	NR	1st	Pump	Continue pumping	NR	NR	NR	62	NR
4/1 To 4/4/05		2nd	Pump	Pump shutdown to measure	NR	NR	NR	27	NR
4/5/2005	11:30	2nd	Pump		34.75	38.92	4.17	NR	NR
4/4 to 4/15/05	11:00	2nd	Pump	Continue pumping	NR	NR	NR	50	NR
4-15 to 5-5-05	12:30	2nd	Pump	Continue pumping	NR	NR	NR	45	154
5-5 to 6-17-05	11:30	2nd	Pump	Continue pumping	NR	NR	NR	24	196
6/27/2005	14:30	2nd		Pump shutdown to measure	NR	NR	NR	NR	NR
6/28/2005	11:30	2nd			32.46	33.25	0.79	NR	NR
6/28/2005		2nd	Pump	Continue pumping	NR	NR	NR	NR	NR
6/17 to 7/8/2005	10:30	2nd	Pump	Continue pumping	NR	NR	NR	18	146
7/8 to 8/9/2005	13:30	3rd	Pump	Continue pumping	NR	NR	NR	28	350
8/9 to 9/16/2005	11:35	3rd			36.46	36.54	0.08	8	240
12/5/2005	13:15	4th			31.92	34.71	2.79	NR	NR
12/8/2005	14:00	4th	Pump	Start	NR	NR	NR	NR	NR
12/22/2005	15:30	4th		stop	NR	NR	NR	5	120
12/29/2005	14:00	4th	Bailer	Hand bailed	NR	NR	NR	0.5	4.5
3/16/2006	13:00	1st.			NR	NR	NR	NR	NR
3/16/2006	14:30	1st.	Pump	Start	32.23	34.48	2.25	NR	NR
3/23/2006	14:30	1st.		Stop	NR	NR	NR	NR	NR
3/27/2006	15:30	1st.	Pump	Start	NR	NR	NR	NR	NR
3/31/2006	11:30	1st.	Pump	Continue pumping	NR	NR	NR	7	174
4/3/2006	11:30	2nd		Stop	NR	NR	NR	1	38
4/4/2006	11:00	2nd			32.75	33.08	0.33	NR	NR
6/6/2006	13:00	2nd			32.39	34.54	2.15	NR	NR
6/8/2006	15:00	2nd	Pump	Start	NR	NR	NR	NR	NR
6/29/2006	10:00	2nd		Stop	NR	NR	NR	8	365
7/31/2006	11:45	3rd			33.06	33.48	0.42	NR	NR
7/31/2006	11:45	3rd	Pump	Start pump	NR	NR	NR	NR	NR
8/3/2006	14:20	3rd		Stopped pump	NR	NR	NR	2	87
8/8/2006	9:00	3rd	Pump	Start pump	NR	NR	NR	NR	NR
8/10/2006	15:30	3rd	Pump	Start pump	NR	NR	NR	NR	NR
8/22/2006	9:00	3rd		Stopped. Pulled pump	NR	NR	NR	4.9	373
8/22/2006	9:45	3rd	Pump	Start pump	33.1	33.4	0.3	NR	NR

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Measurement Date	Time	Quarter	Method	Status	Depth to Product (ft)	Depth to Water (ft)	Product Thickness Level ² (ft)	Product Bailed or Purged ² (gal)	Water Purged ² (gal)
12/21/2006	15:55	4th	Pump	Start pump	35.2	36	0.8	0.62	70
2/21/2007	10:15	1st.	Pump	Start pump	33.42	34.6	1.18	0.63	53.5
6/5/2007	10:00	2nd		Compressor Down	32.42	32.71	0.29	NR	NR
6/5/2007	10:10	2nd		Hand Bailed	NR	NR	NR	0.05	9
6/6/2007	8:40	2nd		Hand bailed	NR	NR	NR	0.1	11
6/13/2007	14:00	2nd		Hand bailed	NR	NR	NR	0.1	12
6/14/2007	10:40	2nd		Hand bailed	NR	NR	NR	0.05	8
7/10/2007	10:08	3rd		Hand bailed	32.42	32.71	0.29	0.3	18
7/11/2007	9:25	3rd		Hand bailed	NR	NR	NR	0.21	NR
7/23/2007	10:00	3rd		Hand bailed	NR	NR	NR	0.1	NR
11/26/2007	10:50	4th		Hand bailed	30.76	36.45	5.69	0.18	37
2/18/2008	15:32	1st.		Hand Bailed - pump frozen	30.18	34.77	4.59	1.66	36
5/21/2008	14:10	2nd	Pump	Used Pump	30.33	34.57	4.24	1.39	51
9/12/2008 ¹	14:30	3rd		Bladder pump malfunctioned	30.03	34.59	4.56	Not Bailed	0
11/13/2008	13:00	4th	Pump	Used Pump	30.02	34.63	4.61	0.94	65
2/11/2009	14:05	1st.	Pump	Used Pump	30.21	31.72	1.51	0.29	90
5/5/2009	11:30	2nd	Pump	Used Pump	30.22	30.8	0.58	0.41	76
8/10/2009	9:22	3rd	Pump	Used Pump	30.69	31.02	0.33	0.89	98
10/28/2009	10:55	4th	Pump	Used Pump	30.56	30.75	0.19	0.19	74
3/3/2010	9:00	1st	Pump	Used Pump	30.89	31.05	0.16	0.21	31
6/3/2010	13:10	2nd	Pump	Used Pump	30.99	31.09	0.1	0.1	32
9/20/2010	14:00	3rd	Pump	Used Pump	29.91	30.06	0.15	0.25	34
11/3/2010	9:10	4th	Pump	Used Pump	30.89	31.01	0.12	0.1	31
3/9/2011	10:19	1st	Pump	Used Pump	30.04	30.15	0.11	0.12	40
6/27/2011	8:05	2nd	Pump	Used Pump	30.52	30.63	0.11	0.1	45
10/3/2011	15:07	Annual	Pump	Used Pump	30.81	30.9	0.09	0.11	42
11/8/2011	8:30		Pump	Used Pump	30.77	30.85	0.08	0.09	38
3/15/2012	10:30	1st	Pump	Used Pump	29.31	29.34	0.03	0.02	22
6/4/2012	9:00	2nd	Pump	Used Pump	29.39	29.41	0.02	0.05	40
8/13/2012	10:30	3rd	Pump	Used Pump	29.54	30.13	0.59	0.4	40
10/8/2012	9:40	4th	Pump	Used Pump	29.28	30.18	0.9	0.5	35
3/26/2013	10:25	1st	Pump	Used Pump	29.11	32.6	3.49	0.028	24
6/17/2013	11:50	2nd	Pump	Used Pump	29.37	33.1	3.73	0.75	18
9/16/2013	11:05	3rd	Pump	Used Pump	28.75	33.09	4.34	0.8	19
11/12/2013	9:25	4th	Pump	Used Pump	28.73	33.11	4.38	0.75	25
3/7/2014	NR	1st	Pump	Used Pump	28.15	31.65	3.5	0.75	28
6/9/2014	NR	2nd	Pump	Used Pump	28.31	33.06	4.75	0.75	25
9/18/2014 ³	NR	3rd		Annual Sampling Only	28.05	Unknown			

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2/22/05 thru 2018

Measurement Date	Time	Quarter	Method	Status	Depth to Product (ft)	Depth to Water (ft)	Product Thickness Level ² (ft)	Product Bailed or Purged ² (gal)	Water Purged ² (gal)
11/13/2014	NR	4th	Pump	Used Pump	28.11	33.04	4.93	0.87	30
3/23/2015	3:00	1st	Pump	Pump	28.20	32.80	4.6	0.5	25
6/9/2015	4:25	2nd	Pump	Pump	27.70	32.10	4.4	0.75	15
8/23/2015 ³	10:10	3rd	Pump	Pump	28.08	30.02	1.94	None	None
10/29/2015	9:15	4th	Pump	Pump	27.65	30.10	2.45	0.75	14
3/4/2016	0:00	1st			28.05	30.55	2.5	None	None
6/8/2016	0:00	2nd			27.98	31.80	3.82	3.5	28
9/13/2016	2:05	3rd			27.90	32.04	4.14	2.5	10
11/16/2016	1:00	4th	Bailer		27.80	30.90	3.1	2.5	15
3/16/2017	0:00	1st	Pump		27.05	30.55	3.5	4	14
6/20/2017	0:00	2nd	Pump		26.77	28.42	1.65	2.5	18
9/19/2017	12:25	3rd	Bailer		26.52	27.60	1.08	2.5	10
12/12/2017	1:20	4th	Bailer		26.50	27.50	1	2	NR
2/14/2018	11:30	1st	Bailer		26.94	27.22	0.28	0.5	0.5
5/7/2018	15:15	2nd	Bailer		26.94	27.21	0.27	0.25	0.5
9/19/2018	16:45	3rd	Bailer		27.44	27.70	0.26	0.25	0.5
4)	--	4th	--		NM	NM	NM	None	None
TOTALS								491.758	3705.5

NOTES:

FT - Feet

NR - Not recorded

NM - Not measured

Gal - Gallon

1) Bladder pump has torn diaphragm. Pump non-repairable. Ordered new pump

2) Measurements given are estimated values based on the technicians interpretation and should not be viewed as accurate.

3) Annual Samples collected - no purging done at this time.

4) Pump in well - well not gauged or bailed.

APPENDIX A - RW-5 HYDROCARBON RECOVERY LOG
2/22/05 thru 2018

Measurement Date	Time	Quarter	Method	Status	Depth to Product (ft)	Depth to Water (ft)	Product Thickness Level ¹ (ft)	Product Bailed/Purged ¹ (gal)	Water Purged ¹ (gal)
2/22/2005	14:15	1st	Bailer	Start	32.92	34.01	1.09	4.5	NR
3/3/2005	14:00	1st	Bailer	Start	33.08	33.42	0.34	6	NR
6/24/2005	9:00	2nd	Bailer	Start	32.96	34.04	1.08	2.5	NR
9/16/2005	9:20	3rd	Bailer	Start	32.83	33.85	1.02	2.5	NR
12/5/2005	14:00	4th	Bailer	Start	32.52	33.21	0.69	1.5	NR
3/16/2006	14:50	1st	Bailer	Start	32.58	33.00	0.42	1	NR
7/26/2006	14:35	2nd	Bailer	Start	32.90	33.31	0.41	0.5	NR
10/16/2006	09:15	4th	Bailer	Start	32.73	33.42	0.69	0.25	NR
2/13/2007	09:00	1st	Bailer	Start	32.17	33.95	1.78	0.5	NR
4/30/2007	11:20	2nd	Bailer	Start	33.00	33.83	0.83	2.5	NR
7/10/2007	10:15	3rd	Bailer	Start	33.10	33.92	0.82	2.5	NR
11/26/2007	08:00	4th	Bailer	Start	33.01	33.91	0.9	1.75	NR
2/18/2008	15:15	1st	Bailer	Start	33.19	33.95	0.76	0.19	20
5/21/2008	14:20	2nd	Bailer	Start	32.77	33.84	1.07	0.14	18
9/12/2008	14:30	3rd	Bailer	Start	32.62	32.85	0.23	0.05	15
11/3/2008	14:00	4th	Bailer	Start	31.05	32.34	1.29	0.05	15
2/11/2009	13:40	1st	Bailer	Start	32.08	32.15	0.07	0.05	15
5/5/2009	10:02	2nd	Bailer	Start	0.00	31.91	0	0	0
8/10/2009	9:50	3rd	Bailer	Start	0.00	31.94	0	0	0
10/28/2009	10:45	4th	Bailer	Start	0.00	31.71	0	0	0
3/3/2010	9:35	1st	Bailer	Start	0.00	31.63	0	0	0
6/3/2010	13:40	2nd	Bailer	Start	0.00	31.37	0	0	0
9/20/2010	14:24	3rd	Bailer	Start	0.00	31.94	0	0	0
11/3/2010	9:30	4th	Bailer	Start	0.00	31.94	0	0	0
3/9/2011	10:29	1st	Bailer	Start	0.00	30.05	0	0	20
6/27/2011	8:40	2nd	Bailer	Start	0.00	28.96	0	0	20
10/4/2011	8:15	3rd	Bailer	Start	0.00	29.89	0	0	14
11/8/2011	9:20	4th	Bailer	Start	0.00	29.85	0	0	17
3/15/2012	9:50	1st	Bailer	Start	0.00	29.32	0	0	15
6/4/2012	9:20	2nd	Bailer	Start	0.00	29.37	0	0	10
8/13/2012	10:50	3rd	Bailer	Start	0.00	29.49	0	0	10
10/8/2012	10:10	4th	Bailer	Start	0.00	29.58	0	0	15
3/26/2013	9:10	2nd	Bailer	Start	0.00	29.45	0	0	10
6/17/2013	10:20	2nd	Bailer	Start	0.00	29.44	0	0	14
9/16/2013	9:30	3rd	Bailer	Start	0.00	28.98	0	0	15
11/12/2013	9:50	4th	Bailer	Start	0.00	28.96	0	0	16

APPENDIX A - RW-5 HYDROCARBON RECOVERY LOG
2/22/05 thru 2018

Measurement Date	Time	Quarter	Method	Status	Depth to Product (ft)	Depth to Water (ft)	Product Thickness Level ¹ (ft)	Product Bailed/Purged ¹ (gal)	Water Purged ¹ (gal)
3/17/2014	NR	1st	Bailer	Start	0.00	27.92	0	0	15
6/9/2014	NR	2nd	Bailer	Start	0.00	28.80	0	0	20
9/18/2014 ²	NR	3rd	Bailer	Start	0.00	28.81	0	0	0
11/13/2014	NR	4th	Bailer	Start	0.00	28.77	0	0	16
3/23/2015	3:15	1st	N/A	N/A	0.00	29.10	0	0	0
6/9/2015	4:10	2nd	Bailer	Start	0.00	28.80	0	0	15
8/23/2015	9:25	3rd	Bailer	Start	0.00	29.08	0	0	16
10/29/2015	1:35	4th	Bailer	Start	0.00	27.94	0	0	17
3/4/2016	0:00	1st	Bailer	Start	0.00	28.22	0	0	15
6/7/2016	3:47	2nd	Bailer	Start	0.00	28.22	0	0	17
9/13/2016	9:10	3rd	Bailer	Start	0.00	27.70	0	0	20
11/16/2016	9:12	4th	Bailer	Start	0.00	27.40	0	0	20
3/16/2017	NR	1st	Bailer	Start	0.00	27.53	0	0	20
6/20/2017	3:47	2nd	Bailer	Start	25.30	33.30	8	10.5	21
9/19/2017	9:10	3rd	Bailer	Start	25.46	31.65	6.19	5.5	20
12/12/2017	11:08	4th	Bailer	Start	24.75	34.00	9.25	18	NR
2/9/2018	11:43	1st	NA	Waiting Pump Install	25.50	33.60	8.1	0	0
4/25/2018	NR	2nd	NA	Waiting Pump Install	26.62	32.34	5.72	0	0
8/16/2018	15:30	3rd	NA	Waiting to turn on pump	27.20	32.58	5.38	0	0
3)	NR	4th	NA	Waiting to turn on pump	NR	NR	NR	0	0
TOTALS								60.48	491

NOTES:

FT - Feet

NR - Not recorded

NA - not applicable

Gal - Gallon

1) Measurements given are estimated values based on the technicians interpretation.

2) Annual grab samples collected - no purging of well at this time.

APPENDIX A - RW-6 HYDROCARBON RECOVERY LOG
2/22/05 thru 2018

Measurement Date	Time	Quarter	Method	Status	Depth to Product (ft)	Depth to Water (ft)	Product Thickness Level ¹ (ft)	Product Bailed/Purged ¹ (gal)	Water Purged ¹ (gal)
2/22/2005	14:30	1st	Bailer	Start	33.12	34.5	1.38	4.5	NR
3/3/2005	14:00	2nd	Bailer	Start	33.15	34	0.85	6	NR
6/24/2005	11:00	2nd	Bailer	Start	33.31	34.46	1.15	3.5	NR
9/16/2005	10:20	3rd	Bailer	Start	32.98	34.33	1.35	3	NR
3/16/2006	12:45	1st	Bailer	Start	32.67	33.75	1.08	2.5	NR
7/26/2006	15:00	2nd	Bailer	Start	33	34.12	1.12	1.5	NR
10/16/2006	09:55	4th	Bailer	Start	33.71	34.63	0.92	0.75	NR
2/13/2007	09:50	1st	Bailer	Start	33.29	34.5	1.21	0.75	NR
4/30/2007	11:25	2nd	Bailer	Start	34.42	34.58	0.16	0.25	NR
7/10/2007	10:08	3rd	Bailer	Start	33.29	34.58	1.29	6.78	NR
11/28/2007	08:10	4th	Bailer	Start	33.25	34.47	1.22	4.5	NR
2/18/2008	15:11	1st	Bailer	Start	33.44	34.35	0.91	0.11	20
5/21/2008	14:30	2nd	Bailer	Start	33.02	34.12	1.1	0.13	18
9/12/2008	14:35	3rd	Bailer	Start	32.12	32.83	0.71	0.09	15
11/3/2008	14:35	4th	Bailer	Start	32.46	32.69	0.23	0.04	15
2/11/2009	13:30	1st	Bailer	Start	32.19	32.35	0.16	0.12	15
5/5/2009	9:45	2nd	Bailer	Start	32.08	32.26	0.18	0.04	15
8/10/2009	9:55	3rd	Bailer	Start	32.04	32.28	0.24	0.03	15
10/28/2009	10:55	4th	Bailer	Start	31.81	32.03	0.22	0.03	12
3/3/2010	9:40	1st	Bailer	Start	31.78	32.01	0.23	0.05	15
6/3/2010	13:45	2nd	Bailer	Start	31.61	31.7	0.09	0.05	15
9/20/2010	14:30	3rd	Bailer	Start	32.04	32.28	0.24	0.03	15
11/3/2010	9:35	4th	Bailer	Start	32.01	32.1	0.09	0.02	15
3/9/2011	10:34	1st	Bailer	Start	30.24	30.26	0.02	0.04	25
6/27/2011	9:25	2nd	Bailer	Start	30.11	30.15	0.04	0.04	30
10/4/2011	9:05	3rd	Bailer	Start	29.91	29.94	0.03	0.09	30
11/8/2011	9:45	4th	Bailer	Start	29.90	29.93	0.03	0.05	25
3/15/2012	9:55	1st	Bailer	Start	0	29.46	0	0	17
6/4/2012	9:25	2nd	Bailer	Start	0	29.54	0	0	20
8/13/2012	11:00	3rd	Bailer	Start	0	29.57	0	0	15
10/8/2012	10:15	4th	Bailer	Start	0	29.62	0	0	15
3/26/2013	9:15	1st	Bailer	Start	0	29.59	0	0	20
6/17/2013	10:25	2nd	Bailer	Start	0	29.52	0	0	15
9/16/2013	10:10	3rd	Bailer	Start	0	29.13	0	0	20
11/12/2013	9:50	4th	Bailer	Start	0	29.1	0	0	15
3/17/2014	NR	1st	Bailer	Start	0	27.92	0	0	15

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2/22/05 thru 2018

Measurement Date	Time	Quarter	Method	Status	Depth to Product (ft)	Depth to Water (ft)	Product Thickness Level ¹ (ft)	Product Bailed/Purged ¹ (gal)	Water Purged ¹ (gal)
6/9/2014	NR	2nd	Bailer	Start	0	28.8	0	0	20
9/18/2014 ²	NR	3rd	Bailer	Start	0	28.81	0	0	0
11/13/2014	NR	4th	Bailer	Start	0	28.77	0	0	16
3/23/2015	3:15	1st	N/A	N/A	0	29.18	0	0	0
6/9/2015	4:12	2nd	Bailer	Start	0	28.68	0	0	15
8/23/2015	9:27	3rd	Bailer	Start	0	29.06	0	0	20
10/29/2015	3:37	4th	Bailer	Start	0	27.97	0	0	19
3/4/2016	0:00	1st	Bailer	Start	0	28.25	0	0	14
6/7/2016	3:45	2nd	Bailer	Start	0	28.24	0	0	18
9/13/2016	9:50	3rd	Bailer	Start	0	27.99	0	0	20
11/16/2016	9:15	4th	Bailer	Start	0	27.72	0	0	20
3/16/2017	0:00	1st	Bailer	Start	0	27.5	0	0	20
6/20/2017	0:00	2nd	Bailer	Start	25.5	33.62	8.12	10	10
9/19/2017	0:00	3rd	Bailer	Start	25.89	30.97	5.08	8	20
12/12/2017	11:13	4th	Bailer	Start	24.83	33.85	9.02	13	NR
2/9/2018	11:48	1st	NA	Waiting Pump Install	25.65	33.05	7.4	0	0
4/25/2018	NR	2nd	NA	Waiting Pump Install	26.93	31.69	4.76	0	0
8/16/2018	16:05	3rd	Bailer	Waiting to turn on pump	27.43	31.78	4.35	0	0
3)	NR	4th	NA	Waiting to turn on pump	NR	NR	NR	0	0
TOTALS								65.99	659

NOTES:

FT - Feet

NR - Not recorded

NA - not applicable

Gal - Gallon

1) Measurements given are estimated values based on the technicians interpretation.

2) Annual grab samples collected - no purging of well at this time.

**APPENDIX B
FIELD INSPECTION LOGS
(ON ATTACHED CD)**

**ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-31		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.5.18	Initial	1336	7.88	11.67	2.844	2.480	2.03	34.0	93.1
GAUGE TIME	1330	1	1339	7.62	10.84	2.759	2.456	2.01	22.1	94.1
DHC (FEET)	ND	2	1341	7.58	10.46	2.695	2.426	1.98	19.9	93.7
DTW (FEET)	7.90	3	1344	7.54	10.45	2.624	2.380	1.94	20.9	95.1
DTB (FEET)	19.31	4								
DTB - DTW	11.41	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.86 PURGING DATA										
3 WELL VOLUMES	5.58	WEATHER CONDITIONS: CLEAR, WEST WIND, 59°								
PURGE DATE	2.5.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR → LIGHT BROWN								
END OF PURGE TIME	1344	COMMENTS:								
PURGE AMOUNT	5.75									
DTW (FEET)	10.10									
SAMPLING DATA										
SAMPLE DATE	2.5.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	10.10	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1405	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-31	1405	40 ML VOA	5				HCL			
		40 ML VOA	3				Na ₂ S ₂ O ₃			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTF-25		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.5.18	Initial	1152	7.04	12.25	2.541	2.180	1.77	18.9	28.8
GAUGE TIME	1140	1	1155	6.81	11.18	2.482	2.188	1.78	39.7	-10.3
DHC (FEET)	ND	2	1158	6.86	10.91	2.447	2.177	1.77	30.5	-18.5
DTW (FEET)	11.20	3	1201	6.86	10.70	2.443	2.177	1.77	25.5	-19.6
DTB (FEET)	19.55	4								
DTB - DTW	8.35	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.36 PURGING DATA										
3 WELL VOLUMES	4.08	WEATHER CONDITIONS: CLEAR, 54°, LIGHT NORTH WIND								
PURGE DATE	2.5.18	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR (HL) → CLOUDY								
END OF PURGE TIME	1201	COMMENTS:								
PURGE AMOUNT	4.25									
DTW (FEET)	11.70									
SAMPLING DATA										
SAMPLE DATE	2.5.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	11.70	WATER APPEARANCE / ODOR: CLOUDY, REDDISH BROWN, FAINT HL ODOR								
SAMPLE TIME	1240	COMMENTS: COLLECTED 1 EXTRA 1L AMBER; DUPO 1								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-25	1240	40 ML VOA	5				HCL			
		40 ML VOA	3				Na ₂ S ₂ O ₃			
		1 L AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		125 ML PLASTIC	1				NEAT			
		125 ML PLASTIC	1				HNO ₃			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
INSTRUMENTS USED										
WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTF-40		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.5.18	Initial	1452	8.54	13.32	4.995	4.182	3.54	86.1	-33.7
GAUGE TIME	1445	1	1455	8.32	13.18	7.884	6.622	5.78	69.6	10.9
DHC (FEET)	ND	2	1458	8.29	13.25	10.21	8.499	7.56	60.3	29.0
DTW (FEET)	13.18	3	1501	8.25	13.30	10.99	9.100	9.05	37.0	35.4
DTB (FEET)	23.62	4								
DTB - DTW	10.44	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.70		PURGING DATA								
3 WELL VOLUMES	5.10	WEATHER CONDITIONS: CLEAR, WEST WIND, 61°								
PURGE DATE	2.5.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1501	COMMENTS:								
PURGE AMOUNT	5.25									
DTW (FEET)	21.50									
		SAMPLING DATA								
SAMPLE DATE	2.5.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	21.50	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1525	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-40	1525	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTF-30		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.6.18	Initial	0948	9.13	12.46	3.146	2.690	2.21	43.6	-83.4
GAUGE TIME	0940	1	0951	9.00	13.46	3.253	2.714	2.23	36.7	-51.8
DHC (FEET)	ND	2	0954	8.89	13.60	3.275	2.720	2.24	37.5	-30.7
DTW (FEET)	14.20	3	0957	8.85	13.59	3.302	2.730	2.25	33.4	-31.3
DTB (FEET)	23.20	4								
DTB - DTW	9.00	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.47		PURGING DATA								
3 WELL VOLUMES	4.41	WEATHER CONDITIONS: CLOUDY, NW WIND, 45°								
PURGE DATE	2.6.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR → BROWN								
END OF PURGE TIME	0957	COMMENTS:								
PURGE AMOUNT	4.56									
DTW (FEET)	15.40									
		SAMPLING DATA								
SAMPLE DATE	2.6.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	15.00	WATER APPEARANCE / ODOR: CLEAR - NO ODOR								
SAMPLE TIME	1015	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-30	1015	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER								
		YSI 556 MPS WATER QUALITY METER								

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WELL ID		TEST PARAMETERS								
MKTF-28		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.6.18	Initial	1059	7.23	12.06	2.336	2.014	1.63	60.2	31.2
GAUGE TIME	1045	1	1102	7.29	13.25	2.268	1.903 2.010	1.53	60.6	28.8
DHC (FEET)	ND	2	1105	7.32	14.15	2.359	1.934	1.57	55.0	29.1
DTW (FEET)	6.73	3	1108	7.33	14.20	2.375	2.000	1.61	43.2	27.5
DTB (FEET)	16.13	4								
DTB - DTW	9.40	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.53 PURGING DATA										
3 WELL VOLUMES	4.59	WEATHER CONDITIONS: PARTLY CLOUDY, NW WIND, 46°								
PURGE DATE	2.6.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1108	COMMENTS:								
PURGE AMOUNT	4.756									
DTW (FEET)	13.02									
SAMPLING DATA										
SAMPLE DATE	2.6.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	12.65	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1125	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-28	1125	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTF-27		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2-6-18	Initial	1154	7.57	8.96	6.882	6.453	5.60	44.5	-48.7
GAUGE TIME	1145	1	1157	7.34	9.15	7.051	6.571	5.71	41.9	-23.2
DHC (FEET)	ND	2	1200	7.29	9.92	7.263	6.633	5.78	29.6	-11.2
DTW (FEET)	6.25	3	1203	7.27	10.01	7.437	6.649	5.79	27.2	-2.9
DTB (FEET)	14.72	4								
DTB - DTW	8.47	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.38		PURGING DATA								
3 WELL VOLUMES	4.14	WEATHER CONDITIONS: CLEAR, MOD NW WIND, 46°								
PURGE DATE	2-6-18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1203	COMMENTS:								
PURGE AMOUNT	4.25									
DTW (FEET)	12.62									
		SAMPLING DATA								
SAMPLE DATE	2-6-18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	12.47	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1220	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-27	1220	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER								
		YSI 556 MPS WATER QUALITY METER								

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WELL ID		TEST PARAMETERS								
MKTF-289		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.6.18	Initial	1258	7.76	9.95	2.147	1.958	1.58	31.0	-144.8
GAUGE TIME	1250	1	1301	7.48	11.09	2.088	1.848	1.49	17.9	-85.5
DHC (FEET)	ND	2	1306	7.45	11.63	2.108	1.840	1.48	14.7	-70.4
DTW (FEET)	1.93	3	1312	7.43	11.70	2.122	1.838	1.48	18.3	-61.6
DTB (FEET)	22.81	4								
DTB - DTW	20.88	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
3.40 PURGING DATA										
3 WELL VOLUMES	10.20	WEATHER CONDITIONS: CLOUDY, MOD. NW WIND, 45°								
PURGE DATE	2.6.18	WATER APPEARANCE / ODOR: CLEAR → LT BROWN, NO ODOR								
END OF PURGE TIME	1312	COMMENTS:								
PURGE AMOUNT	10.50									
DTW (FEET)	12.30									
SAMPLING DATA										
SAMPLE DATE	2.6.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	2.80	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1345	COMMENTS: COLLECTED 1 EXTRA 1 L AMBER; COLLECTED DUPO2								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-289	1345	40 ML VOA	5				HCL			
		1 L AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTF-24		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.6.18	Initial	0820	8.38	11.15	3.154	2.781	2.29	28.3	51.9
GAUGE TIME	0810	1	0823	8.32	12.74	3.341	2.837	2.34	19.7	-8.6
DHC (FEET)	ND	2	0826	8.30	12.43	3.160	2.702	2.22	18.7	-20.3
DTW (FEET)	21.60	3	BAILED DRY @ 4 GALLONS							
DTB (FEET)	30.83	4								
DTB - DTW	9.23	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.50 PURGING DATA										
3 WELL VOLUMES	4.5	WEATHER CONDITIONS: CLOUDY, CALM, 30°								
PURGE DATE	2.6.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, HC ODOR								
END OF PURGE TIME	0830	COMMENTS:								
PURGE AMOUNT	4									
DTW (FEET)	30.50									
SAMPLING DATA										
SAMPLE DATE	2.6.18	WEATHER CONDITIONS: CLOUDY, WEST WIND, 40°								
DTW (FEET)	22.09	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1445	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-24	1445	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTF-02		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.6.18	Initial	0855	8.47	9.03	2.553	2.387	1.94	31.0	-19.8
GAUGE TIME	0845	1	0902	8.41	10.26	2.636	2.385	1.94	14.9	-60.4
DHC (FEET)	ND	2		BAILED			DRY AT 17 GALS			
DTW (FEET)	7.44	3								
DTB (FEET)	20.34	4								
DTB - DTW	12.90	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
9.55		PURGING DATA								
3 WELL VOLUMES	28.65	WEATHER CONDITIONS: CLOUDY, NW WIND, 30°								
PURGE DATE	2.6.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR → BROWN								
END OF PURGE TIME	0915	COMMENTS:								
PURGE AMOUNT	17 GALS									
DTW (FEET)	20.01									
		SAMPLING DATA								
SAMPLE DATE	2.6.18	WEATHER CONDITIONS: SNOW FLURRIES, STRONG WEST WIND 40°								
DTW (FEET)	15.80	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1520	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-02	1520	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER								
		YSI 556 MPS WATER QUALITY METER								

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WELL ID		TEST PARAMETERS								
MKTF-43		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.7.18	Initial	0825	6.74	5.39	12.67	13.17	11.99	56.3	145.4
GAUGE TIME	0810	1	0828	6.59	6.97	14.16	14.05	12.90	46.2	134.7
DHC (FEET)	ND	2	0831	6.49	7.00	14.50	14.20	12.90	47.3	129.8
DTW (FEET)	6.43	3	0834	6.45	7.01	14.00	13.90	12.70	34.8	121.4
DTB (FEET)	15.38	4								
DTB - DTW	8.95	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.46 PURGING DATA										
3 WELL VOLUMES	4.38	WEATHER CONDITIONS: CLEAR, CALM, 19°								
PURGE DATE	2.7.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	0834	COMMENTS:								
PURGE AMOUNT	4.5									
DTW (FEET)	11.15									
SAMPLING DATA										
SAMPLE DATE	2.7.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	11.00	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	0910	COMMENTS: COLLECTED DUPO3 & 1 EXTRA 1 L AMBER								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-43	0910	40 ML VOA	5				HCL			
		1 L AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTF-32		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.7.18	Initial	1037	6.90	12.67	2.370	2.014	1.63	23.4	73.8
GAUGE TIME	1030	1	1040	6.75	13.07	2.362	1.989	1.61	25.1	61.0
DHC (FEET)	ND	2	1044	6.66	13.23	2.453	2.058	1.66	24.4	59.3
DTW (FEET)	13.70	3	1048	6.61	13.30	2.501	2.094	1.70	14.5	51.8
DTB (FEET)	27.75	4								
DTB - DTW	14.05	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.29 PURGING DATA										
3 WELL VOLUMES	6.87	WEATHER CONDITIONS: CLEAR, LT WEST WIND, 35°								
PURGE DATE	2.7.18	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR								
END OF PURGE TIME	1048	COMMENTS:								
PURGE AMOUNT	7.00									
DTW (FEET)	22.45									
SAMPLING DATA										
SAMPLE DATE	2.7.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	22.00	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1105	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-32	1105	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-41		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.7.18	Initial	1237	7.04	13.83	2.848	2.353	1.92	65.0	47.8
GAUGE TIME	1225	1	1242	7.18	13.45	2.805	2.338	1.91	35.7	55.4
DHC (FEET)	ND	2	1248	7.11	13.19	2.775	2.330	1.90	40.6	56.8
DTW (FEET)	20.23	3	1255	7.14	12.97	2.752	2.322	1.89	25.2	57.4
DTB (FEET)	39.72	4								
DTB - DTW	19.49	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
3.17 PURGING DATA										
3 WELL VOLUMES	9.51	WEATHER CONDITIONS: CLEAR, CALM, 45°								
PURGE DATE	2.7.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1255	COMMENTS:								
PURGE AMOUNT	9.75									
DTW (FEET)	34.15									
SAMPLING DATA										
SAMPLE DATE	2.7.18	WEATHER CONDITIONS: CLEAR, LIGHT WEST WIND, 45°								
DTW (FEET)	33.65	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1310	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-41	1310	40 ML VOA	5				HCL			
		40 ML VOA	3				Na ₂ S ₂ O ₃			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER								
		YSI 556 MPS WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTF-42		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.7.18	Initial	1341	7.14	12.62	3.139	2.672	2.19	14.3	16.1
GAUGE TIME	1335	1	1345	6.92	13.09	3.216	2.706	2.22	9.1	22.9
DHC (FEET)	ND	2	1350	6.83	13.15	3.170	2.657	2.18	10.4	25.8
DTW (FEET)	17.41	3	1355	6.79	13.18	3.139	2.635	2.16	12.2	-46.5
DTB (FEET)	32.90	4								
DTB - DTW	15.49	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.52 PURGING DATA										
3 WELL VOLUMES	7.56	WEATHER CONDITIONS: CLEAR, WESTWIND, 50°								
PURGE DATE	2.7.18	WATER APPEARANCE / ODOR: AMBER, ODOR								
END OF PURGE TIME	1355	COMMENTS:								
PURGE AMOUNT	7.75									
DTW (FEET)	27.00									
SAMPLING DATA										
SAMPLE DATE	2.7.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	27.00	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1410	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-42	1410	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

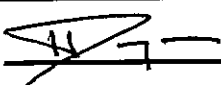
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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTF-23		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2-7-18	Initial								
GAUGE TIME	1545	1		DID NOT SAMPLE						
DHC (FEET)	14.11	2		0.09' OF SPH IN WELL						
DTW (FEET)	14.20	3								
DTB (FEET)	2036	4								
DTB - DTW	-	5								
CAPACITY PER FOOT	0.163 - 2"	6								
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		GEOTECH OIL WATER INTERFACE METER								

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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTF-14		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.7.18	Initial								
GAUGE TIME	1551	1		DID NOT SAMPLE						
DHC (FEET)	6.98	2		0.41 FEET OF SPH IN WELL						
DTW (FEET)	7.39	3								
DTB (FEET)	17.46	4								
DTB - DTW	-	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		GEOTECH OIL WATER INTERFACE METER								

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WELL ID		TEST PARAMETERS								
MKTF-13		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.7.18	Initial								
GAUGE TIME	1556	1		DID NOT SAMPLE						
DHC (FEET)	13.77	2		0.01 FEET OF SPH IN WELL						
DTW (FEET)	13.78	3								
DTB (FEET)	21.25	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		GEOTECH OIL WATER INTERFACE METER								

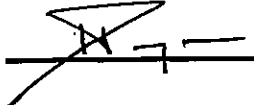
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WELL ID		TEST PARAMETERS								
MKTF-12		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.7.18	Initial								
GAUGE TIME	1602	1								
DHC (FEET)	19.11	2		DID NOT SAMPLE						
DTW (FEET)	19.28	3		0.17 FEET OF SPH IN WELL						
DTB (FEET)	25.60	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		GEOTECH OIL WATER INTERFACE METER								

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WELL ID		TEST PARAMETERS								
MIKTF-26		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.7.18	Initial								
GAUGE TIME	1627	1								
DHC (FEET)	8.53	2		DID NOT SAMPLE						
DTW (FEET)	9.36	3		0.83 FEET OF SPH IN WELL						
DTB (FEET)	17.15	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER GEOTECH								

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WELL ID		TEST PARAMETERS								
MKTf-01		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.7.18	Initial								
GAUGE TIME	1631	1								
DHC (FEET)	5.05	2		DID NOT SAMPLE						
DTW (FEET)	5.40	3		0.35' FEET OF SPH IN WELL						
DTB (FEET)	17.42	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED. <u>WATER-MARK OIL WATER INTERFACE METER</u> <u>GEOTECH</u>										

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WELL ID		TEST PARAMETERS								
MKTF-44		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.7.18	Initial	0952	6.75	11.51	2.410	2.106	1.71	64.3	65.8
GAUGE TIME	0940	1	0957	6.84	12.18	2.010	1.756	1.41	62.2	74.9
DHC (FEET)	ND	2	1002	6.87	12.17	2.095	1.804	1.45	65.3	81.9
DTW (FEET)	37.56	3	BAILED DOWN @ 6.25 GALLONS							
DTB (FEET)	51.16	4								
DTB - DTW	13.60	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.22 PURGING DATA										
3 WELL VOLUMES	6.66	WEATHER CONDITIONS: CLEAR, CALM, 32°								
PURGE DATE	2.7.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1012	COMMENTS:								
PURGE AMOUNT	6.25									
DTW (FEET)	50.76									
SAMPLING DATA										
SAMPLE DATE	2.8.18	WEATHER CONDITIONS: CLEAR, CALM, 30°								
DTW (FEET)	48.98	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0920	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-44	0920	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
✓ GEOTECH										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTf-33		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.7.18	Initial	1445	6.11	13.13	1.442	1.213	0.95	19.1	30.4
GAUGE TIME	1435	1	1449	5.82	12.91	1.411	1.193	0.94	18.7	37.7
DHC (FEET)	ND	2	1453	5.75	12.80	1.456	1.234	0.97	17.0	44.3
DTW (FEET)	22.65	3	1458	5.76	12.23	1.475	1.251	0.99	16.8	49.1
DTB (FEET)	33.20	4								
DTB - DTW	10.55	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.72 PURGING DATA										
3 WELL VOLUMES	5.16	WEATHER CONDITIONS: CLEAR, WEST WIND, 51°								
PURGE DATE	2.7.18	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR, REDDISH BROWN, TURBID								
END OF PURGE TIME	1458	COMMENTS:								
PURGE AMOUNT	5.50									
DTW (FEET)	26.20									
SAMPLING DATA										
SAMPLE DATE	2.8.18	WEATHER CONDITIONS: CLEAR, CALM, 40°								
DTW (FEET)	22.70	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR								
SAMPLE TIME	1025	COMMENTS: COLLECTED DUP04 & 1 EXTRA 1L AMBER								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-33	1025	40 ML VOA	5				HCL			
		1 L AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
GEO TECH										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTF-22		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.7.18	Initial	1520	5.67	12.52	1.565	1.506	1.01	12.3	-101.9
GAUGE TIME	1515	1	1524	5.40	12.71	1.527	1.297	1.02	22.8	-116.0
DHC (FEET)	ND	2	1528	5.29	12.62	1.569	1.336	1.06	13.0	-100.5
DTW (FEET)	25.50	3	BAILED DOWN @ 4.50 GALS							
DTB (FEET)	35.60	4								
DTB - DTW	10.10	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.65 PURGING DATA										
3 WELL VOLUMES	4.95	WEATHER CONDITIONS: CLEAR, CALM, 51°								
PURGE DATE	2.7.18	WATER APPEARANCE / ODOR: CLEAR → REDDISH BROWN, HC ODOR								
END OF PURGE TIME	1532	COMMENTS:								
PURGE AMOUNT	4.50									
DTW (FEET)	35.03									
SAMPLING DATA										
SAMPLE DATE	2.8.18	WEATHER CONDITIONS: CLEAR, CALM, 47°								
DTW (FEET)	25.50	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1115	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-22	1115	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
↓ ↓ GEOTECH										
INSTRUMENTS USED WATER-MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTF-15		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.8.18	Initial								
GAUGE TIME	1335	1								
DHC (FEET)	12.40	2		DID NOT SAMPLE						
DTW (FEET)	12.47	3		0.07 FEET OF SPH IN WELL						
DTB (FEET)	19.48	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	(0.163 - 2")									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		GEDTECH OIL WATER INTERFACE METER								


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WELL ID		TEST PARAMETERS								
MKTF-03		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2-8-18	Initial								
GAUGE TIME	1352	1								
DHC (FEET)	7.40	2		DID NOT SAMPLE						
DTW (FEET)	8.25	3		0.85 FEET OF SPH IN WELL						
DTB (FEET)	8.25	4	18.45							
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER GEOTECH								

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WELL ID		TEST PARAMETERS								
MKTF-05		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2-8-18	Initial								
GAUGE TIME	1402	1								
DHC (FEET)	14.78	2	DID NOT SAMPLE 0.52 FEET OF SPH IN WELL							
DTW (FEET)	15.20	3								
DTB (FEET)	17.75	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		<u>WATER MARK OIL WATER INTERFACE METER</u> <u>GEOTECH</u>								

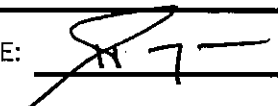
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WELL ID		TEST PARAMETERS								
MKTF-06		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2-8-18	Initial								
GAUGE TIME	1408	1								
DHC (FEET)	17.14	2		DID NOT SAMPLE						
DTW (FEET)	18.52	3		1.38 FEET OF SPH IN WELL						
DTB (FEET)	23.77	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATER-MARK OIL WATER INTERFACE METER GEOTECH								


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**ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-07		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2-8-18	Initial								
GAUGE TIME	1413	1								
DHC (FEET)	11.33	2		DID NOT SAMPLE						
DTW (FEET)	12.55	3		1.22 FEET OF SPH IN WELL						
DTB (FEET)	17.62	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATER-MARK OIL WATER INTERFACE METER GEOTECH								

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WELL ID		TEST PARAMETERS								
MKTF-08		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2-8-18	Initial								
GAUGE TIME	1418	1								
DHC (FEET)	13.29	2		DID NOT SAMPLE						
DTW (FEET)	13.63	3		0.34 FEET OF SPH IN WELL						
DTB (FEET)	21.98	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER GEOTECH								

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WELL ID		TEST PARAMETERS								
MKTF-11		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.8.18	Initial	1300	6.74	14.49	3.412	2.780	2.29	13.6	-164.5
GAUGE TIME	1245	1	1310	6.88	14.22	3.401	2.784	2.29	9.9	-131.0
DHC (FEET)	ND	2	1316	6.88	14.30	3.741	2.042	2.52	14.9	-165.8
DTW (FEET)	7.87	3	1325	6.87	14.32	3.890	3.409	2.84	21.9	-150.3
DTB (FEET)	18.31	4								
DTB - DTW	10.44	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
7.73 PURGING DATA										
3 WELL VOLUMES	23.19	WEATHER CONDITIONS: CLEAR, WEST WIND, 54°								
PURGE DATE	2.8.18	WATER APPEARANCE / ODOR: GREY, HC ODOR, V. TURBID → MUDDY								
END OF PURGE TIME	1325	COMMENTS:								
PURGE AMOUNT	23.25									
DTW (FEET)	15.60									
SAMPLING DATA										
SAMPLE DATE	2.8.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 56°								
DTW (FEET)	7.95	WATER APPEARANCE / ODOR: GREY, HC ODOR								
SAMPLE TIME	1455	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-11	1455	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
↓ ↓ GEOTECH										
INSTRUMENTS USED → WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTF-39		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.8.18	Initial	1548	6.35	15.43	7.430	5.906	5.11	23.9	-92.9
GAUGE TIME	1540	1	1551	6.39	14.99	7.581	6.092	5.29	14.0	-105.2
DHC (FEET)	ND	2	1554	6.31	15.00	8.833	7.026	6.16	12.3	-112.7
DTW (FEET)	8.18	3	1556	6.36	15.05	8.278	6.584	5.74	13.0	-118.1
DTB (FEET)	15.20	4								
DTB - DTW	7.02	5								
CAPACITY PER FOOT	0.74 - 4" 0.163 - 2"	6								
1.14		PURGING DATA								
3 WELL VOLUMES	3.42	WEATHER CONDITIONS: CLEAR, WEST WIND, 58°								
PURGE DATE	2.8.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
END OF PURGE TIME	1556	COMMENTS:								
PURGE AMOUNT	3.5									
DTW (FEET)	9.40									
		SAMPLING DATA								
SAMPLE DATE	2.8.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	9.00	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1615	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-39	1615	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
↓	↓	125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER YSI 556 MPS WATER QUALITY METER								

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WELL ID		TEST PARAMETERS								
NAPIS-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.9.18	Initial		SHEEN ON WATER - NO READINGS						
GAUGE TIME	0845	1								
DHC (FEET)	ND	2								
DTW (FEET)	8.25	3								
DTB (FEET)	14.60	4								
DTB - DTW	6.35	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.04		PURGING DATA								
3 WELL VOLUMES	3.12	WEATHER CONDITIONS: CLEAR, CALM, 32°								
PURGE DATE	2.9.18	WATER APPEARANCE / ODOR: CLEAR, SHEEN								
END OF PURGE TIME	0900	COMMENTS:								
PURGE AMOUNT	3.25									
DTW (FEET)	12.44									
		SAMPLING DATA								
SAMPLE DATE	2.9.18	WEATHER CONDITIONS: CLEAR, STRONG WEST WIND, 62°								
DTW (FEET)	8.27	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1450	COMMENTS: COLLECTED DUPO5								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
NAPIS-2	1450	40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER GEOTECH								

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WELL ID		TEST PARAMETERS								
STP1-NW		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.9.18	Initial	1310	6.71	14.06	6.181	5.078	4.35	49.3	-92.0
GAUGE TIME	1300	1	1319	6.54	13.64	6.495	5.392	4.64	40.4	-28.6
DHC (FEET)	ND	2	1328	6.50	13.21	6.331	5.310	4.56	32.2	-32.7
DTW (FEET)	20.55	3	1337	6.45	13.15	6.234	5.237	4.49	34.1	-40.3
DTB (FEET)	49.73	4								
DTB - DTW	29.18	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
4.75 PURGING DATA										
3 WELL VOLUMES	14.25	WEATHER CONDITIONS: CLEAR, STRONG WEST WIND, 61°								
PURGE DATE	2.9.18	WATER APPEARANCE / ODOR: CLEAR								
END OF PURGE TIME	1337	COMMENTS:								
PURGE AMOUNT	14.25									
DTW (FEET)	44.00									
SAMPLING DATA										
SAMPLE DATE	2.9.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	40.58	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1355	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
STP1-NW	1355	40 ML VOA	5				HCL			
		250ML AMBER	1				NEAT			
		250ML PLASTIC	1				HNO3			
		125ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
↓	↓	125 ML PLASTIC	1				NEAT			
GEOTECH										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
KA-3		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.9.18	Initial	0917	6.80	19.71	1.875	1.354	1.07	16.4	-64.2
GAUGE TIME	0909	1	0922	7.62	23.63	2.038	1.355	1.06	18.3	-97.2
DHC (FEET)	ND	2	0928	7.70	23.95	2.010	1.334	1.06	15.7	-96.9
DTW (FEET)	8.40	3	0933	7.69	23.49	2.007	1.343	1.05	15.8	-95.3
DTB (FEET)	24.30	4								
DTB - DTW	15.90	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	(0.163 - 2")									
2.59 PURGING DATA										
3 WELL VOLUMES	7.77	WEATHER CONDITIONS: CLEAR, CALM, 41°								
PURGE DATE	2.9.18	WATER APPEARANCE / ODOR: CLEAR								
END OF PURGE TIME	0933	COMMENTS:								
PURGE AMOUNT	268									
DTW (FEET)	20.00									
SAMPLING DATA										
SAMPLE DATE	2.18	WEATHER CONDITIONS: CLEAR, STRONG WEST WIND, 62°								
DTW (FEET)	8.80	WATER APPEARANCE / ODOR: CLEAR								
SAMPLE TIME	1530	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
KA-3	1530	40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO₃			
		125 ML PLASTIC	1				HNO₃			
		125 ML PLASTIC	1				H₂SO₄			
		125 ML PLASTIC	1				NEAT			
GEOTECH										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

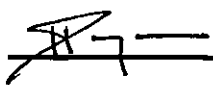
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WELL ID		TEST PARAMETERS								
NAPIS-3		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.9.18	Initial	1000	7.66	22.26	2.438	1.671	1.33	43.0	-76.0
GAUGE TIME	0952	1	1004	7.97	20.75	2.358	1.668	1.33	18.6	-52.5
DHC (FEET)	ND	2	BAILED DOWN @ 5 GALS							
DTW (FEET)	9.70	3								
DTB (FEET)	31.60	4								
DTB - DTW	21.90	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
3.57 PURGING DATA										
3 WELL VOLUMES	10.71	WEATHER CONDITIONS: CLEAR, CALM 41°								
PURGE DATE	2.9.18	WATER APPEARANCE / ODOR: CLEAR								
END OF PURGE TIME	1010	COMMENTS:								
PURGE AMOUNT	5 GALS									
DTW (FEET)	21.45									
SAMPLING DATA										
SAMPLE DATE	2.9.18	WEATHER CONDITIONS: CLEAR, STRONG WEST WIND, 62°								
DTW (FEET)	20.85	WATER APPEARANCE / ODOR: CLEAR								
SAMPLE TIME	1600	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
NAPIS-3	1600	40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
GEOTECH										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YGI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
OAPIS-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.9.18	Initial	1036	8.10	15.73	6.053	4.779	4.08	16.6	-83.0
GAUGE TIME	1028	1	1039	8.05	15.86	6.087	4.794	4.09	14.4	-126.3
DHC (FEET)	ND	2	1044	7.98	16.06	6.127	4.803	4.10	15.3	-107.8
DTW (FEET)	12.60	3	1049	7.97	16.02	6.141	4.812	4.10	18.0	-117.8
DTB (FEET)	27.78	4								
DTB - DTW	15.18	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.47		PURGING DATA								
3 WELL VOLUMES	7.41	WEATHER CONDITIONS: CLEAR, WEST WIND, 53°								
PURGE DATE	2.9.18	WATER APPEARANCE / ODOR: LIGHT YELLOW								
END OF PURGE TIME	1049	COMMENTS:								
PURGE AMOUNT	7.50									
DTW (FEET)	26.40									
SAMPLING DATA										
SAMPLE DATE	2.9.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 60°								
DTW (FEET)	24.40	WATER APPEARANCE / ODOR: LIGHT YELLOW								
SAMPLE TIME	1645	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OAPIS-1	1645	40 ML VOA	5				HCL			
		1 L AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NAOH			
INSTRUMENTS USED										
WATER MARK OIL WATER INTERFACE METER										
Y9I 556 MPS WATER QUALITY METER										
GEOTECH										

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WELL ID		TEST PARAMETERS								
		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
RW-5										
GAUGE DATE	2.9.18	Initial								
GAUGE TIME	1143	1		DID NOT SAMPLE TO LAB						
DHC (FEET)	25.50	2		8.10 FEET OF SPH IN WELL						
DTW (FEET)	33.60	3								
DTB (FEET)	39.59	4		BAILED 0 GALLONS OF SPH						
DTB - DTW	NA	5		PUMP TO BE INSTALLED						
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE	2.9.18	WEATHER CONDITIONS:								
DTW (FEET)	—	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1150	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
RW-5	1150	1 L AMBER	1				—			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER GEOTECH								

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WELL ID		TEST PARAMETERS								
RW-6		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.9.18	Initial								
GAUGE TIME	1148	1		DID NOT SAMPLE TO LAB						
DHC (FEET)	25.65	2		7.40 FEET OF SPH IN WELL						
DTW (FEET)	33.05	3								
DTB (FEET)	40.90	4		BAILED 0 GALLONS OF SPH						
DTB - DTW	NA	5		PUMP TO BE INSTALLED						
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME	1156	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
RW-6	1156	1 L AMBER	1				-			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER GEOTECH								


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WELL ID		TEST PARAMETERS								
NAPIS-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.12.18	Initial								
GAUGE TIME	0830	1								
DHC (FEET)	6.15	2		DID NOT SAMPLE						
DTW (FEET)	8.10	3		1.95 FEET OF SPH IN WELL						
DTB (FEET)		4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		<u>WATER-MARK OIL WATER INTERFACE METER</u> <u>GEOTECH</u>								

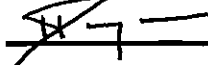
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WELL ID		TEST PARAMETERS								
OIL SUMPLDU		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.12.18	Initial								
GAUGE TIME	0945	1								
DHC (FEET)	ND	2		DID NOT SAMPLE - DRY						
DTW (FEET)	ND	3								
DTB (FEET)	6.60	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		GEO TECH OIL WATER INTERFACE METER								

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WELL ID		TEST PARAMETERS								
EAST LDU		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.12.18	Initial								
GAUGE TIME	0950	1								
DHC (FEET)	ND	2								
DTW (FEET)	1.50	3								
DTB (FEET)	12.76 12.76'									
DTB - DTW	N/A	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA N/A										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE	2.12.18	WEATHER CONDITIONS:								
DTW (FEET)	1.50	CLOUDY, STRONG SW WIND, 45°								
SAMPLE TIME	10.25	WATER APPEARANCE / ODOR:								
		GREY, HC ODOR								
		COMMENTS:								
		COLLECTED DUPOG AT THIS WELL								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
EAST LDU	1025	40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
GEO TECH										
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER								

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ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
WEST LDU		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.12.18	Initial								
GAUGE TIME	0953	1								
DHC (FEET)	ND	2								
DTW (FEET)	11.74	3								
DTB (FEET)	12.50	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA N/A										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE	2.12.18	WEATHER CONDITIONS:								
DTW (FEET)	11.74	CLOUDY, SOUTHWEST WIND, 46°								
SAMPLE TIME	1110	WATER APPEARANCE / ODOR:								
	1010	OLIVE, FAINT ODOR, CLEAR								
		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
WEST LDU	1110	40 ML VOA	5				HCL			
↓	↓	250 ML AMBER	1				NEAT			
↓	↓	250 ML PLASTIC	1				HNO ₃			
↓	↓	125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
GEOTECH OIL WATER INTERFACE METER										

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WELL ID		TEST PARAMETERS								
GWM-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2-12-18	Initial								
GAUGE TIME	1146	1								
DHC (FEET)	ND	2		DID NOT SAMPLE						
DTW (FEET)	ND	3		NO WATER IN WELL						
DTB (FEET)	19.05'	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATERMARK OIL WATER INTERFACE METER GEOTECH								

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WELL ID		TEST PARAMETERS								
GWM-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.12.18	Initial								
GAUGE TIME	1151	1								
DHC (FEET)	21.83	2		DID NOT SAMPLE						
DTW (FEET)	22.20	3		0.37 FEET OF SPH IN WELL						
DTB (FEET)		4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		<u>WATERMARK OIL WATER INTERFACE METER</u> <u>GEOTECH</u>								

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WELL ID		TEST PARAMETERS								
GWM -3		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2-12-18	Initial								
GAUGE TIME	1156	1								
DHC (FEET)	ND	2		DID NOT SAMPLE NO WATER IN WELL						
DTW (FEET)	ND	3								
DTB (FEET)	18.05'	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATERMARK OIL WATER INTERFACE METER								

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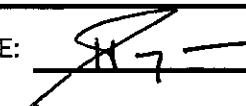
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OUTFALL

WELL ID		TEST PARAMETERS								
		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
STP-1 TO EP-2										
GAUGE DATE		Initial								
GAUGE TIME		1								
DHC (FEET)		2								
DTW (FEET)		3								
DTB (FEET)		4								
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE	2-12-18	WEATHER CONDITIONS:								
DTW (FEET)	NA	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1325	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
STP-1 TO	1325	40 ML VOA	5				HCL			
EP-2		250 ML AMBER	1				NEAT			
		1 L PLASTIC	1				NEAT			
		500ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				H ₂ SO ₄			
INSTRUMENTS USED										

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WELL ID		TEST PARAMETERS								
MKTf-38		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.12.18	Initial	1416	7.02	12.32	1.853	1.588	1.27	32.1	141.0
GAUGE TIME	1405	1	SHEEN OBSERVED ON PURGE WATER							
DHC (FEET)	ND	2	DISCONTINUED WATER QUALITY							
DTW (FEET)	8.40	3	READINGS							
DTB (FEET)	20.30	4								
DTB - DTW	11.90	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.94		PURGING DATA								
3 WELL VOLUMES	5.82	WEATHER CONDITIONS: CLOUDY, SW WIND, 48°								
PURGE DATE	2.12.18	WATER APPEARANCE / ODOR: CLEAR → CLOUDY, SHEEN, HC ODOR								
END OF PURGE TIME	1432	COMMENTS:								
PURGE AMOUNT	6.0									
DTW (FEET)	10.25									
		SAMPLING DATA								
SAMPLE DATE	2.12.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	10.00	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1455	COMMENTS: COLLECTED 1 EXTRA 1L AMBER								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-38	1455	40 ML VOA	5				HCL			
		1 L AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
		GEOTECH								
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER								
		Y8I 556 MPS WATER QUALITY METER								


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WELL ID		TEST PARAMETERS								
RW-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.13.18	Initial								
GAUGE TIME	1130	1		0.28 FEET OF SPH IN WELL						
DHC (FEET)	26.94	2		BAILED 0.5 GALLONS OF SPH						
DTW (FEET)	27.22	3								
DTB (FEET)	27.22	4								
DTB - DTW	43.04	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		GEOTECH OIL WATER INTERFACE METER								

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WELL ID		TEST PARAMETERS								
MKTF-10		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.14.18	Initial		SHEEN ON PURGE WATER						
GAUGE TIME	0908	1		NO WATER QUALITY READINGS						
DHC (FEET)	ND	2		WERE COLLECTED						
DTW (FEET)	7.30	3								
DTB (FEET)	16.10	4								
DTB - DTW	8.80	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
6.51 PURGING DATA										
3 WELL VOLUMES	19.53	WEATHER CONDITIONS: CLOUDY, WEST WIND, 37°								
PURGE DATE	2.14.18	WATER APPEARANCE / ODOR: CLEAR → GREY, TURBID, SHEEN, HC ODOR								
END OF PURGE TIME	0923	COMMENTS:								
PURGE AMOUNT	7									
DTW (FEET)	15.75									
SAMPLING DATA										
SAMPLE DATE	2.14.18	WEATHER CONDITIONS: CLOUDY WEST WIND 50°								
DTW (FEET)	7.30	WATER APPEARANCE / ODOR: CLEAR, SHEEN, HC ODOR								
SAMPLE TIME	1455	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-10	1455	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
GEOTECH										
INSTRUMENTS USED → WATER MARK OIL WATER INTERFACE METER										
YSI 556 MP3 WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTF-09		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.14.18	Initial	0953	6.90	11.30	1.711	1.506	1.20	30.0	-78.3
GAUGE TIME	0946	1	0958	6.93	12.19	1.682	1.448	1.13	14.3	-164.9
DHC (FEET)	ND	2		SHEEN OBSERVED ON PURGE WATER						
DTW (FEET)	13.76	3		DISCONTINUED COLLECTING						
DTB (FEET)	22.74	4		WATER QUALITY READINGS						
DTB - DTW	8.98	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
6.65		PURGING DATA								
3 WELL VOLUMES	19.95	WEATHER CONDITIONS: CLOUDY, WEST WIND, 37°								
PURGE DATE	2.14.18	WATER APPEARANCE / ODOR: CLEAR → GREY, HC ODOR, SHEEN								
END OF PURGE TIME	1014	COMMENTS:								
PURGE AMOUNT	200 G									
DTW (FEET)	18.35									
		SAMPLING DATA								
SAMPLE DATE	2.14.18	WEATHER CONDITIONS: CLOUDY, SW WND, 49°								
DTW (FEET)	13.77	WATER APPEARANCE / ODOR: CLEAR, SHEEN, HC ODOR								
SAMPLE TIME	1540	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-09	1540	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		BEOTECH								
INSTRUMENTS USED		WATER-MARK OIL WATER INTERFACE METER								
		YSI 556 MPS WATER QUALITY METER								

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WELL ID		TEST PARAMETERS								
MKTFF- 7 ⁰⁴		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.14.18	Initial		SHEEN ON PURGE WATER						
GAUGE TIME	0818	1		NO WATER QUALITY READINGS						
DHC (FEET)	ND	2		WERE COLLECTED						
DTW (FEET)	9.85	3								
DTB (FEET)	22.37	4								
DTB - DTW	12.52	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
9.26 PURGING DATA										
3 WELL VOLUMES	27.78	WEATHER CONDITIONS: CLOUDY, WEST WIND, 32°								
PURGE DATE	2.14.18	WATER APPEARANCE / ODOR: GREY, SHEEN, HC ODOR								
END OF PURGE TIME	0838	COMMENTS:								
PURGE AMOUNT	16 GALS									
DTW (FEET)	21.88									
SAMPLING DATA										
SAMPLE DATE	2.14.18	WEATHER CONDITIONS: CLOUDY, SW WIND, 50°								
DTW (FEET)	10.60	WATER APPEARANCE / ODOR: GREY, SHEEN, HC ODOR								
SAMPLE TIME	1405	COMMENTS: COLLECTED DUPOT & 1 EXTRA 1L AMBER								
SAMPLE LOG										
SAMPLE ID	04	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE					
MKTFF- 7	1405		40 ML VOA	5	HCL					
			1 L AMBER	2	NEAT					
			250 ML AMBER	1	NEAT					
			250 ML PLASTIC	1	HNO ₃					
			125 ML PLASTIC	1	HNO ₃					
			125 ML PLASTIC	1	H ₂ SO ₄					
			125 ML PLASTIC	1	NEAT					
GEOTECH										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTF-16		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.14.18	Initial	1046	6.93	14.84	3.254	2.626	2.15	17.1	-99.4
GAUGE TIME	1038	1	1048	6.92	15.72	3.340	2.640	2.17	16.5	-111.6
DHC (FEET)	ND	2	1050	6.91	15.25	3.427	2.691	2.20	36.0	-109.5
DTW (FEET)	8.80	3	1052	6.89	15.24	3.471	2.669	2.19	15.6	-115.6
DTB (FEET)	14.10	4								
DTB - DTW	5.30	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
0.86 PURGING DATA										
3 WELL VOLUMES	2.58	WEATHER CONDITIONS: CLOUDY, WEST WIND, 50°								
PURGE DATE	2.14.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
END OF PURGE TIME	1052	COMMENTS:								
PURGE AMOUNT	2.6									
DTW (FEET)	13.70									
SAMPLING DATA										
SAMPLE DATE	2.15.18	WEATHER CONDITIONS: CLOUDY, CALM, 36°								
DTW (FEET)	8.90	WATER APPEARANCE / ODOR: CLEAR → BROWN, HCL ODOR								
SAMPLE TIME	0915	COMMENTS: COLLECTED DUPOB & 1 EXTRA 1 L AMBER								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-16	0915	40 ML VOA	5				HCL			
		1 L AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
GEOTECH										
INSTRUMENTS USED										
WATER MARK OIL WATER INTERFACE METER										
Y8I 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTF-20		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.14.18	Initial	1242	6.43	14.90	10.32	8.310	7.38	19.7	119.7
GAUGE TIME	1230	1	SHEEN ON PURGE WATER							
DHC (FEET)	ND	2	DISCONTINUED COLLECTING WATER							
DTW (FEET)	7.45	3	QUALITY READINGS							
DTB (FEET)	9.55	4								
DTB - DTW	2.10	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.55 PURGING DATA										
3 WELL VOLUMES	4.65	WEATHER CONDITIONS: CLOUDY, SW WIND, 50°								
PURGE DATE	2.14.18	WATER APPEARANCE / ODOR: CLEAR, LT GREY, ODOR, SHEEN								
END OF PURGE TIME	1250	COMMENTS:								
PURGE AMOUNT	3 GALS									
DTW (FEET)	9.40									
SAMPLING DATA										
SAMPLE DATE	2.15.18	WEATHER CONDITIONS: CLOUDY, WEST WIND, 36°								
DTW (FEET)	7.42	WATER APPEARANCE / ODOR: CLEAR, ODOR, SHEEN								
SAMPLE TIME	1010	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-20	1010	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
✓	✓	125 ML PLASTIC	1				NEAT			
GEOTECH										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YGI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
21 MKTF- 21		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.14.18	Initial		SHEEN ON PURGE WATER						
GAUGE TIME	1304	1		DID NOT COLLECT WATER						
DHC (FEET)	ND	2		QUALITY READINGS						
DTW (FEET)	6.88	3								
DTB (FEET)	8.80	4								
DTB - DTW	1.92	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.42 PURGING DATA										
3 WELL VOLUMES	4.26	WEATHER CONDITIONS: CLOUDY, SW WIND, 50°								
PURGE DATE	2.14.18	WATER APPEARANCE / ODOR: CLEAR, GREY, ODOR, SHEEN								
END OF PURGE TIME	1320	COMMENTS:								
PURGE AMOUNT	1.75 G									
DTW (FEET)	8.64 9.78									
SAMPLING DATA										
SAMPLE DATE	2.15.18	WEATHER CONDITIONS: CLOUDY, SW WIND, 36°								
DTW (FEET)	7.52	WATER APPEARANCE / ODOR: CLEAR, ODOR, SHEEN								
SAMPLE TIME	1100	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	21	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE					
MKTF- 21	1100		40 ML VOA	5	HCL					
			1 L AMBER	1 1	NEAT					
			250 ML AMBER	1	NEAT					
			250 ML PLASTIC	1	HNO ₃					
			125 ML PLASTIC	1	HNO ₃					
			125 ML PLASTIC	1	H ₂ SO ₄					
			125 ML PLASTIC	1	NEAT					
GEOTECH										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
Y8I 556 MPS WATER QUALITY METER										

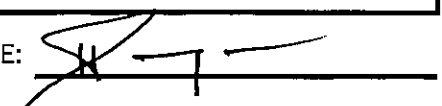
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WELL ID		TEST PARAMETERS								
MKTF-37		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2-15-18	Initial								
GAUGE TIME	1511	1		DID NOT SAMPLE						
DHC (FEET)	8.96	2		0.04' OF SPH IN WELL						
DTW (FEET)	9.00	3								
DTB (FEET)	24.60	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	(0.163 - 2")									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		GEDTECH OIL WATER INTERFACE METER								

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WELL ID		TEST PARAMETERS								
MKTf-45		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.15.18	Initial								
GAUGE TIME	1521	1								
DHC (FEET)	13.09	2								
DTW (FEET)	13.24	3								
DTB (FEET)	30.24	4								
DTB - DTW	5	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED										
GEO TECH WATER MARK OIL WATER INTERFACE METER										

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WELL ID		TEST PARAMETERS								
MKTF-36		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.15.18	Initial		SHEEN ON PURGE WATER						
GAUGE TIME	1532	1		DID NOT COLLECT WATER QUALITY						
DHC (FEET)	ND	2		READINGS						
DTW (FEET)	6.86	3								
DTB (FEET)	15.45	4								
DTB - DTW	8.59	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.40		PURGING DATA								
3 WELL VOLUMES	4.20	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 40°								
PURGE DATE	2.15.18	WATER APPEARANCE / ODOR: CLEAR → GREY, SHEEN, HC ODOR								
END OF PURGE TIME	1545	COMMENTS:								
PURGE AMOUNT	4.50 GALS									
DTW (FEET)	12.75									
SAMPLING DATA										
SAMPLE DATE	2.15.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	9.60	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1610	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-36	1610	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER								

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WELL ID		TEST PARAMETERS								
MKTf-35		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.15.18	Initial		LIGHT SHEEN ON PURGE WATER						
GAUGE TIME	1643	1		DID NOT COLLECT WATER						
DHC (FEET)	ND	2		QUALITY READINGS						
DTW (FEET)	8.70	3								
DTB (FEET)	16.47	4								
DTB - DTW	7.77	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.27 PURGING DATA										
3 WELL VOLUMES	3.81	WEATHER CONDITIONS: PARTLY CLOUDY, SW WIND, 40°								
PURGE DATE	2.15.18	WATER APPEARANCE / ODOR: CLEAR, ODOR, LIGHT SHEEN								
END OF PURGE TIME	1645	COMMENTS:								
PURGE AMOUNT	4 GALS									
DTW (FEET)	9.50									
SAMPLING DATA										
SAMPLE DATE	2.15.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	9.03	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1700	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-35	1700	40 ML VOA	5				HCL			
		40 ML VOA	3				Na ₂ S ₂ O ₃			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER								

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WELL ID		TEST PARAMETERS								
MKTF-17		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.15.18	Initial	1254	7.00	13.00	1.57	1.327	1.05	14.4	-105.9
GAUGE TIME	1242	1		SHEEN ON PURGE WATER						
DHC (FEET)	ND	2		DISCONTINUED COLLECTING						
DTW (FEET)	11.65	3		WATER QUALITY READINGS						
DTB (FEET)	24.68	4								
DTB - DTW	13.03	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.12 PURGING DATA										
3 WELL VOLUMES	6.36	WEATHER CONDITIONS: CLOUDY, SW WIND, 38°								
PURGE DATE	2.15.18	WATER APPEARANCE / ODOR: CLEAR WITH SHEEN, HC ODOR								
END OF PURGE TIME	1302	COMMENTS:								
PURGE AMOUNT	2									
DTW (FEET)	24.49									
SAMPLING DATA										
SAMPLE DATE	2.16.18	WEATHER CONDITIONS: CLEAR, CALM, 23°								
DTW (FEET)	15.20	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	0730	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-17	0730	40 ML VOA	5				HCL			
		1L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
GEO TECH										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
MKTF-19										
GAUGE DATE	2.15.18	Initial		SHEEN ON PURGE WATER						
GAUGE TIME	1318	1		DID NOT COLLECT WATER						
DHC (FEET)	ND	2		QUALITY READINGS						
DTW (FEET)	12.00	3								
DTB (FEET)	18.45	4								
DTB - DTW	6.45	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.05 PURGING DATA										
3 WELL VOLUMES	3.15	WEATHER CONDITIONS: CLOUDY, SW WND 38°								
PURGE DATE	2.15.18	WATER APPEARANCE / ODOR: CLEAR TO TURBID BROWN, HC ODOR, SHEEN								
END OF PURGE TIME	1335	COMMENTS:								
PURGE AMOUNT	3.25									
DTW (FEET)	17.11									
SAMPLING DATA										
SAMPLE DATE	2.16.18	WEATHER CONDITIONS: CLEAR, CALM, 23°								
DTW (FEET)	12.26	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	0810	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-19	0810	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
✓	✓	125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER MARK OIL WATER INTERFACE METER GEOTECH										

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WELL ID		TEST PARAMETERS								
MKTF-34		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.15.18	Initial	1354	7.26	13.14	1.756	1.475	1.17	77.2	44.6
GAUGE TIME	1347	1	1357	7.32	13.54	1.759	1.464	1.16	64.6	50.3
DHC (FEET)	ND	2	1400	7.31	13.66	1.768	1.467	1.17	63.0	53.1
DTW (FEET)	18.80	3	1403	7.31	13.68	1.785	1.474	1.17	35.7	53.7
DTB (FEET)	27.71	4								
DTB - DTW	8.91	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	(0.163 - 2")									
1.45 PURGING DATA										
3 WELL VOLUMES	4.35	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 42°								
PURGE DATE	2.15.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1403	COMMENTS:								
PURGE AMOUNT	4.5									
DTW (FEET)	26.21									
SAMPLING DATA										
SAMPLE DATE	2.16.18	WEATHER CONDITIONS: CLEAR, CALM, 28°								
DTW (FEET)	23.25	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0900	COMMENTS: COLLECTED DLIP09 & 1 EXTRA 1L AMBER								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-34	0900	40 ML VOA	5				HCL			
		1 L AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
GEO TECH 7										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

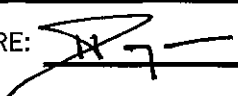
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WELL ID		TEST PARAMETERS								
MKTF-18		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.15.18	Initial		SHEEN ON PURGE WATER						
GAUGE TIME	1442	1		DID NOT COLLECT WATER						
DHC (FEET)	ND	2		QUALITY READINGS						
DTW (FEET)	6.47	3								
DTB (FEET)	26.80	4								
DTB - DTW	20.33	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
3.31		PURGING DATA								
3 WELL VOLUMES	9.93	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 41°								
PURGE DATE	2.15.18	WATER APPEARANCE / ODOR: CLEAR TO GREY, HC ODOR, SHEEN								
END OF PURGE TIME	1456	COMMENTS:								
PURGE AMOUNT	3 GALS									
DTW (FEET)	26.59									
		SAMPLING DATA								
SAMPLE DATE	2.16.18	WEATHER CONDITIONS: CLEAR, NORTH WIND, 32°								
DTW (FEET)	8.15	WATER APPEARANCE / ODOR: CLEAR, HC SHEEN								
SAMPLE TIME	1000	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-18	1000	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		GEDTECH OIL WATER INTERFACE METER								

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WELL ID		TEST PARAMETERS								
OW-57		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2-19-18	Initial	13:59	6.92	12.68	1.595	1.355	1.07	13.5	-134.7
GAUGE TIME	1340	1	1402	6.82	13.13	1.568	1.320	1.04	13.4	-155.4
DHC (FEET)	ND	2			BAILED DRY @ 2 GALLONS					
DTW (FEET)	19.88	3								
DTB (FEET)	28.35	4								
DTB - DTW	8.47	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	(0.163 - 2")									
1.38		PURGING DATA								
3 WELL VOLUMES	4.14	WEATHER CONDITIONS: CLOUDY, STRONG SW WIND, 46°								
PURGE DATE	2.19.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR → BROWN								
END OF PURGE TIME	1405	COMMENTS:								
PURGE AMOUNT	2									
DTW (FEET)	28.03									
		SAMPLING DATA								
SAMPLE DATE	2.20.18	WEATHER CONDITIONS: CLOUDY, WEST WIND, 28°								
DTW (FEET)	20.13	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1005	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-57	1005	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		← GEOTECH								
INSTRUMENTS USED		WATER-MARK OIL WATER INTERFACE METER								
		YSI 556 MPS WATER QUALITY METER								

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WELL ID		TEST PARAMETERS								
RW-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.19.18	Initial		SHEEN ON PURGE WATER						
GAUGE TIME	1434	1		DID NOT COLLECT WATER						
DHC (FEET)	ND	2		QUALITY READINGS						
DTW (FEET)	20.00	3								
DTB (FEET)	40.00	4								
DTB - DTW	20.00	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
14.80 PURGING DATA										
3 WELL VOLUMES	44.4	WEATHER CONDITIONS: CLOUDY, SNOW SHOWERS, 45°								
PURGE DATE	2.19.18	WATER APPEARANCE / ODOR: CLEAR, SHEEN, HL ODOR								
END OF PURGE TIME	1500	COMMENTS: BAILED DOWN @ 18.5 GALS								
PURGE AMOUNT	18.5									
DTW (FEET)	39.55									
SAMPLING DATA										
SAMPLE DATE	2.20.18	WEATHER CONDITIONS: CLOUDY, WEST WIND, 28°								
DTW (FEET)	20.30	WATER APPEARANCE / ODOR: CLEAR, HL ODOR								
SAMPLE TIME	1100	COMMENTS: COLLECTED DUPIO AT THIS WELL								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
RW-2	1100	40 ML VOA	5				HCL			
↓	↓	250 ML AMBER	1				NEAT			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER GEOTECH								

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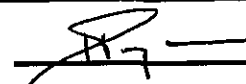
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WELL ID		TEST PARAMETERS								
QW-58		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.20.18	Initial	1204	7.07	10.57	1.486	1.334	1.05	30.1	-69.4
GAUGE TIME	1155	1	1214	6.41	12.56	1.573	1.342	1.06	16.8	-136.7
DHC (FEET)	ND	2	1224	6.40	12.69	1.576	1.342	1.06	16.6	-134.5
DTW (FEET)	24.52	3	1234	6.35	12.75	1.578	1.333	1.05	12.4	-141.1
DTB (FEET)	47.62	4								
DTB - DTW	23.10	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	(0.163 - 2")									
3.77 PURGING DATA										
3 WELL VOLUMES	11.31	WEATHER CONDITIONS: CLOUDY, WEST WIND, 30°								
PURGE DATE	2.20.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, HL ODOR								
END OF PURGE TIME	1234	COMMENTS:								
PURGE AMOUNT	1200 G									
DTW (FEET)	24.54									
SAMPLING DATA										
SAMPLE DATE	2.20.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	24.54	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1300	COMMENTS: COLLECTED 1 EXTRA 1L AMBER								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
QW-58	1300	40 ML VOA	5				HCL			
		1L AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
GEO TECH										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
OW-53		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.21.18	Initial								
GAUGE TIME	1005	1								
DHC (FEET)	ND	2								
DTW (FEET)	ND	3								
DTB (FEET)	33.90	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA NA - DRY										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA NA - DRY										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATER MARK OIL WATER INTERFACE METER GEOTECH								

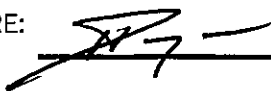
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POND ID	SAMPLE DATE	SAMPLE TIME	
EP-2	2-21-18	1320	
SAMPLING DATA			
WEATHER CONDITIONS: <i>PARTLY CLOUDY, SW WIND, 40°</i>			
WATER APPEARANCE / ODOR: <i>GREY - BIO ODOR</i>			
COMMENTS:			
SAMPLE LOG			
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS PRESERVATIVE
EP-2	<i>1320</i>	40 ML VOA	5 HCL
EP-2	↓	1 LITER AMBER	2 NEAT
EP-2		250 ML PLASTIC	1 HNO ₃
EP-2		125 ML PLASTIC	1 HNO ₃
EP-2		125 ML PLASTIC	1 H ₂ SO ₄
EP-2		125 ML PLASTIC	1 NEAT
INSTRUMENTS USED		N/A	

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POND ID	SAMPLE DATE	SAMPLE TIME		
EP-3	2-21-18	1350		
SAMPLING DATA				
WEATHER CONDITIONS:				
PARTLY CLOUDY SW WIND, 40°				
WATER APPEARANCE / ODOR:				
GREY BIO ODOR				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-3	1350	40 ML VOA	5	HCL
EP-3	↓	1 LITER AMBER	1	NEAT
EP-3		250 ML PLASTIC	1	HNO ₃
EP-3		125 ML PLASTIC	1	HNO ₃
EP-3		125 ML PLASTIC	1	H ₂ SO ₄
EP-3		125 ML PLASTIC	1	NEAT
INSTRUMENTS USED N/A				

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POND ID	SAMPLE DATE	SAMPLE TIME
EP-4	2.21.18	1425

SAMPLING DATA				
WEATHER CONDITIONS: PARTLY CLOUDY, SW WIND, 40°				
WATER APPEARANCE / ODOR: GREY, FAINT BIO ODOR				
COMMENTS:				

SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-4	1425	40 ML VOA	5	HCL
EP-4	↓	1 LITER AMBER	1	NEAT
EP-4		250 ML PLASTIC	1	HNO ₃
EP-4		125 ML PLASTIC	1	HNO ₃
EP-4		125 ML PLASTIC	1	H ₂ SO ₄
EP-4		125 ML PLASTIC	1	NEAT
INSTRUMENTS USED N/A				

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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-5	2-21-18	1310

SAMPLING DATA

WEATHER CONDITIONS: PARTLY CLOUDY, SW WIND, 40°

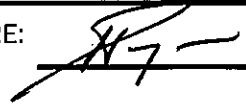
WATER APPEARANCE / ODOR: GREENISH GREY, NO ODOR, AOP

COMMENTS:

SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-5	<u>5</u> <u>1310</u>	40 ML VOA	5	HCL
EP-5	↓	1 LITER AMBER	1	NEAT
EP-5		250 ML PLASTIC	1	HNO ₃
EP-5		125 ML PLASTIC	1	HNO ₃
EP-5		125 ML PLASTIC	1	H ₂ SO ₄
EP-5		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED N/A

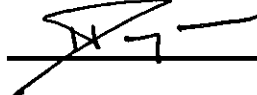
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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME	
EP-6	2.21.18	1555	
SAMPLING DATA			
WEATHER CONDITIONS: PARTLY CLOUDY / CLOUDY, SW WIND, 40°			
WATER APPEARANCE / ODOR: GREY, NO ODOR			
COMMENTS:			
SAMPLE LOG			
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS PRESERVATIVE
EP-6	1555	40 ML VOA	5 HCL
EP-6	↓	1 LITER AMBER	1 NEAT
EP-6		250 ML PLASTIC	1 HNO ₃
EP-6		125 ML PLASTIC	1 HNO ₃
EP-6		125 ML PLASTIC	1 H ₂ SO ₄
EP-6		125 ML PLASTIC	1 NEAT
INSTRUMENTS USED		N/A	

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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-60		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.21.18	Initial	0824	6.80	8.80	5.555	5.237	4.48	52.6	153.0
GAUGE TIME	0800	1	0833	7.05	10.54	5.910	5.315	4.56	24.0	133.3
DHC (FEET)	ND	2	BAILED DRY @ 8 GALS							
DTW (FEET)	16.26	3								
DTB (FEET)	46.06	4								
DTB - DTW	29.80	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	(0.163 - 2")									
4.86 PURGING DATA										
3 WELL VOLUMES	14.58	WEATHER CONDITIONS: CLOUDY, SE WIND, 19°								
PURGE DATE	2.21.18	WATER APPEARANCE / ODOR: CLEAR TO BROWN, NO ODOR								
END OF PURGE TIME	0850	COMMENTS:								
PURGE AMOUNT	8 GALS									
DTW (FEET)	45.63									
SAMPLING DATA										
SAMPLE DATE	2.22.18	WEATHER CONDITIONS: CLOUDY SW WIND, 21°								
DTW (FEET)	34.80	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0820	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-60	0820	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
GEOTECH										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

COMPLETED BY: TRACY PAYNE

SIGNATURE: [Signature]

**ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-59		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.21.18	Initial	0919	7.29	11.36	9.264	8.195	7.27	109.9	102.8
GAUGE TIME	0910	1	0924	7.83	12.72	9.668	8.212	7.28	18.9	73.6
DHC (FEET)	ND	2	0930	7.32	12.50	9.667	8.268	7.33	15.3	66.5
DTW (FEET)	24.00	3	0939	7.30	12.48	9.660	8.279	7.35	13.6	62.3
DTB (FEET)	38.55	4								
DTB - DTW	14.55	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	(0.163 - 2")									
2.37 PURGING DATA										
3 WELL VOLUMES	7.11	WEATHER CONDITIONS: PARTLY CLOUDY, SE WIND, 25°								
PURGE DATE	2.21.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, NO ODOR								
END OF PURGE TIME	0939	COMMENTS:								
PURGE AMOUNT	7.25									
DTW (FEET)	38.29									
SAMPLING DATA										
SAMPLE DATE	2.22.18	WEATHER CONDITIONS: CLOUDY, SW WIND, 21°								
DTW (FEET)	25.55	WATER APPEARANCE / ODOR: CLEAR TO BROWN, NO ODOR								
SAMPLE TIME	0900	COMMENTS: COLLECTED DUPII & 1 EXTRA 1L AMBER								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-59	0900	40 ML VOA	5				HCL			
		1 L AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
GEOTECH										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-54		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.21.18	Initial	1025	7.03	11.49	1.781	1.560	1.24	132.9	36.1
GAUGE TIME	1015	1	1030	7.23	11.95	1.817	1.574	1.26	21.3	5.4
DHC (FEET)	ND	2	1032	7.11	11.84	1.835	1.594	1.27	18.1	-31.7
DTW (FEET)	18.05	3	1036	7.09	11.93	1.842	1.596	1.27	20.1	-52.2
DTB (FEET)	30.87	4								
DTB - DTW	12.82	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.09 PURGING DATA										
3 WELL VOLUMES	6.27	WEATHER CONDITIONS: CLOUDY, SE WIND, SNOW FLURRIES, 30°								
PURGE DATE	2.21.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
END OF PURGE TIME	1036	COMMENTS:								
PURGE AMOUNT	6.50									
DTW (FEET)	18.15									
SAMPLING DATA										
SAMPLE DATE	2.22.18	WEATHER CONDITIONS: CLOUDY, SW WIND 24°								
DTW (FEET)	18.06	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	0955	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-54	0955	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
✓	✓	125 ML PLASTIC	1				NEAT			
GEOTECH?										
INSTRUMENTS USED WATER MARK OIL WATER INTERFACE METER										
YSI 556 MPS WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

WELL ID		TEST PARAMETERS								
		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
OW-56										
GAUGE DATE	2-21-18	Initial	1059	6.95	10.73	2.229	1.992	1.61	59.8	37.8
GAUGE TIME	1053	1	1101	6.94	10.69	2.199	1.967	1.59	55.7	47.3
DHC (FEET)	ND	2	1103	6.85	10.77	2.230	1.992	1.61	36.6	55.4
DTW (FEET)	12.84	3	1106	6.81	10.83	2.215	2.058	1.66	31.9	50.0
DTB (FEET)	18.59	4								
DTB - DTW	5.75	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
0.94 PURGING DATA										
3 WELL VOLUMES	2.82	WEATHER CONDITIONS: CLOUDY, SOUTH WIND, 38°								
PURGE DATE	2-21-18	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR								
END OF PURGE TIME	1106	COMMENTS:								
PURGE AMOUNT	3 GALS									
DTW (FEET)	18.37									
SAMPLING DATA										
SAMPLE DATE	2-22-18	WEATHER CONDITIONS: CLOUDY, WEST WIND, 28°								
DTW (FEET)	16.28	WATER APPEARANCE / ODOR: CLEAR, VERY FAINT ODOR								
SAMPLE TIME	1035	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-56	1035	40 ML VOA	5				HCL			
		1 L AMBER	21				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
GEOTECH										
INSTRUMENTS USED → WATER MARK OIL WATER INTERFACE METER										
Y&I 556 MPS WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-55		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.21.18	Initial	1234	6.71	12.97	2.008	1.694	1.36	26.0	-142.1
GAUGE TIME	1224	1	1238	6.51	13.27	2.043	1.712	1.37	18.4	-163.2
DHC (FEET)	ND	2	1241	6.27	13.24	2.077	1.742	1.40	19.0	-157.5
DTW (FEET)	17.80	3	1246	6.15	13.23	2.084	1.746	1.40	20.9	-153.7
DTB (FEET)	30.95	4								
DTB - DTW	13.15	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.14 PURGING DATA										
3 WELL VOLUMES	6.42	WEATHER CONDITIONS: PARTLY CLOUDY, SOUTH WIND, 38°								
PURGE DATE	2.21.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
END OF PURGE TIME	1246	COMMENTS:								
PURGE AMOUNT	6.5G									
DTW (FEET)	17.95									
SAMPLING DATA										
SAMPLE DATE	2.22.18	WEATHER CONDITIONS: CLOUDY, WEST WIND, 28°								
DTW (FEET)	17.81	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1120	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-55	1120	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
GEOTECH										
INSTRUMENTS USED WATER-MARK OIL WATER INTERFACE METER										
YSI 556 MP3 WATER QUALITY METER										

COMPLETED BY: TRACY PAYNE

SIGNATURE: RT

ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-12B	2.22.18	1215


SAMPLING DATA

WEATHER CONDITIONS:
PARTLY CLOUDY, STRONG WEST WIND

WATER APPEARANCE / ODOR:
GREY

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-12B	1215	40 ML VOA	5	HCL
EP-12B		1 LITER AMBER	1	NEAT
EP-12B		250 ML PLASTIC	1	HNO ₃
EP-12B		125 ML PLASTIC	1	HNO ₃
EP-12B		125 ML PLASTIC	1	H ₂ SO ₄
EP-12B		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED N/A

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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-8	2-23-18	0830

SAMPLING DATA

WEATHER CONDITIONS:
CLEAR, CALM, 23°

WATER APPEARANCE / ODOR:
LT GREY, FAINT ODOR

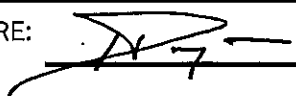
COMMENTS:
COLLECTED 1 EXTRA 1L AMBER

SAMPLE LOG


SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-8	<i>0830</i>	40 ML VOA	5	HCL
EP-8	<i>↓</i>	1 LITER AMBER	5 <i>2</i>	NEAT
EP-8		250 ML PLASTIC	1	HNO ₃
EP-8		125 ML PLASTIC	1	HNO ₃
EP-8		125 ML PLASTIC	1	H ₂ SO ₄
EP-8		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED N/A

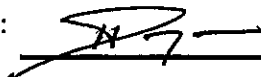
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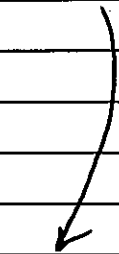
ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-7	2.23.18	0850		
SAMPLING DATA				
WEATHER CONDITIONS:				
CLEAR, CALM, 24°				
WATER APPEARANCE / ODOR:				
CLEAR, GREY, FAINT ODOR				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-7	0850	40 ML VOA	5	HCL
EP-7		1 LITER AMBER	1	NEAT
EP-7		250 ML PLASTIC	1	HNO ₃
EP-7		125 ML PLASTIC	1	HNO ₃
EP-7		125 ML PLASTIC	1	H ₂ SO ₄
EP-7		125 ML PLASTIC	1	NEAT
INSTRUMENTS USED N/A				

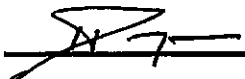
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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-11	2.23.18	0900		
SAMPLING DATA				
WEATHER CONDITIONS: CLEAR, CALM, 24°				
WATER APPEARANCE / ODOR: CLEAR → GREY, FAINT ODOR				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-11	0900	40 ML VOA	5	HCL
EP-11		1 LITER AMBER	1	NEAT
EP-11		250 ML PLASTIC	1	HNO ₃
EP-11		125 ML PLASTIC	1	HNO ₃
EP-11		125 ML PLASTIC	1	H ₂ SO ₄
EP-11		125 ML PLASTIC	1	NEAT
INSTRUMENTS USED N/A				

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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-12	2-23-18	1025

SAMPLING DATA

WEATHER CONDITIONS:
CLEAR, CALM, 31°

WATER APPEARANCE / ODOR:
LT GREY, FAINT ODOR

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-12	1025	40 ML VOA	5	HCL
EP-12		1 LITER AMBER	1	NEAT
EP-12		250 ML PLASTIC	1	HNO ₃
EP-12		125 ML PLASTIC	1	HNO ₃
EP-12		125 ML PLASTIC	1	H ₂ SO ₄
EP-12		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED N/A

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SIGNATURE: JP

ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-9	2-23-18	1125

SAMPLING DATA

WEATHER CONDITIONS:
CLEAR, SW WIND, 35°

WATER APPEARANCE / ODOR:
CLEAR, NO ODOR

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-9	1125	40 ML VOA	5	HCL
EP-9	↓	1 LITER AMBER	1	NEAT
EP-9		250 ML PLASTIC	1	HNO ₃
EP-9		125 ML PLASTIC	1	HNO ₃
EP-9		125 ML PLASTIC	1	H ₂ SO ₄
EP-9		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED N/A

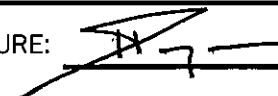
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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

WELL ID		TEST PARAMETERS								
BW-4A		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2-26-18	Initial								
GAUGE TIME	1026	1								
DHC (FEET)	ND	2	DID NOT SAMPLE - NO WATER							
DTW (FEET)	ND	3								
DTB (FEET)	38.80	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA NA										
3 WELL VOLUMES		WEATHER CONDITIONS: WATER APPEARANCE / ODOR: COMMENTS: 								
PURGE DATE										
END OF PURGE TIME										
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA NA										
SAMPLE DATE		WEATHER CONDITIONS: WATER APPEARANCE / ODOR: COMMENTS: 								
DTW (FEET)										
SAMPLE TIME										
SAMPLE LOG NA										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		TESTWELL WATER LEVEL METER								

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

**ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-5A		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.26.18	Initial								
GAUGE TIME	1048	1								
DHC (FEET)	ND	2		DID NOT SAMPLE - NO WATER						
DTW (FEET)	ND	3								
DTB (FEET)	23.02'	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA NA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA NA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG NA										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		TESTWELL WATER LEVEL METER								

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

WELL ID		TEST PARAMETERS								
BW-5B		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.26.18	Initial	1134	6.37	11.47	1.114	0.976	0.76	36.7	45.5
GAUGE TIME	1052	1								
DHC (FEET)	ND	2		PUMPED DOWN @ 8 GALS						
DTW (FEET)	10.28	3								
DTB (FEET)	61.45	4								
DTB - DTW	51.17	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
8.34 PURGING DATA										
3 WELL VOLUMES	25.02	WEATHER CONDITIONS: CLEAR, SW WIND, 45°								
PURGE DATE	2.26.18	WATER APPEARANCE / ODOR: CLEAR TO LT BROWN, NO ODOR								
END OF PURGE TIME	1155	COMMENTS:								
PURGE AMOUNT	8.00									
DTW (FEET)	53.80									
SAMPLING DATA										
SAMPLE DATE	2.26.18	WEATHER CONDITIONS: CLEAR, SW WIND, 55°								
DTW (FEET)	43.40	WATER APPEARANCE / ODOR: LT BROWN, NO ODOR								
SAMPLE TIME	1530	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-5B	1530	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED TESTWELL WATER LEVEL METER										
YSI 556 MPS WATER QUALITY METER										

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

WELL ID		TEST PARAMETERS								
BW-5C		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.26.18	Initial	1148	6.02	11.33	4.245	3.733	3.13	24.7	86.7
GAUGE TIME	1344	1	1400	5.83	11.86	4.262	3.698	3.10	8.9	-23.8
DHC (FEET)	ND	2	1412	5.82	11.77	4.246	3.694	3.10	17.8	-72.6
DTW (FEET)	2.63	3	1424	5.95	11.80	4.277	3.698	3.11	19.9	72.6
DTB (FEET)	76.35	4								-82.0
DTB - DTW	73.72	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	(0.163 - 2")									
12 PURGING DATA										
3 WELL VOLUMES	36	WEATHER CONDITIONS: CLEAR, SW WIND, 54°								
PURGE DATE	2.26.18	WATER APPEARANCE / ODOR: CLEAR, NONE								
END OF PURGE TIME	1425	COMMENTS:								
PURGE AMOUNT	36									
DTW (FEET)	5.95									
SAMPLING DATA										
SAMPLE DATE	2.26.18	WEATHER CONDITIONS: CLEAR, STRONG SW WIND, 54°								
DTW (FEET)	5.95	WATER APPEARANCE / ODOR: CLEAR, NONE								
SAMPLE TIME	1435	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-5C	1435	40 ML VOA	5				HCL			
		1 L AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
↓	↓	125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
TESTWELL WATER LEVEL METER										
YSI 556 MPS WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
BW-4B		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.26.17	Initial	1012	6.96	10.40	1.496	1.346	1.06	14.7	-218.1
GAUGE TIME	0950	1	1018	7.09	11.87	1.491	1.292	1.02	12.6	-220.0
DHC (FEET)	ND	2								
DTW (FEET)	38.43	3								
DTB (FEET)	63.50	4								
DTB - DTW	25.07	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
4.09 PURGING DATA										
3 WELL VOLUMES	12.27	WEATHER CONDITIONS: CLEAR, SOUTH WIND, 25°								
PURGE DATE	2.26.17	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1020	COMMENTS:								
PURGE AMOUNT	4.5									
DTW (FEET)	49.78									
SAMPLING DATA NA										
DATE	2.27.10	WEATHER CONDITIONS:								
DTW (FEET)	49.00	WATER APPEARANCE / ODOR:								
SAMPLE TIME	49.00	COMMENTS: INSUFFICIENT WATER TO SAMPLE								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED TEST WELL WATER LEVEL METER										
YSI 550 MPS WATER QUALITY METER										

SIGNATURE:

URE: 17

ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
OW-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.27.18	Initial	0820	7.25	10.29	1.256	1.133	0.89	39.2	115.2
GAUGE TIME	0800	1	0905	7.27	11.65	1.179	1.028	0.80	112	94.1
DHC (FEET)	ND	2	0950	7.65	12.10	1.195	1.032	0.81	98.1	94.7
DTW (FEET)	1.45	3	ND							
DTB (FEET)	94.55	4								
DTB - DTW	93.10	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES	207	WEATHER CONDITIONS: CLEAR, SOUTH WIND, 23°								
PURGE DATE	2.27.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1006	COMMENTS:								
PURGE AMOUNT	75									
DTW (FEET)	94.48									
SAMPLING DATA										
SAMPLE DATE	2.27.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	90.12	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1050	COMMENTS: COLLECTED DUP 12								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-1	1050	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
TESTWELL WATER LEVEL METER										
YSI 556 MPS WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
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2 GPM

WELL ID		TEST PARAMETERS								
OW-10		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.27.18	Initial	1245	6.60	12.33	1.970	1.690	1.35	31.9	148.6
GAUGE TIME	1140	1	1207	6.41	12.50	3.077	2.625	2.15	50.1	120.4
DHC (FEET)	ND	2	1230	6.40	12.39	3.368	2.886	2.38	14.3	108.3
DTW (FEET)	1.98	3	1243	6.38	12.36	3.500	3.006	2.49	9.3	86.1
DTB (FEET)	60.33	4								
DTB - DTW	58.35	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
43 PURGING DATA										
3 WELL VOLUMES	129	WEATHER CONDITIONS: CLEAR, SW WIND, 47°								
PURGE DATE	2.27.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1243	COMMENTS:								
PURGE AMOUNT	130									
DTW (FEET)	2.25									
SAMPLING DATA										
SAMPLE DATE	2.27.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	2.25	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1245	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-10	1245	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
TESTWELL WATER LEVEL METER										
YSI 556 MPS WATER QUALITY METER										

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1.56GPM

ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-29		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.27.18	Initial	1340	7.08	12.17	1.688	1.452	1.15	13.2	44.8
GAUGE TIME	1325	1	1357	7.05	12.50	1.675	1.424	1.13	15.1	-45.3
DHC (FEET)	ND	2	1414	6.98	12.28	1.665	1.430	1.13	30.2	-55.2
DTW (FEET)	17.12	3	1431	7.06	12.30	1.670	1.432	1.11	10.5	-49.5
DTB (FEET)	51.08	4								
DTB - DTW	33.96	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
25 PURGING DATA										
3 WELL VOLUMES	75	WEATHER CONDITIONS: CLEAR, STRONG SW WIND, 51°								
PURGE DATE	2.27.18	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR								
END OF PURGE TIME	1431	COMMENTS:								
PURGE AMOUNT	75									
DTW (FEET)	27.65									
SAMPLING DATA										
SAMPLE DATE	2.27.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	27.65	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1435	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-29	1435	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED TEST WELL WATER LEVEL METER										
Y9I 556 MPS WATER QUALITY METER										

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1.5 GPM

ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-14		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.27.18	Initial	1540	6.78	13.11	1.689	1.421	1.13	11.2	-139.8
GAUGE TIME	1535	1	1552	6.78	12.95	1.688	1.425	1.13	13.0	-149.9
DHC (FEET)	ND	2	1604	6.71	13.21	1.698	1.424	1.13	12.4	-149.9
DTW (FEET)	21.80	3	1616	6.68	13.16	1.699	1.427	1.13	10.1	-139.7
DTB (FEET)	46.52	4								
DTB - DTW	24.72	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
18 PURGING DATA										
3 WELL VOLUMES	54	WEATHER CONDITIONS: CLEAR, STRONG SW WIND, 50°								
PURGE DATE	2.27.18	WATER APPEARANCE / ODOR: CLEAR, HL ODOR								
END OF PURGE TIME	1616	COMMENTS:								
PURGE AMOUNT	55									
DTW (FEET)	22.70									
SAMPLING DATA										
SAMPLE DATE	2.27.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	22.70	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1620	COMMENTS:								
	22.70									
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-14	1620	40 ML VOA	5				HCL			
		40 ML VOA	3				Na ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
↓	↓									
INSTRUMENTS USED										
TEST WELL WATER LEVEL METER										
YSI 556 MPS WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
OW-13		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.28.18	Initial	1215	7.20	12.70	1.190	1.009	0.79	24.8	-48.1
GAUGE TIME	1208	1	1245	6.93	12.55	1.079	0.920	0.71	15.3	-119.2
DHC (FEET)	ND	2	1315	6.97	12.38	1.073	0.919	0.71	11.0	-57.6
DTW (FEET)	20.50	3	1345	6.87	12.30	1.061	0.924	0.72	26.4	-39.1
DTB (FEET)	99.15	4								
DTB - DTW	78.65	5								
CAPACITY PER FOOT	(0.74 - 4") 0.163 - 2"	6								
58 PURGING DATA										
3 WELL VOLUMES	174	WEATHER CONDITIONS: CLOUDY, SW WIND, 40°								
PURGE DATE	2.28.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1345	COMMENTS:								
PURGE AMOUNT	180									
DTW (FEET)	24.60'									
SAMPLING DATA										
SAMPLE DATE	2-28-18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	24.70	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1350	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-13	1350	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
TESTWELL WATER LEVEL METER										
YSI 556 MPS WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-30		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	2.28.18	Initial	0855	7.27	10.44	1.654	1.490	1.18	27.8	109.6
GAUGE TIME	0845	1	0916	7.28	11.73	1.648	1.435	1.14	11.7	41.6
DHC (FEET)	ND	2	0937	7.30	11.79	1.657	1.438	1.14	10.7	27.4
DTW (FEET)	21.33	3	1000	7.32	11.81	1.667	1.441	1.14	9.8	18.6
DTB (FEET)	49.90	4								
DTB - DTW	28.57	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES	63	WEATHER CONDITIONS: SNOW, 30°								
PURGE DATE	2.28.18	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR								
END OF PURGE TIME	1000	COMMENTS:								
PURGE AMOUNT	65									
DTW (FEET)	24.14									
SAMPLING DATA										
SAMPLE DATE	2.28.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	24.14	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1010	COMMENTS: COLLECTED DUP 13								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-30	1010	40 ML VOA	5				HCL			
		40 ML VOA	3				Na ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
TESTWELL WATER LEVEL METER										
YSI 556 MPS WATER QUALITY METER										

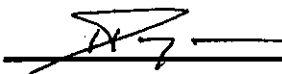
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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

WELL ID		TEST PARAMETERS								
PW-4		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	—	Initial								
GAUGE TIME	—	1								
DHC (FEET)	—	2								
DTW (FEET)	—	3								
DTB (FEET)	—	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES	—	WEATHER CONDITIONS: CLEAR, CALM / LT WEST WIND, 37°								
PURGE DATE	—	WATER APPEARANCE / ODOR: CLEAR - NO ODOR								
END OF PURGE TIME	—	COMMENTS:								
PURGE AMOUNT	—									
DTW (FEET)	—									
SAMPLING DATA										
SAMPLE DATE	3/1/18	WEATHER CONDITIONS: CLEAR CALM, 37°								
DTW (FEET)	—	WATER APPEARANCE / ODOR: CLEAR, AT 11:30 - NO ODOR								
SAMPLE TIME	0940	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
PW-4	0940	40 ML VOA	5				HCL			
		1 L AMBER	2				NEAT			
		250 ML PLASTIC-	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
		500ML PLASTIC	1				NAOH			
INSTRUMENTS USED NA										

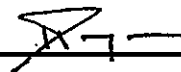
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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-9	3-1-18	0848		
SAMPLING DATA				
WEATHER CONDITIONS:				
CLEAR, CALM, 32°				
WATER APPEARANCE / ODOR:				
CLEAR, NO ODOR				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-9	0848	500 ML PLASTIC	1	NEAT
EP-9	↓	1 LITER PLASTIC	1	NEAT
EP-9		100 ML PLASTIC	1	NEAT
EP-9		500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED				
N/A				

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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-6	3.1.18	0905

SAMPLING DATA

WEATHER CONDITIONS:
CLEAR, CALM, 32°

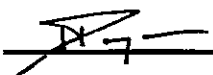
WATER APPEARANCE / ODOR:
GREY, FAINT ODOR

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-6	0905	500 ML PLASTIC	1	NEAT
EP-6	↓	1 LITER PLASTIC	1	NEAT
EP-6	↓	100 ML PLASTIC	1	NEAT
EP-6	↓	500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED	N/A			

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ANDEAVOR - GALLUP REFINERY
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POND ID	SAMPLE DATE	SAMPLE TIME
EP-5	3.1.18	0915

SAMPLING DATA

WEATHER CONDITIONS:
CLEAR, CALM, 32°


WATER APPEARANCE / ODOR:
GREENISH GREY, NO ODOR

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-5	0915	500 ML PLASTIC	1	NEAT
EP-5	↓	1 LITER PLASTIC	1	NEAT
EP-5		100 ML PLASTIC	1	NEAT
EP-5		500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED	N/A			

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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-4	3.1.18	1005

SAMPLING DATA

WEATHER CONDITIONS:
CLEAR, LIGHT WEST WIND, 35°

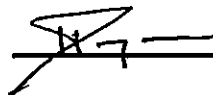
WATER APPEARANCE / ODOR:
GREY, FAINT ODOR

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-4	1005	500 ML PLASTIC	1	NEAT
EP-4	↓	1 LITER PLASTIC	1	NEAT
EP-4	↓	100 ML PLASTIC	1	NEAT
EP-4	↓	500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED	N/A			

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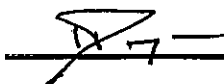
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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-3	3.1.18	1015

SAMPLING DATA				
WEATHER CONDITIONS: CLEAR, LIGHT WEST WIND, 38°				
WATER APPEARANCE / ODOR: GREY, BIO ODOR				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-3	1015	500 ML PLASTIC	1	NEAT
EP-3	↓	1 LITER PLASTIC	1	NEAT
EP-3		100 ML PLASTIC	1	NEAT
EP-3		500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED		N/A		

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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-2	3.1.18	1025

SAMPLING DATA

WEATHER CONDITIONS:
CLEAR, WEST / SW WIND, 40°

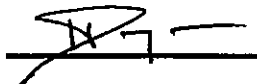
WATER APPEARANCE / ODOR:
GREY - BIO ODOR

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-2	1025	500 ML PLASTIC	1	NEAT
EP-2	↓	1 LITER PLASTIC	1	NEAT
EP-2		100 ML PLASTIC	1	NEAT
EP-2		500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED	N/A			

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SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-8	3.1.18	1045

SAMPLING DATA

WEATHER CONDITIONS:
CLEAR, SW WIND, 44°

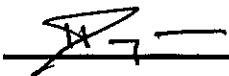
WATER APPEARANCE / ODOR:
LIGHT GREY, FAINT ODOR

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-8	1045	500 ML PLASTIC	1	NEAT
EP-8	↓	1 LITER PLASTIC	1	NEAT
EP-8	↓	100 ML PLASTIC	1	NEAT
EP-8	↓	500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED	N/A			

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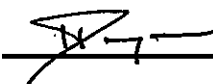
SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-7	3.1.18	1055

SAMPLING DATA																																											
WEATHER CONDITIONS: CLEAR, SW WIND, 44°																																											
WATER APPEARANCE / ODOR: CLEAR → LIGHT GREY, VERY FAINT ODOR																																											
COMMENTS:																																											
SAMPLE LOG																																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">SAMPLE ID</th> <th style="width: 15%;">TIME</th> <th style="width: 30%;">CONTAINER TYPE</th> <th style="width: 20%;">NUMBER OF CONTAINERS</th> <th style="width: 20%;">PRESERVATIVE</th> </tr> </thead> <tbody> <tr> <td>EP-7</td> <td>1055</td> <td>500 ML PLASTIC</td> <td>1</td> <td>NEAT</td> </tr> <tr> <td>EP-7</td> <td rowspan="3" style="text-align: center; vertical-align: middle;">↓</td> <td>1 LITER PLASTIC</td> <td>1</td> <td>NEAT</td> </tr> <tr> <td>EP-7</td> <td>100 ML PLASTIC</td> <td>1</td> <td>NEAT</td> </tr> <tr> <td>EP-7</td> <td>500 ML PLASTIC</td> <td>1</td> <td>H₂SO₄</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE	EP-7	1055	500 ML PLASTIC	1	NEAT	EP-7	↓	1 LITER PLASTIC	1	NEAT	EP-7	100 ML PLASTIC	1	NEAT	EP-7	500 ML PLASTIC	1	H ₂ SO ₄																				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE																																							
EP-7	1055	500 ML PLASTIC	1	NEAT																																							
EP-7	↓	1 LITER PLASTIC	1	NEAT																																							
EP-7		100 ML PLASTIC	1	NEAT																																							
EP-7		500 ML PLASTIC	1	H ₂ SO ₄																																							
INSTRUMENTS USED	N/A																																										

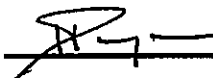
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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-11	3.1.18	1105		
SAMPLING DATA				
WEATHER CONDITIONS:				
CLEAR, SW WIND, 45°				
WATER APPEARANCE / ODOR:				
CLEAR TO LIGHT GREY, FAINT ODOR				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-11	1105	500 ML PLASTIC	1	NEAT
EP-11	↓	1 LITER PLASTIC	1	NEAT
EP-11	↓	100 ML PLASTIC	1	NEAT
EP-11	↓	500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED		N/A		

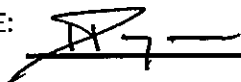
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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-12	3.1.18	1120		
SAMPLING DATA				
WEATHER CONDITIONS:				
CLEAR, SW WIND, 46°				
WATER APPEARANCE / ODOR:				
LIGHT GREY, FAINT ODOR				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-12	1120	500 ML PLASTIC	1	NEAT
EP-12	↓	1 LITER PLASTIC	1	NEAT
EP-12	↓	100 ML PLASTIC	1	NEAT
EP-12	↓	500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED		N/A		

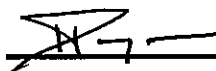
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ANDEAVOR - GALLUP REFINERY
FIRST QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-12B	3/1/18	1130		
SAMPLING DATA				
WEATHER CONDITIONS: CLEAR, SW WIND, 46°				
WATER APPEARANCE / ODOR: GREY, FAINT ODOR				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-12B	1130	500 ML PLASTIC	1	NEAT
EP-12B	↓	1 LITER PLASTIC	1	NEAT
EP-12B	↓	100 ML PLASTIC	1	NEAT
EP-12B	↓	500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED		N/A		

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-63		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	4.29.18	Initial	0835	7.16	13.2	1766	1150	0.90	0.73	-64.6
GAUGE TIME	0820	1	0846	7.15	13.2	1774	1150	0.91	0.58	-70.3
DHC (FEET)	ND	2	0853	7.24	13.5	1756	1144	0.90	2.02	-77.8
DTW (FEET)	20.29	3	0907	7.19	13.3	1777	1157	0.91	0.79	-79.0
DTB (FEET)	32.18	4								
DTB - DTW	11.89	5								
CAPACITY PER FOOT	(0.74 - 4") 0.163 - 2"	6								
8.80 PURGING DATA										
3 WELL VOLUMES	26.40	WEATHER CONDITIONS: CLEAR, WEST WIND, 54°								
PURGE DATE	4.29.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR → BROWN								
END OF PURGE TIME	0907	COMMENTS:								
PURGE AMOUNT	27.00									
DTW (FEET)	24.93									
SAMPLING DATA										
SAMPLE DATE	4.29.18	WEATHER CONDITIONS: CLEAR, V. STRONG WEST WIND								
DTW (FEET)	20.43	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1030	COMMENTS: COLLECTED 1 XTRA AMBER; COLLECTED DUP01 COLLECTED FB01 @ 0925 COLLECTED EB01 @ 0950								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-63	1030	40 ML VOA	5				HCL			
↓	↓	1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-64		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	4.29.18	Initial	1133	7.76	14.5	1901	1235	0.97	0.70	-3.4
GAUGE TIME	1119	1	1141	7.70	13.7	1878	1222	0.96	1.28	-57.0
DHC (FEET)	ND	2	SHEEN OBSERVED ON PURGED WATER							
DTW (FEET)	7.83	3	DISCONTINUED COLLECTING WATER							
DTB (FEET)	27.63	4	QUALITY DATA							
DTB - DTW	19.80	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
14.65 PURGING DATA										
3 WELL VOLUMES	44.00	WEATHER CONDITIONS: PARTLY CLOUDY, V. STRONG WEST WIND, 68°								
PURGE DATE	4.29.18	WATER APPEARANCE / ODOR: CLEAR → TURBID, BROWN, HC ODOR / SHEEN								
END OF PURGE TIME	1200	COMMENTS: BAILED DOWN @ 29 GALLONS								
PURGE AMOUNT	29.0									
DTW (FEET)	27.15									
SAMPLING DATA										
SAMPLE DATE	4.29.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	23.60 27.15	WATER APPEARANCE / ODOR: BROWN, HC ODOR								
SAMPLE TIME	1300	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-64	1300	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-62		Volumes	TIME	pH	Temperature Degrees C	Conductivity ($\mu\text{S}/\text{cm}$)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	4.29.18	Initial	1353	7.49	14.4	781	507	0.38	0.82	-67.7
GAUGE TIME	1345	1	1400	7.81	13.3	949	618	0.47	0.80	-95.8
DHC (FEET)	ND	2								
DTW (FEET)	23.18	3								
DTB (FEET)	31.58	4								
DTB - DTW	8.40	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
6.22 PURGING DATA										
3 WELL VOLUMES	18.66	WEATHER CONDITIONS: CLEAR, VERY STRONG WEST WIND, 76°								
PURGE DATE	4.29.18	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR → SLIGHTLY TURBID, BROWN								
END OF PURGE TIME	1413	COMMENTS: BAILED DOWN @ 12.5 GALS								
PURGE AMOUNT	12.50									
DTW (FEET)	31.25									
SAMPLING DATA										
SAMPLE DATE	4.29.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	29.86	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1620	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-62	1620	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
EAST LDU		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	4.30.18	Initial	1815	7.15	22.1	223	145	0.11	1.76	-176.7
GAUGE TIME	0825	1								
DHC (FEET)	ND	2								
DTW (FEET)	0.00	3								
DTB (FEET)	—	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA / NA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE	4/30/18	WEATHER CONDITIONS:								
DTW (FEET)	0.00	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1350	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
EAST LDU	1350	40 ML VOA	5				HCL			
↓	↓	250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										

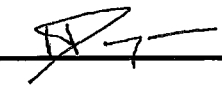
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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
WEST LDU		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	4.30.18	Initial								
GAUGE TIME	0830	1								
DHC (FEET)	ND	2								
DTW (FEET)	8.13	3								
DTB (FEET)	12.45	4								
DTB - DTW	4.32	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA / NA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE	4.30.18	WEATHER CONDITIONS: CLEAR STRONG, WEST WIND, 68°								
DTW (FEET)	8.13	WATER APPEARANCE / ODOR: CLEAR / GREY - FAINT ODOR								
SAMPLE TIME	1415	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
WEST LDU	1415	40 ML VOA	5				HCL			
↓	↓	250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										

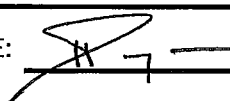
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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
NAPIS-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	4.25.18	Initial	1820	7.52	13.8	19.39	1261	0.99	6.60	-69.9
GAUGE TIME	—	1	4.30.18	GROUNDWATER						
DHC (FEET)	6.58	2		NO SAMPLES COLLECTED						
DTW (FEET)	7.82	3		1.24' OF SPH IN WELL						
DTB (FEET)	13.76	4								
DTB - DTW	—	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

uS/cm

WELL ID		TEST PARAMETERS								MG/L
NAPIS-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity 45 (uS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	4.30.18	Initial	0950	7.25	19.6	1766	1150	0.90	1.21	-67.9
GAUGE TIME	0945	1	0954	7.25	21.1	1762	1144	0.90	0.71	-77.9
DHC (FEET)	ND	2	0957	7.25	21.2	1809	1177	0.92	0.74	-81.8
DTW (FEET)	8.45	3	1000	7.25	21.1	1819	1180	0.93	1.21	-84.1
DTB (FEET)	14.52	4								
DTB - DTW	6.07	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
0.99 PURGING DATA										
3 WELL VOLUMES	2.97	WEATHER CONDITIONS: CLEAR, V. STRONG WEST WIND, 59°								
PURGE DATE	4.30.18	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR								
END OF PURGE TIME	1000	COMMENTS:								
PURGE AMOUNT	3 GALS									
DTW (FEET)	10.40									
SAMPLING DATA										
SAMPLE DATE	4.30.18	WEATHER CONDITIONS: CLEAR, V. STRONG WEST WIND, 70°								
DTW (FEET)	8.51	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1510	COMMENTS: COLLECTED EBOZ @ 0920 COLLECTED FBOZ @ 1430 COLLECTED DUPOZ								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
NAPIS-2	1510	40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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SIGNATURE: SK7

**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
KA-3		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	4.30.18	Initial	1025	7.29	20.7	1699	1105	0.86	1.21	-77.2
GAUGE TIME	1022	1	1029	7.27	23.1	1708	1111	0.86	1.14	-75.7
DHC (FEET)	ND	2	1037	7.24	22.3	1712	1111	0.87	1.22	-89.4
DTW (FEET)	8.53	3	1045	7.25	22.0	1715	1112	0.87	1.84	-89.9
DTB (FEET)	24.24	4								
DTB - DTW	15.71	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.56 PURGING DATA										
3 WELL VOLUMES	7.68	WEATHER CONDITIONS: CLEAR, VERY STRONG WEST WIND, 62°								
PURGE DATE	4.30.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1045	COMMENTS:								
PURGE AMOUNT	8.0									
DTW (FEET)	19.50									
SAMPLING DATA										
SAMPLE DATE	4.30.18	WEATHER CONDITIONS: CLEAR, VERY STRONG WEST WIND, 69°								
DTW (FEET)	8.54	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1540	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
KA-3	1540	40 ML VOA	5				HCL			
↓	↓	250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

COMPLETED BY:

TRACY PAYNE

SIGNATURE:

[Signature]

**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

mg/L

WELL ID		TEST PARAMETERS								
NAPIS-3		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	4.30.18	Initial	1103	8.19	20.6	1913	1242	0.98	3.18	-67.5
GAUGE TIME	1058	1	1111	7.81	19.2	2319	1508	1.20	1.04	-39.7
DHC (FEET)	ND	2								
DTW (FEET)	9.90	3								
DTB (FEET)	31.51	4								
DTB - DTW	21.61	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
3.52 PURGING DATA										
3 WELL VOLUMES	10.56	WEATHER CONDITIONS: CLEAR, VERY STRONG WEST WIND, 61°								
PURGE DATE	4.30.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1120	COMMENTS: BAILED DOWN @ 4.5 GALS.								
PURGE AMOUNT	4.5 GALS									
DTW (FEET)	31.00									
SAMPLING DATA										
SAMPLE DATE	4.30.18	WEATHER CONDITIONS: SAME AS ABOVE - 69°								
DTW (FEET)	9.98	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1605	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
NAPIS-3	1605	40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
OAPIS-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	4-30-18	Initial	1150	7.13	15.0	6555	4258	3.60	1.58	-76.7
GAUGE TIME	1144	1	1155	7.16	14.9	6591	4283	3.63	1.71	-79.2
DHC (FEET)	ND	2	1203	7.16	15.4	6593	4284	3.63	1.15	-66.9
DTW (FEET)	12.28	3								
DTB (FEET)	27.75	4								
DTB - DTW	15.47	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.52 PURGING DATA										
3 WELL VOLUMES	7.56	WEATHER CONDITIONS: CLEAR, V. STRONG WEST WIND, 61°								
PURGE DATE	4-30-18	WATER APPEARANCE / ODOR: AMBER, FAINT ODOR								
END OF PURGE TIME	1210	COMMENTS: BAILED DOWN @ 6 GALS.								
PURGE AMOUNT	6 GALS									
DTW (FEET)	27.25									
SAMPLING DATA										
SAMPLE DATE	4-30-18	WEATHER CONDITIONS: SAME AS ABOVE - 66°								
DTW (FEET)	24.20	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1650	COMMENTS: COLLECTED 1 EXTRA AMBER								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OAPIS-1	1650	40 ML VOA	5				HCL			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NAOH			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
STP-1-NW		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	4.30.18	Initial	1243	8.31	15.0	6413	4167	3.52	5.56	-16.0
GAUGE TIME	1234	1	1251	7.80	14.2	7520	4888	4.17	3.20	3.7
DHC (FEET)	ND	2	1304	7.88	13.9	7307	4752	4.05	2.96	10.1
DTW (FEET)	20.70	3	1316	7.87	13.8	7295	4738	4.03	3.39	16.4
DTB (FEET)	49.65	4								
DTB - DTW	28.95	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
4.72 PURGING DATA										
3 WELL VOLUMES	14.16	WEATHER CONDITIONS: CLEAR, VERY STRONG WEST WIND, 63°								
PURGE DATE	4.30.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1316	COMMENTS:								
PURGE AMOUNT	15.0									
DTW (FEET)	45.35									
SAMPLING DATA										
SAMPLE DATE	4.30.18	WEATHER CONDITIONS: CLEAR, VERY STRONG WEST WIND, 66°								
DTW (FEET)	42.45	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1720	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
STP-1-NW	1720	40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

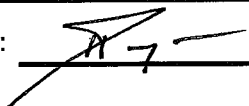
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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
OIL SUMP LDU		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	4.30.18	Initial								
GAUGE TIME	0820	1								
DHC (FEET)	ND	2								
DTW (FEET)	ND	3								
DTB (FEET)	6.55	4								
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA / NA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA / NA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG / NA										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-30		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5-1-18	Initial	1016	7.58	13.1	3340	2171	1.76	1.83	46.4
GAUGE TIME	1007	1	1020	7.52	13.1	3360	2184	1.77	2.97	45.1
DHC (FEET)	ND	2	1023	7.52	13.1	3434	2229	1.81	2.48	44.4
DTW (FEET)	13.78	3	1026	7.52	13.1	3395	2210	1.79	6.94	45.2
DTB (FEET)	23.10	4								
DTB - DTW	9.32	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.52 PURGING DATA										
3 WELL VOLUMES	4.56	WEATHER CONDITIONS: CLEAR, WEST WIND, 55°								
PURGE DATE	5-1-18	WATER APPEARANCE / ODOR: CLEAR → BROWN, NO ODOR								
END OF PURGE TIME	1026	COMMENTS:								
PURGE AMOUNT	4.75									
DTW (FEET)	14.30									
SAMPLING DATA										
SAMPLE DATE	5-1-18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	13.80	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1110	COMMENTS: COLLECTED 1 EXTRA 1 LITER AMBER COLLECTED EBO3 @ 1000, COLLECTED FBO3 @ 1040								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-30	1110	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTF-29		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.1.18	Initial	1146	7.79	18.1	2441	1586	1.26	3.54	69.4
GAUGE TIME	1140	1	1151	7.53	13.0	2407	1566	1.25	1.30	69.7
DHC (FEET)	ND	2	1157	7.50	13.0	2387	1553	1.24	1.34	68.3
DTW (FEET)	2.08	3	1203	7.51	13.1	2375	1540	1.23	1.75	67.4
DTB (FEET)	22.77	4								
DTB - DTW	20.69	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									

3.37

PURGING DATA

3 WELL VOLUMES	10.11	WEATHER CONDITIONS: CLEAR, WEST WIND, 59°
PURGE DATE	5.1.18	WATER APPEARANCE / ODOR: CLEAR → REDDISH BROWN, NO ODOR
END OF PURGE TIME	1203	COMMENTS:
PURGE AMOUNT	10.5	
DTW (FEET)	12.41	

SAMPLING DATA

SAMPLE DATE	5.1.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 60°
DTW (FEET)	3.29	WATER APPEARANCE / ODOR: SAME AS ABOVE
SAMPLE TIME	1235 312	COMMENTS: COLLECTED DUPO3

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
MKTF-29	1235	40 ML VOA	5	HCL
		1 LITER AMBER	1	NEAT
		250 ML AMBER	1	NEAT
		250 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	H ₂ SO ₄
		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED OIL / WATER INTERFACE PROBE
 WATER QUALITY METER

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ANDEAVOR - GALLUP REFINERY
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45/cm

WELL ID		TEST PARAMETERS								
MKTF-28		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.1.18	Initial	1312	7.62	16.2	2691	1749	1.40	5.69	79.5
GAUGE TIME	1304	1	1315	7.58	15.5	2634	1710	1.40	4.96	80.6
DHC (FEET)	ND	2	1319	7.60	15.3	2701	1742	1.40	4.13	80.1
DTW (FEET)	6.65	3	1323	7.61	15.2	2721	1768	1.42	4.22	80.7
DTB (FEET)	16.04	4								
DTB - DTW	9.39	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.53		PURGING DATA								
3 WELL VOLUMES	4.59	WEATHER CONDITIONS: CLEAR WEST WIND 63°								
PURGE DATE	5.1.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1323	COMMENTS:								
PURGE AMOUNT	5									
DTW (FEET)	12.95									
SAMPLING DATA										
SAMPLE DATE	5.1.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	12.45	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1345	COMMENTS: 1340								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-28	1340	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-24		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.1.18	Initial	0829	7.13	11.9	3870	2516	2.06	2.22	55.8
GAUGE TIME	0820	1	0833	7.08	12.1	4043	2626	2.15	1.95	23.8
DHC (FEET)	ND	2	0836	7.09	12.3	3899	2535	2.07	1.91	14.4
DTW (FEET)	21.55	3								
DTB (FEET)	30.78	4								
DTB - DTW	9.23	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.50 PURGING DATA										
3 WELL VOLUMES	4.5	WEATHER CONDITIONS: CLEAR, WEST WIND, 49°								
PURGE DATE	5.1.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, HC ODOR								
END OF PURGE TIME	0842	COMMENTS: BAILED DOWN @ 4.0 GALS								
PURGE AMOUNT	4.0									
DTW (FEET)	30.52									
SAMPLING DATA										
SAMPLE DATE	5.1.18	WEATHER CONDITIONS: OVERCAST, WEST WIND, 67°								
DTW (FEET)	22.50	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1540	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-24	1540	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-02		Volumes	TIME	pH	Temperature Degrees C	Conductivity ($\mu\text{S}/\text{cm}$)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.1.18	Initial	0900	7.55	10.3	3267 3267	2125	1.72	1.46	-53.4
GAUGE TIME	0857	1	0907	7.47	11.8	3243	2106	1.70	1.29	-56.0
DHC (FEET)	ND	2								
DTW (FEET)	7.42	3								
DTB (FEET)	20.36	4								
DTB - DTW	12.94	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES	28.74	WEATHER CONDITIONS: CLEAR, WEST WIND, 49°								
PURGE DATE	5.1.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, HC ODOR								
END OF PURGE TIME	0919	COMMENTS: BAILED DOWN @ 18 GALS								
PURGE AMOUNT	18.0									
DTW (FEET)	20.03									
SAMPLING DATA										
SAMPLE DATE	5.1.18	WEATHER CONDITIONS: OVERCAST, WEST WIND 67°								
DTW (FEET)	15.55	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1615	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-02	1615	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKT-27		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.1.18	Initial	1405	7.03	14.9	14137	9191	8.23	2.10	114.1
GAUGE TIME	1356	1	14058	6.95	12.5	15389	10003	9.00	1.29	117.3
DHC (FEET)	ND	2	1411	6.97	12.1	15699	10205	9.20	1.55	118.4
DTW (FEET)	6.32	3	1415	7.04	12.1	16149	10498	9.49	1.46	119.1
DTB (FEET)	14.62	4								
DTB - DTW	8.30	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.35 PURGING DATA										
3 WELL VOLUMES	4.05	WEATHER CONDITIONS: CLEAR, WEST WIND, 63°								
PURGE DATE	5.1.18	WATER APPEARANCE / ODOR: CLEAR, NO NO ODOR								
END OF PURGE TIME	1415	COMMENTS:								
PURGE AMOUNT	4.25									
DTW (FEET)	12.03									
SAMPLING DATA										
SAMPLE DATE	5.1.18	WEATHER CONDITIONS: OVERCAST, SW WIND, 67°								
DTW (FEET)	11.63	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1650	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKT-27	1650	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTf-15		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.2.18	Initial		SHEEN ON PURGE WATER						
GAUGE TIME	1130	1		DID NOT COLLECT READINGS						
DHC (FEET)	ND	2								
DTW (FEET)	12.30	3								
DTB (FEET)	19.40	4								
DTB - DTW	7.10	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
4.16 PURGING DATA										
3 WELL VOLUMES	3.48	WEATHER CONDITIONS: OVERCAST, RAIN/SLEET								
PURGE DATE	5.2.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR, SHEEN								
END OF PURGE TIME	12:02	COMMENTS:								
PURGE AMOUNT	3.5									
DTW (FEET)	14.70									
SAMPLING DATA										
SAMPLE DATE	5.2.18	WEATHER CONDITIONS: OVERCAST, RAIN, 40°								
DTW (FEET)	12.45	WATER APPEARANCE / ODOR: CLEAR, HC ODOR, SHEEN								
SAMPLE TIME	12:40	COMMENTS: COLLECTED DUPOH + 1 EXTRA AMBER								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-15	1240	40 ML VOA	5				HCL			
↓	↓	1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTf-04		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.2.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	0828	1		DID NOT COLLECT READINGS						
DHC (FEET)	ND	2								
DTW (FEET)	9.75	3								
DTB (FEET)	22.29	4								
DTB - DTW	12.54	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
9.28 PURGING DATA										
3 WELL VOLUMES	27.84	WEATHER CONDITIONS: OVERCAST, LIGHT RAIN, 41°								
PURGE DATE	5.2.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR, SHEEN → GREY TO BLACK								
END OF PURGE TIME	0850	COMMENTS:								
PURGE AMOUNT	17									
DTW (FEET)	21.90									
SAMPLING DATA										
SAMPLE DATE	5.2.18	WEATHER CONDITIONS: OVERCAST, LIGHT RAIN, 41°								
DTW (FEET)	9.80	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1315	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-04	1315	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

COMPLETED BY:

TRACY PAYNE

SIGNATURE:

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-11		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.2.18	Initial	0917	7.28	12.9	3945	2568	2.10	1.97	-58.3
GAUGE TIME	0908	1	0924	7.37	20.1	3951	2568	2.10	1.96	-100.9
DHC (FEET)	ND	2	0932	7.23	13.3	4623	3003	2.48	3.16	-84.6
DTW (FEET)	7.50	3	0944	7.33	13.3	4619	3005	2.48	4.15	-94.1
DTB (FEET)	18.39	4								
DTB - DTW	10.89	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
8.05 PURGING DATA										
3 WELL VOLUMES	24.15	WEATHER CONDITIONS: OVERCAST, LIGHT RAIN, 42°								
PURGE DATE	5.2.18	WATER APPEARANCE / ODOR: CLEAR → GREY → BLACK, HC ODOR								
END OF PURGE TIME	0944	COMMENTS:								
PURGE AMOUNT	25									
DTW (FEET)	17.00									
SAMPLING DATA										
SAMPLE DATE	5.2.18	WEATHER CONDITIONS: OVERCAST, RAIN, 41°								
DTW (FEET)	7.52	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1345	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-11	1345	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTf-09		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.2.18	Initial		SHEEN ON PURGE WATER						
GAUGE TIME	1038	1		DID NOT COLLECT READINGS						
DHC (FEET)	ND	2								
DTW (FEET)	13.42	3								
DTB (FEET)	22.69	4								
DTB - DTW	9.27	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
6.86 PURGING DATA										
3 WELL VOLUMES	20.58	WEATHER CONDITIONS: OVERCAST, LIGHT RAIN, 44°								
PURGE DATE	5.2.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR, SHEEN								
END OF PURGE TIME	1100	COMMENTS:								
PURGE AMOUNT	21.0									
DTW (FEET)	19.70									
SAMPLING DATA										
SAMPLE DATE	5.2.18	WEATHER CONDITIONS: OVERCAST, LIGHT RAIN, 40°								
DTW (FEET)	13.45	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1515	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-09	1515	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTf-10		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.2.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	1002	1		DID NOT COLLECT READINGS						
DHC (FEET)	ND	2								
DTW (FEET)	7.02	3								
DTB (FEET)	16.05	4								
DTB - DTW	9.03	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
6.68 PURGING DATA										
3 WELL VOLUMES	20.04	WEATHER CONDITIONS: OVERCAST, LIGHT RAIN, 42°								
PURGE DATE	5.2.18	WATER APPEARANCE / ODOR: CLEAR → GREY, HC ODOR, SHEEN								
END OF PURGE TIME	1017	COMMENTS:								
PURGE AMOUNT	7.5									
DTW (FEET)	15.89									
SAMPLING DATA										
SAMPLE DATE	5.2.18	WEATHER CONDITIONS: OVERCAST, 42°								
DTW (FEET)	6.92	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1445	COMMENTS: COLLECTED EB04 @ 1420 & FB04 @ 1430								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-10	1445	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTF-38		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.3.18	Initial	0906	7.16	11.7	2170	1410	1.12	1.61	111.5
GAUGE TIME	0830	1	0909	7.17	12.8	2238	2456	1.16	5.05	107.6
DHC (FEET)	ND	2	0914	7.20	13.1	2245	1462	1.16	1.67	106.8
DTW (FEET)	7.96	3	0918	7.22	13.2	2264	1469	1.17	2.01	107.1
DTB (FEET)	20.28	4								
DTB - DTW	12.32	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.0		PURGING DATA								
3 WELL VOLUMES	6	WEATHER CONDITIONS: OVERCAST, WEST WIND, 39°								
PURGE DATE	5.3.18	WATER APPEARANCE / ODOR: CLEAR → GREY, NO ODOR								
END OF PURGE TIME	0918	COMMENTS:								
PURGE AMOUNT	6									
DTW (FEET)	9.00									
		SAMPLING DATA								
SAMPLE DATE	5.3.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 41°								
DTW (FEET)	7.98	WATER APPEARANCE / ODOR: GREY, NO ODOR								
SAMPLE TIME	1010	COMMENTS: COLLECTED DUPO5 & 1 EXTRA AMBER COLLECTED EB05 @ 0850 COLLECTED FB05 @ 0930								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-38	1010	40 ML VOA	5				HCL			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE WATER QUALITY METER								

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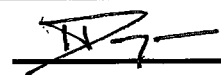
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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTF-37		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.3.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	1343	1		DID NOT COLLECT READINGS						
DHC (FEET)	ND	2								
DTW (FEET)	8.68	3								
DTB (FEET)	24.54	4								
DTB - DTW	15.86	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.56 PURGING DATA										
3 WELL VOLUMES	7.68	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 52°								
PURGE DATE	5.3.18	WATER APPEARANCE / ODOR: CLEAR, SHEEN, HL ODOR								
END OF PURGE TIME	1400	COMMENTS:								
PURGE AMOUNT	8 GALS									
DTW (FEET)	23.05									
SAMPLING DATA										
SAMPLE DATE	5.3.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	19.80	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1430	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-37	1430	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		40 ML VOA	3				SOBI			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTf-36		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.3.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	1500	1		DID NOT COLLECT READINGS						
DHC (FEET)	ND	2								
DTW (FEET)	6.62	3								
DTB (FEET)	15.40	4								
DTB - DTW	8.78	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.43 PURGING DATA										
3 WELL VOLUMES	4.29	WEATHER CONDITIONS: OVERCAST, NEST WIND, 54°								
PURGE DATE	5.3.18	WATER APPEARANCE / ODOR: CLEAR → GREY, HC ODOR, SHEEN								
END OF PURGE TIME	1514	COMMENTS:								
PURGE AMOUNT	4.5									
DTW (FEET)	13.78									
SAMPLING DATA										
SAMPLE DATE	5.3.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	9.70	WATER APPEARANCE / ODOR: CLEAR - SHEEN - HC ODOR								
SAMPLE TIME	1540	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-36	1540	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTf-35		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.3.18	Initial	1616	7.14	14.8	1667	1085	0.85	1.08	-84.8
GAUGE TIME	1409	1	1620	7.13	14.6	1665	1079	0.85	1.82	-83.0
DHC (FEET)	ND	2	1623	7.16	13.9	1661	1079	0.84	1.57	-82.1
DTW (FEET)	8.58	3	1626	7.15	13.8	1660	1079	0.84	1.53	-81.3
DTB (FEET)	16.40	4								
DTB - DTW	7.82	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.27		PURGING DATA								
3 WELL VOLUMES	3.81	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 55°								
PURGE DATE	5.3.18	WATER APPEARANCE / ODOR: CLEAR → GREY, HCL ODOR								
END OF PURGE TIME	1626	COMMENTS:								
PURGE AMOUNT	8.4									
DTW (FEET)	8.80									
SAMPLING DATA										
SAMPLE DATE	5.3.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	8.59	WATER APPEARANCE / ODOR: GREY, HCL ODOR								
SAMPLE TIME	1645	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-35	1645	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-34		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.3.18	Initial	1115	7.80	12.8	2030	1320	1.04	7.76	115.3
GAUGE TIME	1104	1	1118	7.69	12.9	2004	1300	1.03	6.67	115.2
DHC (FEET)	ND	2	1121	7.67	13.1	2010	1305	1.03	6.62	115.6
DTW (FEET)	18.70	3	1124	7.67	13.2	2015	1320	1.04	5.84	115.9
DTB (FEET)	27.60	4								
DTB - DTW	8.90	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.45 PURGING DATA										
3 WELL VOLUMES	4.35	WEATHER CONDITIONS: OVERCAST, WEST WIND, 48°								
PURGE DATE	5.3.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, NO ODOR								
END OF PURGE TIME	1124	COMMENTS:								
PURGE AMOUNT	4.5									
DTW (FEET)	25.62									
SAMPLING DATA										
SAMPLE DATE	5.3.18	WEATHER CONDITIONS: CLEAR, CALM, 38°								
DTW (FEET)	22.78	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0845	COMMENTS: COLLECTED DUPO6 + 1 EXTRA AMBER COLLECTED FB06 @ 0745 COLLECTED FB06 @ 0810								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-34	0845	40 ML VOA	5				HCL			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-17		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.3.18	Initial	1142	7.10	13.3	1805	1170	0.92	2.62	-603
GAUGE TIME	1136	1	1146	7.14	13.8	1793	1164	0.91	2.19	-69
DHC (FEET)	ND	2								
DTW (FEET)	11.45	3								
DTB (FEET)	24.55	4								
DTB - DTW	13.10	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.14 PURGING DATA										
3 WELL VOLUMES	6.42	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 48°								
PURGE DATE	5.3.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
END OF PURGE TIME	1148	COMMENTS: BAILED DRY @ 2.25 GALS								
PURGE AMOUNT	2.25									
DTW (FEET)	24.39									
SAMPLING DATA										
SAMPLE DATE	5.4.15	WEATHER CONDITIONS: CLEAR, NORTH WIND, 45°								
DTW (FEET)	14.95	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	0930	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-17	0930	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-19		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.3.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	1201	1		DID NOT COLLECT READINGS						
DHC (FEET)	ND	2								
DTW (FEET)	12.15	3								
DTB (FEET)	18.19	4								
DTB - DTW	6.04	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
0.98		PURGING DATA								
3 WELL VOLUMES	2.94	WEATHER CONDITIONS: OVERCAST, WEST WIND								
PURGE DATE	5.3.18	WATER APPEARANCE / ODOR: CLEAR, SHEEN, HL ODOR \rightarrow BROWN								
END OF PURGE TIME	1210	COMMENTS:								
PURGE AMOUNT	3.0									
DTW (FEET)	15.78									
SAMPLING DATA										
SAMPLE DATE	5.4.18	WEATHER CONDITIONS: CLEAR, NORTH WIND, 45°								
DTW (FEET)	12.23	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1000	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-19	1000	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

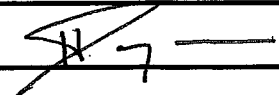
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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTf-18		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.3.18	Initial		SHEEN ON PURGED WATER NO						
GAUGE TIME	1312	1		READINGS COLLECTED						
DHC (FEET)	ND	2								
DTW (FEET)	7.35	3								
DTB (FEET)	26.70	4								
DTB - DTW	19.35	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
3.15 PURGING DATA										
3 WELL VOLUMES	9.45	WEATHER CONDITIONS: OVERCAST, WEST WIND, 52°								
PURGE DATE	5.3.18	WATER APPEARANCE / ODOR: CLEAR, SHEEN, HC ODOR → BROWN								
END OF PURGE TIME	1324	COMMENTS:								
PURGE AMOUNT	3.5									
DTW (FEET)	26.50									
SAMPLING DATA										
SAMPLE DATE	5.4.18	WEATHER CONDITIONS: CLEAR, CALM, 55°								
DTW (FEET)	7.53	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1050	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-18	1050	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY

SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTF-25		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.6.18	Initial	0809	7.01	10.48	2975	1930	1.56	1.22	40.4
GAUGE TIME	0800	1	0812	7.06	10.6	3022	1963	1.58	2.04	22.6
DHC (FEET)	ND	2	0815	7.13	10.5	3066	1956	1.57	3.55	10.1
DTW (FEET)	11.20	3	0818	7.10	10.5	3023	1963	1.58	1.77	4.0
DTB (FEET)	19.50	4								
DTB - DTW	8.30	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.35 PURGING DATA										
3 WELL VOLUMES	4.05	WEATHER CONDITIONS: CLEAR, CALM, 50°								
PURGE DATE	5.6.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
END OF PURGE TIME	0818	COMMENTS:								
PURGE AMOUNT	4.25									
DTW (FEET)	11.90									
SAMPLING DATA										
SAMPLE DATE	5.6.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	11.50	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	0900	COMMENTS: @ 0750 COLLECTED DUPO7 & 1 EXTRA AMBER COLLECTED EB07; COLLECTED FB07 @ 0830								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-25	0900	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-31		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.6.18	Initial	0954	7.17	12.9	3133	2034	1.65	1.54	97.9
GAUGE TIME	0945	1	0957	7.19	12.3	3292	2138	1.73	1.60	95.2
DHC (FEET)	ND	2	1000	7.20	12.1	3258	2119	1.72	1.85	95.4
DTW (FEET)	7.82	3	1003	7.21	12.4	3207	2086	1.69	2.16	95.8
DTB (FEET)	19.26	4								
DTB - DTW	11.44	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.86 PURGING DATA										
3 WELL VOLUMES	5.58	WEATHER CONDITIONS: CLEAR, CALM, 63°								
PURGE DATE	5.6.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, NO ODOR								
END OF PURGE TIME	1003	COMMENTS:								
PURGE AMOUNT	6.0									
DTW (FEET)	10.11									
SAMPLING DATA										
SAMPLE DATE	5.6.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 67°								
DTW (FEET)	9.86	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1020	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-31	1020	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

OUTFALL ID		TEST PARAMETERS / <i>NA</i>								
STP-1 TO EP-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	<i>—</i>	Initial								
GAUGE TIME	<i>—</i>	1								
DHC (FEET)	<i>—</i>	2								
DTW (FEET)	<i>—</i>	3								
DTB (FEET)	<i>—</i>	4								
DTB - DTW	<i>—</i>	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA / <i>NA</i>										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE	<i>5.6.18</i>	WEATHER CONDITIONS: <i>CLEAR WEST WIND</i>								
DTW (FEET)	<i>NA</i>	WATER APPEARANCE / ODOR: <i>GREY, SULPHUR</i>								
SAMPLE TIME	<i>1200</i>	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
STP-1 TO EP-2	<i>1200</i>	40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		1 LITER PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				H ₂ SO ₄			
INSTRUMENTS USED <u>OIL / WATER INTERFACE PROBE</u>										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-40		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.6.18	Initial	1058	7.30	13.4	6316	4101	3.46	7.27	122.0
GAUGE TIME	1050	1	1101	7.27	12.4	6976	4537	3.86	6.40	124.6
DHC (FEET)	ND	2	1104	7.15	12.4	9680	6292	5.47	6.05	131.0
DTW (FEET)	13.50	3	1107	7.08	12.7	12155	7858	6.94	5.61	134.6
DTB (FEET)	23.53	4	1112	7.10	12.9	13197	8580	7.63	3.43	135.1
DTB - DTW	10.03	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.63 PURGING DATA										
3 WELL VOLUMES	4.89	WEATHER CONDITIONS: CLEAR, WEST WIND, 67°								
PURGE DATE	5.6.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1112	COMMENTS: BAILED DOWN @ 6.75 GALS								
PURGE AMOUNT	6.75									
DTW (FEET)	23.03									
SAMPLING DATA										
SAMPLE DATE	5.6.18	WEATHER CONDITIONS: CLEAR, CALM, 78°								
DTW (FEET)	21.65	WATER APPEARANCE / ODOR: CLEAR NO ODOR								
SAMPLE TIME	1245	COMMENTS: 21.65								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-40	1245	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTf-39		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.6.18	Initial	1355	7.18	17.9	4330	2821	2.33	120	-37.0
GAUGE TIME	1352	1		SHEEN ON PURGED WATER						
DHC (FEET)	ND	2	DISCONTINUED COLLECTING READINGS							
DTW (FEET)	8.00	3								
DTB (FEET)	15.13	4								
DTB - DTW	7.13	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.16 PURGING DATA										
3 WELL VOLUMES	3.48	WEATHER CONDITIONS: CLEAR, CALM, 80°								
PURGE DATE	5.6.18	WATER APPEARANCE / ODOR: CLEAR, HCL ODOR, SHEEN								
END OF PURGE TIME	1400	COMMENTS:								
PURGE AMOUNT	3.50									
DTW (FEET)	10.21									
SAMPLING DATA										
SAMPLE DATE	5.6.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	8.40	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1420	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-39	1420	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-60		Volumes	TIME	pH	Temperature Degrees C	Conductivity ($\mu\text{S}/\text{cm}$)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.7.18	Initial	0820	7.87	13.0	7220	4693	4.00	4.29	128.0
GAUGE TIME	0811	1	0828	7.66	13.1	7249	4712	4.01	4.194	123.1
DHC (FEET)	ND	2								
DTW (FEET)	16.60	3								
DTB (FEET)	46.15	4								
DTB - DTW	29.55	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
4.82		PURGING DATA								
3 WELL VOLUMES	14.46	WEATHER CONDITIONS: CLEAR, CALM, 53°								
PURGE DATE	5.7.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, NO ODOR								
END OF PURGE TIME	0840	COMMENTS: BAILED DOWN @ 8 GALS.								
PURGE AMOUNT	8 GALS									
DTW (FEET)	45.80									
		SAMPLING DATA								
SAMPLE DATE	5.8.18	WEATHER CONDITIONS: CLEAR, CALM, 44°								
DTW (FEET)	35.15	WATER APPEARANCE / ODOR: BROWN, NO ODOR								
SAMPLE TIME	0740	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-60	0740	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-59		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.7.18	Initial	0858	7.48	14.3	10995	7150	6.27	0.87	132.8
GAUGE TIME	0852	1	0903	7.52	13.8	11183	7267	6.39	1.28	131.9
DHC (FEET)	ND	2	0908	7.52	13.7	11179	7260	6.38	1.09	130.2
DTW (FEET)	24.15	3	0913	7.51	13.8	11198	7267	6.39	1.33	129.7
DTB (FEET)	38.48	4								
DTB - DTW	14.33	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.34		PURGING DATA								
3 WELL VOLUMES	7.02	WEATHER CONDITIONS: CLEAR, EAST WIND, 53°								
PURGE DATE	5.7.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, NO ODOR								
END OF PURGE TIME	0913	COMMENTS:								
PURGE AMOUNT	7.25									
DTW (FEET)	35.35									
		SAMPLING DATA								
SAMPLE DATE	5.8.18	WEATHER CONDITIONS: CLEAR, CALM, 44°								
DTW (FEET)	25.25	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0810	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS		PRESERVATIVE					
OW-59	0810	40 ML VOA	5		HCL					
		1 LITER AMBER	2		NEAT					
		250 ML AMBER	1		NEAT					
		250 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		H ₂ SO ₄					
		125 ML PLASTIC	1		NEAT					
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-56		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.7.18	Initial	0935	7.49	12.7	2892	1878	1.51	5.44	117.8
GAUGE TIME	0929	1	0937	7.41	11.5	2794	1913	1.46	4.56	118.9
DHC (FEET)	ND	2	0939	7.42	11.3	2783	1907	1.45	4.65	118.7
DTW (FEET)	12.78	3	0942	7.42	11.4	2855	1859	1.49	2.76	115.6
DTB (FEET)	18.59	4								
DTB - DTW	5.81	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
0.95 PURGING DATA										
3 WELL VOLUMES	2.85	WEATHER CONDITIONS: CLEAR, WEST WIND, 61°								
PURGE DATE	5.7.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	0942	COMMENTS:								
PURGE AMOUNT	3 GALS									
DTW (FEET)	17.70									
SAMPLING DATA										
SAMPLE DATE	5.8.18	WEATHER CONDITIONS: CLEAR, CALM, 50°								
DTW (FEET)	16.32	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0840	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-56	0840	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

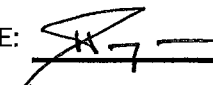
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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-55		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.7.18	Initial	1006	7.07	15.7	2350	1527	1.21	1.36	-50.7
GAUGE TIME	1002	1	1010	7.12	14.2	2343	1521	1.21	1.56	-65.6
DHC (FEET)	ND	2	1014	7.09	13.9	2369	1540	1.23	1.31	-71.3
DTW (FEET)	17.64	3	1020	7.10	13.8	2384	1547	1.23	1.54	-74.9
DTB (FEET)	30.92	4								
DTB - DTW	13.28	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.16 PURGING DATA										
3 WELL VOLUMES	6.48	WEATHER CONDITIONS: CLEAR, WEST WIND, 70°								
PURGE DATE	5.7.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR → GREY								
END OF PURGE TIME	1020	COMMENTS:								
PURGE AMOUNT	6.5 GALS									
DTW (FEET)	17.83									
SAMPLING DATA										
SAMPLE DATE	5.8.18	WEATHER CONDITIONS: CLEAR, CALM, 50°								
DTW (FEET)	17.65	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	0910	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-55	0910	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-54		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.7.18	Initial	1045	7.21	14.3	2136	1391	1.10	1.22	9.0
GAUGE TIME	1040	1	1049	7.24	12.8	2172	1410	1.12	1.18	-4.9
DHC (FEET)	ND	2	1053	7.28	12.5	2182	1417	1.12	1.83	-18.9
DTW (FEET)	17.87	3	1058	7.29	12.4	2190	1423	1.13	1.89	-23.6
DTB (FEET)	29.70	4								
DTB - DTW	11.83	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.93 PURGING DATA										
3 WELL VOLUMES	5.79	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 70°								
PURGE DATE	5.7.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
END OF PURGE TIME	1058	COMMENTS:								
PURGE AMOUNT	6 GALS									
DTW (FEET)	17.95									
SAMPLING DATA										
SAMPLE DATE	5.8.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 63°								
DTW (FEET)	17.81	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	0940	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-54	0940	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

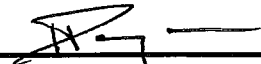
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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-57		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.7.18	Initial	1225	7.08	16.3	1859	1209	0.95	0.86	-84.1
GAUGE TIME	1222	1	1230	7.13	14.3	1832	1189	0.94	1.30	-89.4
DHC (FEET)	ND	2								
DTW (FEET)	20.04	3								
DTB (FEET)	28.06	4								
DTB - DTW	8.02	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.31		PURGING DATA								
3 WELL VOLUMES	393	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND								
PURGE DATE	5.7.18	WATER APPEARANCE / ODOR: CLEAR → GREY, HC ODOR								
END OF PURGE TIME	1235	COMMENTS: BAILED DOWN @ 2 GALLONS								
PURGE AMOUNT	2									
DTW (FEET)	27.85									
SAMPLING DATA										
SAMPLE DATE	5.8.18	WEATHER CONDITIONS: CLEAR, CALM, 71°								
DTW (FEET)	20.00	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1110	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-57	1110	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
RW-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.7.18	Initial	SHEEN ON PURGED WATER DID NOT							
GAUGE TIME	1300	1	COLLECT READINGS							
DHC (FEET)	ND	2								
DTW (FEET)	19.97	3								
DTB (FEET)	39.99	4								
DTB - DTW	20.02	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
14.81 PURGING DATA										
3 WELL VOLUMES	44.43	WEATHER CONDITIONS: OVERCAST, WEST WIND								
PURGE DATE	5.7.18	WATER APPEARANCE / ODOR: CLEAR → GREY, HC ODOR, SHEEN								
END OF PURGE TIME	1330	COMMENTS: BAILED DOWN @ 17 GAL								
PURGE AMOUNT	17 GAL									
DTW (FEET)	39.21									
SAMPLING DATA										
SAMPLE DATE	5.8.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 80°								
DTW (FEET)	19.98	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1225	COMMENTS: COLLECTED DUP 08 COLLECTED EB08 @ 1145 & FB08 @ 1200								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
RW-2	1225	40 ML VOA	5				HCL			
↓	↓	250 ML AMBER	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-58		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.7.18	Initial	1426	7.10	17.2	1866	1209	0.86	0.87	-79.3
GAUGE TIME	1418	1	1434	7.11	15.2	1883	1222	0.96	2.01	-87.9
DHC (FEET)	ND	2	1442	7.08	14.9	1884	1222	0.96	1.02	-80.3
DTW (FEET)	24.23	3	1452	7.10	14.6	1877	1222	0.96	1.64	-80.2
DTB (FEET)	47.50	4								
DTB - DTW	23.27	5								
CAPACITY PER FOOT	0.74 - 4" 0.163 - 2"	6								
PURGING DATA										
3 WELL VOLUMES	11.37	WEATHER CONDITIONS: OVERCAST, WEST WIND, 81°								
PURGE DATE	5.7.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR, → GREY								
END OF PURGE TIME	1452 2042	COMMENTS:								
PURGE AMOUNT	12 GALS									
DTW (FEET)	24.25									
SAMPLING DATA										
SAMPLE DATE	5.8.18	WEATHER CONDITIONS: CLEAR, WEST WIND 80°								
DTW (FEET)	24.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1300	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-58	1300	40 ML VOA	5				HCL			
		1 LITER AMBER					NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

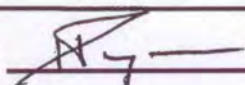
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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTF-42		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (µS/cm) G/L	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.9.18	Initial	1042	7.94	14.1	3616	2353	1.92	1.40	96.4
GAUGE TIME	1037	1	1048	7.97	13.5	3730	2425	1.98	1.31	94.1
DHC (FEET)	ND	2	1053	7.98	12.9	3663	2379	1.94	1.89	93.6
DTW (FEET)	17.05	3	1059	7.98	13.1	3665	2380	1.94	1.53	87.2
DTB (FEET)	33.08	4								
DTB - DTW	16.03	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.641 PURGING DATA										
3 WELL VOLUMES	7.823	WEATHER CONDITIONS: CLEAR, WEST WIND, 75°								
PURGE DATE	5.9.18	WATER APPEARANCE / ODOR: AMBER, HC ODOR								
END OF PURGE TIME	1059	COMMENTS:								
PURGE AMOUNT	8.00									
DTW (FEET)	26.90									
SAMPLING DATA										
SAMPLE DATE	5.9.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 87°								
DTW (FEET)	25.35	WATER APPEARANCE / ODOR: AMBER, HC ODOR								
SAMPLE TIME	1235	COMMENTS: COLLECTED DUPO9 & 1 EXTRA AMBER								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-42	1235	40 ML VOA	5				HCL			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-32		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.9.18	Initial	1336	7.75	15.2	2725	1768	1.42	0.84	128.1
GAUGE TIME	1330	1	1340	7.79	13.6	2752	1787	1.44	1.81	128.6
DHC (FEET)	ND	2	1345	7.83	13.5	2775	1807	1.45	1.83	127.9
DTW (FEET)	13.40	3	1350	7.85	13.5	2804	1820	1.46	1.25	126.4
DTB (FEET)	27.66	4								
DTB - DTW	1426	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.32 PURGING DATA										
3 WELL VOLUMES	6.96	WEATHER CONDITIONS: CLEAR, STRONG WEST WIND, 87°								
PURGE DATE	5.9.18	WATER APPEARANCE / ODOR: CLEAR → CLOUDY, FAINT HCL ODOR								
END OF PURGE TIME	1350	COMMENTS:								
PURGE AMOUNT	7 GALS									
DTW (FEET)	24.01									
SAMPLING DATA										
SAMPLE DATE	5.9.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	20.20	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1425 1225	COMMENTS: COLLECTED EBO9 @ 1315 COLLECTED FBO9 @ 1400								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS		PRESERVATIVE					
MKTf-32	1425	40 ML VOA	5		HCL					
		40 ML VOA	3		NA ₂ S ₂ O ₃					
		1 LITER AMBER	1		NEAT					
		250 ML AMBER	1		NEAT					
		250 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		H ₂ SO ₄					
		125 ML PLASTIC	1		NEAT					
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-41		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.9.18	Initial	1500	8.30	18.4	3127	2034	1.64	3.16	123.6
GAUGE TIME	1453	1	1505	8.18	15.0	3267	3268	1.72	3.55	125.7
DHC (FEET)	ND	2	1511	8.26	14.2	3241	2106	1.71	4.01	124.7
DTW (FEET)	19.95	3	1519	8.27	14.0	3231	2099	1.70	2.66	121.6
DTB (FEET)	39.91	4								
DTB - DTW	19.96	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
3.25 PURGING DATA										
3 WELL VOLUMES	9.75	WEATHER CONDITIONS: CLEAR, STRONG WEST WIND, 87°								
PURGE DATE	5.9.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1519	COMMENTS:								
PURGE AMOUNT	9.75									
DTW (FEET)	34.50									
SAMPLING DATA										
SAMPLE DATE	5.9.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	33.70	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1540	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-41	1540	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-43		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.9.18	Initial	0911	6.97	14.3	21740	14131	13.10	3.81	102.8
GAUGE TIME	0850	1	0913	6.98	12.7	21895	14235	13.20	3.81	102.0
DHC (FEET)	ND	2	0916	7.15	12.1	21597	14040	12.99	3.81	101.6
DTW (FEET)	4.75	3	0919	7.05	11.5	22021	14319	13.28	4.14	102.4
DTB (FEET)	15.30	4	0926	7.00	11.0	25224	16393	15.37	2.87	105.8
DTB - DTW	10.55	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.72 PURGING DATA										
3 WELL VOLUMES	5.16	WEATHER CONDITIONS: CLEAR, CALM, 61°								
PURGE DATE	5.9.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR → LIGHT TAN								
END OF PURGE TIME	0930	COMMENTS: BAILED DOWN @ 7 GALS								
PURGE AMOUNT	7.0									
DTW (FEET)	14.80									
SAMPLING DATA										
SAMPLE DATE	5.9.18	WEATHER CONDITIONS: OVERCAST, WEST WIND, 84°								
DTW (FEET)	10.50	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1755	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-43	1755	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-44		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.9.18	Initial	0955	8.21	13.9	2715	1762	1.41	5.05	75.3
GAUGE TIME	0945	1	1001	8.25	13.5	2113	1372	1.09	5.16	71.0
DHC (FEET)	ND	2	1007	8.25	13.3	2143	1391	1.10	5.88	73.6
DTW (FEET)	34.98	3								
DTB (FEET)	51.08	4								
DTB - DTW	16.10	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.62 PURGING DATA										
3 WELL VOLUMES	7.86	WEATHER CONDITIONS: CLEAR, CALM, 69°								
PURGE DATE	5.9.18	WATER APPEARANCE / ODOR: CLEAR → LT. BROWN, NO ODOR								
END OF PURGE TIME	1025	COMMENTS: BAILED DOWN @ 7.5 GALS								
PURGE AMOUNT	7.5									
DTW (FEET)	50.82									
SAMPLING DATA										
SAMPLE DATE	5.10.18	WEATHER CONDITIONS: CLEAR, CALM, 65°								
DTW (FEET)	48.75	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0850	COMMENTS: COLLECTED FIELD BLANK FB10 @ 0825								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-43	0850	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-33		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.9.18	Initial	1604	7.32	15.1	1644	1066	0.84	1.36	148.2
GAUGE TIME	1558	1	1608	7.31	13.4	1422	923	0.72	1.93	146.7
DHC (FEET)	ND	2	1612	7.35	13.2	1679	1092	0.85	1.76	143.7
DTW (FEET)	22.60	3	1616	7.37	13.0	1696	1105	0.86	1.77	142.8
DTB (FEET)	33.11	4								
DTB - DTW	10.51	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.71 PURGING DATA										
3 WELL VOLUMES	5.13	WEATHER CONDITIONS: CLEAR, WEST WIND, 87°								
PURGE DATE	5.9.18	WATER APPEARANCE / ODOR: CLEAR → LT. BROWN, HC ODOR								
END OF PURGE TIME	1616	COMMENTS:								
PURGE AMOUNT	5.25									
DTW (FEET)	26.28									
SAMPLING DATA										
SAMPLE DATE	5.10.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 68°								
DTW (FEET)	22.65	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	0940	COMMENTS: COLLECTED DUPIO & 1 EXTRA 1 L AMBER								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-33	0940	40 ML VOA	5				HCL			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF- 21 22		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.9.18	Initial	1635	7.06	14.8	1823	1183	0.93	0.88	-657
GAUGE TIME	1629	1	1639	7.14	14.4	1803	1176	0.92	1.91	-75.6
DHC (FEET)	ND	2	1644	7.15	13.9	1043	676	0.52	1.62	-80.6
DTW (FEET)	25.45	3	1649	7.19	13.8	1851	1202	0.95	1.79	-83.3
DTB (FEET)	35.51	4								
DTB - DTW	10.06	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.64 PURGING DATA										
3 WELL VOLUMES	4.92	WEATHER CONDITIONS: OVERCAST, WEST WIND 86°								
PURGE DATE	5.9.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, HC ODOR								
END OF PURGE TIME	1649	COMMENTS: BANKED DOWN @ 5 GALS								
PURGE AMOUNT	5 GALS									
DTW (FEET)	35.16									
SAMPLING DATA										
SAMPLE DATE	5.10.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 74°								
DTW (FEET)	25.48	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR								
SAMPLE TIME	1030	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF- 21 22	1030	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

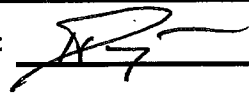
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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTf-13		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.9.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	1707	1		NO READINGS COLLECTED						
DHC (FEET)	ND	2								
DTW (FEET)	13.78	3								
DTB (FEET)	21.66	4								
DTB - DTW	7.88	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES	17.50	WEATHER CONDITIONS: OVERCAST, WEST WIND, 85°								
PURGE DATE	5.9.18	WATER APPEARANCE / ODOR: CLEAR, SHEEN, HC ODOR → BROWN								
END OF PURGE TIME	1720	COMMENTS: BAILED DOWN @ 15 GALS								
PURGE AMOUNT	15									
DTW (FEET)	21.18									
SAMPLING DATA										
SAMPLE DATE	5.9.18	WEATHER CONDITIONS: CLEAR, WEST WIND								
DTW (FEET)	13.83	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1135	COMMENTS: COLLECTED EB10 @ 1100								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-13	1135	40 ML VOA	5				HCL			
		1 L AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				HNO3			
		125 ML PLASTIC	1				H2SO4			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-20		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.10.18	Initial	1323	6.77	19.7	4839	3146	2.60	0.51	-101.7
GAUGE TIME	1319	1	1326	6.79	19.3	5452	3547	2.95	0.47	-105.7
DHC (FEET)	ND	2								
DTW (FEET)	7.02	3								
DTB (FEET)	9.50	4								
DTB - DTW	2.48	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.84		PURGING DATA								
3 WELL VOLUMES	5.52	WEATHER CONDITIONS: CLEAR, WEST WIND								
PURGE DATE	5.10.18	WATER APPEARANCE / ODOR: AMBER -> GREY, HC ODOR, SHEEN								
END OF PURGE TIME	1330	COMMENTS:								
PURGE AMOUNT	3.25									
DTW (FEET)	9.42									
SAMPLING DATA										
SAMPLE DATE	5.11.18	WEATHER CONDITIONS: OVERCAST, SW WIND, 67°								
DTW (FEET)	7.05	WATER APPEARANCE / ODOR: AMBER, HC ODOR, SHEEN								
SAMPLE TIME	0930	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS		PRESERVATIVE					
MKTf-20	0930	40 ML VOA	5		HCL					
		1 LITER AMBER	1		NEAT					
		250 ML AMBER	1		NEAT					
		250 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		H ₂ SO ₄					
		125 ML PLASTIC	1		NEAT					
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTf-21		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.10.18	Initial	1303	6.73	18.4	2164	1404	1.11	1.05	-99.1
GAUGE TIME	1257	1	1305	6.76	16.1	2150	1397	1.11	1.30	98.1
DHC (FEET)	ND	2								
DTW (FEET)	6.45	3								
DTB (FEET)	8.75	4								
DTB - DTW	2.30	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.70		PURGING DATA								
3 WELL VOLUMES	5.10	WEATHER CONDITIONS: CLEAR, WEST WIND								
PURGE DATE	5.10.18	WATER APPEARANCE / ODOR: GREY, ODOR								
END OF PURGE TIME	1309	COMMENTS: BAILED DOWN @ 2 GALS								
PURGE AMOUNT	2									
DTW (FEET)	8.56									
		SAMPLING DATA								
SAMPLE DATE	5.11.18	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 66°								
DTW (FEET)	7.11	WATER APPEARANCE / ODOR: GREY, ODOR								
SAMPLE TIME	0840	COMMENTS: COLLECTED 1 EXTRA 1 L AMBER COLLECTED FB11 @ 0740 COLLECTED FB11 @ 0800								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-21	0840	40 ML VOA	5				HCL			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-16		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.10.18	Initial	1346	6.94	20.3	3708	2412	1.96	0.85	-94
GAUGE TIME	1342	1	1349	6.94	18.6	3714	2411	1.97	1.04	-94.9
DHC (FEET)	ND	2	1352	7.00	18.7	3803	2470	2.00	1.03	-88.4
DTW (FEET)	8.40	3	1355	7.03	18.6	3876	2522	2.06	1.76	-85.3
DTB (FEET)	13.96	4								
DTB - DTW	5.56	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
0.91 PURGING DATA										
3 WELL VOLUMES	2.73	WEATHER CONDITIONS: CLEAR, WEST WIND								
PURGE DATE	5.10.18	WATER APPEARANCE / ODOR: LIGHT BROWN, HC ODOR								
END OF PURGE TIME	13.55	COMMENTS:								
PURGE AMOUNT	2.75									
DTW (FEET)	13.50									
SAMPLING DATA										
SAMPLE DATE	5.11.18	WEATHER CONDITIONS: OVERCAST, SW WIND, 69°								
DTW (FEET)	12.20	WATER APPEARANCE / ODOR: LIGHT BROWN, HC ODOR								
SAMPLE TIME	1010	COMMENTS: INSUFFICIENT WATER VOLUME TO DUPLICATE								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-16	1010	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-5C		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.14.18	Initial	1210	7.67	13.1	4813	3126	2.60	2.01	37.6
GAUGE TIME	11:56	1	1220	7.60	13.2	4951	3218	2.67	0.98	-53.2
DHC (FEET)	ND	2	1228	7.61	13.1	4988	3237	2.69	1.24	-77.9
DTW (FEET)	2.65	3	1238	7.61	12.9	5009	3256	2.70	1.30	-76.7
DTB (FEET) (76.35)	69.33 TOP OF PUMP	4								
DTB - DTW	73.70	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
12 PURGING DATA										
3 WELL VOLUMES	36	WEATHER CONDITIONS: CLEAR, WEST WIND, 80°								
PURGE DATE	5.14.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1238	COMMENTS:								
PURGE AMOUNT	36									
DTW (FEET)	16.20									
SAMPLING DATA										
SAMPLE DATE	5.14.18	WEATHER CONDITIONS: CLEAR, WEST WIND 75°								
DTW (FEET)	2.85	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1320	COMMENTS: COLLECTED DUP 11 COLLECTED FB12 @ 1250 ← 1XTRA 1L DUP								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-5C	1320	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL METER										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-5B		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.14.18	Initial	113	8.75	14.1	1480	962	0.75	6.81	43.2
GAUGE TIME	1123	1	1145	8.54	14.7	1475	962	0.75	3.40	53.6
DHC (FEET)	ND	2								
DTW (FEET)	9.50	3								
DTB (FEET)	46.70	4								
(61.45) DTB - DTW	TOP OF PUMP	5								
	51.95	6								
CAPACITY PER FOOT	0.74 - 4"									
	0.163 - 2"									
8.47 PURGING DATA										
3 WELL VOLUMES	25.41	WEATHER CONDITIONS: CLEAR, WEST WIND, 73°								
PURGE DATE	5.14.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1147	COMMENTS: PUMPED DOWN @ 9.25 GALS								
PURGE AMOUNT	9.25									
DTW (FEET)	53.05									
SAMPLING DATA										
SAMPLE DATE	5.14.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	46.80	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1350	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-5B	1350	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL METER										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-4B		Volumes	TIME	pH	Temperature Degrees C	Conductivity ($\mu\text{S}/\text{cm}$)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.14.18	Initial	1052	8.37	13.1	1874	1215	0.96	6.72	75.0
GAUGE TIME	1030	1								
DHC (FEET)	ND	2								
DTW (FEET)	40.50	3								
DTB (FEET)	50.70	4								
(63.50)	TOP OF PUMP									
DTB - DTW	23.00	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	(0.163 - 2")									
3.75		PURGING DATA								
3 WELL VOLUMES	11.25	WEATHER CONDITIONS: CLEAR, STRONG WEST WIND, 71°								
PURGE DATE	5.14.18	WATER APPEARANCE / ODOR: CLEAR								
END OF PURGE TIME	1055	COMMENTS: PLUMPED DOWN @ 3.25 GALS								
PURGE AMOUNT	3.25									
DTW (FEET)	49.90									
		SAMPLING DATA N/A								
SAMPLE DATE	—	WEATHER CONDITIONS:								
DTW (FEET)	48.50	WATER APPEARANCE / ODOR: → OB18								
SAMPLE TIME	—	COMMENTS: INSUFFICIENT WATER VOLUME — DID NOT SAMPLE								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-4B		40 ML VOA	5				HCL			
		1 LITER AMBER					NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL METER										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.14.18	Initial	1511	8.69	14.0	1533	994	0.78	1.65	92.4
GAUGE TIME	1505	1	1541	8.61	14.1	1439	936	0.73	0.75	79.6
DHC (FEET)	ND	2								
DTW (FEET)	1.70	3								
DTB (FEET)	94.54	4								
DTB - DTW	92.84	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
* 68.70 PURGING DATA										
3 WELL VOLUMES	206.10	WEATHER CONDITIONS: CLEAR, WEST WIND, 76°								
PURGE DATE	5.14.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1554	COMMENTS: PUMPED DOWN @ 80 GALS								
PURGE AMOUNT	80 GALS									
DTW (FEET)	95.60									
SAMPLING DATA										
SAMPLE DATE	5.15.18	WEATHER CONDITIONS: CLEAR, SW WIND, 55°								
DTW (FEET)	43.40	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0920	COMMENTS: 2000 COLLECTED DUP 12 COLLECTED FB13 @ 0845								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-1	0920	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		WATER LEVEL PROBE WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-10		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.15.18	Initial	1022	7.37	14.3	2235	1456	1.10	1.62	139.2
GAUGE TIME	0955	1	1039	7.38	13.7	4328	2808	2.32	1.73	136.3
DHC (FEET)	ND	2	1056	7.36	13.6	3868	2515	2.06	1.50	124.5
DTW (FEET)	2.05	3	1113	7.37	13.5	3763	2444	2.00	1.44	123.3
DTB (FEET)	69	4								
DTB - DTW	66.95	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
50 PURGING DATA										
3 WELL VOLUMES	150	WEATHER CONDITIONS: CLEAR, STRONG SW WIND, 65°								
PURGE DATE	5.15.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1113	COMMENTS:								
PURGE AMOUNT	150									
DTW (FEET)	2.60									
SAMPLING DATA										
SAMPLE DATE	5.15.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	2.60	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1125	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-10	1125	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-13		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.15.18	Initial	1230	8.02	14.7	1342	871	0.68	1.07	130.9
GAUGE TIME	1215	1	1300	7.91	13.9	1278	832	0.54	0.88	131.4
DHC (FEET)	ND	2	1330	7.92	14.0	1279	832	0.64	0.88	127.8
DTW (FEET)	20.50	3	1400	7.96	14.1	1282	832	0.64	0.99	128.0
DTB (FEET)	99.00	4								
DTB - DTW	78.5	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
58.0 PURGING DATA										
3 WELL VOLUMES	174	WEATHER CONDITIONS: CLEAR, SW WIND, 72°								
PURGE DATE	5.15.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1400	COMMENTS:								
PURGE AMOUNT	175									
DTW (FEET)	24.80									
SAMPLING DATA										
SAMPLE DATE	5.15.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	24.95	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1410	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-13	1410	40 ML VOA	5				HCL			
↓	↓	40 ML VOA	3				NA ₂ S ₂ O ₃			
↓	↓	250 ML AMBER	1				NEAT			
↓	↓	250 ML PLASTIC	1				HNO ₃			
↓	↓	125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
WATER LEVEL PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-14		Volumes	TIME	pH	Temperature Degrees C	Conductivity (µS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.15.18	Initial	1450	6.98	15.7	1976	1287	1.01	1.46	-82.6
GAUGE TIME	1445	1	1500	6.96	14.5	1973	1280	1.01	0.96	-92.0
DHC (FEET)	ND	2	1510	7.01	14.6	1964	1274	1.01	1.31	-92.5
DTW (FEET)	21.73	3	1520	7.02	14.6	1969	1280	1.01	1.28	-92.5
DTB (FEET)	46.75	4								
DTB - DTW	25.02	5								
CAPACITY PER FOOT	(0.74 - 4") 0.163 - 2"	6								
18.51 PURGING DATA										
3 WELL VOLUMES	55.53	WEATHER CONDITIONS: CLEAR, SW WIND, 76°								
PURGE DATE	5.15.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
END OF PURGE TIME	1520	COMMENTS:								
PURGE AMOUNT	60									
DTW (FEET)	22.80									
SAMPLING DATA										
SAMPLE DATE	5.15.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	22.80	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1525	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-14	1525	40 ML VOA	5				HCL			
↓	↓	40 ML VOA	3				NA ₂ S ₂ O ₃			
↓	↓	250 ML AMBER	1				NEAT			
↓	↓	250 ML PLASTIC	1				HNO ₃			
↓	↓	125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
WATER LEVEL PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018**

MGL

WELL ID		TEST PARAMETERS								
OW-30		Volumes	TIME	pH	Temperature Degrees C	Conductivity ($\mu\text{S}/\text{cm}$)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (ppm)	ORP (mv)
GAUGE DATE	5.16.18	Initial	0742	7.10	12.5	2006	1306	1.03	1.10	189
GAUGE TIME	0735	1	0754	7.12	12.8	2001	1300	1.03	1.01	160.1
DHC (FEET)	ND	2	0806	7.11	12.6	1994	1293	1.02	1.27	148.1
DTW (FEET)	21.35	3	0818	7.10	12.7	2009	1306	1.03	1.17	122.5
DTB (FEET)	50.20	4								
DTB - DTW	28.85	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
21 PURGING DATA										
3 WELL VOLUMES	63	WEATHER CONDITIONS: CLEAR, CALM, 47°								
PURGE DATE	5.16.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
END OF PURGE TIME	0818	COMMENTS:								
PURGE AMOUNT	70									
DTW (FEET)	25.60									
SAMPLING DATA										
SAMPLE DATE	5.16.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	25.60	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	0825	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-30	0825	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
WATER LEVEL PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
SECOND QUARTER 2018

MG/L

WELL ID		TEST PARAMETERS								
OW-29		Volumes	TIME	pH	Temperature Degrees C	Conductivity (μ S/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	5.16.18	Initial	0956	7.28	14.7	1935	1261	1.00	2.25	59.3
GAUGE TIME	0952	1	1009	7.27	13.5	1964	1274	1.01	2.24	-5.8
DHC (FEET)	ND	2	1022	7.21	14.1	1981	1287	1.02	2.87	-6.3
DTW (FEET)	17.15	3	1035	7.22	14.2	1997	1300	1.02	2.30	-9.3
DTB (FEET)	51.90	4								
DTB - DTW	34.75	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
25.72 PURGING DATA										
3 WELL VOLUMES	77.16	WEATHER CONDITIONS: CLEAR, CALM, 70°								
PURGE DATE	5.16.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
END OF PURGE TIME	1035	COMMENTS:								
PURGE AMOUNT	80 GALS									
DTW (FEET)	37.90									
SAMPLING DATA										
SAMPLE DATE	5.16.18	WEATHER CONDITIONS: CLEAR, CALM, 70°								
DTW (FEET)	37.90	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1040	COMMENTS: COLLECTED FB14@1015 COLLECTED COLLECTED DU13								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-29	1040	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
WATER LEVEL PROBE										
WATER QUALITY METER										

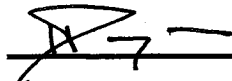
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-1A		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/ CN)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%) MG/L	ORP (mv)
GAUGE DATE	8.15.18	Initial								
GAUGE TIME	0941	1								
DHC (FEET)	ND	2		WELL NOT SAMPLED - DRY						
DTW (FEET)	ND	3								
DTB (FEET)	42.61	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.163 - 2"	6								
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATER LEVEL METER								

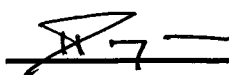
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-1B		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (ppm)	ORP (mv)
GAUGE DATE	8-15-18	Initial							MG/L	
GAUGE TIME	0945	1								
DHC (FEET)	ND	2	WELL NOT SAMPLED - DRY							
DTW (FEET)	ND	3								
DTB (FEET)	73.55	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.163 - 2"	6								
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATER LEVEL METER								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-1C		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	9.12.18	Initial	0810	8.56	14.3	1.07	0.8710	0.68	1.06 ^{not}	34.5
GAUGE TIME	0755	1	0820	8.72	14.0	1.05	0.8645	0.67	0.54	-3.8
DHC (FEET)	ND	2								
DTW (FEET)	13.05	3								
DTB (FEET)	126.15	4								
DTB - DTW	113.10	5								
CAPACITY PER FOOT	0.163 - 2"	6								
18.44 PURGING DATA										
3 WELL VOLUMES	55.32	WEATHER CONDITIONS: CLEAR, LT EAST WIND, 53°								
PURGE DATE	9.12.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	0835	COMMENTS: PUMPED DOWN @ 32 GALLONS								
PURGE AMOUNT	32									
DTW (FEET)	116.90									
SAMPLING DATA										
SAMPLE DATE	9.12.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	101.50	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	0855	COMMENTS: COLLECTED DUPLG COLLECTED FB15 @ 0925								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-1C	0855	40 ML VOA	5				HCl			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL METER										
WATER QUALITY METER										

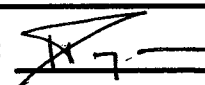
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-2A		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	9.12.18	Initial	1005	8.17	14.4	1.10	0.8905	0.69	1.08	5.5
GAUGE TIME	0950	1	1012	7.81	14.0	1.08	0.8905	0.69	1.04	-85.1
DHC (FEET)	ND	2	1021	7.80	14.0	1.08	0.8905	0.69	0.90	-103.9
DTW (FEET)	32.47	3	1028	7.79	14.0	1.09	0.8840	0.68	0.89	-96.4
DTB (FEET)	59.60	4								
DTB - DTW	27.13	5								
CAPACITY PER FOOT	0.163 - 2"	6								
4.42 PURGING DATA										
3 WELL VOLUMES	13.26	WEATHER CONDITIONS: CLEAR SW WIND 71°								
PURGE DATE	9.12.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1028	COMMENTS:								
PURGE AMOUNT	13.50									
DTW (FEET)	39.62									
SAMPLING DATA										
SAMPLE DATE	9.12.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	39.62	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1040	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-2A	1040	40 ML VOA	5				HCl			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL METER										
WATER QUALITY METER										

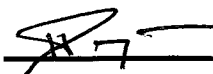
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-2B		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	9.12.18	Initial	1110	7.77	14.9	1.81	1.4501	1.16	1.89	-52.1
GAUGE TIME	1055	1	1121	7.79	14.8	1.81	1.4625	1.16	0.68	-82.8
DHC (FEET)	ND	2	1132	7.79	14.6	1.80	1.4625	1.16	0.69	-90.6
DTW (FEET)	28.25	3	* SHUT DOWN PURGING TO ATTEND SAFETY MEETING							
DTB (FEET)	92.26	4								
DTB - DTW	53.10	5			DTW - 39.38		- 1223-7 DTW 31.20			
DTB - DTW	64.01	5	1231	7.80	14.7	1.80	1.4625	1.15	0.60	-72.9
CAPACITY PER FOOT	0.163 - 2"	6								
10.43		PURGING DATA								
3 WELL VOLUMES	3129	WEATHER CONDITIONS: CLEAR, STRONG WEST WIND, 77°								
PURGE DATE	9.12.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1231	COMMENTS: RESUMED PURGING @ 1225 @ 16GPM								
PURGE AMOUNT	32									
DTW (FEET)	39.40									
		SAMPLING DATA								
SAMPLE DATE	9.12.18	WEATHER CONDITIONS: CLEAR, STRONG WEST WIND, 80°								
DTW (FEET)	39.40	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1242	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-2B	1242	40 ML VOA	5				HCl			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		WATER LEVEL METER								
		WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
BW-2C		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	9.18.18	Initial	0815	8.90	12.9	1.10	0.9295	0.72	1.24	64.1
GAUGE TIME	0800	1	0833	8.83	13.1	1.09	0.9165	0.71	0.78	37.4
DHC (FEET)	ND	2								
DTW (FEET)	20.85	3								
DTB (FEET)	143.05	4								
DTB - DTW	122.20	5								
CAPACITY PER FOOT	0.163 - 2"	6								
19.92 PURGING DATA										
3 WELL VOLUMES	59.76	WEATHER CONDITIONS: CLEAR, CALM, 54°								
PURGE DATE	9.18.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	0840	COMMENTS:								
PURGE AMOUNT	25 GALS									
DTW (FEET)	141.80									
SAMPLING DATA										
SAMPLE DATE	9.18.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	120.05	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	0850	COMMENTS: ADJUSTED								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-2C	0850	40 ML VOA	5				HCl			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL METER										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-3A		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8-15-18	Initial							MG/L	
GAUGE TIME	0900	1								
DHC (FEET)	ND	2								
DTW (FEET)	ND	3	WELL NOT SAMPLED - DRY							
DTB (FEET)	52.38	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.163 - 2"	6								
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATER LEVEL METER								

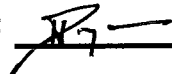
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-3B		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	9.12.18	Initial	1335	8.70	14.7	1.33	1.0725	0.84	0.90	-115.9
GAUGE TIME	1330	1	1341	8.00	15.0	1.26	1.0140	0.79	0.69	-135.1
DHC (FEET)	ND	2	1347	7.90	14.6	1.24	1.0075	0.78	0.73	-128.1
DTW (FEET)	33.40	3	1353	7.97	14.6	1.23	1.0025	0.78	0.81	-122.4
DTB (FEET)	69.75	4								
DTB - DTW	36.35	5								
CAPACITY PER FOOT	0.163 - 2"	6								
5.92 PURGING DATA										
3 WELL VOLUMES	17.76	WEATHER CONDITIONS: CLEAR, STRONG SW WIND, 80°								
PURGE DATE	9.12.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR, LIGHT YELLOW								
END OF PURGE TIME	1353	COMMENTS:								
PURGE AMOUNT	18 GALS									
DTW (FEET)	44.00									
SAMPLING DATA										
SAMPLE DATE	9.12.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	44.00	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1400	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-3B	1400	40 ML VOA	5				HCl			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL METER										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-3C		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	9.18.18	Initial	0953	8.52	14.5	1.29	1.0465	0.82	0.95	-51.6
GAUGE TIME	0940	1	1005	8.47	14.00	1.26	1.0400	0.81	0.75	-86.9
DHC (FEET)	ND	2								
DTW (FEET)	8.51	3								
DTB (FEET)	146.60	4								
DTB - DTW	138.09	5								
CAPACITY PER FOOT	0.163 - 2"	6								
22.50		PURGING DATA								
3 WELL VOLUMES	67.5	WEATHER CONDITIONS: CLEAR, CALM, 60°								
PURGE DATE	9.18.18	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR								
END OF PURGE TIME	1015	COMMENTS: PUMPED DOWN @ 42 GALLONS								
PURGE AMOUNT	42									
DTW (FEET)	126.18	1035 - DTW - 117.10								
SAMPLING DATA										
SAMPLE DATE	9.18.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 79°								
DTW (FEET)	116.80	WATER APPEARANCE / ODOR: CLOUDY, FAINT ODOR								
SAMPLE TIME	1115	COMMENTS: COLLECTED FB18 @ 1010 & DW19								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-3C	1115	40 ML VOA	5				HCl			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL METER										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-4A		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.15.18	Initial							MG/L	
GAUGE TIME	1013	1								
DHC (FEET)	ND	2	WELL NOT SAMPLED - DRY							
DTW (FEET)	ND	3								
DTB (FEET)	38.80	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATER LEVEL METER								

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
BW-4B		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	9.10.18	Initial	1114	8.36	16.9	1.54	1.1830	0.93	0.65	-215.2
GAUGE TIME	10:55 02:10:18	1	1117	8.26	14.5	1.45	1.1765	0.93	0.89	-209.1
DHC (FEET)	ND	2								
DTW (FEET)	36.85	3								
DTB (FEET)	50.70	4								
DTB - DTW	13.85	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	(0.163 - 2")									
2.26 PURGING DATA										
3 WELL VOLUMES	6.78	WEATHER CONDITIONS: CLEAR, CALM, 70°								
PURGE DATE	9.10.18	WATER APPEARANCE / ODOR:								
END OF PURGE TIME	1122	COMMENTS:								
PURGE AMOUNT	4 GALS									
DTW (FEET)	49.20									
SAMPLING DATA										
SAMPLE DATE	NA	WEATHER CONDITIONS:								
DTW (FEET)	48.75	WATER APPEARANCE / ODOR:								
SAMPLE TIME	NA	COMMENTS: INSUFFICIENT WATER VOLUME TO SAMPLE								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-4B		40 ML VOA	5				HCL			
		1 LITER AMBER					NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL METER										
WATER QUALITY METER										

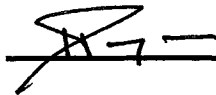
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-5A		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.15.18	Initial								
GAUGE TIME	1020	1								
DHC (FEET)	ND	2	WELL NOT SAMPLED - DRY							
DTW (FEET)	ND	3								
DTB (FEET)	23.02	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		WATER LEVEL METER								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
BW-5B		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	9.10.18	Initial	1017	8.60	20.8	1.59	1.1180	0.87	2.27	54.1
GAUGE TIME	1005	1	1032	8.56	16.9	1.38	1.0595	0.83	1.05	52.3
DHC (FEET)	ND	2								
DTW (FEET)	10.20	3								
DTB (FEET)	46.70	4								
DTB - DTW	36.50	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
5.945 PURGING DATA										
3 WELL VOLUMES	17.85	WEATHER CONDITIONS: CLEAR, CALM, 70°								
PURGE DATE	9.10.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1040	COMMENTS:								
PURGE AMOUNT	8 GALS									
DTW (FEET)	52.50									
SAMPLING DATA										
SAMPLE DATE	9.10.18	WEATHER CONDITIONS: PARTLY CLOUDY, SW WIND, 82°								
DTW (FEET)	36.98	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1520	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-5B	1520	40 ML VOA	5				HCL			
		1 LITER AMBER					NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL METER										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
BW-5C		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	9.10.18	Initial	1342	7.78	25.8	5.02	3.2110	2.64	0.89	13.2
GAUGE TIME	1335	1	1354	7.90	15.1	4.02	3.2110	2.67	0.40	-113.4
DHC (FEET)	ND	2	1403	7.74	14.3	3.92	3.1980	2.65	1.22	-103.1
DTW (FEET)	3.55	3	1412	7.73	14.2	3.92	3.2110	2.67	0.74	-99.5
DTB (FEET)	69.33	4	1422	7.72	14.2	3.90	3.1900	2.66	0.76	-97.3
DTB - DTW	65.78	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
10.72 PURGING DATA										
3 WELL VOLUMES	32.16	WEATHER CONDITIONS: PARTLY CLOUDY, SW WIND, 81°								
PURGE DATE	9.10.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, NO ODOR								
END OF PURGE TIME	1422	COMMENTS:								
PURGE AMOUNT	44									
DTW (FEET)	6.65									
SAMPLING DATA										
SAMPLE DATE	9.10.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	6.65	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1435	COMMENTS: COLLECTED FB13 @ 1320 & DUPI4								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
BW-5C	1435	40 ML VOA	5				HCL			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL METER										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
EAST LDU		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.5.18	Initial								
GAUGE TIME		1								
DHC (FEET)		2	COULD NOT ACCESS HIGH H ₂ S CONCENTRATIONS IN IMMEDIATE AREA							
DTW (FEET)		3								
DTB (FEET)		4								
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
EAST LDU		40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-2	9.6.18	1250

SAMPLING DATA

WEATHER CONDITIONS:

PARTLY CLOUDY, CALM, 73°

WATER APPEARANCE / ODOR:

PINKISH BROWN, ODOR

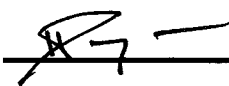
COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-2	1250	40 ML VOA	X3	HCL
		1 LITER AMBER	2	NEAT
		250 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	H ₂ SO ₄
		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED N/A

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

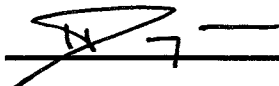
ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-3	9.6.18	1330

SAMPLING DATA				
WEATHER CONDITIONS: CLOUDY, SOUTH WIND, 76°				
WATER APPEARANCE / ODOR: PINKISH BROWN, ODOR				
COMMENTS:				

SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-3	1330	40 ML VOA	X3	HCL
		1 LITER AMBER	2	NEAT
		250 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	H ₂ SO ₄
		125 ML PLASTIC	1	NEAT
INSTRUMENTS USED N/A				

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-4	9.6-18	1450

SAMPLING DATA

WEATHER CONDITIONS:

CLOUDY, SOUTH WIND, 76°

WATER APPEARANCE / ODOR:

PINKISH BROWN, ODOR

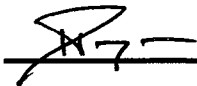
COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-4	1450	40 ML VOA	X3	HCL
		1 LITER AMBER	1	NEAT
		250 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	H ₂ SO ₄
		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED N/A

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-5	9.6.18	1515

SAMPLING DATA

WEATHER CONDITIONS:

CLOUDY - NORTH WIND, 70°

WATER APPEARANCE / ODOR:

GREEN, NO ODOR


COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-5	1515	40 ML VOA	X3	HCL
		1 LITER AMBER	1	NEAT
		250 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	H ₂ SO ₄
		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED N/A

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-6	9.7.18	0805

SAMPLING DATA

WEATHER CONDITIONS:

CLEAR, CALM, 46°

WATER APPEARANCE / ODOR:

GREEN NO ODOR

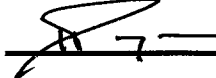
COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-6	0805	40 ML VOA	X3	HCL
		1 LITER AMBER	1	NEAT
		250 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	H ₂ SO ₄
		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED N/A

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-7	9.7.18	0840

SAMPLING DATA

WEATHER CONDITIONS:

CLEAR, CALM, 52°

WATER APPEARANCE / ODOR:

~~BB~~ GREEN, NO ODOR

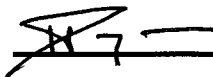
COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-7	0840	40 ML VOA	X3	HCL
		1 LITER AMBER	1	NEAT
		250 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	H ₂ SO ₄
		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED N/A

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-8	9.7.18	0900

SAMPLING DATA

WEATHER CONDITIONS:

CLEAR, CALM, 57°

WATER APPEARANCE / ODOR:

GREEN, NO ODOR

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-8	0900	40 ML VOA	3	HCL
		1 LITER AMBER	1	NEAT
		250 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	H ₂ SO ₄
		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED N/A

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-9	9.7.18	0930		
SAMPLING DATA				
WEATHER CONDITIONS:				
CLEAR, CALM, 59°				
WATER APPEARANCE / ODOR:				
CLEAR, NO ODOR				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-9	0930	40 ML VOA	X3	HCL
		1 LITER AMBER	1	NEAT
		250 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	H ₂ SO ₄
		125 ML PLASTIC	1	NEAT
INSTRUMENTS USED N/A				

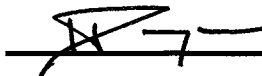
COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME	
EP-11	9.7.18	1025	
SAMPLING DATA			
WEATHER CONDITIONS: CLEAR, CALM, 70°			
WATER APPEARANCE / ODOR: AMBER, ODOR, 7/10			
COMMENTS: POND ALMOST DRY			
SAMPLE LOG			
SAMPLE ID	TIME	CONTAINER TYPE	PRESERVATIVE
EP-11	1025	40 ML VOA	HCL
		1 LITER AMBER	NEAT
		250 ML PLASTIC	HNO ₃
		125 ML PLASTIC	HNO ₃
		125 ML PLASTIC	H ₂ SO ₄
		125 ML PLASTIC	NEAT
INSTRUMENTS USED N/A			

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-12A	9.7.18	1100

SAMPLING DATA

WEATHER CONDITIONS:
CLEAR, NORTH WIND, 72°

WATER APPEARANCE / ODOR:
AMBER, ODOR

COMMENTS:
POND ALMOST DRY

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-12A	1100	40 ML VOA	3	HCL
		1 LITER AMBER	2	NEAT
		250 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	H ₂ SO ₄
		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED N/A

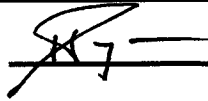
COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-12B	9.7.18	1130		
SAMPLING DATA				
WEATHER CONDITIONS:				
CLEAR, NORTH WIND 73°				
WATER APPEARANCE / ODOR:				
PINKISH BROWN, ODOR				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-12B	1130	40 ML VOA	X3	HCL
		1 LITER AMBER	2	NEAT
		250 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	H ₂ SO ₄
		125 ML PLASTIC	1	NEAT
INSTRUMENTS USED N/A				

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-2	9.14.18	0709

SAMPLING DATA

WEATHER CONDITIONS:

CLEAR, CALM, 47°

WATER APPEARANCE / ODOR:

PINKISH BROWN, ODOR

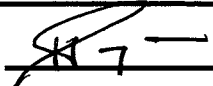
COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-2	0709	500 ML PLASTIC	1	NEAT
↓	↓	1 LITER PLASTIC	1	NEAT
↓	↓	100 ML PLASTIC	1	NEAT
↓	↓	500 ML PLASTIC	1	H ₂ SO ₄

INSTRUMENTS USED N/A

COMPLETED BY: TRACY FAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-3	9.14.18	0723

SAMPLING DATA

WEATHER CONDITIONS:

CLEAR, CALM, 47°

WATER APPEARANCE / ODOR:

PINKISH BROWN, ODOR

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-3	0723	500 ML PLASTIC	1	NEAT
		1 LITER PLASTIC	1	NEAT
		100 ML PLASTIC	1	NEAT
		500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED		N/A		

COMPLETED BY:

TRACY PAYNE

SIGNATURE:

SP7-

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-4	9.14.18	0735

SAMPLING DATA

WEATHER CONDITIONS:
CLEAR, CALM, 47°


WATER APPEARANCE / ODOR:
PINKISH BROWN, ODOR

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-4	0735	500 ML PLASTIC	1	NEAT
		1 LITER PLASTIC	1	NEAT
		100 ML PLASTIC	1	NEAT
		500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED <u>N/A</u>				

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-5	9.14.18	0747		
SAMPLING DATA				
WEATHER CONDITIONS:				
CLEAR, CALM, 47°				
WATER APPEARANCE / ODOR:				
GREEN, NO ODOR				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-5	0747	500 ML PLASTIC	1	NEAT
		1 LITER PLASTIC	1	NEAT
		100 ML PLASTIC	1	NEAT
		500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED		N/A		

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY

THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-6	9.14.18	0800		
SAMPLING DATA				
WEATHER CONDITIONS: CLEAR, CALM, 50°				
WATER APPEARANCE / ODOR: GREEN, NO ODOR				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-6	0800	500 ML PLASTIC	1	NEAT
↓	↓	1 LITER PLASTIC	1	NEAT
↓	↓	100 ML PLASTIC	1	NEAT
↓	↓	500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED N/A				

COMPLETED BY: TRACY PAYNE

SIGNATURE: TRACY PAYNE

7-

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-7	9.14.18	0816

SAMPLING DATA

WEATHER CONDITIONS:

CLEAR, CALM, 50°

WATER APPEARANCE / ODOR:

LIGHT BROWN, NO ODOR

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-7	0816	500 ML PLASTIC	1	NEAT
		1 LITER PLASTIC	1	NEAT
		100 ML PLASTIC	1	NEAT
		500 ML PLASTIC	1	H ₂ SO ₄

INSTRUMENTS USED N/A

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-8	9.14.18	0828		
SAMPLING DATA				
WEATHER CONDITIONS: <i>CLEAR, CALM, 50°</i>				
WATER APPEARANCE / ODOR: <i>LIGHT BROWN, NO ODOR</i>				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-8	<i>0828</i>	500 ML PLASTIC	1	NEAT
↓	↓	1 LITER PLASTIC	1	NEAT
↓	↓	100 ML PLASTIC	1	NEAT
↓	↓	500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED		N/A		

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-9	9.14.18	0842		
SAMPLING DATA				
WEATHER CONDITIONS:				
CLEAR, CALM, 54°				
WATER APPEARANCE / ODOR:				
CLEAR, NO ODOR, V. SMALL RED ORGANISM IN WATER				
COMMENTS:				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-9	0842	500 ML PLASTIC	1	NEAT
↓	↓	1 LITER PLASTIC	1	NEAT
↓	↓	100 ML PLASTIC	1	NEAT
↓	↓	500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED		N/A		


COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME		
EP-11	9.14.18	0900		
SAMPLING DATA				
WEATHER CONDITIONS: CLEAR CALM, 60°				
WATER APPEARANCE / ODOR: AMBER, FAINT ODOR				
COMMENTS: POND ALMOST DRY				
SAMPLE LOG				
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-11	0900	500 ML PLASTIC	1	NEAT
		1 LITER PLASTIC	1	NEAT
		100 ML PLASTIC	1	NEAT
		500 ML PLASTIC	1	H ₂ SO ₄
INSTRUMENTS USED N/A				

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-12A	9.14.18	NA

SAMPLING DATA

WEATHER CONDITIONS:

CLEAR CALM, 60°

WATER APPEARANCE / ODOR:

—

COMMENTS:

POND HAS ALMOST DRIED UP - COULD
NOT SAFELY REACH WATER

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-12A		500 ML PLASTIC	1	NEAT
		1 LITER PLASTIC	1	NEAT
		100 ML PLASTIC	1	NEAT
		500 ML PLASTIC	1	H ₂ SO ₄

INSTRUMENTS USED N/A

COMPLETED BY: TRACY FAYNE

SIGNATURE: 

ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

POND ID	SAMPLE DATE	SAMPLE TIME
EP-12B	9.14.18	0930

SAMPLING DATA

WEATHER CONDITIONS:

CLEAR, CALM, 60°

WATER APPEARANCE / ODOR:

LIGHT BROWN, FAINT ODOR

COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
EP-12B	0930	500 ML PLASTIC	1	NEAT
		1 LITER PLASTIC	1	NEAT
		100 ML PLASTIC	1	NEAT
		500 ML PLASTIC	1	H ₂ SO ₄

INSTRUMENTS USED N/A

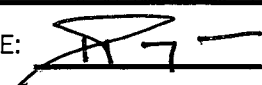
COMPLETED BY: TRACY FAYNE

SIGNATURE: 

**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
GWM-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.15.18	Initial								
GAUGE TIME	1439	1								
DHC (FEET)	21.50	2		WELL NOT SAMPLED						
DTW (FEET)	21.54	3		0.04 FEET OF SPH PRESENT						
DTB (FEET)	26.42	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

COMPLETED BY: TRACY PAYNE


SIGNATURE: 

**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
GWM-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.15.18	Initial								
GAUGE TIME	1433	1								
DHC (FEET)	ND	2	WELL NOT SAMPLED - DRY							
DTW (FEET)	ND	3								
DTB (FEET)	19.04	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

COMPLETED BY: TRACY PAYNE

SIGNATURE: _____

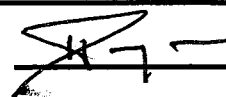


**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
GWM-3		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.15.18	Initial								
GAUGE TIME	1443	1								
DHC (FEET)	ND	2	WELL NOT SAMPLED - DRY							
DTW (FEET)	ND	3								
DTB (FEET)	18.04	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

COMPLETED BY: TRACY PAYNE

SIGNATURE: _____



**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
KA-3		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.5.18	Initial								
GAUGE TIME		1								
DHC (FEET)		2								
DTW (FEET)		3								
DTB (FEET)		4								
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
KA-3		40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										


COMPLETED BY: TRACY PAYNE

SIGNATURE: [Signature]

**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-01		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.15.18	Initial								
GAUGE TIME	1231	1								
DHC (FEET)	6.40	2								
DTW (FEET)	6.71	3								
DTB (FEET)	17.27	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

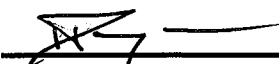
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-02		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.20.18	Initial	0856	7.39	16.9	2.67	2.0475	1.65	1.79	-124.5
GAUGE TIME	0840	1	0902	7.19	14.8	2.59	2.0865	1.69	1.12	-107.9
DHC (FEET)	ND	2	BAILED DOWN AT 17 GALS							
DTW (FEET)	8.40	3								
DTB (FEET)	20.43	4								
DTB - DTW	12.03	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES	26.7	WEATHER CONDITIONS: CLEAR, EAST WIND, 57°								
PURGE DATE	8.20.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, HC ODOR								
END OF PURGE TIME	0912	COMMENTS:								
PURGE AMOUNT	17 GALS									
DTW (FEET)	19.90									
SAMPLING DATA										
SAMPLE DATE	8.20.18	WEATHER CONDITIONS: CLEAR, STRONG WEST WIND, 86°								
DTW (FEET)	16.48	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1510	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-02	1510	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTF-03		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.16.18	Initial								
GAUGE TIME	0746	1								
DHC (FEET)	7.30	2								
DTW (FEET)	8.25	3								
DTB (FEET)	18.53	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										

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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTf-04		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.4.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	0810	1		DID NOT COLLECT READINGS						
DHC (FEET)	ND	2								
DTW (FEET)	9.61	3								
DTB (FEET)	22.39	4								
DTB - DTW	12.78	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
9.46 PURGING DATA										
3 WELL VOLUMES	28.38	WEATHER CONDITIONS: PARTLY CLOUDY, CALM, 57°								
PURGE DATE	9.4.18	WATER APPEARANCE / ODOR: CLEAR → GREY → BROWN, HC ODOR, SHEEN								
END OF PURGE TIME	0830	COMMENTS: BAILED DOWN @ 17 GALS								
PURGE AMOUNT	17 GALS									
DTW (FEET)	22.01									
SAMPLING DATA										
SAMPLE DATE	9.4.18	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 73°								
DTW (FEET)	9.62	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1250	COMMENTS: COLLECTED FB11 @ 1155, EB11 @ 1215, DUPII								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-04	1250	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-05		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.16.18	Initial								
GAUGE TIME	0801	1								
DHC (FEET)	14.61	2	WELL NOT SAMPLED							
DTW (FEET)	14.80	3	0.19 FEET OF SPH PRESENT							
DTB (FEET)	17.75	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-06		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.16.18	Initial								
GAUGE TIME	0831	1								
DHC (FEET)	16.83	2	WELL NOT SAMPLED							
DTW (FEET)	18.00	3	1.17 FEET OF SPH PRESENT							
DTB (FEET)	23.79	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-07		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.16.18	Initial							MS/L	
GAUGE TIME	0827	1								
DHC (FEET)	11.42	2		WELL NOT SAMPLED						
DTW (FEET)	12.50	3		1.08 FEET OF SPH PRESENT						
DTB (FEET)	17.47	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTf-08		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.16.18	Initial								
GAUGE TIME	0823	1								
DHC (FEET)	12.96	2								
DTW (FEET)	13.35	3								
DTB (FEET)	21.98	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTF-09		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.4.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	1028	1		DID NOT COLLECT READINGS						
DHC (FEET)	ND	2								
DTW (FEET)	13.40	3								
DTB (FEET)	22.74	4								
DTB - DTW	9.34	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
6.91 PURGING DATA										
3 WELL VOLUMES	20.73	WEATHER CONDITIONS: CLEAR, WEST WIND, 64°								
PURGE DATE	9.4.18	WATER APPEARANCE / ODOR: CLEAR, HL ODOR, SHEEN								
END OF PURGE TIME	1050	COMMENTS: BAILED DOWN AT 17.5 GALLONS								
PURGE AMOUNT	17.5 GALS									
DTW (FEET)	22.21									
SAMPLING DATA										
SAMPLE DATE	9.4.18	WEATHER CONDITIONS: CLOUDY, NE WIND, 68°								
DTW (FEET)	13.40	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1610	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-09	1610	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-10		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.4.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	0952	1		DID NOT COLLECT READINGS						
DHC (FEET)	ND	2								
DTW (FEET)	7.20	3								
DTB (FEET)	16.28	4								
DTB - DTW	9.08	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
6.72 PURGING DATA										
3 WELL VOLUMES	20.16	WEATHER CONDITIONS: PARTLY CLOUDY, NW WIND, 62°								
PURGE DATE	9.4.18	WATER APPEARANCE / ODOR: CLEAR TO BROWN, HC ODOR, SHEEN								
END OF PURGE TIME	1005	COMMENTS: BAILED DOWN @ 7 GALS								
PURGE AMOUNT	7 GALS									
DTW (FEET)	15.87									
SAMPLING DATA										
SAMPLE DATE	9.4.18	WEATHER CONDITIONS: CLOUDY, LT. RAIN, 64°								
DTW (FEET)	6.90	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1530	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-10	1530	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-11		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.4.18	Initial	0902	7.39	19.6	2.95	2.1385	1.73	0.74	-114.4
GAUGE TIME	0853	1	0907	7.18	17.7	3.65	2.7495	2.26	0.75	-111.8
DHC (FEET)	ND	2	0912	7.05	16.8	4.89	3.7700	3.16	0.63	-128.3
DTW (FEET)	7.48	3	0923	7.21	16.5	2.44	1.8915	1.52	2.46	-118.3
DTB (FEET)	18.48	4			BAILED DOWN @ 25 GALS					
DTB - DTW	11.00	5								
CAPACITY PER FOOT	0.74 - 4" 0.163 - 2"	6								
8.14		PURGING DATA								
3 WELL VOLUMES	24.42	WEATHER CONDITIONS: PARTLY CLOUDY, CALM, 57°								
PURGE DATE	9.4.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR, BECOMES GREY. THEN BLACK								
END OF PURGE TIME	0923	COMMENTS:								
PURGE AMOUNT	25 GALS									
DTW (FEET)	17.90									
		SAMPLING DATA								
SAMPLE DATE	9.4.18	WEATHER CONDITIONS: CLOUDY, WEST WIND, 70°								
DTW (FEET)	7.47	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1345	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-11	1345	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-12		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.15.18	Initial								
GAUGE TIME	1605	1								
DHC (FEET)	19.01	2		WELL NOT SAMPLED						
DTW (FEET)	19.20	3		0.19 FEET OF SPH PRESENT						
DTB (FEET)	25.60	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

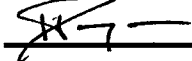
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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTf-13		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.29.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	1536	1		DID NOT COLLECT						
DHC (FEET)	ND	2		WATER QUALITY READINGS						
DTW (FEET)	13.32	3								
DTB (FEET)	21.55	4								
DTB - DTW	8.23	5								
CAPACITY PER FOOT	0.74 - 4"	6								
6.09		PURGING DATA								
3 WELL VOLUMES	18.27	WEATHER CONDITIONS: CLEAR, WEST WIND, 83°								
PURGE DATE	8.29.18	WATER APPEARANCE / ODOR: CLEAR TO GREY, SHEEN, HC ODOR								
END OF PURGE TIME	15:50	COMMENTS: BAILED DOWN AT 14 GALS								
PURGE AMOUNT	14 GALS									
DTW (FEET)	21.17									
SAMPLING DATA										
SAMPLE DATE	8.30.18	WEATHER CONDITIONS: CLEAR, CALM, 78°								
DTW (FEET)	13.45	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1230	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-13	1230	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

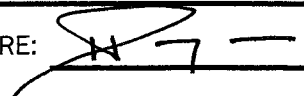
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WELL ID		TEST PARAMETERS								
MKTf-14		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.15.18	Initial								
GAUGE TIME	1555	1								
DHC (FEET)	6.95	2								
DTW (FEET)	7.30	3								
DTB (FEET)	17.45	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTf-15		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.28.18	Initial	SHEEN ON PURGE WATER - NO READINGS							
GAUGE TIME	1415	1	COLLECTED							
DHC (FEET)	ND	2								
DTW (FEET)	12.42	3								
DTB (FEET)	19.50	4								
DTB - DTW	7.08	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.15 PURGING DATA										
3 WELL VOLUMES	3.45	WEATHER CONDITIONS: CLEAR, WEST WIND, 80°								
PURGE DATE	8.28.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, HC ODOR, SHEEN								
END OF PURGE TIME	1427	COMMENTS:								
PURGE AMOUNT	3.5									
DTW (FEET)	14.65									
SAMPLING DATA										
SAMPLE DATE	8.28.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	12.56	WATER APPEARANCE / ODOR: CLEAR → BROWN, HC ODOR								
SAMPLE TIME	1450	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-15	1450	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

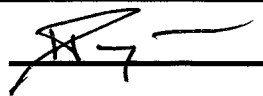
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-16		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.30.18	Initial	1510	6.83	25.9	3.09	1.9760	1.58	0.51	-110.3
GAUGE TIME	1505	1	1513	6.86	24.3	3.19	2.0995	1.69	0.56	-101.4
DHC (FEET)	ND	2	1516	6.91	23.9	3.35	2.2295	1.80	0.70	-95.3
DTW (FEET)	8.51	3			BAILED DOWN @ 2.5 GALLONS					
DTB (FEET)	14.08	4								
DTB - DTW	5.57	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
0.91 PURGING DATA										
3 WELL VOLUMES	2.73	WEATHER CONDITIONS: CLEAR, WEST WIND, 83°								
PURGE DATE	8.30.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
END OF PURGE TIME	1520	COMMENTS:								
PURGE AMOUNT	2.5									
DTW (FEET)	13.79									
SAMPLING DATA										
SAMPLE DATE	8.31.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 75°								
DTW (FEET)	12.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1145	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-16	1145	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

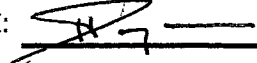
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ANDEAVOR - GALLUP REFINERY

THIRD QUARTER 2018

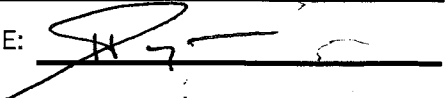
WELL ID		TEST PARAMETERS								
MKTf-17		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.23.18	Initial	0942	7.31	17.3	1.47	1.1180	0.87	0.86	~100.0
GAUGE TIME	0935	1	BAILED DRY AT 1.75 GALLONS							
DHC (FEET)	ND	2								
DTW (FEET)	12.12	3								
DTB (FEET)	24.68	4								
DTB - DTW	12.56	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.05		PURGING DATA								
3 WELL VOLUMES	6.15	WEATHER CONDITIONS: CLEAR, CALM, 62°								
PURGE DATE	8.23.18	WATER APPEARANCE / ODOR: CLEAR → BLACK, HC ODOR								
END OF PURGE TIME	0950	COMMENTS:								
PURGE AMOUNT	1.75									
DTW (FEET)	24.50									
SAMPLING DATA										
SAMPLE DATE	8.24.18	WEATHER CONDITIONS: CLEAR, CALM, 58°								
DTW (FEET)	14.62	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	0820	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-17	0820	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-18		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.23.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	1051	1		DID NOT COLLECT WATER						
DHC (FEET)	ND	2		QUALITY READINGS						
DTW (FEET)	7.15	3		BAILED DOWN @ 3.5 GALS						
DTB (FEET)	27.45	4								
DTB - DTW	20.30	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
3.31		PURGING DATA								
3 WELL VOLUMES	9.93	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 69°								
PURGE DATE	8.23.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, TURBID, HC ODOR, SHEEN								
END OF PURGE TIME	1110	COMMENTS:								
PURGE AMOUNT	3.5									
DTW (FEET)	27.23									
SAMPLING DATA										
SAMPLE DATE	8.24.18	WEATHER CONDITIONS: 68°, CLEAR CALM								
DTW (FEET)	7.30	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1025	COMMENTS: COLLECTED FB06 @ 0940 & FB06 @ 0955								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-18	1025	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-19		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.23.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	1010	1		DID NOT COLLECT WATER						
DHC (FEET)	ND	2		QUALITY READINGS						
DTW (FEET)	12.11	3								
DTB (FEET)	19.30	4								
DTB - DTW	7.19	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.17		PURGING DATA								
3 WELL VOLUMES	3.51	WEATHER CONDITIONS: CLEAR, CALM, 66°								
PURGE DATE	8.23.18	WATER APPEARANCE / ODOR: CLEAR TO BROWN, TURBID, HC ODOR, SHEEN								
END OF PURGE TIME	1030	COMMENTS:								
PURGE AMOUNT	3.75									
DTW (FEET)	16.60									
SAMPLING DATA										
SAMPLE DATE	8.24.18	WEATHER CONDITIONS: CLEAR, CALM, 58°								
DTW (FEET)	12.10	WATER APPEARANCE / ODOR:								
SAMPLE TIME	0855	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-19	0855	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTf-20		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.30.18	Initial	1450	6.89	27.5	2.79	1.7290	1.37	0.28	-147.8
GAUGE TIME	1444	1	1453	SHEEN ON PURGED WATER						
DHC (FEET)	ND	2		DISCONTINUED READINGS						
DTW (FEET)	7.20	3								
DTB (FEET)	9.56	4								
DTB - DTW	2.56	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.89		PURGING DATA								
3 WELL VOLUMES	5.67	WEATHER CONDITIONS: CLEAR, WEST WIND, 83°								
PURGE DATE	8.30.18	WATER APPEARANCE / ODOR: GREY TO BLACK, HC ODOR, SHEEN								
END OF PURGE TIME	1456	COMMENTS: BAILED DOWN @ 2.5 GALLONS								
PURGE AMOUNT	82.5									
DTW (FEET)	9.13									
		SAMPLING DATA								
SAMPLE DATE	8.31.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 71°								
DTW (FEET)	7.13	WATER APPEARANCE / ODOR: GREY, HC ODOR								
SAMPLE TIME	1115	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-20	1115	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY

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WELL ID		TEST PARAMETERS								
MKTf-21		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.30.18	Initial	1345	6.66	27.8	2.68	1.6510	1.30	0.20	-80.8
GAUGE TIME	1342	1	1350	6.63	27.5	2.63	1.6315	1.29	0.23	-80.5
DHC (FEET)	ND	2			BAILED DOWN @			4.85		
DTW (FEET)	4.95	3								
DTB (FEET)	8.80	4								
DTB - DTW	3.85	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.85		PURGING DATA								
3 WELL VOLUMES	8.55	WEATHER CONDITIONS: CLEAR, SW WIND, 80°								
PURGE DATE	8.30.18	WATER APPEARANCE / ODOR: BROWN TO GREY, HC ODOR								
END OF PURGE TIME	1354	COMMENTS: BAILED DOWN @ 4.85 GALS								
PURGE AMOUNT	4.85									
DTW (FEET)	8.55									
SAMPLING DATA										
SAMPLE DATE	8.31.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 68°								
DTW (FEET)	4.75	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1020	COMMENTS: COLLECTED FB#10 @ 0925, FB10 @ 0945 & DUP 10								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS		PRESERVATIVE					
MKTf-21	1020	40 ML VOA	5		HCL					
		1 LITER AMBER	2		NEAT					
		250 ML AMBER	1		NEAT					
		250 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		H ₂ SO ₄					
		125 ML PLASTIC	1		NEAT					
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY

THIRD QUARTER 2018

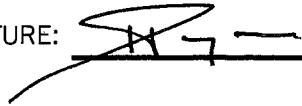
WELL ID		TEST PARAMETERS								
MKTF-22		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.29.18	Initial	1454	7.16	15.2	1.50	1.2028	0.95	0.67	-95.8
GAUGE TIME	1447	1	1458	7.04	13.9	1.45	1.1895	0.94	1.52	-90.2
DHC (FEET)	ND	2	1505	7.05	14.4	1.50	1.2220	0.96	1.30	-92.1
DTW (FEET)	25.78	3	BAILED DOWN @ 4.25 GALS							
DTB (FEET)	35.62	4								
DTB - DTW	9.84	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.61		PURGING DATA								
3 WELL VOLUMES	4.83	WEATHER CONDITIONS: CLEAR WEST WIND, 82°								
PURGE DATE	8.29.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, HC ODOR								
END OF PURGE TIME	1512	COMMENTS: BAILED DOWN AT 4.25 GALS								
PURGE AMOUNT	4.25									
DTW (FEET)	35.16									
		SAMPLING DATA								
SAMPLE DATE	8.30.18	WEATHER CONDITIONS: CLEAR, CALM, 67°								
DTW (FEET)	25.80	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1100	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-22	1100	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTf-23		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.15.18	Initial								
GAUGE TIME	1551	1								
DHC (FEET)	15.48	2		WELL NOT SAMPLED						
DTW (FEET)	15.58	3		0.10 FEET OF SPH PRESENT						
DTB (FEET)	2038	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-24		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.20.18	Initial	0817	7.57	13.5	2.86	2.3790	1.94	7.41	-22.5
GAUGE TIME	0807	1	0821	7.16	12.9	2.86	2.4180	1.97	1.38	-30.4
DHC (FEET)	ND	2	0825	7.10	12.9	2.73	2.3140	1.88	3.83	-33.7
DTW (FEET)	22.73	3	BAILED DOWN AT 3 GALLONS							
DTB (FEET)	30.85	4								
DTB - DTW	8.12	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.32		PURGING DATA								
3 WELL VOLUMES	3.96	WEATHER CONDITIONS: CLEAR, CALM, 57°								
PURGE DATE	8.20.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR, TURNS TO LIGHT REDDISH BROWN								
END OF PURGE TIME	0828	COMMENTS:								
PURGE AMOUNT	3 GALS									
DTW (FEET)	30.25									
SAMPLING DATA										
SAMPLE DATE	8.20.18	WEATHER CONDITIONS: CLEAR, WEST WIND 86°								
DTW (FEET)	23.20	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1430	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-24	1430	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE WATER QUALITY METER								

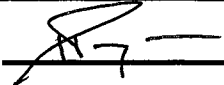
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-25		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.17.18	Initial	0842	7.16	15.0	2.56	2.0475	1.65	0.23	-48.7
GAUGE TIME	0834	1	0844	7.10	14.5	2.38	1.9305	1.56	0.25	-60.9
DHC (FEET)	ND	2			BAILED DOWN AT			1.75 GALLONS		
DTW (FEET)	12.49	3								
DTB (FEET)	19.78	4								
DTB - DTW	7.29	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.19		PURGING DATA								
3 WELL VOLUMES	3.57	WEATHER CONDITIONS: CLOUDY, CALM, 62°								
PURGE DATE	8.17.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, HC ODOR								
END OF PURGE TIME	0847	COMMENTS:								
PURGE AMOUNT	1.75									
DTW (FEET)	19.47									
SAMPLING DATA										
SAMPLE DATE	8.17.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	12.60	WATER APPEARANCE / ODOR: CLEAR / HC ODOR								
SAMPLE TIME	1000	COMMENTS: SOLE COLLECTED DUP01, COLLECTED FB01 @ 0900 & EB01 @ 0920								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-25	1000	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
MKTf-26		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.15.18	Initial								
GAUGE TIME	1242	1								
DHC (FEET)	8.73	2								
DTW (FEET)	9.57	3								
DTB (FEET)	17.17	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-27		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.20.18	Initial	1212	7.00	23.8	11.18	7.4425	6.52	0.80	-0.4
GAUGE TIME	1208	1	1215	6.97	22.3	11.01	7.5790	6.64	1.05	4.8
DHC (FEET)	ND	2	1218	6.98	19.7	10.65	7.6860	6.79	1.38	37.3
DTW (FEET)	6.22	3	1223	7.00	18.1	10.81	8.1085	7.19	2.92	55.3
DTB (FEET)	14.72	4			BAILED DOWN AT 4.5 GALLONS					
DTB - DTW	8.50	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
131 PURGING DATA										
3 WELL VOLUMES	4.17	WEATHER CONDITIONS: CLEAR, CALM, 82°								
PURGE DATE	8.20.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1223	COMMENTS:								
PURGE AMOUNT	4.50									
DTW (FEET)	14.15									
SAMPLING DATA										
SAMPLE DATE	8.20.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 86°								
DTW (FEET)	12.75	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1625	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-27	1625	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

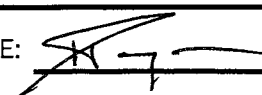
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-28		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.20.18	Initial	1140	8.13	25.8	2.44	1.5665	1.23	4.15	-5.5
GAUGE TIME	1133	1	1143	7.40	23.7	2.41	1.6055	1.27	2.30	32.3
DHC (FEET)	ND	2	1147	7.39	22.2	2.44	1.6770	1.34	0.73	40.8
DTW (FEET)	4.40	3	1151	7.38	21.3	2.87	2.0085	1.62	1.23	42.8
DTB (FEET)	16.15	4								
DTB - DTW	11.75	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.91 PURGING DATA										
3 WELL VOLUMES	5.73	WEATHER CONDITIONS: CLEAR, CALM, 79°								
PURGE DATE	8.20.18	WATER APPEARANCE / ODOR: CLEAR TO BROWN, NO ODOR								
END OF PURGE TIME	1151	COMMENTS:								
PURGE AMOUNT	5.75									
DTW (FEET)	14.50									
SAMPLING DATA										
SAMPLE DATE	8.20.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 83°								
DTW (FEET)	13.50	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1550	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-28	1550	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-29		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.20.18	Initial	1254	8.08	24.0	2.48	1.6445	1.30	5.11	32.1
GAUGE TIME	1247	1	1258	7.38	19.2	2.23	1.6315	1.30	1.91	29.2
DHC (FEET)	ND	2	1303	7.35	18.3	2.18	1.6315	1.30	2.05	26.1
DTW (FEET)	3.98	3	1308	7.34	17.7	2.17	1.6185	1.29	4.17	30.2
DTB (FEET)	22.82	4								
DTB - DTW	18.84	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
3.07 PURGING DATA										
3 WELL VOLUMES	9.21	WEATHER CONDITIONS: CLEAR, WEST WIND, 82°								
PURGE DATE	8.20.18	WATER APPEARANCE / ODOR: CLEAR TO LIGHT BROWN, NO ODOR								
END OF PURGE TIME	1308	COMMENTS:								
PURGE AMOUNT	9.25									
DTW (FEET)	13.95									
SAMPLING DATA										
SAMPLE DATE	8.20.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	5.30	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1335	COMMENTS: COLLECTED DUPOZ								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-29	1335	40 ML VOA	5				HCL			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-30		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.20.18	Initial	0948	7.30	18.1	3.03	2.2620	1.84	2.49	11.6
GAUGE TIME	0942	1	0951	7.26	17.2	3.03	2.3140	1.88	2.52	22.6
DHC (FEET)	ND	2	0954	7.32	17.0	3.04	2.3270	1.89	3.81	32.5
DTW (FEET)	14.85	3	BAILED DOWN AT 3.75 GALS							
DTB (FEET)	23.20	4								
DTB - DTW	8.35	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.36		PURGING DATA								
3 WELL VOLUMES	4.08	WEATHER CONDITIONS: CLEAR, EAST WIND, 64°								
PURGE DATE	8.20.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR, TURNS BROWN								
END OF PURGE TIME	0958	COMMENTS:								
PURGE AMOUNT	3.75									
DTW (FEET)	22.80									
		SAMPLING DATA								
SAMPLE DATE	8.20.18	WEATHER CONDITIONS: CLEAR, CALM, 78°								
DTW (FEET)	14.96	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1100	COMMENTS: COLLECTED FB02 @ 1010 COLLECTED EB02 @ 1035								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-30	1100	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTF-31		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.17.18	Initial	1041	7.24	20.5	2.70	1.9240	1.54	2.92	6.7
GAUGE TIME	1035	1	1046	7.10	19.3	2.90	2.1190	1.71	1.44	23.5
DHC (FEET)	ND	2	1049	7.09	19.3	2.87	2.0930	1.69	2.43	34.8
DTW (FEET)	8.29	3	1052	7.10	19.3	2.84	2.0735	1.67	4.24	37.9
DTB (FEET)	19.35	4								
DTB - DTW	11.06	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.80 PURGING DATA										
3 WELL VOLUMES	5.40	WEATHER CONDITIONS: CLOUDY, CALM, 69°								
PURGE DATE	8.17.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1052	COMMENTS:								
PURGE AMOUNT	6 GALS									
DTW (FEET)	10.45									
SAMPLING DATA										
SAMPLE DATE	8.17.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	9.02	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1110	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-31	1110	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTf-32		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.28.18	Initial	1554	7.74	19.2	2.29	1.6705	1.33	0.95	40.9
GAUGE TIME	1548	1	1558	7.69	15.7	2.24	1.7680	1.42	0.98	43.7
DHC (FEET)	ND	2	1604	7.70	14.9	2.21	1.7875	1.44	0.93	42.1
DTW (FEET)	14.09	3	1609	7.71	14.8	2.17	1.7810	1.43	1.10	38.7
DTB (FEET)	27.77	4								
DTB - DTW	13.68	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									

2.23

PURGING DATA

3 WELL VOLUMES	6.69	WEATHER CONDITIONS: CLEAR, WEST WIND, 80°
PURGE DATE	8.28.18	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR, TURNS LT. BROWN
END OF PURGE TIME	1609	COMMENTS:
PURGE AMOUNT	6.75	
DTW (FEET)	25.20	

SAMPLING DATA


SAMPLE DATE	8.28.18	WEATHER CONDITIONS: SAME AS ABOVE
DTW (FEET)	22.95	WATER APPEARANCE / ODOR: SAME AS ABOVE
SAMPLE TIME	1635	COMMENTS:

SAMPLE LOG

SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE
MKTf-32	1635	40 ML VOA	5	HCL
		40 ML VOA	3	NA ₂ S ₂ O ₃
		1 LITER AMBER	1	NEAT
		250 ML AMBER	1	NEAT
		250 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	HNO ₃
		125 ML PLASTIC	1	H ₂ SO ₄
		125 ML PLASTIC	1	NEAT

INSTRUMENTS USED OIL / WATER INTERFACE PROBE
 WATER QUALITY METER

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTF-33		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8-29-18	Initial	1416	7.50	15.9	2.16	1.6835	1.34	1.00	75.8
GAUGE TIME	1409	1	1420	7.35	14.0	1.34	1.0985	0.86	1.29	78.5
DHC (FEET)	ND	2	1425	7.28	13.7	1.30	1.0725	0.84	1.19	83.0
DTW (FEET)	22.91	3	1430	7.28	13.6	1.27	1.0660	0.83	1.29	84.5
DTB (FEET)	33.23	4								
DTB - DTW	10.32	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.68 PURGING DATA										
3 WELL VOLUMES	5.04	WEATHER CONDITIONS: CLEAR, WEST WIND, 30°								
PURGE DATE	8-29-18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR, TURNS BROWN								
END OF PURGE TIME	1430	COMMENTS:								
PURGE AMOUNT	5.25									
DTW (FEET)	27.30									
SAMPLING DATA										
SAMPLE DATE	8-30-18	WEATHER CONDITIONS: CLEAR, CALM, 63°								
DTW (FEET)	22.94	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1010	COMMENTS: COLLECTED DUP09								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-33	1010	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTF-34		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.23.18	Initial	0900	7.53	15.4	1.64	1.3065	1.03	4.96	69.6
GAUGE TIME	0847	1	0904	7.48	14.8	1.59	1.2870	1.01	4.61	75.9
DHC (FEET)	ND	2	0908	7.49	14.4	1.59	1.2935	1.02	4.30	80.8
DTW (FEET)	18.75	3	0912	7.50	14.1	1.58	1.3000	1.03	0.86	81.7
DTB (FEET)	27.70	4								
DTB - DTW	8.95	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.46 PURGING DATA										
3 WELL VOLUMES	4.38	WEATHER CONDITIONS: CLEAR, CALM, 62°								
PURGE DATE	8.23.18	WATER APPEARANCE / ODOR: CLEAR → LIGHT BROWN, NO ODOR								
END OF PURGE TIME	0912	COMMENTS:								
PURGE AMOUNT	4.5									
DTW (FEET)	25.95									
SAMPLING DATA										
SAMPLE DATE	8.24.18	WEATHER CONDITIONS: PARTLY CLOUDY, CALM, 56°								
DTW (FEET)	23.03	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0740	COMMENTS: COLLECTED DUPOG								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-34	0740	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

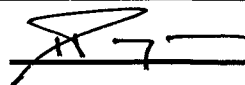
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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
MKTF-35		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.23.18	Initial	1351	SHEEN ON PURGED WATER						
GAUGE TIME	1343	1								
DHC (FEET)	ND	2								
DTW (FEET)	8.86	3								
DTB (FEET)	16.48	4								
DTB - DTW	7.62	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.24 PURGING DATA										
3 WELL VOLUMES	3.72	WEATHER CONDITIONS: CLOUDY, NORTH WIND, 71°								
PURGE DATE	8.23.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR, TURNS GREY, SHEEN								
END OF PURGE TIME	1358	COMMENTS:								
PURGE AMOUNT	3.75									
DTW (FEET)	9.30									
SAMPLING DATA										
SAMPLE DATE	8.23.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	8.87	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1500	COMMENTS: COLLECTED FB05 @ 1410 COLLECTED EB05 @ 1430								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-35	1500	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-36		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.5.18	Initial		SHEEN ON PURGED WATER						
GAUGE TIME	0945	1		NO READINGS WERE COLLECTED						
DHC (FEET)	ND	2								
DTW (FEET)	6.52	3								
DTB (FEET)	15.43	4								
DTB - DTW	8.91	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.45		PURGING DATA								
3 WELL VOLUMES	4.35	WEATHER CONDITIONS: CLEAR, SE WIND, 64°								
PURGE DATE	9.5.13	WATER APPEARANCE / ODOR: CLEAR, HC, ODOR, SHEEN, BECOMES GREY								
END OF PURGE TIME	1000	COMMENTS: WELL LOCATED 8'9" FROM EDGE OF CONCRETE								
PURGE AMOUNT	4.5									
DTW (FEET)	13.79									
		SAMPLING DATA								
SAMPLE DATE	9.5.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	8.55	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1045	COMMENTS: COLLECTED DUP 12								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-36	1045	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-37		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.23.18	Initial								
GAUGE TIME	1135	1								
DHC (FEET)	ND	2								
DTW (FEET)	8.70	3								
DTB (FEET)	24.59	4								
DTB - DTW	15.89	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.59		PURGING DATA								
3 WELL VOLUMES	7.77	WEATHER CONDITIONS: CLOUDY, WEST WIND WIND, 71°								
PURGE DATE	8.23.18	WATER APPEARANCE / ODOR: CLEAR → GREY, HC ODOR, SHEEN								
END OF PURGE TIME	1155	COMMENTS: BAILED DOWN AT 7.5 GALS								
PURGE AMOUNT	7.5									
DTW (FEET)	24.45									
SAMPLING DATA										
SAMPLE DATE	8.23.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	20.35	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1230	COMMENTS: COLLECTED DLIP05								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-37	1230	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

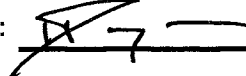
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
MKTf-38		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.21.18	Initial	1411	7.03	20.8	2.00	1.4105	1.11	1.03	140.6
GAUGE TIME	1400	1	1414	6.97	20.7	2.19	1.5535	1.23	1.07	141.6
DHC (FEET)	ND	2	1418	7.01	20.5	2.27	1.6185	1.28	1.19	136.6
DTW (FEET)	8.15	3	1422	7.02	20.5	2.31	1.6445	1.31	4.72	130.0
DTB (FEET)	20.27	4								
DTB - DTW	12.12	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
198 PURGING DATA										
3 WELL VOLUMES	5.94	WEATHER CONDITIONS: CLOUDY, WEST WIND, 69°								
PURGE DATE	8.21.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1422	COMMENTS:								
PURGE AMOUNT	6.0 GALS									
DTW (FEET)	10.72									
SAMPLING DATA										
SAMPLE DATE	8.21.18	WEATHER CONDITIONS: CLOUDY, WEST WIND, 70°								
DTW (FEET)	8.10	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1525	COMMENTS: COLLECTED FB03 @ 1430 AND EB03 @ 1450								
SAMPLE LOG COLLECTED DUPO3										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-38	1525	40 ML VOA	5				HCL			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTf-39		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.21.18	Initial	1618	7.09	22.9	5.68	3.8415	3.21	0.32	-105.2
GAUGE TIME	1614	1	1620	SHEEN ON WATER						
DHC (FEET)	ND	2		DISCONTINUED WATER						
DTW (FEET)	8.33	3		QUALITY READINGS						
DTB (FEET)	15.20	4								
DTB - DTW	6.87	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.12 2 PURGING DATA										
3 WELL VOLUMES	3.36	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 75°								
PURGE DATE	8.21.18	WATER APPEARANCE / ODOR: CLEAR → GREY; SHEEN, HC ODOR								
END OF PURGE TIME	1625	COMMENTS:								
PURGE AMOUNT	3.5									
DTW (FEET)	10.10									
SAMPLING DATA										
SAMPLE DATE	8.21.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	8.75	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1635	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-39	1635	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

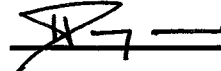
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WELL ID		TEST PARAMETERS								
MKTf-40		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.17.18	Initial	0807	7.24	16.9	4.66	3.5815	2.99	7.08	71.0
GAUGE TIME	0758	1	0810	7.20	16.0	5.64	4.4330	3.76	3.93	88.5
DHC (FEET)	ND	2	0813	7.11	15.1	8.35	6.7080	5.86	4.58	99.4
DTW (FEET)	12.83	3	0817	7.15	14.2	9.45	7.7155	6.81	4.90	102.5
DTB (FEET)	23.54	4	BAILED DOWN AT 5.75 GALLONS							
DTB - DTW	10.71	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.75 PURGING DATA										
3 WELL VOLUMES	5.25	WEATHER CONDITIONS: CLOUDY, CALM, 61°								
PURGE DATE	8.17.18	WATER APPEARANCE / ODOR: CLEAR → LIGHT BROWN, NO ODOR								
END OF PURGE TIME	0821	COMMENTS:								
PURGE AMOUNT	5.75									
DTW (FEET)	23.15									
SAMPLING DATA										
SAMPLE DATE	8.17.18	WEATHER CONDITIONS: CLOUDY, CALM, 70°								
DTW (FEET)	21.30	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1145	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-40	1145	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								


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WELL ID		TEST PARAMETERS								
MKTF-41		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.29.18	Initial	1209	8.53	16.4	2.70	2.0995	1.70	3.66	32.8
GAUGE TIME	1115	1	1214	8.11	15.4	2.63	2.0930	1.70	1.27	47.0
DHC (FEET)	ND	2	1221	8.10	14.1	2.53	2.0800	1.68	1.01	54.0
DTW (FEET)	20.32	3	1229	8.11	14.0	2.52	2.0865	1.69	1.04	55.0
DTB (FEET)	39.74	4								
DTB - DTW	19.42	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
3.17 PURGING DATA										
3 WELL VOLUMES	9.51	WEATHER CONDITIONS: CLEAR, WEST WIND, 80°								
PURGE DATE	8.29.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1229	COMMENTS:								
PURGE AMOUNT	9.75									
DTW (FEET)	34.30									
SAMPLING DATA										
SAMPLE DATE	8.29.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	33.40	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1250	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-41	1250	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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WELL ID		TEST PARAMETERS								
MKTF-42		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.29.18	Initial	0800	8.31	13.8	2.88	2.3855	1.95	0.44	23.5
GAUGE TIME	0745	1	0804	8.03	13.6	2.89	2.4050	1.96	0.75	22.1
DHC (FEET)	ND	2	0810	7.95	13.2	2.83	2.3725	1.93	0.73	27.7
DTW (FEET)	16.75	3	0817	7.94	13.0	2.80	2.3595	1.92	0.74	24.5
DTB (FEET)	33.20	4								
DTB - DTW	16.45	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.68 PURGING DATA										
3 WELL VOLUMES	8.04	WEATHER CONDITIONS: CLEAR, CALM, 51°								
PURGE DATE	8.29.18	WATER APPEARANCE / ODOR: AMBER, HC ODOR								
END OF PURGE TIME	0817	COMMENTS:								
PURGE AMOUNT	8.25									
DTW (FEET)	26.95									
SAMPLING DATA										
SAMPLE DATE	8.29.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	25.50	WATER APPEARANCE / ODOR: AMBER, HC ODOR								
SAMPLE TIME	0930	COMMENTS: COLLECTED FB08 @ 0830 & FB08 @ 0850 & DUP08								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTF-42	0930	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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WELL ID		TEST PARAMETERS								
MKTf-43		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.29.18	Initial	1320	7.83	19.5	9.23	6.6950	5.84	4.32	111.7
GAUGE TIME	1315	1	1324	7.38	18.0	11.12	8.3395	7.40	0.98	-1.5
DHC (FEET)	ND	2	1328	7.15	17.3	12.50	9.5225	8.54	0.98	19.8
DTW (FEET)	2.55	3	1332	7.01	16.9	9.62	7.3970	8.50	2.06	67.9
DTB (FEET)	15.41	4	1337	6.98	15.8	19.60	15.4310	14.43	1.42	84.6
DTB - DTW	12.86	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.10 PURGING DATA										
3 WELL VOLUMES	6.30	WEATHER CONDITIONS: CLEAR, WEST WIND, 80°								
PURGE DATE	8.29.18	WATER APPEARANCE / ODOR: CLEAR TO GREY, NO ODOR								
END OF PURGE TIME	1344	COMMENTS: BAILED DOWN @ 10 GALS								
PURGE AMOUNT	10									
DTW (FEET)	14.89									
SAMPLING DATA										
SAMPLE DATE	8.30.18	WEATHER CONDITIONS: CLOUDY, CALM, 63°								
DTW (FEET)	2.61	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0910	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-43	0910	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTf-44		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.29.18	Initial	1017	7.84	15.1	2.40	1.9240	1.55	2.47	60.5
GAUGE TIME	1010	1	1024	7.75	13.8	2.40	1.9760	1.59	0.85	59.1
DHC (FEET)	ND	2	1033	7.79	13.7	2.43	1.9955	1.61	1.42	58.9
DTW (FEET)	33.40	3	BAILED DOWN @ 7.5 GALS							
DTB (FEET)	51.20	4								
DTB - DTW	17.80	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.90 PURGING DATA										
3 WELL VOLUMES	8.70	WEATHER CONDITIONS: CLEAR, WEST WIND, 70°								
PURGE DATE	8.29.18	WATER APPEARANCE / ODOR: CLEAR → LT BROWN, NO ODOR								
END OF PURGE TIME	1044	COMMENTS:								
PURGE AMOUNT	7.5									
DTW (FEET)	50.72									
SAMPLING DATA										
SAMPLE DATE	8.30.18	WEATHER CONDITIONS: CLOUDY, CALM, 58°								
DTW (FEET)	48.51	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0835	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MKTf-44	0835	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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WELL ID		TEST PARAMETERS								
MKTf-45		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (ppm)	ORP (mv)
GAUGE DATE	8.16.18	Initial							NEG/L	
GAUGE TIME	1156	1								
DHC (FEET)	13.15	2		WELL NOT SAMPLED						
DTW (FEET)	13.58	3		0.43 FEET OF GPH PRESENT						
DTB (FEET)	30.33	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

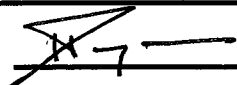
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WELL ID		TEST PARAMETERS								
MW-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	9.13.18	Initial	1115	9.01	15.2	0.93	0.7345	0.57	3.44	28.1
GAUGE TIME	1110	1	1150	8.93	14.7	0.90	0.7215	0.55	2.22	58.3
DHC (FEET)	ND	2								
DTW (FEET)	7.75	3								
DTB (FEET)	130.83	4								
DTB - DTW	123.08	5								
CAPACITY PER FOOT	1.020-5"	6								
125.54 PURGING DATA										
3 WELL VOLUMES	376.62	WEATHER CONDITIONS: CLEAR, STRONG WEST WIND, 77°								
PURGE DATE	9.13.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1246	COMMENTS: PUMPED DOWN @ 225 GALS								
PURGE AMOUNT	225 GALS	@ 1300 RECOVERED TO 116.60								
DTW (FEET)	126.80									
SAMPLING DATA										
SAMPLE DATE	9.13.18	WEATHER CONDITIONS: CLEAR, WEST WIND 81°								
DTW (FEET)	116.60	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1310	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MW-1	1310	40 ML VOA	5				HCl			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NaOH			
INSTRUMENTS USED		WATER LEVEL METER								
		WATER QUALITY METER								

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WELL ID		TEST PARAMETERS								
MW-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.13.18	Initial	1405	8.98	15.9	0.96	0.7540	0.58	1.86	76.9
GAUGE TIME	1400	1	1455	8.88	16.1	0.95	0.7475	0.57	1.00	75.6
DHC (FEET)	ND	2	1545	8.91	15.9	0.94	0.7410	0.57	0.81	70.4
DTW (FEET)	17.25	3	1640	8.93	15.6	0.93	0.7345	0.57	0.65	66.4
DTB (FEET)	125.88	4								
137.48										
DTB - DTW	120.23	5								
CAPACITY PER FOOT	1.020-5"	6								
122.63 PURGING DATA										
3 WELL VOLUMES	367.89	WEATHER CONDITIONS: CLEAR, WEST WIND, 83°								
PURGE DATE	9.13.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1640	COMMENTS:								
PURGE AMOUNT	370									
DTW (FEET)	106.05									
SAMPLING DATA										
SAMPLE DATE	9.13.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 83°								
DTW (FEET)	106.05	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1645	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MW-2	1645	40 ML VOA	5				HCl			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NaOH			
INSTRUMENTS USED		WATER LEVEL METER								
		WATER QUALITY METER								

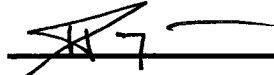
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WELL ID		TEST PARAMETERS								
MW-4		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen <i>mg/L</i>	ORP (mv)
GAUGE DATE	10.13.18	Initial	0800	8.76	12.9	0.92	0.7800	0.60	1.76	54.5
GAUGE TIME	0750	1	0830	8.78	13.3	0.92	0.7670	0.59	1.22	47.3
DHC (FEET)	ND	2	0920	8.69	13.7	0.96	0.7735	0.60	1.49	51.4
DTW (FEET)	7.70	3	0955	8.71	13.9	0.95	0.7705	0.60	1.51	52.3
DTB (FEET)	121.72	4								
DTB - DTW	114.02	5								
CAPACITY PER FOOT	1.020-5"	6								
116 PURGING DATA										
3 WELL VOLUMES	348	WEATHER CONDITIONS: CLEAR, CALM, 51°								
PURGE DATE	10.13.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	0955	COMMENTS:								
PURGE AMOUNT	350									
DTW (FEET)	75.05									
SAMPLING DATA										
SAMPLE DATE	10.13.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 72°								
DTW (FEET)	75.05	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1010	COMMENTS: COLLECTED FB16 @ 0945 & DUP #17								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MW-4	1010	40 ML VOA	5				HCl			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NaOH			
INSTRUMENTS USED		WATER LEVEL METER								
		WATER QUALITY METER								

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WELL ID		TEST PARAMETERS								
MW-5		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen	ORP (mv)
GAUGE DATE	9.17.18	Initial	0950	8.99	14.7	0.98	0.7865	0.61	1.61	69.8
GAUGE TIME	0940	1	1025	8.96	14.6	0.97	0.7865	0.61	1.06	63.8
DHC (FEET)	ND	2	1100	8.96	14.5	0.97	0.7890	0.61	1.07	71.6
DTW (FEET)	11.90	3	1135	8.96	14.4	0.97	0.7930	0.61	0.81	77.3
DTB (FEET)	130.83	4								
DTB - DTW	118.93	5								
CAPACITY PER FOOT	0.74-4"	6								
88 PURGING DATA										
3 WELL VOLUMES	264	WEATHER CONDITIONS: CLEAR, CALM, 68°								
PURGE DATE	9.17.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1135	COMMENTS: RECEIVED								
PURGE AMOUNT	270									
DTW (FEET)	92.92									
SAMPLING DATA										
SAMPLE DATE	9.17.18	WEATHER CONDITIONS: CLEAR WEST WIND, 80°								
DTW (FEET)	92.92	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1140	COMMENTS: COLLECTED FB17 @ 1030 & DUP 18								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
MW-5	1140	40 ML VOA	5				HCl			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NaOH			
INSTRUMENTS USED		WATER LEVEL METER								
		WATER QUALITY METER								

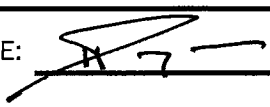
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
NAPIS-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.5.18	Initial								
GAUGE TIME		1								
DHC (FEET)		2		COULD NOT ACCESS HIGH H ₂ S CONCENTRATIONS IN IMMEDIATE AREA						
DTW (FEET)		3								
DTB (FEET)		4								
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
NAPIS-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.5.18	Initial								
GAUGE TIME		1								
DHC (FEET)		2								
DTW (FEET)		3								
DTB (FEET)		4								
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
NAPIS-2		40 ML VOA	5				HCl			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
NAPIS-3		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/ CM)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.5.18	Initial								
GAUGE TIME		1								
DHC (FEET)		2		COULD NOT ACCESS						
DTW (FEET)		3		HIGH H ₂ S CONCENTRATIONS						
DTB (FEET)		4		IN IMMEDIATE AREA						
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
NAPIS-3		40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
NAPI INLET		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.5.18	Initial								
GAUGE TIME		1								
DHC (FEET)		2		COULD NOT ACCESS						
DTW (FEET)		3		HIGH H ₂ S CONCENTRATIONS IN						
DTB (FEET)		4		IMMEDIATE AREA						
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
NAPI INLET		40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
WATER QUALITY METER										

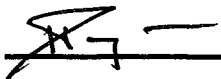
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OAPIS-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.5.18	Initial	1534	7.01	21.8	6.08	4.2055	3.54	0.49	-99.1
GAUGE TIME	1528	1	1539	7.01	18.6	5.67	4.1990	3.54	0.74	-95.4
DHC (FEET)	ND	2	1544	7.02	16.8	5.47	4.2185	3.56	0.78	-93.5
DTW (FEET)	11.65	3	1550	7.03	17.2	5.52	4.2185	3.56	0.99	-84.6
DTB (FEET)	27.86	4								
DTB - DTW	16.21	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.64 PURGING DATA										
3 WELL VOLUMES	7.92	WEATHER CONDITIONS: PARTLY CLOUDY, CALM, 76°								
PURGE DATE	9.5.18	WATER APPEARANCE / ODOR: CLEAR, AMBER, ODOR								
END OF PURGE TIME	1550	COMMENTS:								
PURGE AMOUNT	8 GALS 25.15									
DTW (FEET)	25.15									
SAMPLING DATA										
SAMPLE DATE	9.5.18	WEATHER CONDITIONS: CLEAR, SE WIND								
DTW (FEET)	19.33	WATER APPEARANCE / ODOR: CLEAR, AMBER, ODOR								
SAMPLE TIME	1100	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OAPIS-1	1100	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NAOH			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OIL SUMP LDU		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.5.18	Initial								
GAUGE TIME		1								
DHC (FEET)		2								
DTW (FEET)		3								
DTB (FEET)		4								
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.10.18	Initial	1131	8.60	21.5	1.37	0.9555	0.74	1.12	-158.0
GAUGE TIME	1125	1	1200	8.78	15.6	1.17	0.9230	0.72	0.95	-104.7
DHC (FEET)	ND	2								
DTW (FEET)	1.80	3								
DTB (FEET)	94.55	4								
DTB - DTW	92.75	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
68.64 PURGING DATA										
3 WELL VOLUMES	205.92	WEATHER CONDITIONS: CLEAR, CALM, 75°								
PURGE DATE	9.10.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1214	COMMENTS: PUMPED DOWN @ 80 GALS								
PURGE AMOUNT	80 GALS									
DTW (FEET)	93.95									
SAMPLING DATA										
SAMPLE DATE	9.11.18	WEATHER CONDITIONS: CLEAR, CALM, 58°								
DTW (FEET)	36.90	WATER APPEARANCE / ODOR:								
SAMPLE TIME	0815	COMMENTS: COLLECTED DUP15 & FB14 @ 0845								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-1	0815	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-10		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.11.18	Initial	0930	7.64	15.2	1.85	1.4755	1.17	2.28	43.1
GAUGE TIME	0920	1	0952	7.50	14.3	3.67	2.9965	2.48	3.05	44.3
DHC (FEET)	ND	2	1014	7.52	15.0	3.36	2.6910	2.21	2.74	51.2
DTW (FEET)	2.61	3	1036	7.53	14.9	3.30	2.5820	2.05	2.82	53.5
DTB (FEET)	60.13	4								
DTB - DTW	57.52	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
42.56 PURGING DATA										
3 WELL VOLUMES	127.68	WEATHER CONDITIONS: CLEAR, CALM, 66°								
PURGE DATE	9.11.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1036	COMMENTS:								
PURGE AMOUNT	130 GALS									
DTW (FEET)	3.45									
SAMPLING DATA										
SAMPLE DATE	9.11.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 76°								
DTW (FEET)	3.45	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1045	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-10	1045	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-11		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen	ORP (mv)
GAUGE DATE	9.18.18	Initial	1445	8.49	18.9	2.58	1.8980	1.52	1.53	27.9
GAUGE TIME	1434	1	1501	8.54	16.4	2.48	1.9305	1.55	1.90	32.0
DHC (FEET)	ND	2	1520	8.46	15.2	2.48	1.9825	1.60	1.25	49.5
DTW (FEET)	19.00	3	1540	8.42	15.1	2.42	1.9435	1.57	1.24	52.0
DTB (FEET)	67.90	4								
DTB - DTW	48.90	5								
CAPACITY PER FOOT	0.74-4"	6								
36.19		PURGING DATA								
3 WELL VOLUMES	108.57	WEATHER CONDITIONS: CLOUDY, WEST WIND, 87°								
PURGE DATE	9.18.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1540	COMMENTS:								
PURGE AMOUNT	110									
DTW (FEET)	24.75									
SAMPLING DATA										
SAMPLE DATE	9.18.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 86°								
DTW (FEET)	24.75	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1545	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-11	1545	40 ML VOA	5				HCl			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
WATER LEVEL METER										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-12		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen <i>MLV</i>	ORP (mv)
GAUGE DATE	9.19.18	Initial	0933	10.09	15.3	1.12	0.8905	0.69	2.27	54.5
GAUGE TIME	0920	1	1030	9.45	17.3	1.00	0.7670	0.59	2.42	45.1
DHC (FEET)	ND	2								
DTW (FEET)	46.50	3								
DTB (FEET)	128.85 132.55	4								
DTB - DTW	82.35	5								
CAPACITY PER FOOT	0.74-4"	6								
61 PURGING DATA										
3 WELL VOLUMES	183	WEATHER CONDITIONS: CLOUDY, CALM, 66°								
PURGE DATE	9.19.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1048	COMMENTS: PUMP DOWN @ 70 GALS.								
PURGE AMOUNT	70									
DTW (FEET)	126.45									
SAMPLING DATA										
SAMPLE DATE	9.19.18	WEATHER CONDITIONS: CLOUDY, CALM, 76°								
DTW (FEET)	113.84	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1225	COMMENTS: COLLECTED FB19 @ 0945								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-12	1225	40 ML VOA	5				HCl			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED		WATER LEVEL METER								
		WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-13		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.11.18	Initial	1150	8.35	14.5	1.04	0.8385	0.65	1.96	2.3
GAUGE TIME	1140	1	1220	8.00	14.8	1.02	0.8255	0.64	2.12	6.0
DHC (FEET)	ND	2	1250	7.99	14.8	1.02	0.8255	0.64 2.38	2.38	29.6
DTW (FEET)	20.78	3	1320	7.98	14.8	1.04	0.8385	0.65	2.24	30.3
DTB (FEET)	102.00	4								
DTB - DTW	81.22	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
60.10 PURGING DATA										
WELL VOLUMES	180.31	WEATHER CONDITIONS: CLEAR, WEST WIND, 80°								
PURGE DATE	9.11.18	WATER APPEARANCE / ODOR: CLEAR, WATER NO ODOR								
END OF PURGE TIME	1320	COMMENTS:								
PURGE AMOUNT	185									
DTW (FEET)	22.45									
SAMPLING DATA										
SAMPLE DATE	9.11.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 82°								
DTW (FEET)	22.45	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1330	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-13	1330	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
WATER LEVEL PROBE										
WATER QUALITY METER										

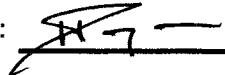
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-14		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.11.18	Initial	1405	7.26	16.9	1.64	1.2545	0.99	0.96	-125.9
GAUGE TIME	1400	1	1415	7.11	13.2 15.2	1.59	1.2480	0.98	1.00	-111.6
DHC (FEET)	ND	2	1425	7.12	14.6	1.54	1.2480	0.98	0.82	-103.8
DTW (FEET)	21.96	3	1435	7.13	14.6	1.54	1.2480	0.98	0.75	-104.9
DTB (FEET)	46.78	4								
DTB - DTW	24.82	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
18.37		PURGING DATA								
3 WELL VOLUMES	55.11	WEATHER CONDITIONS: CLEAR, WEST WIND, 82°								
PURGE DATE	9.11.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1435	COMMENTS:								
PURGE AMOUNT	60									
DTW (FEET)	22.15									
		SAMPLING DATA								
SAMPLE DATE	9.11.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	22.15	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1440	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-14	1440	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED		WATER LEVEL PROBE								
		WATER QUALITY METER								

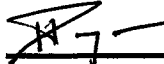
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-29		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.11.18	Initial	1536	7.99	16.0	1.62	1.2675	1.00	0.93	-23.2
GAUGE TIME	1530	1	1549	7.38	14.5	1.57	1.2740	1.01	0.89	-44.2
DHC (FEET)	ND	2	1602	7.37	14.8	1.58	1.2805	1.01	1.17	-356
DTW (FEET)	17.60	3	1615	7.35	14.8	1.60	1.2935	1.02	1.93	-33.1
DTB (FEET)	52.40	4								
DTB - DTW	34.80	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
25.75 PURGING DATA										
3 WELL VOLUMES	77.25	WEATHER CONDITIONS: CLEAR, WEST WIND, 82°								
PURGE DATE	9.11.18	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR								
END OF PURGE TIME	1615	COMMENTS:								
PURGE AMOUNT	80 GALS									
DTW (FEET)	37.80									
SAMPLING DATA										
SAMPLE DATE	9.11.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	37.80	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1620	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-29	1620	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
WATER LEVEL PROBE										
WATER QUALITY METER										

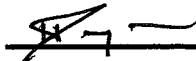
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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-30		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.19.18	Initial	0725	7.36	13.8	1.66	1.3715	1.08	0.75	27.9
GAUGE TIME	0720	1	0733	7.15	13.1	1.60	1.3455	1.06	0.85	9.8
DHC (FEET)	ND	2	0745	7.23	13.0	1.59	1.3455	1.06	1.05	22.7
DTW (FEET)	21.69	3	0757	7.22	13.0	1.58	1.3250	1.06	1.72	29.1
DTB (FEET)	51.40	4								
DTB - DTW	29.71	5								
CAPACITY PER FOOT	(0.74 - 4") 0.163 - 2"	6								
22 PURGING DATA										
3 WELL VOLUMES	66	WEATHER CONDITIONS: CLOUDY, CALM, 62°								
PURGE DATE	9.19.18	WATER APPEARANCE / ODOR: CLEAR, FAINT ODOR								
END OF PURGE TIME	0757	COMMENTS:								
PURGE AMOUNT	66									
DTW (FEET)	25.40									
SAMPLING DATA										
SAMPLE DATE	9.19.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	25.40	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	0810	COMMENTS: COLLECTED DUP20								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-30	0810	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
WATER LEVEL PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-50		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9-17-18	Initial	1240	8.38	28.5	1.49	0.9035	0.69	4.37	103.5
GAUGE TIME	1230	1	1247	8.23	16.5	1.05	0.8190	0.63	8.45	102.5
DHC (FEET)	ND	2	1254	8.10	15.6	1.03	0.8125	0.63	0.67	81.3
DTW (FEET)	15.30	3	1201	8.09	15.5	1.01	0.8125	0.63	0.63	68.0
DTB (FEET)	65.25	4								
DTB - DTW	49.95	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
8.14 PURGING DATA										
3 WELL VOLUMES	24.42	WEATHER CONDITIONS: CLEAR, SW WIND 80°								
PURGE DATE	9-17-18	WATER APPEARANCE / ODOR: BROWN, NO ODOR								
END OF PURGE TIME	1301	COMMENTS:								
PURGE AMOUNT	25									
DTW (FEET)	15.92									
SAMPLING DATA										
SAMPLE DATE	9-17-18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	15.92	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1305	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-50	1305	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
WATER LEVEL PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-52		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.17.18	Initial	1427	8.36	17.9	0.98	0.7345	0.57	1.87	4.2
GAUGE TIME	1415	1	1431	8.17	15.6	0.88	0.7020	0.54	0.80	-41.9
DHC (FEET)	ND	2	1449	8.16	15.4	0.86	0.6955	0.53	0.91	-58.6
DTW (FEET)	14.55	3	1502	8.15	15.4	0.86	0.6975	0.53	0.64	-34.4
DTB (FEET)	79.00	4								
DTB - DTW	64.45	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
10.50 PURGING DATA										
3 WELL VOLUMES	31.5	WEATHER CONDITIONS: CLOUDY, WEST WIND 86°								
PURGE DATE	9.17.18	WATER APPEARANCE / ODOR: BROWN TO CLEAR, NO ODOR								
END OF PURGE TIME	1502	COMMENTS:								
PURGE AMOUNT	32									
DTW (FEET)	19.15									
SAMPLING DATA										
SAMPLE DATE	9.17.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	19.15	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1505	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-52	1505	40 ML VOA	5				HCL			
		40 ML VOA	3				NA ₂ S ₂ O ₃			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED										
WATER LEVEL PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-53		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.15.18	Initial								
GAUGE TIME	0725	1								
DHC (FEET)	ND	2								
DTW (FEET)	ND	3								
DTB (FEET)	33.91	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								


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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-54		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.27.18	Initial	0956	7.35	14.6	1.81	1.4690	1.16	2.53	-16.9
GAUGE TIME	0950	1	1000	7.22	13.2	1.63	1.3715	1.09	1.68	-48.0
DHC (FEET)	ND	2	10035	7.19	12.8	1.64	1.3910	1.10	1.25	-61.6
DTW (FEET)	18.23	3	1009	7.18	12.9	1.64	1.3780	1.09	1.30	-68.1
DTB (FEET)	29.62	4								
DTB - DTW	11.39	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.86		PURGING DATA								
3 WELL VOLUMES	5.58	WEATHER CONDITIONS: PARTLY CLOUDY, CALM, 62°								
PURGE DATE	8.27.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR, TURNS BROWN								
END OF PURGE TIME	1009	COMMENTS:								
PURGE AMOUNT	6 GALS									
DTW (FEET)	18.28									
SAMPLING DATA										
SAMPLE DATE	8.28.18	WEATHER CONDITIONS: CLEAR, CALM, 58°								
DTW (FEET)	18.25	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	0825	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS		PRESERVATIVE					
OW-54	0825	40 ML VOA	5		HCL					
		1 LITER AMBER	1		NEAT					
		250 ML AMBER	1		NEAT					
		250 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		H ₂ SO ₄					
		125 ML PLASTIC	1		NEAT					
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-55		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.27.18	Initial	1032	7.15	15.2	1.79	1,430	1.13	1.35	-97.6
GAUGE TIME	1025	1		SHEEN OBSERVED ON PURGED WATER						
DHC (FEET)	ND	2		DISCONTINUED WATER QUALITY READINGS						
DTW (FEET)	17.97	3								
DTB (FEET)	30.70	4								
DTB - DTW	12.73	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.07		PURGING DATA								
3 WELL VOLUMES	6.21	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 68°								
PURGE DATE	8.27.18	WATER APPEARANCE / ODOR: CLEAR → GREY, NC ODOR, SHEEN								
END OF PURGE TIME	1055	COMMENTS:								
PURGE AMOUNT	6.50									
DTW (FEET)	18.36									
		SAMPLING DATA								
SAMPLE DATE	8.28.18	WEATHER CONDITIONS: CLEAR, CALM, 58°								
DTW (FEET)	18.01	WATER APPEARANCE / ODOR:								
SAMPLE TIME	0855	COMMENTS:								
		SAMPLE LOG								
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-55	0855	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-56		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8-27-18	Initial	1112	7.75	16.0	2.00	1.5665	1.25	2.98	19.9
GAUGE TIME	11:05	1	1115	7.32	15.2	2.13	1.7030	1.36	2.48	40.8
DHC (FEET)	ND	2	1119	7.29	14.5	2.30	1.8655	1.50	0.78	36.4
DTW (FEET)	13.53	3								
DTB (FEET)	18.59	4								
DTB - DTW	5.06	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
0.82 PURGING DATA										
3 WELL VOLUMES	2.46	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 71°								
PURGE DATE	8-27-18	WATER APPEARANCE / ODOR: CLEAR → BROWN, NO ODOR								
END OF PURGE TIME	1125	COMMENTS: BAILED DOWN @ 2 GALS								
PURGE AMOUNT	2 GALS									
DTW (FEET)	17.90									
SAMPLING DATA										
SAMPLE DATE	8-28-18	WEATHER CONDITIONS: CLEAR, CALM, 63°								
DTW (FEET)	17.08	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0927	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-56	0927	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-57		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.27.18	Initial	1323	7.10	16.6	1.56	1.2025	0.95	0.61	-105.2
GAUGE TIME	1307	1	1327	6.99	15.4	1.48	1.1765	0.92	0.88	-91.1
DHC (FEET)	ND	2		BAILED DOWN @ 1.75 GALS						
DTW (FEET)	20.11	3								
DTB (FEET)	28.07	4								
DTB - DTW	7.96	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
1.30 PURGING DATA										
3 WELL VOLUMES	3.90	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 73°								
PURGE DATE	8.27.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR, BECOMES GREY								
END OF PURGE TIME	1330	COMMENTS: BAILED DOWN @ 1.75 GALS								
PURGE AMOUNT	1.75									
DTW (FEET)	27.73									
SAMPLING DATA										
SAMPLE DATE	8.28.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 74°								
DTW (FEET)	20.19	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	10:55	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-57	1055	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

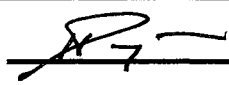
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THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-58		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.27.18	Initial	1526	7.53	16.9	1.20	0.9230	0.72	0.34	-85.0
GAUGE TIME	1517	1	1534	6.97	16.0	1.52	1.1895	0.94	1.71	-85.7
DHC (FEET)	ND	2	1543	6.97	15.3	1.51	1.2090	0.95	1.77	-90.5
DTW (FEET)	24.41	3	1553	6.98	15.3	1.52	1.2095	0.95	2.10 2.09	-86.7
DTB (FEET)	47.49	4								
DTB - DTW	23.08	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
3.76		PURGING DATA								
3 WELL VOLUMES	11.28	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 74°								
PURGE DATE	8.27.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, HC ODOR								
END OF PURGE TIME	1553	COMMENTS:								
PURGE AMOUNT	11.50									
DTW (FEET)	24.50									
SAMPLING DATA										
SAMPLE DATE	8.28.18	WEATHER CONDITIONS: CLEAR, WEST WIND, 77°								
DTW (FEET)	24.46	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1300	COMMENTS: COLLECTED 1 EXTRA AMBER								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-58	1300	40 ML VOA	5				HCL			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
OW-59		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.27.18	Initial	0910	7.60	14.9	8.88	7.1500	6.28	1.28	102.2
GAUGE TIME	0903	1	0915	7.52	13.9	8.73	7.2020	6.32	1.02	100.1
DHC (FEET)	ND	2	0922	7.54	13.6	8.74	7.2215	6.34	1.34	96.5
DTW (FEET)	24.15	3	0930	7.55	13.5	8.75	7.3710	6.38	1.42	94.3
DTB (FEET)	38.52	4								
DTB - DTW	14.37	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
2.34 PURGING DATA										
3 WELL VOLUMES	7.02	WEATHER CONDITIONS: CLEAR, CALM, 60°								
PURGE DATE	8.27.18	WATER APPEARANCE / ODOR: CLEAR TO BROWN, NO ODOR								
END OF PURGE TIME	0935	COMMENTS:								
PURGE AMOUNT	7.0									
DTW (FEET)	37.61									
SAMPLING DATA										
SAMPLE DATE	8.28.18	WEATHER CONDITIONS: CLEAR, CALM, 50°								
DTW (FEET)	25.53	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	0755	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-59	0755	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY

THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
OW-60		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.27.18	Initial	0828	7.74	15.2	5.79	4.6280	3.94	2.05	103.3
GAUGE TIME	0820	1	0837	7.67	13.5	5.57	4.6345	3.94	1.66	93.3
DHC (FEET)	ND	2	BAILED DOWN @ 7.5 GALS.							
DTW (FEET)	16.55	3								
DTB (FEET)	46.42	4								
DTB - DTW	29.87	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
4.87		PURGING DATA								
3 WELL VOLUMES	14.61	WEATHER CONDITIONS: CLEAR CALM, 58°								
PURGE DATE	8.27.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, NO ODOR								
END OF PURGE TIME	0855	COMMENTS: BAILED DOWN @ 7.5 GALS								
PURGE AMOUNT	7.5									
DTW (FEET)	45.65									
SAMPLING DATA										
SAMPLE DATE	8.28.18	WEATHER CONDITIONS: CLEAR, CALM, 50°								
DTW (FEET)	35.85	WATER APPEARANCE / ODOR: LT BROWN, NO ODOR								
SAMPLE TIME	0725	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-60	0725	40 ML VOA	5				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
OW-61		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.16.18	Initial								
GAUGE TIME	0938	1								
DHC (FEET)	17.40	2	WELL NOT SAMPLED 4.70 FEET OF SPH PRESENT							
DTW (FEET)	22.10	3								
DTB (FEET)	31.70	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
OW-62		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.22.18	Initial	0800	7.04	14.2	0.83	0.6760	0.52	0.49	-63.2
GAUGE TIME	0750	1	0806	7.25	13.3	0.78	0.6565	0.50	0.33	-129.4
DHC (FEET)	ND	2	0816	7.67	13.2	0.85	0.7150	0.55	1.02	-111.7
DTW (FEET)	23.73	3	BAILED DOWN @ 12.5 GALS							
DTB (FEET)	31.59	4								
DTB - DTW	7.86	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
5.82		PURGING DATA								
3 WELL VOLUMES	17.46	WEATHER CONDITIONS: CLOUDY, EAST WIND, 60°								
PURGE DATE	8.22.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
END OF PURGE TIME	0820	COMMENTS:								
PURGE AMOUNT	12.5									
DTW (FEET)	31.40									
SAMPLING DATA										
SAMPLE DATE	8.22.18	WEATHER CONDITIONS: CLOUDY, EAST WIND, 68°								
DTW (FEET)	29.90	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1525	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS		PRESERVATIVE					
OW-62	1525	40 ML VOA	5		HCL					
		1 LITER AMBER	1		NEAT					
		250 ML AMBER	1		NEAT					
		250 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		H ₂ SO ₄					
		125 ML PLASTIC	1		NEAT					
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
OW-63		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.22.18	Initial	1011	7.04	15.1	1.40	1.1245	0.88	0.24	-1102
GAUGE TIME	1000	1	1018	7.04	14.5	1.40	1.1350	0.90	0.67	-107.8
DHC (FEET)	ND	2	1026	7.04	13.9	1.41	1.1635	0.91	0.55	-103.6
DTW (FEET)	20.67	3	1038	7.05	13.9	1.40	1.1440	0.90	0.60	-100.1
DTB (FEET)	32.20	4								
DTB - DTW	11.53	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
8.53 PURGING DATA										
3 WELL VOLUMES	25.59	WEATHER CONDITIONS: CLOUDY, SE WIND, 63°, SLIGHT RAINFALL								
PURGE DATE	8.22.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR BECOMES LIGHT BROWN								
END OF PURGE TIME	1038	COMMENTS:								
PURGE AMOUNT	26									
DTW (FEET)	25.40									
SAMPLING DATA										
SAMPLE DATE	8.22.18	WEATHER CONDITIONS: CLOUDY, CALM, 70°								
DTW (FEET)	20.68	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1240	COMMENTS: COLLECTED FB04 @ 1055 & EB04 @ 1115; DUP04								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-63	1240	40 ML VOA	5				HCL			
		1 LITER AMBER	2				NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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ANDEAVOR - GALLUP REFINERY

THIRD QUARTER 2018

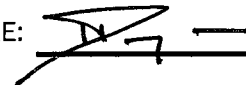
WELL ID		TEST PARAMETERS								
OW-64		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.22.18	Initial	0913	7.77	21.2	1.74	1.2220	0.96	0.26	-123.5
GAUGE TIME	0905	1	0921	7.61	18.6	1.76	1.3065	1.03	0.59	-177.8
DHC (FEET)	ND	2		SHEEN ON PURGED WATER						
DTW (FEET)	7.80	3		DISCONTINUED COLLECTING						
DTB (FEET)	27.35	4		WATER QUALITY READINGS						
DTB - DTW	19.55	5		BAILED DOWN @ 27 GALS						
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
14.47		PURGING DATA								
3 WELL VOLUMES	43.41	WEATHER CONDITIONS: CLOUDY, EAST WIND								
PURGE DATE	8.22.18	WATER APPEARANCE / ODOR: CLEAR, HC ODOR, BECOMES BROWN, TURBID, SHEEN								
END OF PURGE TIME	0940	COMMENTS:								
PURGE AMOUNT	27 GALS									
DTW (FEET)	27.03									
SAMPLING DATA										
SAMPLE DATE	8.22.18	WEATHER CONDITIONS: CLOUDY EAST WIND, 68°								
DTW (FEET)	10.71	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1435	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
OW-64	1435	40 ML VOA	5				HCL			
		1 LITER AMBER					NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
OW-65		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	8.16.18	Initial								
GAUGE TIME	0953	1								
DHC (FEET)	24.96	2		WELL NOT SAMPLED						
DTW (FEET)	26.64	3		1.68 FEET OF SPH PRESENT						
DTB (FEET)	41.66	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
PW-3		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE		Initial								
GAUGE TIME		1								
DHC (FEET)		2								
DTW (FEET)		3								
DTB (FEET)		4								
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE	9.19.18	WEATHER CONDITIONS: CLOUDY, CALM								
DTW (FEET)	NA	WATER APPEARANCE / ODOR:								
SAMPLE TIME	1410	COMMENTS: 1410								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
PW-3	1410	40 ML VOA	3				HCL			
		1 LITER AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NaOH			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
PW-4		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE		Initial								
GAUGE TIME		1								
DHC (FEET)		2								
DTW (FEET)		3								
DTB (FEET)		4								
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE	9.19.18	WEATHER CONDITIONS: CLOUDY, CALM, 78°								
DTW (FEET)	—	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1320	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
PW-4	1320	40 ML VOA	3				HCL			
		1 LITER AMBER	2				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NaOH			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
RW-1		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/ CM)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.16.18	Initial								
GAUGE TIME	1106	1								
DHC (FEET)	27.44	2		WELL NOT SAMPLED						
DTW (FEET)	27.70	3		0.26 FEET OF SPH PRESENT						
DTB (FEET)	43.45	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
RW-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8-27-18	Initial								
GAUGE TIME	1401	1								
DHC (FEET)	ND	2								
DTW (FEET)	20.05	3								
DTB (FEET)	40.00	4								
DTB - DTW	19.95	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
14.76		PURGING DATA								
3 WELL VOLUMES	44.28	WEATHER CONDITIONS: PARTLY CLOUDY, WEST WIND, 73°								
PURGE DATE	8-27-18	WATER APPEARANCE / ODOR: CLEAR → GREY, HC ODOR, SHEEN								
END OF PURGE TIME	1430	COMMENTS: BAILED DOWN @ 21.5 GALS								
PURGE AMOUNT	21.50									
DTW (FEET)	39.57									
SAMPLING DATA										
SAMPLE DATE	8-28-18	WEATHER CONDITIONS: CLEAR, WEST WIND, 77°								
DTW (FEET)	20.12	WATER APPEARANCE / ODOR: CLEAR, HC ODOR								
SAMPLE TIME	1205	COMMENTS: COLLECTED FB07@ 1115 & EB07@ 1130								
SAMPLE LOG 4 LSO DUPO7										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS					PRESERVATIVE		
RW-2	1205	40 ML VOA	5					HCL		
↓	↓	250 ML AMBER	1					NEAT		
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										

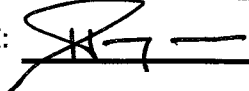
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
RW-5		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS) <i>cm</i>	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.16.18	Initial								
GAUGE TIME	1044	1								
DHC (FEET)	27.20	2		WELL NOT SAMPLED						
DTW (FEET)	32.58	3		5.38 FEET OF SPH PRESENT						
DTB (FEET)	39.51	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

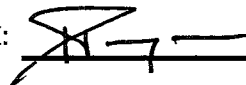
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**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
RW-6		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
GAUGE DATE	8.16.18	Initial								
GAUGE TIME	1050	1								
DHC (FEET)	27.43	2								
DTW (FEET)	31.78	3								
DTB (FEET)	40.85	4								
DTB - DTW	NA	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
INSTRUMENTS USED		OIL / WATER INTERFACE PROBE								

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ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
SMW-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen	ORP (mv)
GAUGE DATE	9.18.18	Initial	1214	7.53	18.0	7.86	5.6225	4.84	2.61	38.0
GAUGE TIME	1200	1	1218	7.34	17.1	9.84	7.3450	6.46	1.89	21.7
DHC (FEET)	ND	2	1225	7.37	17.0	10.48	7.7155	6.79	6.48	42.2
DTW (FEET)	24.62	3								
DTB (FEET)	52.90	4								
DTB - DTW	28.28	5								
CAPACITY PER FOOT	0.163-2"	6								
4.60 PURGING DATA										
3 WELL VOLUMES	13.80	WEATHER CONDITIONS: CLEAR, WEST WIND, 81°								
PURGE DATE	9.18.18	WATER APPEARANCE / ODOR: CLOUDY, NO ODOR								
END OF PURGE TIME	1225	COMMENTS: PUMPED DOWN @ 8 GALS								
PURGE AMOUNT	8									
DTW (FEET)	55.95									
SAMPLING DATA										
SAMPLE DATE	9.18.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	39.90	WATER APPEARANCE / ODOR: SAME AS ABOVE								
SAMPLE TIME	1250	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
SMW-2	1250	40 ML VOA	5				HCl			
		1 LITER AMBER					NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NaOH			
INSTRUMENTS USED		WATER LEVEL METER								
		WATER QUALITY METER								

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**ANDEAVOR - GALLUP REFINERY
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WELL ID		TEST PARAMETERS								
SMW-4		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen <i>mg/L</i>	ORP (mv)
GAUGE DATE	9.12.18	Initial	1450	8.52	17.3	1.11	0.8515	0.66	2.30	0.2
GAUGE TIME	1440	1	1457	8.04	16.0	1.03	0.8125	0.63	2.48	16.9
DHC (FEET)	ND	2	1504	8.05	16.4	1.08	0.8385	0.65	1.52	21.0
DTW (FEET)	29.15	3	1511	8.06	16.3	1.11	0.8710	0.68	2.04	25.5
DTB (FEET)	69.68	4								
DTB - DTW	40.53	5								
CAPACITY PER FOOT	0.163-2"	6								
6.61 PURGING DATA										
3 WELL VOLUMES	19.83	WEATHER CONDITIONS: CLEAR, STRONG WEST WIND, 83°								
PURGE DATE	9.12.18	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
END OF PURGE TIME	1511	COMMENTS: PUMPED DOWN AT 21 GALS								
PURGE AMOUNT	21									
DTW (FEET)	60.20									
SAMPLING DATA										
SAMPLE DATE	9.12.18	WEATHER CONDITIONS: SAME AS ABOVE								
DTW (FEET)	57.08	WATER APPEARANCE / ODOR: CLEAR, NO ODOR								
SAMPLE TIME	1550	COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
SMW-4	1550	40 ML VOA	5				HCl			
		1 LITER AMBER					NEAT			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NaOH			
INSTRUMENTS USED		WATER LEVEL METER								
		WATER QUALITY METER								

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ANDEAVOR - GALLUP REFINERY

THIRD QUARTER 2018

WELL ID		TEST PARAMETERS								
STP-1-NW		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.5.18	Initial	1400	7.94	15.6	5.22	4.1340	3.49	4.45	75.5
GAUGE TIME	1353	1	1413	7.76	14.2	5.91	4.8360	4.13	2.13	73.8
DHC (FEET)	ND	2	1427	7.78	13.9	5.80	4.7840	4.08	1.79	72.9
DTW (FEET)	20.95	3	1445	7.78	13.8	5.91	4.7850	4.08	1.97	73.5
DTB (FEET)	49.78	4								
DTB - DTW	28.83	5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
4.70 PURGING DATA										
3 WELL VOLUMES	14.1	WEATHER CONDITIONS: CLOUDY, CALM, 76°								
PURGE DATE	9.5.18	WATER APPEARANCE / ODOR: CLEAR → BROWN, NO ODOR								
END OF PURGE TIME	1445	COMMENTS:								
PURGE AMOUNT	14.25									
DTW (FEET)	47.92									
SAMPLING DATA										
SAMPLE DATE	9.6.18	WEATHER CONDITIONS: PARTLY CLOUDY, SE WIND, 56°								
DTW (FEET)	42.35	WATER APPEARANCE / ODOR:								
SAMPLE TIME	0950	COMMENTS: COLLECTED FB12@ 0910, EB12@ 0925 & DUP13								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
STP-1-NW	0950	40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				H ₂ SO ₄			
		125 ML PLASTIC	1				NEAT			
INSTRUMENTS USED										
OIL / WATER INTERFACE PROBE										
WATER QUALITY METER										

COMPLETED BY: TRACY PAYNESIGNATURE: JP

**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

OUTFALL ID		TEST PARAMETERS								
STP-1 TO EP-2		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE		Initial	0752	8.31	20.0	3.46	2.4830	2.03	0.13	-23.5
GAUGE TIME		1								
DHC (FEET)		2								
DTW (FEET)		3								
DTB (FEET)		4								
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		 WEATHER CONDITIONS: WATER APPEARANCE / ODOR: COMMENTS: 								
PURGE DATE										
END OF PURGE TIME										
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE	8.31.18	WEATHER CONDITIONS: CLOUDY, CALM, 56° WATER APPEARANCE / ODOR: LIGHT GRAYISH BROWN, ODOR, TURBID COMMENTS:								
DTW (FEET)	NA									
SAMPLE TIME	0820									
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
STP-1 TO EP-2	0820	40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
		1 LITER PLASTIC	1				NEAT			
		500 ML PLASTIC	1				NEAT			
		500 ML PLASTIC	1				H ₂ SO ₄			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										

COMPLETED BY: TRACY PAYNE

SIGNATURE: 

**ANDEAVOR - GALLUP REFINERY
THIRD QUARTER 2018**

WELL ID		TEST PARAMETERS								
WEST LDU		Volumes	TIME	pH	Temperature Degrees C	Conductivity (mS/cm)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (mg/L)	ORP (mv)
GAUGE DATE	9.5.18	Initial								
GAUGE TIME		1								
DHC (FEET)		2	COULD NOT ACCESS HIGH H ₂ S CONCENTRATIONS IN IMMEDIATE AREA							
DTW (FEET)		3								
DTB (FEET)		4								
DTB - DTW		5								
CAPACITY PER FOOT	0.74 - 4"	6								
	0.163 - 2"									
PURGING DATA										
3 WELL VOLUMES		WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
END OF PURGE TIME		COMMENTS:								
PURGE AMOUNT										
DTW (FEET)										
SAMPLING DATA										
SAMPLE DATE		WEATHER CONDITIONS:								
DTW (FEET)		WATER APPEARANCE / ODOR:								
SAMPLE TIME		COMMENTS:								
SAMPLE LOG										
SAMPLE ID	TIME	CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE			
WEST LDU		40 ML VOA	5				HCL			
		250 ML AMBER	1				NEAT			
		250 ML PLASTIC	1				HNO ₃			
		125 ML PLASTIC	1				HNO ₃			
INSTRUMENTS USED OIL / WATER INTERFACE PROBE										

COMPLETED BY: TRACY PAYNE

SIGNATURE: 



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/27/18	TIME	1400							
DHC (FEET)	5.5	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	5.87	1								
DTB (FEET)	17.42	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: clear, slight breeze.								
3 WELL VOLUMES		WATER APPEARANCE / ODOR:								
PURGE DATE										
START TIME										
END TIME		COMMENTS:								
AMT PURGED		No Samples collected - SPH level								
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/27/18	TIME	1353							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	8.4	1	1057	7.76	13.34	3350	2.178	1.77	46.3	33.9
DTB (FEET)	20.48	2	1059	7.7	13.18	3361	2.185	1.77	43.6	41.5
DTB - DTW	12.08	3	1101	7.65	13.05	3370	2.191	1.78	42.6	45.9
CAPACITY PER FOOT	0.74 - 4"	4	1103	7.65	12.95	3370	2.19	1.78	42.4	47.4
3 WELL VOLUMES	27	WEATHER CONDITIONS: Clear, slight breeze / pty cldy - breezy								
PURGE DATE	11/27/18	WATER APPEARANCE / ODOR: Clear, slight yellow tint, murky								
START TIME	1356	COMMENTS:								
END TIME	1420									
AMT PURGED	4.5									
SAMPLE DATE	11/28/18									
SAMPLE TIME	1104									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011-EDB	40ML VOA		2		Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID		TEST PARAMETERS								
GAUGE DATE	1/19/18	TIME	1430							
DHC (FEET)	6.85	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	7.85	1								
DTB (FEET)	18.45	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: clear, calm								
3 WELL VOLUMES		WATER APPEARANCE / ODOR: H ₂ O layer - odor								
PURGE DATE		COMMENTS: No Samples collected								
START TIME										
END TIME										
AMT PURGED										
SAMPLE DATE										
SAMPLE TIME										
Analysis Request		CONTAINER TYPE	NUMBER OF CONTAINERS		PRESERVATIVE					
		40 ML VOA	5		HCL					
		1 LITER AMBER			NEAT					
		250 ML AMBER	1		NEAT					
		250 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		H ₂ SO ₄					
		125 ML PLASTIC	1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/19/18	TIME	1400							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	839	1	0802	7.35	14.07	2183	1.419	1.13	24.3	-32.7
DTB (FEET)	22.15	2	0804	7.24	13.34	2201	1.431	1.14	23.9	-26.6
DTB - DTW	13.74	3	0806	7.23	12.59	2207	1.434	1.14	22.9	-22.2
CAPACITY PER FOOT	0.74 - 4"	4	0808	7.24	12.09	2210	1.436	1.14	21.2	-18.3
	0.163 - 2"	WEATHER CONDITIONS: Clear Calm								
3 WELL VOLUMES	30 gal									
PURGE DATE	11/19/18	WATER APPEARANCE / ODOR: Clear - grey - murky last barrel								
START TIME	1405									
END TIME	1423	COMMENTS:								
AMT PURGED	22									
SAMPLE DATE	11/20/18									
SAMPLE TIME	0810	Collected Samples								
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011-EDB	40ml VOA		2		Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID		TEST PARAMETERS									
GAUGE DATE	11/14/18	TIME	1352								
DHC (FEET)	14.62	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	14.83	1									
DTB (FEET)	17.75	2									
DTB - DTW		3									
CAPACITY PER FOOT	0.74 - 4"	4									
	0.163 - 2"	WEATHER CONDITIONS:									
3 WELL VOLUMES		WATER APPEARANCE / ODOR:									
PURGE DATE		oil layer - odor - N									
START TIME											
END TIME		COMMENTS: NO samples collected									
AMT PURGED											
SAMPLE DATE											
SAMPLE TIME											
Analysis Request		CONTAINER TYPE	NUMBER OF CONTAINERS		PRESERVATIVE						
		40 ML VOA	5		HCL						
		1 LITER AMBER			NEAT						
		250 ML AMBER	1		NEAT						
		250 ML PLASTIC	1		HNO ₃						
		125 ML PLASTIC	1		HNO ₃						
		125 ML PLASTIC	1		H ₂ SO ₄						
		125 ML PLASTIC	1		NEAT						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/19/18	TIME	1355							
DHC (FEET)	16.85	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	18.01	1								
DTB (FEET)	23.77	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES		WATER APPEARANCE / ODOR:								
PURGE DATE		SPH layer = odor								
START TIME										
END TIME		COMMENTS: No Samples collected								
AMT PURGED										
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID		TEST PARAMETERS									
GAUGE DATE		11/27/18	TIME	1438							
DHC (FEET)	12.35	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	13.52	1									
DTB (FEET)	17.62	2									
DTB - DTW		3									
CAPACITY PER FOOT	0.74 - 4"	4									
	0.163 - 2"	WEATHER CONDITIONS: ptly cldy, slight breeze									
3 WELL VOLUMES		WATER APPEARANCE / ODOR: SPH layer									
PURGE DATE											
START TIME											
END TIME		COMMENTS: No Samples Collected - SPH layer									
AMT PURGED											
SAMPLE DATE											
SAMPLE TIME											
Analysis Request		CONTAINER TYPE	NUMBER OF CONTAINERS		PRESERVATIVE						
		40 ML VOA	5		HCL						
		1 LITER AMBER			NEAT						
		250 ML AMBER	1		NEAT						
		250 ML PLASTIC	1		HNO ₃						
		125 ML PLASTIC	1		HNO ₃						
		125 ML PLASTIC	1		H ₂ SO ₄						
		125 ML PLASTIC	1		NEAT						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/27/18	TIME	1433							
DHC (FEET)	13.41	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	13.8	1								
DTB (FEET)	21.98	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: pthy cldy, slight breeze								
3 WELL VOLUMES		WATER APPEARANCE / ODOR:								
PURGE DATE										
START TIME										
END TIME		COMMENTS:								
AMT PURGED		No Samples collected - SPH layer								
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS										
GAUGE DATE	11/27/18	TIME	1430								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	13.81	1	1126	8.17	19.93	91	0.059	0.04	68.8	38.4	
DTB (FEET)	22.70	2	1128	7.41	14.3	2004	1.303	1.03	15.9	-9.1	
DTB - DTW	8.89	3	1130	7.33	14.04	2007	1.305	1.03	14.5	-11	
CAPACITY PER FOOT	0.74 - 4"	4	1132	7.29	13.85	2009	1.300	1.03	13.6	-10.1	
	0.163 - 2"	WEATHER CONDITIONS: pty cldy, slight breeze									
3 WELL VOLUMES	20	WATER APPEARANCE / ODOR:									
PURGE DATE	11/27	Clear - gray - smell of bail									
START TIME	1442										
END TIME	1458	COMMENTS:									
AMT PURGED	15										
SAMPLE DATE	11/28/18										
SAMPLE TIME	1135										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE						
	40 ML VOA		5		HCL						
	1 LITER AMBER				NEAT						
	250 ML AMBER		1		NEAT						
	250 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		H ₂ SO ₄						
	125 ML PLASTIC		1		NEAT						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/19/18	TIME	1500							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	17.25	1	0841	7.47	24.7	41	0.027	0.02	88.9	-1
DTB (FEET)	15.99	2	0843	7.45	13.79	2048	1.331	1.05	13.9	-654
DTB - DTW	8.74	3	0845	7.31	13.19	2060	1.339	1.06	12.6	-55
CAPACITY PER FOOT	0.74 - 4"	4	0847	7.26	12.68	2057	1.337	1.06	13	-48.4
	0.163 - 2"	WEATHER CONDITIONS: clear - calm								
3 WELL VOLUMES	19	WATER APPEARANCE / ODOR: Clear - pink - brown murky								
PURGE DATE										
START TIME	1510									
END TIME	1518	COMMENTS:								
AMT PURGED	7									
SAMPLE DATE	11/20/18									
SAMPLE TIME	0849									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
	0858		Duplicate							
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/19/18	TIME	1438							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	7.2	1	0820	7.34	4.6	29	0019	0.01	91.1	5.3
DTB (FEET)	18.14	2	0822	7.38	13.94	5045	3279	2.73	14.8	-66.4
DTB - DTW	10.94	3	0824	7.35	13.26	5084	3305	2.75	12.9	-62.2
CAPACITY PER FOOT	0.74 - 4"	4	0826	7.35	12.7	5101	3316	2.76	12.4	-58.5
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES	24	Clear - calm								
PURGE DATE	11/19/18	WATER APPEARANCE / ODOR:								
START TIME		Clear - slightly tinted - gray @ end of purge.								
END TIME	1458	COMMENTS:								
AMT PURGED	25									
SAMPLE DATE	11/20/18									
SAMPLE TIME	0830									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/27/18	TIME	11 00							
DHC (FEET)	18.4	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	18.54	1								
DTB (FEET)	25.60	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: Clear, calm								
3 WELL VOLUMES		WATER APPEARANCE / ODOR:								
PURGE DATE										
START TIME										
END TIME		COMMENTS: No Samples Collected - SPH layer								
AMT PURGED										
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/27/18	TIME	1109							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	12.72	1	0928	7.14	14.38	2116	1.35	1.09	16.3	-58.4
DTB (FEET)	21.25	2	0930	7.12	14.52	2127	1.379	1.09	14.5	-58.3
DTB - DTW	8.53	3	0932	7.12	14.26	2133	1.386	1.1	10.7	-57.2
CAPACITY PER FOOT	0.74 - 4"	4	0934	7.11	14.17	2135	1.388	1.1	10.8	-56.7
	0.163 - 2"	WEATHER CONDITIONS: Clear, calm / pth cloudy, calm								
3 WELL VOLUMES	19 gals									
PURGE DATE	11/27/18	WATER APPEARANCE / ODOR: Clear, slight rust - murky odor + sheen								
START TIME	1110									
END TIME	1130	COMMENTS: Bailed 13 gals								
AMT PURGED	13									
SAMPLE DATE	11/28/18									
SAMPLE TIME	0935									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11.27.18	TIME	1135							
DHC (FEET)	6.26	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (my)
DTW (FEET)	6.65	1								
DTB (FEET)	17.46	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: Clear - slight breeze								
3 WELL VOLUMES		WATER APPEARANCE / ODOR: SPH								
PURGE DATE										
START TIME										
END TIME		COMMENTS: NO Samples Collected - has SPH layer								
AMT PURGED										
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID		TEST PARAMETERS									
GAUGE DATE	11/19/18	TIME	1330								
DHC (FEET)	1257	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	12.7	1									
DTB (FEET)	19.48	2									
DTB - DTW		3									
CAPACITY PER FOOT	0.74 - 4"	4									
	0.163 - 2"	WEATHER CONDITIONS: Clear, slight breeze									
3 WELL VOLUMES		WATER APPEARANCE / ODOR: SPH layer - No Samples Collected									
PURGE DATE		COMMENTS: water inside vault below plug									
START TIME											
END TIME											
AMT PURGED											
SAMPLE DATE		No Samples Collected									
SAMPLE TIME											
Analysis Request		CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE				
		40 ML VOA	5				HCL				
		1 LITER AMBER					NEAT				
		250 ML AMBER	1				NEAT				
		250 ML PLASTIC	1				HNO ₃				
		125 ML PLASTIC	1				HNO ₃				
		125 ML PLASTIC	1				H ₂ SO ₄				
		125 ML PLASTIC	1				NEAT				
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID		TEST PARAMETERS									
GAUGE DATE	11/29/18	TIME	0751								
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	954	1	Did not record readings								
DTB (FEET)	14.10	2									
DTB - DTW	4.56	3									
CAPACITY PER FOOT	0.74 - 4"	4									
	0.163 - 2"	WEATHER CONDITIONS: overcast, calm									
3 WELL VOLUMES	2	WATER APPEARANCE / ODOR: Clear, slight gwtint									
PURGE DATE	11/29										
START TIME	0755										
END TIME	0759	COMMENTS:									
AMT PURGED	2										
SAMPLE DATE	11/29/18										
SAMPLE TIME	1400										
Analysis Request		CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
		40 ML VOA		5		HCL					
		1 LITER AMBER				NEAT					
		250 ML AMBER		1		NEAT					
		250 ML PLASTIC		1		HNO ₃					
		125 ML PLASTIC		1		HNO ₃					
		125 ML PLASTIC		1		H ₂ SO ₄					
		125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11.27.18	TIME	0900							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	13.15	1	0838	7.57	14.34	1632	1.061	0.83	48	5
DTB (FEET)	24.11	2	0840	7.59	14.14	1631	1.06	0.83	44.9	10.8
DTB - DTW	10.44	3	0842	7.61	13.85	1627	1.058	0.83	43.5	15.2
CAPACITY PER FOOT	0.74 - 4"	4	0844	7.62	13.56	1625	1.056	0.83	42.2	18.5
	0.163 - 2"	WEATHER CONDITIONS: Clear, calm								
3 WELL VOLUMES	5 gals	WATER APPEARANCE / ODOR: clear -								
PURGE DATE	11/27/18	0905								
START TIME	0905									
END TIME	0910									
AMT PURGED	COMMENTS: water inside vault - below plug -									
SAMPLE DATE	Bailed 1.25 gals - will sample w/24 hrs									
SAMPLE TIME	11/28/18									
	0846									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/28/18	TIME	1605							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)		1	Did not record readings							
DTB (FEET)	7.94	2								
DTB - DTW	25.38	3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES		Clean								
PURGE DATE		WATER APPEARANCE / ODOR:								
START TIME										
END TIME		COMMENTS:								
AMT PURGED										
SAMPLE DATE	11/28/18									
SAMPLE TIME	1250									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011-EDB	40 ml VOA		2		Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS										
GAUGE DATE	11.27.18	TIME	0920								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	12.37	1	0818	7.07	14.48	1949	1.267	1	10.4	-71	
DTB (FEET)	17.47	2	0820	7.12	14.2	1947	1.266	1	10.3	-70.9	
DTB - DTW	5.1	3	0822	7.14	13.92	1949	1.267	1	10.6	-70.9	
CAPACITY PER FOOT	0.74 - 4"	4	0824	7.14	13.7	1951	1.268	1	11.1	-70.7	
	0.163 - 2"	WEATHER CONDITIONS: Clear, Calm									
3 WELL VOLUMES	3 gals	WATER APPEARANCE / ODOR:									
PURGE DATE		Clear - pink - muddy - has green slight odor									
START TIME	925	COMMENTS:									
END TIME	934										
AMT PURGED	3 gals	Barrel 3 gals									
SAMPLE DATE	11/28/18										
SAMPLE TIME	0825										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE						
	40 ML VOA		5		HCL						
	1 LITER AMBER				NEAT						
	250 ML AMBER		1		NEAT						
	250 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		H ₂ SO ₄						
	125 ML PLASTIC		1		NEAT						
8011 EDB	40ml VOA		2		Na ₂ S ₂ O ₃						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/29/18	TIME	1335							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	7.59	1								
DTB (FEET)	9.89	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES		Overcast, windy								
PURGE DATE		WATER APPEARANCE / ODOR:								
START TIME		gray, odor, sheen								
END TIME		COMMENTS:								
AMT PURGED		No water quality parameters taken - odor, sheen in. Did not								
SAMPLE DATE		purge - collected grab sample.								
SAMPLE TIME	1345									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/29/18	TIME	1305							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	752	1								
DTB (FEET)	9.89	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: overcast, windy								
3 WELL VOLUMES		WATER APPEARANCE / ODOR: gray, odor, sheer								
PURGE DATE		COMMENTS: No water Q. Parameters taken - well - shallow - did not purge - collected grab sample.								
START TIME										
END TIME										
AMT PURGED										
SAMPLE DATE										
SAMPLE TIME	1320									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/27/18	TIME	1147							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	25.57	1	0955	7.29	12.71	1788	1.162	0.91	2.4	-9.3
DTB (FEET)	35.25	2	0957	7.24	12.67	1789	1.163	0.91	22.6	-9.2
DTB - DTW	9.68	3	0959	7.22	12.7	1790	1.164	0.91	21.5	-8.6
CAPACITY PER FOOT	0.74 - 4"	4	1001	7.97	12.75	1791	1.164	0.91	20.5	-8.4
3 WELL VOLUMES	5	WEATHER CONDITIONS: Clear - slight breeze / ptly cldy 11/28 Calm								
PURGE DATE	11/27/18	WATER APPEARANCE / ODOR: Clear - pink - muddn last 3 bails								
START TIME	1150									
END TIME	1200 5:15	COMMENTS:								
AMT PURGED	3.75									
SAMPLE DATE	11/28/18									
SAMPLE TIME	1002									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/27/18	TIME	1140							
DHC (FEET)	14.2	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	14.24	1								
DTB (FEET)	20.36	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: Clear, slight breeze								
3 WELL VOLUMES		WATER APPEARANCE / ODOR: SPH layer								
PURGE DATE										
START TIME										
END TIME		COMMENTS: NO Samples Collected - SPH layer								
AMT PURGED										
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011 - EDB	40ml VOA		2		Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS										
GAUGE DATE	11/14/18	TIME	1140								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	23.3	1	0946	7.47	13.18	3035	1.913	1.59	22	425	
DTB (FEET)	30.44	2	0948	7.38	12.88	3047	1.981	1.6	17.5	38.1	
DTB - DTW	7.17	3	0950	7.33	12.73	3052	1.984	1.6	15.5	39.3	
CAPACITY PER FOOT	0.74 - 4"	4	0952	7.3	12.68	3055	1.986	1.6	14.4	39.7	
	0.163 - 2"	WEATHER CONDITIONS:								11-15-18	
3 WELL VOLUMES	4 gal	pty cldy, calm								Clear-calm	
PURGE DATE	11/14/18	WATER APPEARANCE / ODOR:									
START TIME	1143	Clear - pink - muddy end of purge									
END TIME	1151	COMMENTS:									
AMT PURGED	2.5										
SAMPLE DATE	11/15/18										
SAMPLE TIME	0951										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE						
	40 ML VOA		5		HCL						
	1 LITER AMBER				NEAT						
	250 ML AMBER		1		NEAT						
	250 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		H ₂ SO ₄						
	125 ML PLASTIC		1		NEAT						
8011D-EDB	40ml VOA		2		Na ₂ S ₂ O ₃						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/14/18	TIME	1155							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	13.35	1	1001	7.7	13.39	397	2.078	1.68	148	52.9
DTB (FEET)	19.43	2	1003	7.35	13	3219	2.092	1.69	29.8	57.3
DTB - DTW	6.08	3	1005	7.29	12.61	3227	2.097	1.7	29.7	58.1
CAPACITY PER FOOT	0.74 - 4"	4	1007	7.27	12.28	3230	2.1	1.7	29.1	57.8
	0.163 - 2"	WEATHER CONDITIONS: 11-15-18 ptly cldy, calm / clear - calm								
3 WELL VOLUMES	3 gal	WATER APPEARANCE / ODOR:								
PURGE DATE	11/14/18	Clear - brown/muddy end of bail.								
START TIME	1158									
END TIME	1203	COMMENTS:								
AMT PURGED	75 gal									
SAMPLE DATE	11/15/18									
SAMPLE TIME	1012									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS										
GAUGE DATE	11/4/18	TIME	1524								
DHC (FEET)	8.45	RUNS		TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	9.9	1									
DTB (FEET)	17.15	2									
DTB - DTW		3									
CAPACITY PER FOOT	0.74 - 4"	4									
	0.163 - 2"	WEATHER CONDITIONS:									
3 WELL VOLUMES											
PURGE DATE		WATER APPEARANCE / ODOR:									
START TIME		has hydrocarbons - No samples collected.									
END TIME		COMMENTS:									
AMT PURGED		.95 HC layer									
SAMPLE DATE											
SAMPLE TIME											
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE						
	40 ML VOA		5		HCL						
	1 LITER AMBER				NEAT						
	250 ML AMBER		1		NEAT						
	250 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		H ₂ SO ₄						
	125 ML PLASTIC		1		NEAT						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/14/18	TIME	1424							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	631	1	1100	8.47	20.66	32	0.021	0.01	79.5	57.3
DTB (FEET)	14.72	2	1102	7.51	15.41	10584	6.881	6.02	33.5	99.9
DTB - DTW	8.41	3	1114	7.38	14.97	10605	6.893	6.03	30.4	101.2
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: ptly cldy - breezy								
3 WELL VOLUMES	4 gals	WATER APPEARANCE / ODOR: clear - cldy - gran								
PURGE DATE	11/14/18									
START TIME	1426									
END TIME	1433	COMMENTS:								
AMT PURGED	4 gals									
SAMPLE DATE	11/15/18									
SAMPLE TIME	1433	1116								
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/14/18	TIME	1437							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	6.12	1	1222	823	22.03	2520	1.638	1.3	13.4	87.6
DTB (FEET)	16.16	2	1224	7.96	19.63	2596	1.687	1.35	49.5	87.8
DTB - DTW	10.04	3	1226	7.89	19.65	2660	1.69	1.35	47.8	86.8
CAPACITY PER FOOT	0.74 - 4"	4	1228	7.86	18.69	2663	1.692	1.35	47.9	85
	0.163 - 2"	WEATHER CONDITIONS: ptly cldy - calm / 11/15/18 - Clear - calm								
3 WELL VOLUMES	5 gals	WATER APPEARANCE / ODOR: Clear - slight yw tint								
PURGE DATE										
START TIME	1440									
END TIME	1447	COMMENTS:								
AMT PURGED	5 gals									
SAMPLE DATE	11/15/18									
SAMPLE TIME	1230									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/14/18	TIME	1504							
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	4.09	1	1201	7.92	12.09	2607	1.694	1.36	36.7	89.4
DTB (FEET)	22.81	2	1203	7.88	12.23	2605	1.693	1.36	33.9	95
DTB - DTW	18.75	3	1205	7.71	12.43	2608	1.695	1.36	33.5	99.1
CAPACITY PER FOOT	0.74 - 4"	4	1207	7.67	12.66	2611	1.697	1.36	33.2	101.3
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES	9 gals	WATER APPEARANCE / ODOR:								
PURGE DATE	11/14/18	clear - slight bw tint								
START TIME	1506									
END TIME	1517	COMMENTS:								
AMT PURGED	10 gals									
SAMPLE DATE	11/15/18									
SAMPLE TIME	1210									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER		1 + 1 Dup		NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID		TEST PARAMETERS								
GAUGE DATE		TIME								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	15.15	1	1131	7.62	15.68	3359	2.183	1.77	31.7	85
DTB (FEET)	2320	2	1133	7.59	15.51	3360	2.184	1.77	30.8	86.5
DTB - DTW	8.05	3	1135	7.58	15.33	3359	2.183	1.77	30.4	86.6
CAPACITY PER FOOT	0.74 - 4"	4	1137	7.57	15.1	3359	2.183	1.77	30.4	87
0.163 - 2"		WEATHER CONDITIONS: Pth Cloud - slight breeze								
3 WELL VOLUMES		11/15/18 - clear - calm								
PURGE DATE		WATER APPEARANCE / ODOR:								
START TIME		clear - pink - muddn @ end of purge								
END TIME		COMMENTS:								
AMT PURGED										
SAMPLE DATE										
SAMPLE TIME										
Analysis Request		CONTAINER TYPE	NUMBER OF CONTAINERS		PRESERVATIVE					
		40 ML VOA	5		HCL					
		1 LITER AMBER			NEAT					
		250 ML AMBER	1		NEAT					
		250 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		HNO ₃					
		125 ML PLASTIC	1		H ₂ SO ₄					
		125 ML PLASTIC	1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/14/18	TIME	1207							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	8.44	1	1024	8.26	17.49	35	0.022	0.01	68	34
DTB (FEET)	22.81	2	1026	7.39	15.57	3258	2.118	1.72	49.6	88.4
DTB - DTW	14.37	3	1028	7.38	13.45	3270	2.125	1.72	47.8	90.9
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: 11-15-18 pty cldy - calm / clear, calm								
3 WELL VOLUMES	7	WATER APPEARANCE / ODOR: Clear - cloudy - pink								
PURGE DATE	11/14	COMMENTS:								
START TIME	1210									
END TIME	1221									
AMT PURGED	8 gal									
SAMPLE DATE	11/15/18									
SAMPLE TIME	1032									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
SOIL + EDB										
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-14-18	TIME	0930							
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	14.1	1	0839	7.91	14.35	2552	1.659	1.33	16.4	102.9
DTB (FEET)	27.75	2	0841	7.92	14.08	2563	1.665	1.33	9.4	99.8
DTB - DTW	13.65	3	0843	7.92	13.89	2565	1.667	1.33	9.1	96.2
CAPACITY PER FOOT	0.74 - 4"	4	0845	7.92	13.71	2566	1.668	1.33	8.6	93.3
3 WELL VOLUMES	7 gals	WEATHER CONDITIONS: pty cldy, calm / 11-15-18 clear, calm								
PURGE DATE	11-14-18	WATER APPEARANCE / ODOR: clear - pink/brown @ end of purge								
START TIME	0932									
END TIME	0946	COMMENTS:								
AMT PURGED	7 gals									
SAMPLE DATE	11-15-18									
SAMPLE TIME	0846									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011 - EDB	40ml VOA		2		Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS										
GAUGE DATE	11-27-18	TIME	1205								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	22.72	1	1010	7.55	12.34	1656	1.076	0.84	34	31.5	
DTB (FEET)	33.2	2	1012	7.54	12.25	1655	1.076	0.84	34.6	32.5	
DTB - DTW	19.52	3	1014	7.54	12.16	1653	1.075	0.84	34.5	33.2	
CAPACITY PER FOOT	0.74 - 4"	4	1016	7.53	11.98	1656	1.076	0.84	34.6	34	
3 WELL VOLUMES	10	WEATHER CONDITIONS: Clear, slight breeze / ptly cldy, slight breeze									
PURGE DATE	11/27	WATER APPEARANCE / ODOR: clear - pink - brown/silty									
START TIME	1208										
END TIME	1227	COMMENTS:									
AMT PURGED	10										
SAMPLE DATE	11/28/18										
SAMPLE TIME	1020	collected Duplicate @ 1028									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE						
	40 ML VOA		5		HCL						
	1 LITER AMBER				NEAT						
	250 ML AMBER		1		NEAT						
	250 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		H ₂ SO ₄						
	125 ML PLASTIC		1		NEAT						
8011-EDB	40ml VOA		2		Na ₂ S ₂ O ₃						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/27/18	TIME	0941							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	18.95	1	0857	7.87	13.18	2017	1.311	1.04	44.5	22.6
DTB (FEET)	27.68	2	0859	7.83	12.39	2031	1.32	1.04	42.8	24.6
DTB - DTW	8.73	3	0901	7.8	11.81	2035	1.323	1.04	42.2	24.6
CAPACITY PER FOOT	0.74 - 4"	4	0903	7.79	11.32	2038	1.325	1.05	41	25
	0.163 - 2"	WEATHER CONDITIONS: clear, calm / 11/28/18 overcast, calm								
3 WELL VOLUMES	14	WATER APPEARANCE / ODOR: clear -								
PURGE DATE	11/27	START TIME 0945								
END TIME	0954	COMMENTS: Bailed 4 gals								
AMT PURGED	4									
SAMPLE DATE	11/28/18									
SAMPLE TIME	0904									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
BD11-EDB	40 ml VOA		2		Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/28/18	TIME	1535							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	9.1	1	1208	7.71	16.81	1719	1.118	0.87	138.8	-54.1
DTB (FEET)	16.45	2	1210	7.39	14.35	1755	1.14	0.89	11.8	-72.7
DTB - DTW	7.35	3	1212	7.33	14.11	1752	1.139	0.89	12.3	-70.7
CAPACITY PER FOOT	0.74 - 4"	4	1214	7.3	13.08	1774	1.153	0.91	11.8	-65.9
	0.163 - 2"	WEATHER CONDITIONS: overcast, slight breeze								
3 WELL VOLUMES	4	WATER APPEARANCE / ODOR: Clear - gray - murky - end of bail								
PURGE DATE	11/27									
START TIME	1540									
END TIME	1550	COMMENTS:								
AMT PURGED	4 gal									
SAMPLE DATE	11/28/18									
SAMPLE TIME	1218									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011-EDB	40ml VOA		2		Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/29/18	TIME	09:14							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)		1								
DTB (FEET)	15.45	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES		WATER APPEARANCE / ODOR:								
PURGE DATE										
START TIME										
END TIME		COMMENTS: was not able to locate well								
AMT PURGED										
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011-EDB	40 ml VOA		2		Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/21/18	TIME	1526							
DHC (FEET)	9.4	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	9.52	1								
DTB (FEET)	24.60	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: overcast, slight breeze								
3 WELL VOLUMES		WATER APPEARANCE / ODOR:								
PURGE DATE										
START TIME										
END TIME		COMMENTS:								
AMT PURGED		No Samples Collected - SPA layer								
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011-EDB	40ml VOA		2		Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/19/18	TIME	1545							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	8.09	1	0940	7.87	15.26	2283	1.484	1.18	29.9	16.6
DTB (FEET)	20.29	2	0942	7.58	15.1	2305	1.498	1.19	24.8	32.6
DTB - DTW	11.3	3	0944	7.51	14.77	2309	1.501	1.19	24.4	34
CAPACITY PER FOOT	0.74 - 4"	4	0946	7.46	14.44	2313	1.503	1.2	22.5	34.9
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES	60	Clear, calm								
PURGE DATE	11/19/18	WATER APPEARANCE / ODOR:								
START TIME	1549	clear - pink - muddy end of bail								
END TIME	1559	COMMENTS:								
AMT PURGED	5.25	WTR made vault below plug								
SAMPLE DATE	11/20/18									
SAMPLE TIME	0948									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS										
GAUGE DATE	11/19/18	TIME	1532								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	9.0	1	0916	7.81	615	8	1006	0	84.1	-85	
DTB (FEET)	1520	2	0918	7.24	1667	5963	3876	3.26	13	-531	
DTB - DTW	6.2	3	0920	7.19	15.69	6002	3901	3.28	12.2	-534	
CAPACITY PER FOOT	0.74 - 4"	4	0922	7.16	1527	6012	3908	3.29	12.1	-51.6	
	0.163 - 2"	WEATHER CONDITIONS: clear, calm									
3 WELL VOLUMES	3	WATER APPEARANCE / ODOR: clear - last bail - muddy									
PURGE DATE	11/19/18										
START TIME	1533										
END TIME	1543	COMMENTS:									
AMT PURGED	3										
SAMPLE DATE	11/20/18										
SAMPLE TIME	0922										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE						
	40 ML VOA		5		HCL						
	1 LITER AMBER				NEAT						
	250 ML AMBER		1		NEAT						
	250 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		H ₂ SO ₄						
	125 ML PLASTIC		1		NEAT						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS										
GAUGE DATE	11/14/18	TIME	1229								
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	13.64	1	1048	7.7	15.39	8476	5509	4.74	60	96.3	
DTB (FEET)	23.64	2	1050	7.61	14.93	8507	553	4.76	57.7	96.5	
DTB - DTW	30.00	3	1052	7.58	14.57	8526	5542	4.78	57.5	96.4	
CAPACITY PER FOOT	0.74 - 4"	4	1054	7.57	14.25	8531	5551	4.78	57.3	96.1	
	0.163 - 2"	WEATHER CONDITIONS: ptly cldy, slight breeze 11/15/18 - clear, calm									
3 WELL VOLUMES	5 gal	WATER APPEARANCE / ODOR: clean -									
PURGE DATE	11/14/18										
START TIME	1229										
END TIME	1237	COMMENTS:									
AMT PURGED	5 gal										
SAMPLE DATE	11/15/18										
SAMPLE TIME	1055										
Analysis Request	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE								
	40 ML VOA	5	HCL								
	1 LITER AMBER		NEAT								
	250 ML AMBER	1	NEAT								
	250 ML PLASTIC	1	HNO ₃								
	125 ML PLASTIC	1	HNO ₃								
	125 ML PLASTIC	1	H ₂ SO ₄								
	125 ML PLASTIC	1	NEAT								
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-14-18	TIME	0951							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	20.51	1	0858	8.4	13.66	31	0.02	0.01	80.5	94.4
DTB (FEET)	40.10	2	0900	8.44	13.85	3166	2.058	1.67	9.8	104.4
DTB - DTW	19.59	3	0902	8.43	13.7	3172	2.062	1.67	8.8	98.3
CAPACITY PER FOOT	0.74 - 4"	4	0904	8.42	13.63	3172	2.062	1.67	8.5	92.7
3 WELL VOLUMES	10 gals	WEATHER CONDITIONS: Overcast pty bdy - calm 11/15/18 - clear - calm								
PURGE DATE	11/14/18	WATER APPEARANCE / ODOR: Clear - slight yew tint								
START TIME	0953									
END TIME	1012	COMMENTS:								
AMT PURGED	10 gals									
SAMPLE DATE	11/15/18									
SAMPLE TIME	0907									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011-EDB	40 ml VOA		2		Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS										
GAUGE DATE	11-14-18	TIME	0858								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	16.94	1	0800	8.41	13.49	3635	2.363	1.93	36.2		
DTB (FEET)	33.15	2	0802	8.42	13.08	3665	2.382	1.94	34.4		
DTB - DTW	16.21	3	0804	8.49	12.76	3683	2.394	1.95	34.7		
CAPACITY PER FOOT	0.74 - 4"	4	0806	8.51	12.46	3696	2.402	1.96	35.3		
3 WELL VOLUMES	8 gals	WEATHER CONDITIONS: 11/15/ clear, calm									
PURGE DATE	11-14	WATER APPEARANCE / ODOR: clear / orange tint - slight odor									
START TIME	0902										
END TIME	1909	COMMENTS:									
AMT PURGED	8.5										
SAMPLE DATE	11-15										
SAMPLE TIME	0828										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE						
	40 ML VOA		5		HCL						
	1 LITER AMBER				NEAT						
	250 ML AMBER		1		NEAT						
	250 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		H ₂ SO ₄						
	125 ML PLASTIC		1		NEAT						
8011-EDB	40ml VOA		2		Na ₂ S ₂ O ₃						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-14-18	TIME	1019							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	5.42	1	0920	7.79	12.59	7538	4.9	4.18	60.7	138.7
DTB (FEET)	15.43	2	0922	7.72	12.65	7596	4.912	4.19	58	134.8
DTB - DTW	10.01	3	0924	7.67	12.78	7564	4.917	4.2	57	131.3
CAPACITY PER FOOT	0.74 - 4"	4	0926	7.64	12.97	7569	4.92	4.2	56.9	127.8
3 WELL VOLUMES	5 gals	WEATHER CONDITIONS: Pty cldy, calm / 11/15 - clear - calm								
PURGE DATE	11-14-18	WATER APPEARANCE / ODOR: clear, no odor								
START TIME	1021									
END TIME	1030	COMMENTS:								
AMT PURGED										
SAMPLE DATE	11-15-18									
SAMPLE TIME	0925									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID		TEST PARAMETERS									
GAUGE DATE		TIME									
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	26.42	1	0751	8.12	11.56	2134	1.387	1.1	48.7	116.1	
DTB (FEET)	51.15	2	0753	8.18	11.15	2145	1.394	1.1	47.8	112.2	
DTB - DTW	24.73	3	0755	8.2	10.94	2148	1.396	1.11	47.8	110.1	
CAPACITY PER FOOT	0.74 - 4"	4	0757	8.21	10.83	2151	1.398	1.11	48	108.3	
3 WELL VOLUMES	12 gals	WEATHER CONDITIONS: ptly cldy, calm / 11-15-18 clear, calm									
PURGE DATE	11-14	WATER APPEARANCE / ODOR:									
START TIME	1040										
END TIME	1100	COMMENTS: clear - cloudy - yew tint @ end									
AMT PURGED	6.9 gals	of purge									
SAMPLE DATE	11-15-18	11-15-18 -									
SAMPLE TIME	0802										
Analysis Request		CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
		40 ML VOA		5		HCL					
		1 LITER AMBER				NEAT					
		250 ML AMBER		1		NEAT					
		250 ML PLASTIC		1		HNO ₃					
		125 ML PLASTIC		1		HNO ₃					
		125 ML PLASTIC		1		H ₂ SO ₄					
		125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID		TEST PARAMETERS									
GAUGE DATE	11/27/18	TIME	1558								
DHC (FEET)	13.6	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	14.15	1									
DTB (FEET)	30.24	2									
DTB - DTW		3									
CAPACITY PER FOOT	0.74 - 4"	4									
	0.163 - 2"	WEATHER CONDITIONS: overcast, slight breeze									
3 WELL VOLUMES		WATER APPEARANCE / ODOR: SPH									
PURGE DATE											
START TIME											
END TIME		COMMENTS: No Samples collected - SPH layer									
AMT PURGED											
SAMPLE DATE											
SAMPLE TIME											
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE						
	40 ML VOA		5		HCL						
	1 LITER AMBER				NEAT						
	250 ML AMBER		1		NEAT						
	250 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		H ₂ SO ₄						
	125 ML PLASTIC		1		NEAT						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-7-18	TIME	1516							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	DRY	1								
DTB (FEET)	38.8	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
3 WELL VOLUMES	0.163 - 2"	WEATHER CONDITIONS: clear - windy								
PURGE DATE		WATER APPEARANCE / ODOR: - DRY -								
START TIME										
END TIME		COMMENTS:								
AMT PURGED										
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-18-18	TIME	1319 1335							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	44.87	1	1424	8.98	11.72	1828	1.188	0.93	23.2	-5.2
DTB (FEET)	63.5	2	1426	8.63	11.41	1828	1.188	0.93	8.8	-59.1
DTB - DTW	18.63	3	1428	8.59	11.32	1815	1.18	0.93	8.2	-74.2
CAPACITY PER FOOT	0.74 - 4"	4	1430	Did Not Record last reading						
3 WELL VOLUMES	9	WEATHER CONDITIONS: Clear, windy								
PURGE DATE	11-13-18	WATER APPEARANCE / ODOR: Clear - cloudy								
START TIME	1340									
END TIME	1345	COMMENTS: Lost suction @ 2.5 gals -								
AMT PURGED	2.5	will allow to rechg before collecting								
SAMPLE DATE	11-13	samples								
SAMPLE TIME	1430									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-13-18	TIME	1150							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	DRY	1								
DTB (FEET)	23.0	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES		Clear, Calm								
PURGE DATE		WATER APPEARANCE / ODOR:								
START TIME		DRY								
END TIME		COMMENTS:								
AMT PURGED		No Samples Collected								
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS										
GAUGE DATE	11-18-18	TIME	1152								
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	10.57	1	1456	8.82	9.92	1907	1.24	0.98	35.4	-254	
DTB (FEET)	61.45	2	1458	8.82	9.61	1910	1.241	0.98	35.1	-20.2	
DTB - DTW	50.88	3	1500	8.8	9.38	1910	1.242	0.98	34.7	-152	
CAPACITY PER FOOT	0.74 - 4"	4	1502	8.79	9.19	1911	1.242	0.98	34.6	-11	
	0.163 - 2"	WEATHER CONDITIONS:									
3 WELL VOLUMES	25	Clear, calm									
PURGE DATE	11-13	WATER APPEARANCE / ODOR:									
START TIME	1309	pink - cloudy - clear									
END TIME	1324	COMMENTS:									
AMT PURGED	9 gals	lost suction @ 9 gals - will allow to recharge before collecting samples									
SAMPLE DATE	11-13										
SAMPLE TIME	1305										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE						
801SD18260	40 ML VOA		5		HCL						
8015	1 LITER AMBER				NEAT						
8270	250 ML AMBER		1 + 1 duplicate		NEAT @ 1510						
WQCC - Total	250 ML PLASTIC		1		HNO ₃						
Diss	125 ML PLASTIC		1		HNO ₃						
Cations/Anions	125 ML PLASTIC		1		H ₂ SO ₄						
	125 ML PLASTIC		1		NEAT						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-13-18	TIME	1155							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	3.49	1	1248	7.8	10.97	4889	3.178	2.64	8.8	-94.3
DTB (FEET)	76.35	2	1250	7.81	10.72	4890	3.178	2.64	7.7	-95.4
DTB - DTW	72.86	3	1252	7.82	10.39	4903	3.187	2.64	9.1	-96.5
CAPACITY PER FOOT	0.74 - 4"	4	1254	7.83	10.18	4911	3.192	2.65	9.1	-96.7
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES	36 gal	Clear, calm								
PURGE DATE	11-13	WATER APPEARANCE / ODOR:								
START TIME	1205	brown - cloudy - clear								
END TIME	1248	COMMENTS:								
AMT PURGED	35 gal									
SAMPLE DATE	11-13									
SAMPLE TIME	1255									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
826018015	40 ML VOA		5		HCL					
8015	1 LITER AMBER				NEAT					
8270	250 ML AMBER		1		NEAT					
WQCC - Total	250 ML PLASTIC		1		HNO ₃					
- Diss	125 ML PLASTIC		1		HNO ₃					
Catrom	125 ML PLASTIC		1		H ₂ SO ₄					
Amrom	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID		TEST PARAMETERS									
GAUGE DATE	11-6-18	TIME	1320								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	DRY	1									
DTB (FEET)	33.9	2									
DTB - DTW		3									
CAPACITY PER FOOT	0.74 - 4"	4									
	0.163 - 2"	WEATHER CONDITIONS:									
3 WELL VOLUMES		Clear, breezy									
PURGE DATE		WATER APPEARANCE / ODOR:									
START TIME		DRY									
END TIME		COMMENTS:									
AMT PURGED											
SAMPLE DATE											
SAMPLE TIME											
Analysis Request		CONTAINER TYPE	NUMBER OF CONTAINERS				PRESERVATIVE				
		40 ML VOA	5				HCL				
		1 LITER AMBER					NEAT				
		250 ML AMBER	1				NEAT				
		250 ML PLASTIC	1				HNO ₃				
		125 ML PLASTIC	1				HNO ₃				
		125 ML PLASTIC	1				H ₂ SO ₄				
		125 ML PLASTIC	1				NEAT				
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-6-18	TIME	1350							
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	17.9	1	0804	7.79	12.54	2099	1.365	1.08	9.6	-26
DTB (FEET)	31.04	2	0806	7.56	12.46	2116	1.375	1.09	7.2	-16.7
DTB - DTW	13.14	3	0808	7.49	12.26	2119	1.377	1.09	7.2	-16.8
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: Clear - breezy								
3 WELL VOLUMES	logels	WATER APPEARANCE / ODOR: clear - no odor								
PURGE DATE	11-6-18									
START TIME	1400									
END TIME	1410	COMMENTS: 11-7-18 - clear day - slight breeze								
AMT PURGED	logels	Collecting Samples.								
SAMPLE DATE	11-7-18									
SAMPLE TIME	0815									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-6-18	TIME	1406							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	17.72	1	0836	7.18	14.16	2198	1.429	1.13	35.2	-75.1
DTB (FEET)	30.7	2	0838	7.17	14.25	2204	1.433	1.14	33.6	-70.4
DTB - DTW	12.98	3	0840	7.17	14.31	2211	1.437	1.14	31.5	-67.8
CAPACITY PER FOOT	0.74 - 4"	4	0842	7.17	14.41	2217	1.441	1.14	29.9	-65.7
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES	65 gals	Clear, breezy								
PURGE DATE	11-6-18	WATER APPEARANCE / ODOR:								
START TIME	1409	Clear - no odor								
END TIME	1418	COMMENTS:								
AMT PURGED	65 gals	11-7-18 @ 0840 - Clear day - slight breeze								
SAMPLE DATE	11-7-18									
SAMPLE TIME	0842									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-6-18	TIME	1428							
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	14.05	1	0857	7.48	14.43	2824	1.835	1.48	3.0	35.8
DTB (FEET)	18.59	2	0859	7.47	14.53	2822	1.835	1.47	2.9	40.8
DTB - DTW	4.54	3	0901	7.46	14.57	2820	1.833	1.47	2.6	44.4
CAPACITY PER FOOT	0.74 - 4"	4	0903	7.45	14.64	2653	1.725	1.38	2.4	47.3
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES	2.2	Clear - breezy								
PURGE DATE	11-6-18	WATER APPEARANCE / ODOR:								
START TIME	1430	Clear - no odor								
END TIME	1436	COMMENTS:								
AMT PURGED	2 gals	11-7-18 @ 0857 - Clear day - slight breeze								
SAMPLE DATE	11-7-18									
SAMPLE TIME	0905									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/29/18	TIME	0903							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	20.3	1								
DTB (FEET)	28.1	2	1420	746	13.1	1815	1.179	0.93	21	-667
DTB - DTW	7.8	3	1422	737	12.95	1815	1.18	0.93	19.5	-663
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: overcast, breezy								
3 WELL VOLUMES	4	WATER APPEARANCE / ODOR: clear, brown, muddy								
PURGE DATE	11/29/18									
START TIME	0928									
END TIME	0933	COMMENTS:								
AMT PURGED	1.5									
SAMPLE DATE		duplicate 1435								
SAMPLE TIME	1425									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/29/18	TIME	0914							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	24.27	1	1209	7.96	12.92	13	0.008	0	209.3	17.8
DTB (FEET)	47.3	2	1211	7.26	13.07	1862	1.211	0.95	15.4	-69.9
DTB - DTW	23.03	3	1213	7.21	12.97	1866	1.213	0.95	13.7	-71.3
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: overcast, windy.								
3 WELL VOLUMES	11	WATER APPEARANCE / ODOR: Clear -								
PURGE DATE	11/29									
START TIME	0930									
END TIME	0952	COMMENTS:								
AMT PURGED	9									
SAMPLE DATE	11/29									
SAMPLE TIME	1215									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-6-18	TIME	1450							
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	23.9	1	0926	7.73	12.54	10877	7.07	6.2	50.3	89
DTB (FEET)	38.3	2	0928	7.71	12.43	10874	7.068	6.2	49.9	88.6
DTB - DTW	14.4	3	0930	7.69	12.33	10869	7.065	6.19	49.8	88.8
CAPACITY PER FOOT	0.74 - 4"	4	0932	7.68	12.26	10870	7.065	6.19	46.6	88.4
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES	7 gals	Clear, breeze								
PURGE DATE	11-6-18	WATER APPEARANCE / ODOR:								
START TIME	1455	Clear - slight pink tint - no odor								
END TIME	1505	COMMENTS:								
AMT PURGED	7 gals	11-7-18 @ 0926 - clear day - slight breeze								
SAMPLE DATE	11-7-18	collected duplicate @ 0946								
SAMPLE TIME	0934									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS										
GAUGE DATE	11-6-18	TIME	1510								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	1625	1	1002	8.21	12.73	2	1001	0	241	219.4	
DTB (FEET)	45.5	2	1004	7.62	12.36	6983	4.539	385	56.5	190.4	
DTB - DTW	29.25	3	1006	7.69	12.32	7006	4.554	387	54.2	188.2	
CAPACITY PER FOOT	0.74 - 4"	4	1008	7.73	12.28	7019	4.562	388	54	180.4	
	0.163 - 2"	WEATHER CONDITIONS:									
3 WELL VOLUMES	14	Clear, breezy									
PURGE DATE	11-6-18	WATER APPEARANCE / ODOR:									
START TIME	1512	Clear-Cloudy - pink - brown (muddy)									
END TIME	1331	COMMENTS:									
AMT PURGED	9 gals	WTR turned murky after 9 gals - stopped.									
SAMPLE DATE	1-7-18	11-7-18 @ 1003 - Clear day - slight breeze									
SAMPLE TIME	1010										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE						
	40 ML VOA		5		HCL						
	1 LITER AMBER				NEAT						
	250 ML AMBER		1		NEAT						
	250 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		H ₂ SO ₄						
	125 ML PLASTIC		1		NEAT						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/29/18	TIME	0808							
DHC (FEET)	17.95	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	22	1								
DTB (FEET)	32.0	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
3 WELL VOLUMES	0.163 - 2"	WEATHER CONDITIONS: overcast, calm								
PURGE DATE		WATER APPEARANCE / ODOR:								
START TIME										
END TIME		COMMENTS: No Samples Collected								
AMT PURGED										
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS										
GAUGE DATE	11/29/18	TIME	1000								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	23.99	1	1237	7.92	12.76	1222	0.794	0.61	17.9	-64.7	
DTB (FEET)	46.0	2	1239	7.84	12.7	1224	0.796	0.61	14.2	-66.5	
DTB - DTW	16.01	3	1241	7.82	12.65	1224	0.795	0.61	16.7	-66.7	
CAPACITY PER FOOT	0.74 - 4"	4	1243	7.8	12.61	1223	0.795	0.61	15.8	-66.6	
	0.163 - 2"	WEATHER CONDITIONS: overcast, breezy									
3 WELL VOLUMES	36	WATER APPEARANCE / ODOR: clear - pink									
PURGE DATE	11/29										
START TIME	1040										
END TIME	1056	COMMENTS:									
AMT PURGED	11										
SAMPLE DATE	11/29										
SAMPLE TIME	1245										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE						
	40 ML VOA		5		HCL						
	1 LITER AMBER				NEAT						
	250 ML AMBER		1		NEAT						
	250 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		H ₂ SO ₄						
	125 ML PLASTIC		1		NEAT						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/29/18	TIME	0831							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	20.95	1	1152	7.4	13.77	1643	1.068	0.84	7.7	-83.9
DTB (FEET)	32.0	2	1154	7.3	13.59	1642	1.067	0.83	7.3	-81
DTB - DTW	11.05	3	1156	7.27	13.37	1643	1.068	0.84	6.8	-77.6
CAPACITY PER FOOT	0.74 - 4"	4	1158							
	0.163 - 2"	WEATHER CONDITIONS: overcast, calm								
3 WELL VOLUMES	25	WATER APPEARANCE / ODOR: clear, cloudy, pink end of purge								
PURGE DATE	11/29									
START TIME	0833									
END TIME	0900	COMMENTS:								
AMT PURGED	25									
SAMPLE DATE	11/29/18									
SAMPLE TIME	1200									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	12/3/18	TIME	1025							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	20.89	1	1452	7.2	22.71	7	0.004	0	92	79.9
DTB (FEET)	32.0	2	1454	7.33	12.64	1696	1.103	0.86	17.2	-82.4
DTB - DTW	11.1	3	1456	7.2	12.57	1690	1.099	0.86	14.8	-75.7
CAPACITY PER FOOT	0.74 - 4"	4	1458	7.17	12.46	1690	1.098	0.86	14	-70.7
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES	25	clear, breezy								
PURGE DATE	12/3	WATER APPEARANCE / ODOR:								
START TIME	1030	clear, cloudy								
END TIME	1104	COMMENTS:								
AMT PURGED	25	- Resampled well - did not include 8260								
SAMPLE DATE	12/3/18	containers w/ original samples. Resampled for								
SAMPLE TIME	11500	entire suite.								
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	10/29/18	TIME	1144							
DHC (FEET)	800	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	8.11	1								
DTB (FEET)	44.0	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES		WATER APPEARANCE / ODOR:								
PURGE DATE		3 pH layer								
START TIME										
END TIME		COMMENTS:								
AMT PURGED		No Samples Collected								
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID		TEST PARAMETERS									
GAUGE DATE		TIME									
DHC (FEET)	24.05	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	31.8	1									
DTB (FEET)	40.0	2									
DTB - DTW		3									
CAPACITY PER FOOT	0.74 - 4"	4									
3 WELL VOLUMES	0.163 - 2"	WEATHER CONDITIONS: overcast / calm									
PURGE DATE		WATER APPEARANCE / ODOR:									
START TIME											
END TIME		COMMENTS:									
AMT PURGED		No Samples Collected									
SAMPLE DATE											
SAMPLE TIME											
Analysis Request		CONTAINER TYPE	NUMBER OF CONTAINERS		PRESERVATIVE						
		40 ML VOA	5		HCL						
		1 LITER AMBER			NEAT						
		250 ML AMBER	1		NEAT						
		250 ML PLASTIC	1		HNO ₃						
		125 ML PLASTIC	1		HNO ₃						
		125 ML PLASTIC	1		H ₂ SO ₄						
		125 ML PLASTIC	1		NEAT						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID		TEST PARAMETERS									
ow-1		GAUGE DATE		11-7-18		TIME		1515			
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)	133	1	0925	8.8	11.84	1423	0.925	.72	5.5	361	
DTB (FEET)	94.55	2	0927	8.82	11.82	1426	0.927	.72	5.8	30.6	
DTB - DTW	93.22	3	0929	8.83	11.82	1426	0.927	.72	6.1	27	
CAPACITY PER FOOT	0.74 - 4"	4	0931	8.83	11.8	1427	0.928	.72	6.2	24.9	
	0.163 - 2"	WEATHER CONDITIONS: clear, windy									
3 WELL VOLUMES	206	WATER APPEARANCE / ODOR: clear - pink -									
PURGE DATE	11-7-18										
START TIME	1520										
END TIME	1630	COMMENTS: lost suction - will allow to recharge - sample next day.									
AMT PURGED	90										
SAMPLE DATE	11-8-18	11-8-18 - weather - clear, calm - Back to									
SAMPLE TIME	0933	collect sample - WTK - clear, slightly cloudy									
Analysis Request		CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
8260/8015		40 ML VOA		5		HCL					
8015		1 LITER AMBER				NEAT					
8015		250 ML AMBER		1		NEAT					
WQCC - Total		250 ML PLASTIC		1		HNO ₃					
WQCC - Diss-Filtered		125 ML PLASTIC		1		HNO ₃					
Cations / Anions		125 ML PLASTIC		1		H ₂ SO ₄					
Cations / Anions		125 ML PLASTIC		1		NEAT					
8015 - EDB		40 ML VOA		2		Na ₂ S ₂ O ₄					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-8-18	TIME	0940							
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	2.5	1	1050	783	12.22	3376	2.195	1.78	11.4	1036
DTB (FEET)	60.33	2	1052	7.75	11.92	3391	2.204	1.79	9.3	104.3
DTB - DTW	57.83	3	1054	7.73	11.73	3396	2.207	1.79	8.2	103.4
CAPACITY PER FOOT	0.74 - 4"	4	1056	7.71	11.54	3397	2.208	1.79	8.7	102.5
3 WELL VOLUMES	128 gals	WEATHER CONDITIONS: Clear, slight breeze								
PURGE DATE	1-8-18	WATER APPEARANCE / ODOR: Clear, no odor								
START TIME	0945									
END TIME	1050	COMMENTS:								
AMT PURGED	130 gals									
SAMPLE DATE	11/8/18	Duplicate Samples collected @ 1110								
SAMPLE TIME	1100									
Analysis Request	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE							
826018015	40 ML VOA	5	HCL							
8015	1 LITER AMBER		NEAT							
	250 ML AMBER	1	NEAT							
WQCC - Total	250 ML PLASTIC	1	HNO ₃							
WQCC - Diss. Silica	125 ML PLASTIC	1	HNO ₃							
Cations/Anions	125 ML PLASTIC	1	H ₂ SO ₄							
" "	125 ML PLASTIC	1	NEAT							
80115 EDB	40ml VOA	2	Na ₂ SO ₄							
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-6-18	TIME	1135							
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	20.7	1	1221	8.22	12.91	1375	0.894	0.69	21.9	916.6
DTB (FEET)	99.15	2	1223	8.17	12.98	1336	0.869	0.67	25.3	103.4
DTB - DTW	78.45	3	1225	8.1	12.98	1314	0.854	0.66	25	104.4
CAPACITY PER FOOT	0.74 - 4"	4	1227	8.07	12.96	1292	0.84	0.65	17.8	107
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES	174	Clean, breezy								
PURGE DATE	11-6-18	WATER APPEARANCE / ODOR:								
START TIME	1140	Clean - no odor								
END TIME	1225	COMMENTS:								
AMT PURGED	180 gal									
SAMPLE DATE	12/8									
SAMPLE TIME	1230									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
8260/8015D	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
8015D	250 ML AMBER		1		NEAT					
UCC Metals	250 ML PLASTIC		1		HNO ₃					
Total / Dissolved	125 ML PLASTIC		1		HNO ₃					
Dissolved	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011 EDB					Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-6-18	TIME	0900							
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	21.82	1	0940	7	13.63	1911	1.242	.98	60.9	-80.5
DTB (FEET)	46.52	2	0942	7.13	13.71	1897	1.233	.97	85.4	-82.9
DTB - DTW	24.7	3	0944	7.16	13.52	1905	1.238	.98	82.3	-78.4
CAPACITY PER FOOT	0.74 - 4"	4	0946	7.19	13.44	1904	1.238	.97	79.9	-75.9
	0.163 - 2"	WEATHER CONDITIONS: Clear calm								
3 WELL VOLUMES	55	WATER APPEARANCE / ODOR: Clear - no odor detected								
PURGE DATE										
START TIME	0930									
END TIME	0940	COMMENTS:								
AMT PURGED	60									
SAMPLE DATE										
SAMPLE TIME	0950									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
826018015D	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
8015D	250 ML AMBER		1		NEAT					
WQCC Metals	250 ML PLASTIC		1		HNO ₃					
WQCC Metals	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011-ED13	40ml VOA		2		Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-6-18	TIME	1030							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	17.22	1	1055	7.36	12.97	2044	1.329	1.05	4	-1.6
DTB (FEET)	51.08	2	1057	7.34	12.94	1983	1.289	1.02	7.6	-2.5
DTB - DTW	33.86	3	1059	7.35	12.96	1982	1.288	1.02	7.2	-3.3
CAPACITY PER FOOT	0.74 4"	4	1101	7.36	12.94	1983	1.289	1.02	6.7	-4.3
	0.163 - 2"	WEATHER CONDITIONS: Clear - breezy								
3 WELL VOLUMES	75	WATER APPEARANCE / ODOR: Clear - no odor								
PURGE DATE	11-6-18									
START TIME	1040									
END TIME	1101	COMMENTS:								
AMT PURGED	75									
SAMPLE DATE										
SAMPLE TIME	1105									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
82601801SD	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
8015D	250 ML AMBER		1		NEAT					
WQC Metals	250 ML PLASTIC		1		HNO ₃					
WQC Metals	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011 - EDB	40 ML VOA		2		Na2S2O3					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	12/3/18	TIME	1528							
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	21.3	1	1552	7.43	1051	1992	1.295	1.02	13.4	29.6
DTB (FEET)	49.90	2	1554	7.34	9.83	2002	1.301	1.03	13.6	28.3
DTB - DTW	28.6	3	1556	7.3	9.17	2010	1.306	1.03	12.6	27
CAPACITY PER FOOT	0.74 - 4"	4	1558	7.29	8.65	2013	1.308	1.03	12.6	25.7
	0.163 - 2"	WEATHER CONDITIONS: clear, slight breeze								
3 WELL VOLUMES	57	WATER APPEARANCE / ODOR: clear, no odor								
PURGE DATE	12/3/18									
START TIME	1530									
END TIME	1555	COMMENTS:								
AMT PURGED	58									
SAMPLE DATE	12/3/18									
SAMPLE TIME	1600									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
8011- EDB	40mlVOA		2		Na ₂ SO ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-7-18	TIME	1300							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	15.2	1	1328	8.06	13.02	1185	0.77	0.59	11.5	110.5
DTB (FEET)	64.00	2	1330	8.07	13	1185	0.77	0.59	11.1	101.3
DTB - DTW	48.8	3	1332	8.09	12.94	1185	0.771	0.59	10.6	94
CAPACITY PER FOOT	0.74 - 4"	4	1334	8.15	12.87	1187	0.771	0.59	10.4	857
	0.163 - 2"	WEATHER CONDITIONS: Clear - windy								
3 WELL VOLUMES	24 gals	WATER APPEARANCE / ODOR: pink - cloudy - clear								
PURGE DATE	11-7-18									
START TIME	1310									
END TIME	1335	COMMENTS:								
AMT PURGED	25 gals									
SAMPLE DATE	11-7-18									
SAMPLE TIME	1340									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
8260 / 8015D	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
8015D	250 ML AMBER		1		NEAT					
WQCC - Total	250 ML PLASTIC		1		HNO ₃					
WQCC - Diss	125 ML PLASTIC		1		HNO ₃					
Gen Chem	125 ML PLASTIC		1		H ₂ SO ₄					
Gen Chem	125 ML PLASTIC		1		NEAT					
8011D - EDB	80 ml VOA		2		Na ₂ S ₂ O ₃					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/7/18	TIME	1408							
DHC (FEET)	—	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	4.44	1	1429	8.27	13.29	1005	0.653	0.5	9.4	-53.9
DTB (FEET)	77.74	2	1431	8.26	13.35	1005	0.653	0.5	9.7	-48.4
DTB - DTW	103.3	3	1433	8.25	13.43	1005	0.653	0.5	10.2	-43.7
CAPACITY PER FOOT	0.74 - 4"	4	1435	8.25	13.47	1006	0.654	0.5	10.5	-39.3
	0.163 - 2"	WEATHER CONDITIONS: Clear - windy								
3 WELL VOLUMES	31 gals	WATER APPEARANCE / ODOR: Brown - cloudy - clear								
PURGE DATE	11/7/18									
START TIME	1411									
END TIME	1430	COMMENTS:								
AMT PURGED	32									
SAMPLE DATE	11/7/18									
SAMPLE TIME	1435									
Analysis Request	CONTAINER TYPE	NUMBER OF CONTAINERS	PRESERVATIVE							
826018015	40 ML VOA	5	HCL							
	1 LITER AMBER		NEAT							
8015D	250 ML AMBER	1	NEAT							
WQCC Tot	250 ML PLASTIC	1	HNO ₃							
WQCC DISS	125 ML PLASTIC	1	HNO ₃							
GenChem	125 ML PLASTIC	1	H ₂ SO ₄							
GenChem	125 ML PLASTIC	1	NEAT							
8011-FDB	40 ml VOA	2	Na ₂ S ₂ O ₄							
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/19/18	TIME	0855							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	19.93	1	1150	8.65	18.5	13	1009	0	20.0	24.2
DTB (FEET)	50.00	2	1152	8.2	12.9	7032	4571	3.88	42.1	23.3
DTB - DTW	30.07	3	1154	8.15	12.74	7062	4591	3.9	38.6	22.2
CAPACITY PER FOOT	0.74 - 4"	4	1154	8.11	12.64	7083	4604	3.91	37.2	22.2
	0.163 - 2"	WEATHER CONDITIONS: Clear, calm								
3 WELL VOLUMES	15	WATER APPEARANCE / ODOR: clear - no odor								
PURGE DATE	11/19/18	COMMENTS:								
START TIME	900									
END TIME	940									
AMT PURGED	15 gal									
SAMPLE DATE	11/19/18									
SAMPLE TIME	1156									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-19-18	TIME								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)		1								
DTB (FEET)	29.10	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES		WATER APPEARANCE / ODOR:								
PURGE DATE		COMMENTS:								
START TIME		Did not gauge - high H ₂ S levels in								
END TIME		Pond area - Not authorized to								
AMT PURGED		enter. 100								
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

Sample Location
WELL ID

STP-1 to EP2

TEST PARAMETERS

GAUGE DATE	11/8/18	TIME								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)		1								
DTB (FEET)		2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES		Clear, calm								
PURGE DATE		WATER APPEARANCE / ODOR:								
START TIME		cloudy, dk, gran, slight odor								
END TIME		COMMENTS:								
AMT PURGED		Collected grab sample from								
SAMPLE DATE	11/8/18	inlet into EP2.								
SAMPLE TIME	0830									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
8200 / 8015	40 ML VOA		5		HCL					
8015	1 LITER AMBER				NEAT					
8015	250 ML AMBER		1		NEAT					
WQCC Total	250 ML PLASTIC		1		HNO ₃					
WQCC - Dis-Filtered	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
BOD/COD/TDS	500ml/250ml/250ml		1 ea (3)		None/H ₂ SO ₄ /None					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/14/18	TIME	0835							
DHC (FEET)	21.42	RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	21.55	1								
DTB (FEET)	26.2	2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: Clear, calm								
3 WELL VOLUMES		WATER APPEARANCE / ODOR: yellow-oil layer NO Samples								
PURGE DATE										
START TIME										
END TIME		COMMENTS:								
AMT PURGED		HC layer = 0.13								
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/19/18	TIME	0833							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)		1								
DTB (FEET)		2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES		Clear, calm								
PURGE DATE		WATER APPEARANCE / ODOR:								
START TIME		NO Samples								
END TIME		COMMENTS:								
AMT PURGED		DRY - 19.07								
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/19/18	TIME	0843							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)		1								
DTB (FEET)		2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS: clear, calm								
3 WELL VOLUMES		WATER APPEARANCE / ODOR: DRY = 18.07								
PURGE DATE										
START TIME										
END TIME		COMMENTS: No samples								
AMT PURGED										
SAMPLE DATE										
SAMPLE TIME										
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/19/18	TIME	1105							
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)	11.89	1	1122	7.28	16.74	6.366	4.138	3.49	18.9	-51.3
DTB (FEET)	26.0	2	1124	7.27	16.69	6.382	4.149	3.50	18.3	-48.0
DTB - DTW	4.11	3	1126	7.26	16.60	6.400	4.160	3.51	18.1	-45.1
CAPACITY PER FOOT	0.74 - 4"	4	1128	7.26	16.54	6.415	4.167	3.52	17.8	-42.8
	0.163 - 2"	WEATHER CONDITIONS: Clear, calm								
3 WELL VOLUMES	7 gal	WATER APPEARANCE / ODOR: Clear w/ gwt tint								
PURGE DATE	11/19/18									
START TIME	1108									
END TIME	1120	COMMENTS:								
AMT PURGED	7 gal									
SAMPLE DATE	11/19/18									
SAMPLE TIME	1120									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER		2		NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
Cyanide					NaOH					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	11/8/18	TIME								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)		1								
DTB (FEET)		2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
3 WELL VOLUMES	0.163 - 2"	WEATHER CONDITIONS:								
PURGE DATE		WATER APPEARANCE / ODOR:								
START TIME		No Samples collected or gauging due to high levels of H ₂ S.								
END TIME		COMMENTS:								
AMT PURGED		One Attempt								
SAMPLE DATE		12/3/18 - attempted to sample wells - high								
SAMPLE TIME		H ₂ S - restricted - no access - unless only with breathing air.								
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

RW-1

WELL ID	TEST PARAMETERS									
GAUGE DATE	11-7-18	TIME								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)		1								
DTB (FEET)		2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES		WATER APPEARANCE / ODOR:								
PURGE DATE		COMMENTS:								
START TIME										
END TIME										
AMT PURGED		has recovery system installed								
SAMPLE DATE		on all wells - no measurements								
SAMPLE TIME		or samples collected.								
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS									
GAUGE DATE	N/A	TIME								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)
DTW (FEET)		1								
DTB (FEET)		2								
DTB - DTW		3								
CAPACITY PER FOOT	0.74 - 4"	4								
	0.163 - 2"	WEATHER CONDITIONS:								
3 WELL VOLUMES		WATER APPEARANCE / ODOR:								
PURGE DATE		COMMENTS:								
START TIME	1015	Process well - Encased								
END TIME	1025	Let well Run for 10-15 mins.								
AMT PURGED		before collecting samples								
SAMPLE DATE	11/20/18									
SAMPLE TIME	1030									
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE					
	40 ML VOA		5		HCL					
	1 LITER AMBER				NEAT					
	250 ML AMBER		1		NEAT					
	250 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		HNO ₃					
	125 ML PLASTIC		1		H ₂ SO ₄					
	125 ML PLASTIC		1		NEAT					
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter										
Completed by: /s/ Cheryl Johnson/Environmental Specialist										
Signature:										



MARATHON - GALLUP REFINERY

FOURTH QUARTER 2018

WELL ID	TEST PARAMETERS										
GAUGE DATE	11/19/18	TIME	0950								
DHC (FEET)		RUNS	TIME	pH	Temperature Degrees C	Conductivity (mS)	TDS (g/L)	Salinity (ppt)	Dissolved Oxygen (%)	ORP (mv)	
DTW (FEET)		1									
DTB (FEET)		2									
DTB - DTW		3									
CAPACITY PER FOOT	0.74 - 4"	4									
	0.163 - 2"	WEATHER CONDITIONS:									
3 WELL VOLUMES	WATER APPEARANCE / ODOR:										
PURGE DATE											11-19-18
START TIME											0951
END TIME	1001	COMMENTS: allowed water to run - 15-10 min before collecting samples.									
AMT PURGED											
SAMPLE DATE											
SAMPLE TIME											
Analysis Request	CONTAINER TYPE		NUMBER OF CONTAINERS		PRESERVATIVE						
3260B	40 ML VOA		5		HCL						
3270	1 LITER AMBER				NEAT						
	250 ML AMBER		1		NEAT						
Weee metals	250 ML PLASTIC		1		HNO ₃						
	125 ML PLASTIC		1		HNO ₃						
Nitrates	125 ML PLASTIC		1		H ₂ SO ₄						
	125 ML PLASTIC		1		NEAT						
Ammonia	250ml Plw		1		NaOH						
INSTRUMENTS USED: Oil/Water Interface Probe; Water Quality Meter											
Completed by: /s/ Cheryl Johnson/Environmental Specialist											
Signature:											

APPENDIX C
APPLICABLE STANDARDS
(ON ATTACHED CD)

TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 6 WATER QUALITY
PART 2 GROUND AND SURFACE WATER PROTECTION

20.6.2.1 ISSUING AGENCY: Water Quality Control Commission
[12-1-95; 20.6.2.1 NMAC - Rn, 20 NMAC 6.2.I.1000, 1-15-01]

20.6.2.2 SCOPE: All persons subject to the Water Quality Act, NMSA 1978, Sections 74-6-1 et seq.
[12-1-95; 20.6.2.2 NMAC - Rn, 20 NMAC 6.2.I.1001, 1-15-01]

20.6.2.3 STATUTORY AUTHORITY: Standards and Regulations are adopted by the commission under the authority of the Water Quality Act, NMSA 1978, Sections 74-6-1 through 74-6-17.
[2-18-77, 9-20-82, 12-1-95; 20.6.2.3 NMAC - Rn, 20 NMAC 6.2.I.1002, 1-15-01]

20.6.2.4 DURATION: Permanent.
[12-1-95; 20.6.2.4 NMAC - Rn, 20 NMAC 6.2.I.1003, 1-15-01]

20.6.2.5 EFFECTIVE DATE: December 1, 1995 unless a later date is cited at the end of a section.
[12-1-95, 11-15-96; 20.6.2.5 NMAC - Rn, 20 NMAC 6.2.I.1004, 1-15-01; A, 1-15-01]

20.6.2.6 OBJECTIVE: The objective of this Part is to implement the Water Quality Act, NMSA 1978, Sections 74-6-1 et seq.
[12-1-95; 20.6.2.6 NMAC - Rn, 20 NMAC 6.2.I.1005, 1-15-01]

20.6.2.7 DEFINITIONS: The following terms, as used in this part shall have the following meanings; terms defined in the Water Quality Act, but not defined in this part, will have the meaning given in the act.

A. Definitions that begin with the letter "A."

(1) **"abandoned well"** means a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be rehabilitated for its intended purpose or other purposes including monitoring and observation;

(2) **"abate" or "abatement"** means the investigation, containment, removal or other mitigation of water pollution;

(3) **"abatement plan"** means a description of any operational, monitoring, contingency and closure requirements and conditions for the prevention, investigation and abatement of water pollution, and includes Stage 1, Stage 2, or Stage 1 and 2 of the abatement plan, as approved by the secretary;

(4) **"adjacent properties"** means properties that are contiguous to the discharge site or property that would be contiguous to the discharge site but for being separated by a public or private right of way, including roads and highways.

B. Definitions that begin with the letter "B."

(1) **"background"** means, for purposes of ground water abatement plans only and for no other purposes in this part or any other regulations including but not limited to surface water standards, the amount of ground water contaminants naturally occurring from undisturbed geologic sources or water contaminants which the responsible person establishes are occurring from a source other than the responsible person's facility; this definition shall not prevent the secretary from requiring abatement of commingled plumes of pollution, shall not prevent responsible persons from seeking contribution or other legal or equitable relief from other persons, and shall not preclude the secretary from exercising enforcement authority under any applicable statute, regulation or common law;

C. Definitions that begin with the letter "C."

(1) **"casing"** means pipe or tubing of appropriate material, diameter and weight used to support the sides of a well hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent fluid from entering or leaving the well other than to or from the injection zone;

(2) **"cementing"** means the operation whereby a cementing slurry is pumped into a drilled hole and/or forced behind the casing;

(3) **"cesspool"** means a **"drywell"** that receives untreated domestic liquid waste containing human excreta, and which sometimes has an open bottom and/or perforated sides; a large capacity cesspool means a cesspool that receives liquid waste greater than that regulated by 20.7.3 NMAC;

(4) **“collapse”** means the structural failure of overlying materials caused by removal of underlying materials;

(5) **“commission”** means:

(a) the New Mexico water quality control commission or

(b) the department, when used in connection with any administrative and enforcement activity;

(6) **“confining zone”** means a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement from an injection zone;

(7) **“conventional mining”** means the production of minerals from an open pit or underground excavation; underground excavations include mine shafts, workings and air vents, but does not include excavations primarily caused by in situ extraction activities;

D. Definitions that begin with the letter “D.”

(1) **“daily composite sample”** means a sample collected over any twenty-four hour period at intervals not to exceed one hour and obtained by combining equal volumes of the effluent collected, or means a sample collected in accordance with federal permit conditions where a permit has been issued under the national pollutant discharge elimination system or for those facilities which include a waste stabilization pond in the treatment process where the retention time is greater than twenty (20) days, means a sample obtained by compositing equal volumes of at least two grab samples collected within a period of not more than twenty-four (24) hours;

(2) **“department”, “agency”, or “division”** means the New Mexico environment department or a constituent agency designated by the commission;

(3) **“discharge permit”** means a discharge plan approved by the department;

(4) **“discharge permit modification”** means a change to the requirements of a discharge permit that result from a change in the location of the discharge, a significant increase in the quantity of the discharge, a significant change in the quality of the discharge; or as required by the secretary;

(5) **“discharge permit renewal”** means the re-issuance of a discharge permit for the same, previously permitted discharge;

(6) **“discharge plan”** means a description of any operational, monitoring, contingency, and closure requirements and conditions for any discharge of effluent or leachate which may move directly or indirectly into ground water;

(7) **“discharge site”** means the entire site where the discharge and associated activities will take place;

(8) **“disposal”** means to abandon, deposit, inter or otherwise discard a fluid as a final action after its use has been achieved;

(9) **“domestic liquid waste”** means human excreta and water-carried waste from typical residential plumbing fixtures and activities, including but not limited to waste from toilets, sinks, bath fixtures, clothes or dishwashing machines and floor drains;

(10) **“domestic liquid waste treatment unit”** means a watertight unit designed, constructed and installed to stabilize only domestic liquid waste and to retain solids contained in such domestic liquid waste, including but not limited to aerobic treatment units and septic tanks;

(11) **“drywell”** means a well, other than an improved sinkhole or subsurface fluid distribution system, completed above the water table so that its bottom and sides are typically dry except when receiving fluids;

E. Definitions that begin with the letter “E.”

“experimental technology” means a technology which has not been proven feasible under the conditions in which it is being tested;

F. Definitions that begin with the letter “F.”

“fluid” means material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state;

G. Definitions that begin with the letter “G.”

“ground water” means interstitial water which occurs in saturated earth material and which is capable of entering a well in sufficient amounts to be utilized as a water supply;

H. Definitions that begin with the letter “H.”

“hazard to public health” exists when water which is used or is reasonably expected to be used in the future as a human drinking water supply exceeds at the time and place of such use, one or more of the standards of Subsection A of 20.6.2.3103 NMAC, or the naturally occurring concentrations, whichever is higher in determining whether a discharge would cause a hazard to public health to exist, the secretary shall investigate and

consider the purification and dilution reasonably expected to occur from the time and place of discharge to the time and place of withdrawal for use as human drinking water;

I. Definitions that begin with the letter “I.”

(1) **“improved sinkhole”** means a naturally occurring karst depression or other natural crevice found in volcanic terrain and other geologic settings which have been modified by man for the purpose of directing and emplacing fluids into the subsurface;

(2) **“injection”** means the subsurface emplacement of fluids through a well;

(3) **“injection zone”** means a geological formation, group of formations, or part of a formation receiving fluids through a well;

J. Definitions that begin with the letter “J.” [RESERVED]

K. Definitions that begin with the letter “K.” [RESERVED]

L. Definitions that begin with the letter “L.” [RESERVED]

M. Definitions that begin with the letter “M.”

“motor vehicle waste disposal well” means a well which receives or has received fluids from vehicular repair or maintenance activities;

N. Definitions that begin with the letter “N.”

“non-aqueous phase liquid” means an interstitial body of liquid oil, petroleum product, petrochemical, or organic solvent, including an emulsion containing such material;

O. Definitions that begin with the letter “O.”

(1) **“operational area”** means a geographic area defined in a project discharge permit where a group of wells or well fields in close proximity comprise a single class III well operation;

(2) **“owner of record”** means an owner of property according to the property records of the tax assessor in the county in which the discharge site is located at the time the application was deemed administratively complete;

P. Definitions that begin with the letter “P.”

(1) **“packer”** means a device lowered into a well to produce a fluid-tight seal within the casing;

(2) **“person”** means an individual or any other entity including partnerships, corporation, associations, responsible business or association agents or officers, the state or a political subdivision of the state or any agency, department or instrumentality of the United States and any of its officers, agents or employees;

(3) **“petitioner”** means a person seeking a variance from a regulation of the commission pursuant to Section 74-6-4(H) NMSA 1978;

(4) **“plugging”** means the act or process of stopping the flow of water, oil or gas into or out of a geological formation, group of formations or part of a formation through a borehole or well penetrating these geologic units;

(5) **“project discharge permit”** means a discharge permit which describes the operation of similar class III wells or well fields within one or more individual operational areas;

Q. Definitions that begin with the letter “Q.” [RESERVED]

R. Definitions that begin with the letter “R.”

(1) **“refuse”** includes food, swill, carrion, slops and all substances from the preparation, cooking and consumption of food and from the handling, storage and sale of food products, the carcasses of animals, junked parts of automobiles and other machinery, paper, paper cartons, tree branches, yard trimmings, discarded furniture, cans, oil, ashes, bottles, and all unwholesome material;

(2) **“responsible person”** means a person who is required to submit an abatement plan or who submits an abatement plan pursuant to this part;

S. Definitions that begin with the letter “S.”

(1) **“secretary”** or **“director”** means the secretary of the New Mexico department of environment or the director of a constituent agency designated by the commission;

(2) **“sewer system”** means pipelines, conduits, pumping stations, force mains, or other structures, devices, appurtenances or facilities used for collecting or conducting wastes to an ultimate point for treatment or disposal;

(3) **“sewerage system”** means a system for disposing of wastes, either by surface or underground methods, and includes sewer systems, treatment works, disposal wells and other systems;

(4) **“significant modification of Stage 2 of the abatement plan”** means a change in the abatement technology used excluding design and operational parameters, or re-location of 25 percent or more of the

compliance sampling stations, for any single medium, as designated pursuant to Paragraph (4) of Subsection E of 20.6.2.4106 NMAC;

(5) **“subsurface fluid distribution system”** means an assemblage of perforated pipes, drain tiles, or other mechanisms intended to distribute fluids below the surface of the ground;

(6) **“subsurface water”** means ground water and water in the vadose zone that may become ground water or surface water in the reasonably foreseeable future or may be utilized by vegetation;

T. Definitions that begin with the letter “T.”

(1) **“TDS”** means total dissolved solids as determined by the "calculation method" (sum of constituents), by the "residue on evaporation method at 180 degrees" of the *"U.S. geological survey techniques of water resource investigations,"* or by conductivity, as the secretary may determine;

(2) **“toxic pollutant”** means any water contaminant or combination of the water contaminants in the list below

- (a) acrolein (CAS 107-02-8)
- (b) acrylonitrile (CAS 107-13-1)
- (c) benzene and alkylbenzenes
 - (i) benzene (CAS 71-43-2)
 - (ii) toluene (methylbenzene) (CAS 108-88-3)
 - (iii) ethylbenzene (CAS 100-41-4)
 - (iv) xylenes (dimethyl benzene isomers): o-xylene (CAS 95-47-6); m-xylene (CAS 108-38-3); and p-xylene (CAS 106-42-3)
 - (v) styrene (ethenylbenzene) (CAS 100-42-5)
- (d) chlorinated benzenes
 - (i) monochlorobenzene (CAS 108-90-7)
 - (ii) 1,2-dichlorobenzene (ortho-dichlorobenzene) (CAS 95-50-1)
 - (iii) 1,4-dichlorobenzene (para-dichlorobenzene) (CAS 106-46-7)
 - (iv) 1,2,4-trichlorobenzene (CAS 120-82-1)
 - (v) 1,2,4,5-tetrachlorobenzene (CAS 95-94-3)
 - (vi) pentachlorobenzene (CAS 608-93-5)
 - (vii) hexachlorobenzene (CAS 118-74-1)
- (e) chlorinated phenols
 - (i) 2,4-dichlorophenol (CAS 120-83-2)
 - (ii) 2,4,5-trichlorophenol (CAS 95-95-4)
 - (iii) 2,4,6-trichlorophenol (CAS 88-06-2)
 - (iv) pentachlorophenol (PCP) (CAS 87-86-5)
- (f) chloroalkyl ethers
 - (i) bis (2-chloroethyl) ether (CAS 111-44-4)
 - (ii) bis (2-chloroisopropyl) ether (CAS 108-60-1)
 - (iii) bis (chloromethyl) ether (CAS 542-88-1)
- (g) 1,2-dichloropropane (propylene dichloride, PDC) (CAS 78-87-5)
- (h) dichloropropenes (CAS 542-75-6)
- (i) 1,4-dioxane (CAS 123-91-1)
- (j) halogenated ethanes
 - (i) 1,2-dibromoethane (ethylene dibromide, EDB) (CAS 106-93-4)
 - (ii) 1,1-dichloroethane (1,1-DCA) (CAS 75-34-3)
 - (iii) 1,2-dichloroethane (ethylene dichloride, EDC) (CAS 107-06-2)
 - (iv) 1,1,1-trichloroethane (TCA) (CAS 71-55-6)
 - (v) 1,1,2-trichloroethane (1,1,2-TCA) (CAS 79-00-5)
 - (vi) 1,1,2,2-tetrachloroethane (CAS 79-34-5)
 - (vii) hexachloroethane (CAS 67-72-1)
- (k) halogenated ethenes
 - (i) chloroethene (vinyl chloride) (CAS 75-01-4)
 - (ii) 1,1-dichloroethene (1,1-DCE) (CAS 75-35-4)
 - (iii) cis-1,2-dichloroethene (cis-1,2-DCE) (CAS 156-59-2)
 - (iv) trans-1,2-dichloroethene (trans-1,2-DCE) (CAS 156-60-5)
 - (v) trichloroethene (trichloroethylene, TCE) (CAS 79-01-6)
 - (vi) tetrachloroethene (perchloroethylene, PCE) (CAS 127-18-4)

- 41-0)
- (l) halogenated methanes
 - (i) bromodichloromethane (CAS 75-27-4)
 - (ii) bromomethane (CAS 74-83-9)
 - (iii) chloromethane (CAS 74-87-3)
 - (iv) dichlorodifluoromethane (fluorocarbon-12) (CAS 75-71-8)
 - (v) dichloromethane (methylene chloride) (CAS 75-09-2)
 - (vi) tribromomethane (bromoform) (CAS 75-25-2)
 - (vii) trichloromethane (chloroform) (CAS 67-66-3)
 - (viii) tetrachloromethane (carbon tetrachloride) (CAS 56-23-5)
 - (ix) trichlorofluoromethane (fluorocarbon-11) (CAS 75-69-4)
 - (m) hexachlorobutadiene (CAS 87-68-3)
 - (n) isophorone (CAS 78-59-1)
 - (o) methyl tertiary-butyl-ether (MTBE) (CAS 1634-04-4)
 - (p) nitroaromatics and high explosives (HE)
 - (i) nitrobenzene (CAS 98-95-3)
 - (ii) 2,4-dinitrotoluene (2,4-DNT) (CAS 121-14-2)
 - (iii) 2,6-dinitrotoluene (2,6-DNT) (CAS 606-20-2)
 - (iv) octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) (CAS 2691-35-0)
 - (v) hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) (CAS 121-82-4)
 - (vi) 2,4,6-trinitrotoluene (TNT) (CAS 118-96-7)
 - (vii) 2,4-dinitro-o-cresol (CAS 534-52-1)
 - (viii) dinitrophenols (CAS 51-28-5)
 - (q) nitrosamines
 - (i) N-nitrosodiethylamine (CAS 55-18-5)
 - (ii) N-nitrosodimethylamine (CAS 62-75-9)
 - (iii) N-nitrosodibutylamine (CAS 924-16-3)
 - (iv) N-nitrosodiphenylamine (CAS 86-30-6)
 - (v) N-nitrosopyrrolidine (CAS 930-55-2)
 - (r) perchlorate (CAS 14797-73-0)
 - (s) perfluorinated-chemicals (PFCs)
 - (i) perfluorohexane sulfonic acid (PHHxS) (CAS 355-46-4)
 - (ii) perfluorooctane sulfonate (PFOS) (CAS 1763-23-1)
 - (iii) perfluorooctanoic acid (PFOA) (CAS 335-67-1)
 - (t) pesticides
 - (i) Aldrin (CAS 309-00-2)
 - (ii) atrazine (CAS 1912-24-9)
 - (iii) chlordane (CAS 57-74-9)
 - (iv) DDT (CAS 50-29-3)
 - (v) dieldrin (CAS 60-57-1)
 - (vi) endosulfan (CAS 115-29-7)
 - (vii) endrin (CAS 72-20-8)
 - (viii) heptachlor (CAS 76-44-8)
 - (ix) hexachlorocyclohexane (HCH, lindane): alpha-HCH (CAS 319-84-6); beta-HCH (CAS 319-85-7); gamma-HCH (CAS 58-89-9); and, technical-HCH (CAS 608-73-1)
 - (x) hexachlorocyclopentadiene (CAS 77-47-4)
 - (xi) prometon (CAS 1610-18-0)
 - (xii) toxaphene (CAS 8001-35-2)
 - (u) phenol (CAS 108-95-2)
 - (v) phthalate esters
 - (i) dibutyl phthalate (CAS 84-74-2)
 - (ii) di-2-ethylhexyl phthalate (DEHP) (CAS 117-81-7)
 - (iii) diethyl phthalate (DEP) (CAS 84-66-2)
 - (iv) dimethyl phthalate (DMP) (CAS 131-11-3)
 - (w) polycyclic compounds
 - (i) benzidine (CAS 92-87-5)

- (ii) dichlorobenzidine (CAS 91-94-1)
 - (iii) diphenylhydrazine (CAS 122-66-7)
 - (iv) polychlorinated biphenyls (PCBs) (CAS 1336-36-3)
 - (x) polynuclear aromatic hydrocarbons (PAHs)
 - (i) anthracene (CAS 120-12-7)
 - (ii) benzo(a)pyrene (CAS 50-32-8)
 - (iii) 3,4-benzofluoranthene (CAS 205-99-2)
 - (iv) benzo(k)fluoranthene (CAS 207-08-9)
 - (v) fluoranthene (CAS 206-44-0)
 - (vi) fluorene (CAS 86-73-7)
 - (vii) naphthalene (CAS 91-20-3)
 - (viii) 1-methylnaphthalene (CAS 90-12-0)
 - (ix) 2-methylnaphthalene (CAS 91-57-6)
 - (x) phenanthrene (CAS 85-01-8)
 - (xi) pyrene (CAS 129-00-0)
 - (y) thiolane 1,1 dioxide (sulfolane) (CAS 126-33-0)
 - U. Definitions that begin with the letter "U." [RESERVED]
 - V. Definitions that begin with the letter "V."
 - (1) **"vadose zone"** means earth material below the land surface and above ground water, or in between bodies of ground water
 - W. Definitions that begin with the letter "W."
 - (1) **"wastes"** means sewage, industrial wastes, or any other liquid, gaseous or solid substance which will pollute any waters of the state;
 - (2) **"water"** means all water including water situated wholly or partly within or bordering upon the state, whether surface or subsurface, public or private, except private waters that do not combine with other surface or subsurface water;
 - (3) **"water contaminant"** means any substance that could alter if discharged or spilled the physical, chemical, biological or radiological qualities of water; "water contaminant" does not mean source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954;
 - (4) **"watercourse"** means any river, creek, arroyo, canyon, draw, or wash, or any other channel having definite banks and beds with visible evidence of the occasional flow of water;
 - (5) **"water pollution"** means introducing or permitting the introduction into water, either directly or indirectly, of one or more water contaminants in such quantity and of such duration as may with reasonable probability injure human health, animal or plant life or property, or to unreasonably interfere with the public welfare or the use of property;
 - (6) **"well"** means: (1) A bored, drilled, or driven shaft; (2) A dug hole whose depth is greater than the largest surface dimension; (3) An improved sinkhole; or (4) A subsurface fluid distribution system;
 - (7) **"well stimulation"** means a process used to clean the well, enlarge channels, and increase pore space in the interval to be injected, thus making it possible for fluids to move more readily into the injection zone; well stimulation includes, but is not limited to, (1) surging, (2) jetting, (3) blasting, (4) acidizing, (5) hydraulic fracturing.
 - X. Definitions that begin with the letter "X." [RESERVED]
 - Y. Definitions that begin with the letter "Y." [RESERVED]
 - Z. Definitions that begin with the letter "Z." [RESERVED]
- [1-4-68, 4-20-68, 11-27-70, 9-3-72, 4-11-74, 8-13-76, 2-18-77, 6-26-80, 7-2-81, 1-29-82, 9-20-82, 11-17-84, 3-3-86, 8-17-91, 8-19-93, 12-1-95; 20.6.2.7 NMAC - Rn, 20 NMAC 6.2.I.1101, 1-15-01; A, 1-15-01; A, 12-1-01; A, 9-15-02; A, 9-26-04; A, 7-16-06; A, 8-1-14; A, 12-21-18]

20.6.2.8 SEVERABILITY: If any section, subsection, individual standard or application of these standards or regulations is held invalid, the remainder shall not be affected.

[2-18-77, 12-1-95; 20.6.2.8 NMAC - Rn, 20 NMAC 6.2.I.1007, 1-15-01]

20.6.2.9 DOCUMENTS: Documents referenced in the part may be viewed at the New Mexico environment department, ground water quality bureau, Harold Runnels building, 1190 St. Francis Drive, Santa Fe, New Mexico 87503.

[12-1-95; 20.6.2.9 NMAC - Rn, 20 NMAC 6.2.I.1006, 1-15-01; A, 12-1-01]

20.6.2.10 LIMITATIONS: These regulations do not apply to the following:

A. Any activity or condition subject to the authority of the environmental improvement board pursuant to the Hazardous Waste Act, NMSA 1978, Sections 74-4-1 to -14, the Ground Water Protection Act, NMSA 1978, Sections 74-6B-1 to -14, or the Solid Waste Act, NMSA 1978, Sections 74-9-1 to -25, except to abate water pollution or to control the disposal or use of septage and sludge; or

B. Any activity or condition subject to the authority of the oil conservation commission pursuant to the provisions of the Oil and Gas Act, NMSA 1978, Section 70-2-12 and other laws conferring power on the oil conservation commission and the oil conservation division of the energy, minerals and natural resources department to prevent or abate water pollution.

[N, 12-21-18]

20.6.2.11[0] - 20.6.2.1199: [RESERVED]

[12-1-95; 20.6.2.10 - 20.6.2.1199 NMAC - Rn, 20 NMAC 6.2.I.1008-1100, 1102-1199, 1-15-01]

20.6.2.1200 PROCEDURES:

[12-1-95; 20.6.2.1200 NMAC - Rn, 20 NMAC 6.2.I.1200, 1-15-01]

20.6.2.1201 NOTICE OF INTENT TO DISCHARGE:

A. Except for the notices specified in paragraphs (1) and (2) of this subsection, any person intending to make a new water contaminant discharge or to alter the character or location of an existing water contaminant discharge, unless the discharge is being made or will be made into a community sewer system or subject to the Liquid Waste Disposal Regulations adopted by the New Mexico environmental improvement board, shall file a notice with the ground water quality bureau of the department for discharges that may affect ground water, and/ or the surface water quality bureau of the department for discharges that may affect surface water.

(1) Notices regarding discharges from facilities for the production, refinement, pipeline transmission of oil and gas or products thereof, the oil field service industry as related to oil and gas production activities, oil field brine production wells, and carbon dioxide facilities shall be filed with the oil conservation division of the energy, minerals and natural resources department,

(2) Notices regarding discharges related to geothermal resources, as defined in Section 71-9-3 of the Geothermal Resources Development Act, NMSA 1978, Sections 71-9-1 to -11 (2016) shall be filed with the energy conservation and management division of the energy, minerals and natural resources department.

B. Except for the notices specified in paragraphs (1) and (2) of this subsection any person intending to inject fluids into a well, including a subsurface distribution system, unless the injection is being made subject to the Liquid Waste Disposal Regulations adopted by the New Mexico environmental improvement board, shall file a notice with the ground water quality bureau of the department.

(1) Notices regarding injections to wells associated with oil and gas facilities as described in Paragraph (1) of Subsection A of 20.6.2.1201 NMAC shall be filed with the oil conservation division.

(2) Notices regarding injections to wells associated with exploration, development or production of geothermal resources, as described in Paragraph (2) of Subsection A of 20.6.2.1201 NMAC, shall be filed with the energy conservation and management division of the energy, minerals and natural resources department pursuant to the Geothermal Resources Development Act, NMSA 1978, Sections 71-9-1 to -11 (2016).

C. Notices shall state:

- (1) the name of the person making the discharge;
- (2) the address of the person making the discharge;
- (3) the location of the discharge;
- (4) an estimate of the concentration of water contaminants in the discharge; and
- (5) the quantity of the discharge.

D. Based on information provided in the notice of intent, the department will notify the person proposing the discharge as to which of the following apply:

- (1) a discharge permit is required;
- (2) a discharge permit is not required;
- (3) the proposed injection well will be added to the department's underground injection well inventory;
- (4) the proposed injection activity or injection well is prohibited pursuant to 20.6.2.5004 NMAC.

[1-4-68, 9-5-69, 9-3-72, 2-17-74, 2-20-81, 12-1-95; 20.6.2.1201 NMAC - Rn, 20 NMAC 6.2.I.1201, 1-15-01; A, 12-1-01; A, 12-21-18]

20.6.2.1202 FILING OF PLANS AND SPECIFICATIONS--SEWERAGE SYSTEMS:

A. Any person proposing to construct a sewerage system or proposing to modify any sewerage system in a manner that will change substantially the quantity or quality of the discharge from the system shall file plans and specifications of the construction or modification with ground water quality bureau of the department for discharges that may affect ground water, and/or the surface water quality bureau of the department for discharges that may affect surface water. Modifications having a minor effect on the character of the discharge from sewerage systems shall be reported as of January 1 and June 30 of each year to the ground water quality bureau of the department for discharges that may affect ground water, or the surface water quality bureau of the department for discharges that may affect surface water.

B. Plans, specifications and reports required by this section, if related to facilities for the production, refinement and pipeline transmission of oil and gas, or products thereof, shall be filed instead with the oil conservation division.

C. Plans and specifications required to be filed under this section must be filed prior to the commencement of construction.

[1-4-68, 9-3-72, 2-20-81, 12-1-95; 20.6.2.1202 NMAC - Rn, 20 NMAC 6.2.I.1202, 1-15-01; A, 12-1-01]

20.6.2.1203 NOTIFICATION OF DISCHARGE-REMOVAL:

A. With respect to any discharge from any facility of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, the following notifications and corrective actions are required:

(1) As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, any person in charge of the facility shall orally notify the chief of the ground water quality bureau of the department, or the appropriate counterpart in any constituent agency delegated responsibility for enforcement of these rules as to any facility subject to such delegation. To the best of that person's knowledge, the following items of information shall be provided:

(a) the name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;

(b) the name and address of the facility;

(c) the date, time, location, and duration of the discharge;

(d) the source and cause of discharge;

(e) a description of the discharge, including its chemical composition;

(f) the estimated volume of the discharge; and

(g) any actions taken to mitigate immediate damage from the discharge.

(2) When in doubt as to which agency to notify, the person in charge of the facility shall notify the chief of the ground water quality bureau of the department. If that department does not have authority pursuant to commission delegation, the department shall notify the appropriate constituent agency.

(3) Within one week after the discharger has learned of the discharge, the facility owner and/or operator shall send written notification to the same department official, verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

(4) The oral and written notification and reporting requirements contained in this Subsection A are not intended to be duplicative of discharge notification and reporting requirements promulgated by the oil conservation commission (OCC) or by the oil conservation division (OCD); therefore, any facility which is subject to OCC or OCD discharge notification and reporting requirements need not additionally comply with the notification and reporting requirements herein.

(5) As soon as possible after learning of such a discharge, the owner/operator of the facility shall take such corrective actions as are necessary or appropriate to contain and remove or mitigate the damage caused by the discharge.

(6) If it is possible to do so without unduly delaying needed corrective actions, the facility owner/operator shall endeavor to contact and consult with the chief of the ground water quality bureau of the department or appropriate counterpart in a delegated agency, in an effort to determine the department's views as to what further corrective actions may be necessary or appropriate to the discharge in question. In any event, no later

than fifteen (15) days after the discharger learns of the discharge, the facility owner/operator shall send to said Bureau Chief a written report describing any corrective actions taken and/or to be taken relative to the discharge. Upon a written request and for good cause shown, the bureau chief may extend the time limit beyond fifteen (15) days.

(7) The bureau chief shall approve or disapprove in writing the foregoing corrective action report within thirty (30) days of its receipt by the department. In the event that the report is not satisfactory to the department, the bureau chief shall specify in writing to the facility owner/operator any shortcomings in the report or in the corrective actions already taken or proposed to be taken relative to the discharge, and shall give the facility owner/operator a reasonable and clearly specified time within which to submit a modified corrective action report. The bureau chief shall approve or disapprove in writing the modified corrective action report within fifteen (15) days of its receipt by the department.

(8) In the event that the modified corrective action report also is unsatisfactory to the department, the facility owner/operator has five (5) days from the notification by the bureau chief that it is unsatisfactory to appeal to the department secretary. The department secretary shall approve or disapprove the modified corrective action report within five (5) days of receipt of the appeal from the bureau chief's decision. In the absence of either corrective action consistent with the approved corrective action report or with the decision of the secretary concerning the shortcomings of the modified corrective action report, the department may take whatever enforcement or legal action it deems necessary or appropriate.

(9) If the secretary determines that the discharge causes or may with reasonable probability cause water pollution in excess of the standards and requirements of Section 20.6.2.4103 NMAC, and the water pollution will not be abated within one hundred and eighty (180) days after notice is required to be given pursuant to Paragraph (1) of Subsection A of Section 20.6.2.1203 NMAC, the secretary may notify the facility owner/operator that he is a responsible person and that an abatement plan may be required pursuant to Section 20.6.2.4104 and Subsection A of Section 20.6.2.4106 NMAC.

B. Exempt from the requirements of this section are continuous or periodic discharges which are made:

(1) in conformance with regulations of the commission and rules, regulations or orders of other state or federal agencies; or

(2) in violation of regulations of the commission, but pursuant to an assurance of discontinuance or schedule of compliance approved by the commission or one of its duly authorized constituent agencies.

C. As used in this section and in Sections 20.6.2.4100 through 20.6.2.4115 NMAC, but not in other sections of this part:

(1) "discharge" means spilling, leaking, pumping, pouring, emitting, emptying, or dumping into water or in a location and manner where there is a reasonable probability that the discharged substance will reach surface or subsurface water;

(2) "facility" means any structure, installation, operation, storage tank, transmission line, motor vehicle, rolling stock, or activity of any kind, whether stationary or mobile;

(3) "oil" means oil of any kind or in any form including petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes;

(4) "operator" means the person or persons responsible for the overall operations of a facility; and

(5) "owner" means the person or persons who own a facility, or part of a facility.

D. Notification of discharge received pursuant to this part or information obtained by the exploitation of such notification shall not be used against any such person in any criminal case, except for perjury or for giving a false statement.

E. Any person who has any information relating to any discharge from any facility of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, is urged to notify the chief of the ground water quality bureau of the department. Upon such notification, the secretary may require an owner/operator or a responsible person to perform corrective actions pursuant to Paragraphs (5) and (9) of Subsection A of Section 20.6.2.1203 NMAC.

[2-17-74, 2-20-81, 12-24-87, 12-1-95; 20.6.2.1203 NMAC - Rn, 20 NMAC 6.2.I.1203, 1-15-01; A, 12-1-01; A, 12-21-18]

20.6.2.1204 - 20.6.2.1209 [RESERVED]

[12-1-95; 20.6.2.1204 - 20.6.2.1209 NMAC - Rn, 20 NMAC 6.2.I.1204-1209, 1-15-01]

20.6.2.1210 VARIANCE PETITIONS:

A. Any person seeking a variance pursuant to Section 74-6-4(H) NMSA 1978, shall do so by filing a written petition with the commission. The petitioner may submit with his petition any relevant documents or material which the petitioner believes would support his petition. Petitions shall:

- (1) state the petitioner's name and address;
- (2) state the date of the petition;
- (3) describe the facility or activity for which the variance is sought;
- (4) state the address or description of the property upon which the facility is located;
- (5) describe the water body or watercourse affected by the discharge for which the variance is sought and provide information on uses of water that may be affected;
- (6) identify the regulation of the commission from which the variance is sought;
- (7) state in detail the extent to which the petitioner wishes to vary from the regulation;
- (8) state why the petitioner believes that compliance with the regulation will impose an unreasonable burden upon his activity; and
- (9) state in detail how any water pollution above standards will be abated; and
- (10) state the period of time for which the variance is desired including all reasons, data, reports and any other information demonstrating that such time period is justified and reasonable.

B. The variance petition shall be reviewed in accordance with the adjudicatory procedures of 20 NMAC 1.3.

C. The commission may grant the requested variance, in whole or in part, may grant the variance subject to conditions, or may deny the variance. If the variance is granted in whole or in part, or subject to conditions, the commission shall specify the length of time that the variance shall be in place.

D. For variances associated with a discharge permit or abatement plan, the existence and nature of the variance shall be disclosed in all public notices applicable to the discharge permit or abatement plan.

E. For variances granted for a period in excess of five years, the petitioner shall provide to the department for review a variance compliance report at five year intervals to demonstrate that the conditions of the variance are being met, including notification of any changed circumstances or newly-discovered facts that are material to the variance. At such time as the department determines the report is administratively complete, the department shall post the report on its website, and mail or e-mail notice of its availability to those persons on a general and facility-specific list maintained by the department who have requested notice of discharge permit applications, and any person who participated in the variance process. If such conditions are not being met, or there is evidence indicating changed circumstances or newly-discovered facts or conditions that were unknown at the time the variance was initially granted, any person, including the department, may request a hearing before the commission to revoke, modify, or otherwise reconsider the variance within 90 days of the issuance of the notice of availability of the report.

F. An order of the commission is final and bars the petitioner from petitioning for the same variance without special permission from the commission. The commission may consider, among other things, the development of new information and techniques to be sufficient justification for a second petition. If the petitioner, or his authorized representative, fails to appear at the public hearing on the variance petition, the commission shall proceed with the hearing on the basis of the petition. A variance may not be extended or renewed unless a new petition is filed and processed in accordance with the procedures established by this section.

[7-19-68, 11-27-70, 9-3-72, 2-20-81, 11-15-96; 20.6.2.1210 NMAC - Rn, 20 NMAC 6.2.I.1210, 1-15-01; A, 12-21-18]

20.6.2.1211 - 20.6.2.1219: [RESERVED]

[12-1-95; 20.6.2.1211 - 20.6.2.1219 NMAC - Rn, 20 NMAC 6.2.I.1211-1219, 1-15-01]

20.6.2.1220 PENALTIES ENFORCEMENT, COMPLIANCE ORDERS, PENALTIES, ASSURANCE OF DISCONTINUANCE.:

Failure to comply with the Water Quality Act, or any regulation or standard promulgated pursuant to the Water Quality Act is a prohibited act. If the secretary determines that a person has violated or is violating a requirement of the Water Quality Act or any regulation promulgated thereunder or is exceeding any water quality standard or ground water standard contained in commission regulations, or is not complying with a condition or provision of an approved or modified abatement plan, discharge plan, or permit issued pursuant to the Water Quality Act, the secretary may issue a compliance order, assess a penalty, commence a

civil action in district court, or accept an assurance of discontinuance in accordance with NMSA 1978, Section 74-6-10 of the Water Quality Act.

[12-1-95; 20.6.2.1220 NMAC - Rn, 20 NMAC 6.2.I.1220, 1-15-01]

20.6.2.1221 - 20.6.2.1999: [RESERVED]

[12-1-95; 20.6.2.1221 - 20.6.2.1999 NMAC - Rn, 20 NMAC 6.2.I.1221-2099, 1-15-01]

20.6.2.2000 SURFACE WATER PROTECTION:

[12-1-95; 20.6.2.2000 NMAC - Rn, 20 NMAC 6.2.II, 1-15-01]

20.6.2.2001 PROCEDURES FOR CERTIFICATION OF FEDERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS:

A. This section applies to the state certification of draft national pollutant discharge elimination system (NPDES) permits under Section 401 of the federal Clean Water Act. The purpose of such certification is to reasonably ensure that the permitted activities will be conducted in a manner that will comply with applicable water quality standards, including the antidegradation policy, and the statewide water quality management plan.

B. After review of a draft permit, the department will either: (1) certify that the discharge will comply with the applicable provisions of Sections 208(e), 301, 302, 303, 306 and 307 of the federal Clean Water Act and with appropriate requirements of state law; (2) certify that the discharge will comply with the applicable provisions of Sections 208(e), 301, 302, 303, 306 and 307 of the Clean Water Act and with appropriate requirements of state law upon inclusion of specified conditions in the permit and include the justification for the conditions; or (3) deny certification and include reasons for the denial. If the department does not act on the certification within the time prescribed by the federal permitting agency for such action, the authority to do so shall be waived.

C. Pursuant to federal regulations at 40 CFR 124.10(c), the U.S. environmental protection agency provides notice of draft NPDES permits to the applicant (except for general permits); various local, state, federal, tribal and pueblo government agencies; and other interested parties, and it allows at least 30 days of public comment. To the extent practicable, the department will provide public notice that the department is reviewing a draft NPDES permit for the purpose of preparing a state certification or denial pursuant to Section 401 of the federal Clean Water Act jointly with the notice provided by the U.S. environmental protection agency. The department will also post notice on its website.

D. When joint notice is impractical, the department shall provide notice that the department is reviewing a draft NPDES permit for purpose of preparing a state certification or denial pursuant to Section 401 of the federal Clean Water Act as follows:

- (1) for general permits by:
 - (a) posting notice on the department's website;
 - (b) publishing notice in at least one newspaper of general circulation;
 - (c) mailing or e-mailing notice to those persons on the general mailing list maintained by the department who have requested such notice; and
 - (d) mailing or e-mailing notice to any affected local, state, federal, tribal, or pueblo government agency, as identified by the department; or
- (2) for individual permits by:
 - (a) posting notice on the department's website;
 - (b) publishing notice in a newspaper of general circulation in the location of the discharge;
 - (c) mailing notice to the applicant;
 - (d) mailing or e-mailing notice to those persons on the general and facility-specific mailing list maintained by the department who have requested such notice; and
 - (e) mailing notice to any affected local, state, federal, tribal, or pueblo government agency, as identified by the department.

E. Public notices may describe more than one permit or permit action. The notice provided under Subsections C and D of 20.6.2.2001 NMAC shall include:

- (1) for general permits:
 - (a) a statement that the department will accept written comments on the draft permit during the comment period including the address where comments may be submitted;
 - (b) a brief description of the activities that produce the discharge; and
 - (c) a description of the geographic area to be covered by the permit; or

(2) for individual permits:

- (a) a statement that the department will accept written comments on the draft permit during the comment period including the address where comments may be submitted;
- (b) the name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit;
- (c) a brief description of the activities that produce the discharge; and
- (d) a general description of the location of the discharge and the name of the receiving water.

F. Following the public notice provided under Subsections C or D of 20.6.2.2001 NMAC, there shall be a period of at least 30 days during which interested persons may submit written comments to the department. The 30-day comment period shall begin on the date of the public notice provided under Subsections C or D of 20.6.2.2001 NMAC. The department shall consider all pertinent comments.

G. Following the public comment period provided under Subsection F of 20.6.2.2001 NMAC, the department shall issue a final permit certification including any conditions that the department places on the certification, or issue a statement of denial including the reasons for the denial. The final certification will generally be issued within 45 days from the date a request to grant, deny or waive certification is received by the department, unless the department in consultation with the U.S. environmental protection agency regional administrator finds that unusual circumstances require a longer time. The department shall send a copy of the final permit certification or denial to the U.S. environmental protection agency, the applicant (except for general permits), and those members of the public who submitted comments to the department.

(1) The permit certification shall be in writing and shall include:

- (a) the name of the applicant (except for general permits) and the NPDES permit number;
- (b) a statement that the department has examined the application or other relevant information and bases its certification upon an evaluation of the information contained in such application or other information which is relevant to water quality considerations;
- (c) a statement that there is a reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards;
- (d) a statement of any conditions which the department deems necessary or desirable with respect to the discharge of the activity;
- (e) identification of any condition more stringent than that in the draft permit required to assure compliance with the applicable provisions of Sections 208(e), 301, 302, 303, 306 and 307 of the Clean Water Act and with appropriate requirements of state law citing the Clean Water Act or state law upon which the condition is based;
- (f) a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of state law, including water quality standards; and
- (g) such other information as the department may determine to be appropriate.

(2) With justification, including any of the reasons listed in the New Mexico Water Quality Act, NMSA 1978, Section 74-6-5(E), the department may deny permit certification. Denial of permit certification shall be in writing and shall include:

- (a) the name of the applicant (except for general permits) and the NPDES permit number;
- (b) a statement that the department has examined the application or other relevant information and bases its denial upon an evaluation of the information contained in such application or other information which is relevant to water quality considerations;
- (c) a statement of denial including the reasons for the denial; and
- (d) such other information as the department may determine to be appropriate.

H. Any person who is adversely affected by the certification or denial of a specific permit may appeal such certification or denial by filing a petition for review with the secretary within 30 days after the department issues the final permit certification or statement of denial. Such petition shall be in writing and shall include a concise statement of the reasons for the appeal and the relief requested. The secretary may hold a hearing on the appeal. In any such appeal hearing, the procedures of 20.1.4 NMAC shall not apply. The department shall give notice of the appeal hearing at least 30 days prior to the hearing. The notice shall state the date, time, and location of the appeal hearing and shall include the pertinent information listed in Subparagraphs (b), (c), and (d) of Paragraph (2) of Subsection E of 20.6.2.2001 NMAC. The secretary shall appoint a hearing officer to preside over the appeal hearing. Any person may present oral or written statements, data, technical information, legal arguments,

or other information on the permit certification or denial during the appeal hearing. Any person may present oral or written statements, data, technical information, legal arguments, or other information in rebuttal of that presented by another person. Reasonable time limits may be placed on oral statements, and the submission of written statements may be required. The hearing officer may question persons presenting oral testimony. Cross examination of persons presenting oral statements shall not otherwise be allowed. Within 30 days after the completion of the hearing, or such other time as the secretary may order given the complexities of the case, the hearing officer shall submit recommendations to the secretary. The secretary shall issue a final decision on the appeal within 30 days after receiving the recommendation, or such other time as the secretary may order given the complexities of the case.

I. Pursuant to the New Mexico Water Quality Act, NMSA 1978, Section 74-6-5(O), any person who is adversely affected by the secretary's final decision may file with the commission a petition for review of that decision based on the administrative record.

[20.6.2.2001 NMAC - N, 5-18-11]

20.6.2.2002 PROCEDURES FOR CERTIFICATION OF FEDERAL PERMITS FOR DISCHARGE OF DREDGED OR FILL MATERIAL:

A. This section applies to the state certification of draft permits or permit applications for the discharge of dredged or fill material under Section 401 of the federal Clean Water Act. The purpose of such certification is to reasonably ensure that the permitted activities will be conducted in a manner that will comply with applicable water quality standards, including the antidegradation policy, and the statewide water quality management plan.

B. After review of a draft permit or permit application, the department will either: (1) certify that the discharge will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the federal Clean Water Act and with appropriate requirements of state law; (2) certify that the discharge will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act and with appropriate requirements of state law upon inclusion of specified conditions in the permit and include the justification for the conditions; or (3) deny certification and include reasons for the denial. If the department does not act on the certification within the time prescribed by the federal permitting agency for such action, the authority to do so shall be waived.

C. Pursuant to federal regulations at 33 CFR 325.3 and 33 CFR 330.5, the U.S. army corps of engineers provides notice of draft dredged or fill permits and permit applications to the applicant (except for general or nationwide permits); various local, state, federal, tribal and pueblo government agencies; and other interested parties, and it allows at least 15 days of public comment. To the extent practicable, the department will provide public notice that the department is reviewing a draft permit or permit application for the purpose of preparing a state certification or denial pursuant to Section 401 of the federal Clean Water Act jointly with the notice provided by the U.S. army corps of engineers. The department will also post notice on its website.

D. When joint notice is impractical, the department shall provide notice that the department is reviewing a draft dredged or fill permit or permit application for purpose of preparing a state certification or denial pursuant to Section 401 of the federal Clean Water Act as follows:

- (1) for general permits by:
 - (a) posting notice on the department's website;
 - (b) publishing notice in at least one newspaper of general circulation;
 - (c) mailing or e-mailing notice to those persons on the general mailing list maintained by the department who have requested such notice; and
 - (d) mailing or e-mailing notice to any affected local, state, federal, tribal, or pueblo government agency, as identified by the department; or
- (2) for individual permit applications by:
 - (a) posting notice on the department's website;
 - (b) publishing notice in a newspaper of general circulation in the location of the discharge;
 - (c) mailing notice to the applicant;
 - (d) mailing or e-mailing notice to those persons on the general and facility-specific mailing list maintained by the department who have requested such notice; and
 - (e) mailing notice to any affected local, state, federal, tribal, or pueblo government agency, as identified by the department.

E. Public notices may describe more than one permit or permit action. The notice provided under Subsections C and D of 20.6.2.2002 NMAC shall include:

- (1) for general permits:
 - (a) a statement that the department will accept written comments on the draft permit during the comment period including the address where comments may be submitted;
 - (b) a brief description of the activities that produce the discharge; and
 - (c) a description of the geographic area to be covered by the permit; or
- (2) for individual permit applications:
 - (a) a statement that the department will accept written comments on the permit application during the comment period including the address where comments may be submitted;
 - (b) the name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit;
 - (c) a brief description of the activities that produce the discharge; and
 - (d) a general description of the location of the discharge and the name of the receiving water.

F. Following the public notice provided under Subsections C or D of 20.6.2.2002 NMAC, there shall be a period of at least 30 days during which interested persons may submit written comments to the department. The 30-day comment period shall begin on the date of the public notice provided under Subsections C or D of 20.6.2.2002 NMAC. The department shall consider all pertinent comments.

G. The public notice provisions in Subsection C and D of Section 20.6.2.2002 NMAC and the public comment provisions in Subsection F of Section 20.6.2.2002 NMAC shall not apply to permits issued using emergency procedures under 33 CFR 325.2(e)(4). However, even in emergency situations, reasonable efforts shall be made to receive comments from interested state and local agencies and the affected public.

H. Following the public comment period provided under Subsection F of 20.6.2.2002 NMAC, the department shall issue a final permit certification including any conditions that the department places on the certification, or issue a statement of denial including the reasons for the denial. The final certification will generally be issued within 60 days from the date a request to grant, deny or waive certification is received by the department, unless the department in consultation with the U.S. army corps of engineers district engineer finds that unusual circumstances require a longer time. The department shall send a copy of the final permit certification or denial to the army corps of engineers, the applicant (except for general or nationwide permits), and those members of the public who submitted comments to the department.

- (1) The permit certification or denial shall be in writing and shall include:
 - (a) the name of the applicant (except for general permits) and the permit number;
 - (b) a statement that the department has examined the application or other relevant information and bases its certification upon an evaluation of the information contained in such application or other information which is relevant to water quality considerations;
 - (c) a statement that there is a reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards;
 - (d) a statement of any conditions which the department deems necessary or desirable with respect to the discharge of the activity; and
 - (e) such other information as the department may determine to be appropriate.

(2) With justification, including any of the reasons listed in the New Mexico Water Quality Act, NMSA 1978, Section 74-6-5(E), the department may deny permit certification. Denial of permit certification shall be in writing and shall include:

- (a) the name of the applicant (except for general permits) and the permit number;
- (b) a statement that the department has examined the application or other relevant information and bases its denial upon an evaluation of the information contained in such application or other information which is relevant to water quality considerations;
- (c) a statement of denial including the reasons for the denial; and
- (d) such other information as the department may determine to be appropriate.

I. Any person who is adversely affected by the certification or denial of a specific permit may appeal such certification or denial by filing a petition for review with the secretary within 30 days after the department issues the final permit certification or statement of denial. Such petition shall be in writing and shall include a concise statement of the reasons for the appeal and the relief requested. The secretary may hold a hearing on the appeal. In any such appeal hearing, the procedures of 20.1.4 NMAC shall not apply. The department shall give notice of the appeal hearing at least 30 days prior to the hearing. The notice shall state the date, time, and location

of the appeal hearing and shall include the pertinent information listed in Subparagraphs (b), (c), and (d) of Paragraph (2) of Subsection E of 20.6.2.2002 NMAC. The secretary shall appoint a hearing officer to preside over the appeal hearing. Any person may present oral or written statements, data, technical information, legal arguments, or other information on the permit certification or denial during the appeal hearing. Any person may present oral or written statements, data, technical information, legal arguments, or other information in rebuttal of that presented by another person. Reasonable time limits may be placed on oral statements, and the submission of written statements may be required. The hearing officer may question persons presenting oral testimony. Cross examination of persons presenting oral statements shall not otherwise be allowed. Within 30 days after the completion of the hearing, or such other time as the secretary may order given the complexities of the case, the hearing officer shall submit recommendations to the secretary. The secretary shall issue a final decision on the appeal within 30 days after receiving the recommendation, or such other time as the secretary may order given the complexities of the case.

J. Pursuant to the New Mexico Water Quality Act, NMSA 1978, Section 74-6-5(O), any person who is adversely affected by the secretary's final decision may file with the commission a petition for review of that decision based on the administrative record.
[20.6.2.2002 NMAC - N, 5-18-11]

20.6.2.2003 PROCEDURES FOR CERTIFICATION OF OTHER FEDERAL PERMITS:

A. This section applies to the state certification of draft federal permits, permit applications or licenses under Section 401 of the federal Clean Water Act, except for NPDES permits or permits for the discharge of dredged or fill material. For example, this section applies to certification of permits or licenses issued by the federal energy regulatory commission (FERC) and to permits or licenses issued under the Rivers and Harbors Act of 1899. The purpose of such certification is to reasonably ensure that the permitted activities will be conducted in a manner that will comply with applicable water quality standards, including the antidegradation policy, and the statewide water quality management plan.

B. After review of a draft permit, permit application or license, the department will either: (1) certify that the activity will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the federal Clean Water Act and with appropriate requirements of state law; (2) certify that the activity will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act and with appropriate requirements of state law upon inclusion of specified conditions in the permit and include the justification for the conditions; or (3) deny certification and include reasons for the denial. If the department does not act on the certification within the time prescribed by the federal permitting agency for such action, the authority to do so shall be waived.

C. To the extent practicable, the department will provide public notice that the department is reviewing a draft federal permit, permit application or license for the purpose of preparing a state certification or denial jointly with the notice provided by the federal permitting or licensing agency. The department will also post notice on its website.

D. When joint notice is impractical, the department shall provide notice that the department is reviewing a draft federal permit, permit application or license for purpose of preparing a state certification or denial pursuant to Section 401 of the federal Clean Water Act as follows:

- (1) for general permits or licenses by:
 - (a) posting notice on the department's website;
 - (b) publishing notice in at least one newspaper of general circulation;
 - (c) mailing or e-mailing notice to those persons on the general mailing list maintained by the department who have requested such notice; and
 - (d) mailing or e-mailing notice to any affected local, state, federal, tribal, or pueblo government agency, as identified by the department; or
- (2) for individual permits or licenses by:
 - (a) posting notice on the department's website;
 - (b) publishing notice in a newspaper of general circulation in the location of the permitted or licensed activity;
 - (c) mailing notice to the applicant;
 - (d) mailing or e-mailing notice to those persons on the general and facility-specific mailing list maintained by the department who have requested such notice; and
 - (e) mailing notice to any affected local, state, federal, tribal, or pueblo government agency, as identified by the department.

E. Public notices may describe more than one license, permit or permit action. The notice provided under Subsections C and D of 20.6.2.2003 NMAC shall include:

- (1) for general permits or licenses:
 - (a) a statement that the department will accept written comments on the permit or license during the comment period including the address where comments may be submitted; and
 - (b) a brief description of the permitted or licensed activities; and
 - (c) a description of the geographic area to be covered by the permit; or
- (2) for individual permits or licenses:
 - (a) a statement that the department will accept written comments on the permit or license during the comment period including the address where comments may be submitted;
 - (b) the name and address of the licensee, permittee or permit or license applicant and, if different, of the facility or activity regulated by the permit or license;
 - (c) a brief description of the permitted or licensed activities; and
 - (d) a general description of the location of the permitted or licensed activities and the name of the receiving water.

F. Following the public notice provided under Subsections C or D of 20.6.2.2003 NMAC, there shall be a period of at least 30 days during which interested persons may submit written comments to the department. The 30-day comment period shall begin on the date of the public notice provided under Subsections C or D of 20.6.2.2003 NMAC. The department shall consider all pertinent comments.

G. Following the public comment period provided under Subsection F of 20.6.2.2003 NMAC, the department shall issue a final certification including any conditions that the department places on the certification, or issue a statement of denial including the reasons for the denial. The final certification will generally be issued within 60 days from the date a request to grant or deny certification is received by the department, unless the department in consultation with the federal permitting or licensing agency finds that unusual circumstances require a longer time. The department shall send a copy of the final certification or denial to the federal permitting or licensing agency, the applicant (except for general permits), and those members of the public who submitted comments to the department.

- (1) The certification or denial shall be in writing and shall include:
 - (a) the name of the applicant (except for general permits) and the permit or license number;
 - (b) a statement that the department has examined the application or other relevant information and bases its certification upon an evaluation of the information contained in such application or other information which is relevant to water quality considerations;
 - (c) a statement that there is a reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards;
 - (d) a statement of any conditions which the department deems necessary or desirable with respect to the discharge of the activity;
 - (e) identification of any condition more stringent than that in the draft permit or license required to assure compliance with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act and with appropriate requirements of state law citing the Clean Water Act or state law upon which the condition is based;
 - (f) a statement of the extent to which each condition of the draft permit or license can be made less stringent without violating the requirements of state law, including water quality standards; and
 - (g) Such other information as the department may determine to be appropriate.
- (2) With justification, including any of the reasons listed in the New Mexico Water Quality Act, NMSA 1978, Section 74-6-5(E), the department may deny certification. Denial of certification shall be in writing and shall include:
 - (a) the name of the applicant (except for general permits) and the permit or license number;
 - (b) a statement that the department has examined the application or other relevant information and bases its denial upon an evaluation of the information contained in such application or other information which is relevant to water quality considerations;
 - (c) a statement of denial including the reasons for the denial; and
 - (d) such other information as the department may determine to be appropriate.

H. Any person who is adversely affected by the certification or denial of a specific permit or license may appeal such certification or denial by filing a petition for review with the secretary within 30 days after the

department issues the final certification or statement of denial. Such petition shall be in writing and shall include a concise statement of the reasons for the appeal and the relief requested. The secretary may hold a hearing on the appeal. In any such appeal hearing, the procedures of 20.1.4 NMAC shall not apply. The department shall give notice of the appeal hearing at least 30 days prior to the hearing. The notice shall state the date, time, and location of the appeal hearing and shall include the pertinent information listed in Subparagraphs (b), (c), and (d) of Paragraph (2) of Subsection E of 20.6.2.2003 NMAC. The secretary shall appoint a hearing officer to preside over the appeal hearing. Any person may present oral or written statements, data, technical information, legal arguments, or other information on the certification or denial during the appeal hearing. Any person may present oral or written statements, data, technical information, legal arguments, or other information in rebuttal of that presented by another person. Reasonable time limits may be placed on oral statements, and the submission of written statements may be required. The hearing officer may question persons presenting oral testimony. Cross examination of persons presenting oral statements shall not otherwise be allowed. Within 30 days after the completion of the hearing, or such other time as the secretary may order given the complexities of the case, the hearing officer shall submit recommendations to the secretary. The secretary shall issue a final decision on the appeal within 30 days after receiving the recommendation, or such other time as the secretary may order given the complexities of the case.

I. Pursuant to the New Mexico Water Quality Act, NMSA 1978, Section 74-6-5(O), any person who is adversely affected by the secretary's final decision may file with the commission a petition for review of that decision based on the administrative record.
[20.6.2.2003 NMAC - N, 5-18-11]

20.6.2.2004 - 20.6.2.2099: [RESERVED]

[12-1-95; 20.6.2.2001 - 20.6.2.2099 NMAC - Rn, 20 NMAC 6.2.I.1221-2099, 1-15-01; A, 5-18-11]

20.6.2.2100 APPLICABILITY: The requirements of Section 20.6.2.2101 and 20.6.2.2102 NMAC shall not apply to any discharge which is subject to a permit under the National Pollutant Discharge Elimination System of P. L. 92-500; provided that any discharger who is given written notice of National Pollutant Discharge Elimination System permit violation from the Administrator of the Environmental Protection Agency and who has not corrected the violation within thirty days of receipt of said notice shall be subject to Section 20.6.2.2101 and 20.6.2.2102 NMAC until in compliance with the National Pollution Discharge Elimination System permit conditions; provided further that nothing in this Part shall be construed as a deterrent to action under Section 74-6-11 NMSA, 1978.
[8-13-76; 20.6.2.2100 NMAC - Rn, 20 NMAC 6.2.II.2100, 1-15-01]

20.6.2.2101 GENERAL REQUIREMENTS:

A. Except as otherwise provided in Sections 20.6.2.2000 through 20.6.2.2201 NMAC, no person shall cause or allow effluent to discharge to a watercourse if the effluent as indicated by:

- (1) any two consecutive daily composite samples;
- (2) more than one daily composite sample in any thirty-day period (in which less than ten (10) daily composite samples are examined);
- (3) more than ten percent (10%) of the daily composite samples in any thirty-day period (in which ten (10) or more daily composite samples are examined); or
- (4) a grab sample collected during flow from an intermittent or infrequent discharge does not conform to the following:

- (a) Bio-chemical Oxygen Demand (BOD) Less than 30 mg/l
- (b) Chemical Oxygen Demand (COD) Less than 125 mg/l
- (c) Settleable Solids Less than 0.5 mg/l
- (d) Fecal Coliform Bacteria Less than 500 organisms per 100 ml
- (e) pH Between 6.6 and 8.6

B. Upon application, the secretary may eliminate the pH requirement for any effluent source that the secretary determines does not unreasonably degrade the water into which the effluent is discharged.

C. Subsection A of this Section does not apply to the weight of constituents in the water diverted.

D. Samples shall be examined in accordance with the most current edition of Standard Methods for the Examination of Water and Wastewater published by the American Public Health Association or the most current edition of Methods for Chemical Analysis of Water and Wastes published by the Environmental Protection Agency, where applicable.

[4-20-68, 3-14-71, 10-8-71, 8-13-76, 2-20-81, 12-1-95; 20.6.2.2101 NMAC - Rn, 20 NMAC 6.2.II.2101, 1-15-01]

20.6.2.2102 RIO GRANDE BASIN--COMMUNITY SEWERAGE SYSTEMS:

A. No person shall cause or allow effluent from a community sewerage system to discharge to a watercourse in the Rio Grande Basin between the headwaters of Elephant Butte Reservoir and Angostura Diversion Dam as described in Subsection E of this Section if the effluent, as indicated by:

- (1) any two consecutive daily composite samples;
- (2) more than one daily composite sample in any thirty-day period (in which less than ten (10) daily composite samples are examined);
- (3) more than ten percent (10%) of the daily composite samples in any thirty-day period (in which ten (10) or more daily composite samples are examined); or
- (4) a grab sample collected during flow from an intermittent or infrequent discharge does not conform to the following:

(a)	Bio-chemical Oxygen Demand (BOD)	Less than 30 mg/l
(b)	Chemical Oxygen Demand (COD)	Less than 80 mg/l
(c)	Settleable Solids	Less than 0.1 mg/l
(d)	Fecal Coliform Bacteria	Less than 500 organisms per 100

ml

(e)	pH	Between 6.6 and 8.6
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B. Upon application, the secretary may eliminate the pH requirement for any effluent source that the secretary determines does not unreasonably degrade the water into which the effluent is discharged.

C. Subsection A of this Section does not apply to the weight of constituents in the water diverted.

D. Samples shall be examined in accordance with the most current edition of Standard Methods for the Analysis of Water and Wastewater published by the American Public Health Association or the most current edition of Methods for Chemical Analysis of Water and Wastes published by the Environmental Protection Agency, where applicable.

E. The following is a description of the Rio Grande Basin from the headwaters of Elephant Butte Reservoir to Angostura Diversion Dam as used in this Section. Begin at San Marcial USGS gauging station, which is the headwaters of Elephant Butte Reservoir Irrigation Project, thence northwest to U.S. Highway 60, nine miles + west of Magdalena; thence west along the northeast edge of the San Agustin Plains closed basin; thence north along the east side of the north plains closed basin to the Continental Divide; thence northly along the Continental Divide to the community of Regina on State Highway 96; thence southeasterly along the crest of the San Pedro Mountains to Cerro Toledo Peak; thence southwesterly along the Sierra de Los Valles ridge and the Borrego Mesa to Bodega Butte; thence southerly to Angostura Diversion Dam which is the upper reach of the Rio Grande in this basin; thence southeast to the crest and the crest of the Manzano Mountains and the Los Pinos Mountains; thence southerly along the divide that contributes to the Rio Grande to San Marcial gauging station to the point and place of beginning; excluding all waters upstream of Jemez Pueblo which flow into the Jemez River drainage and the Bluewater Lake. Counties included in the basin are:

- (1) north portion of Socorro County;
- (2) northeast corner of Catron County;
- (3) east portion of Valencia County;
- (4) west portion of Bernalillo County;
- (5) east portion of McKinley County; and
- (6) most of Sandoval County.

[3-14-71, 9-3-72, 8-13-76, 2-20-81, 12-1-95; 20.6.2.2102 NMAC - Rn, 20 NMAC 6.2.II.2102, 1-15-01]

20.6.2.2103 - 20.6.2.2199: [RESERVED]

[12-1-95; 20.6.2.2103 - 20.6.2.2199 NMAC - Rn, 20 NMAC 6.2.II.2103-2199, 1-15-01]

20.6.2.2200 WATERCOURSE PROTECTION:

[12-1-95; 20.6.2.2200 NMAC - Rn, 20 NMAC 6.2.II.2200, 1-15-01]

20.6.2.2201 DISPOSAL OF REFUSE: No person shall dispose of any refuse in a natural watercourse or in a location and manner where there is a reasonable probability that the refuse will be moved into a natural watercourse by leaching or otherwise. Solids diverted from the stream and returned thereto are not subject to abatement under this Section.

[4-20-68, 9-3-72; 20.6.2.2201 NMAC - Rn, 20 NMAC 6.2.II.2201, 1-15-01]

20.6.2.2202 - 20.6.2.2999: [RESERVED]

[12-1-95; 20.6.2.2202 - 20.6.2.2999 NMAC - Rn, 20 NMAC 6.2.II.2202-3100, 1-15-01]

20.6.2.3000 PERMITTING AND GROUND WATER STANDARDS:

[12-1-95; 20.6.2.3000 NMAC - Rn, 20 NMAC 6.2.III, 1-15-01]

20.6.2.3001 - 20.6.2.3100: [RESERVED]

[12-1-95; 20.6.2.3001 - 20.6.2.3100 NMAC - Rn, 20 NMAC 6.2.II.2202-3100, 1-15-01]

20.6.2.3101 PURPOSE:

A. The purpose of Sections 20.6.2.3000 through 20.6.2.3114 NMAC controlling discharges onto or below the surface of the ground is to protect all ground water of the state of New Mexico which has an existing concentration of 10,000 mg/l or less TDS, for present and potential future use as domestic and agricultural water supply, and to protect those segments of surface waters which are gaining because of ground water inflow, for uses designated in the New Mexico Water Quality Standards. Sections 20.6.2.3000 through 20.6.2.3114 NMAC are written so that in general:

(1) if the existing concentration of any water contaminant in ground water is in conformance with the standard of 20.6.2.3103 NMAC, degradation of the ground water up to the limit of the standard will be allowed; and

(2) if the existing concentration of any water contaminant in ground water exceeds the standard of Section 20.6.2.3103 NMAC, no degradation of the ground water beyond the existing concentration will be allowed.

B. Ground water standards are numbers that represent the pH range and maximum concentrations of water contaminants in the ground water which still allow for the present and future use of ground water resources.

C. The standards are not intended as maximum ranges and concentrations for use, and nothing herein contained shall be construed as limiting the use of waters containing higher ranges and concentrations.

[2-18-77; 20.6.2.3101 NMAC - Rn, 20 NMAC 6.2.III.3101, 1-15-01]

20.6.2.3102: [RESERVED]

[12-1-95; 20.6.2.3102 NMAC - Rn, 20 NMAC 6.2.III.3102, 1-15-01]

20.6.2.3103 STANDARDS FOR GROUND WATER OF 10,000 mg/l TDS CONCENTRATION OR

LESS: The following standards are the allowable pH range and the maximum allowable concentration in ground water for the contaminants specified unless the existing condition exceeds the standard or unless otherwise provided in Subsection E of Section 20.6.2.3109 NMAC. Regardless of whether there is one contaminant or more than one contaminant present in ground water, when an existing pH or concentration of any water contaminant exceeds the standard specified in Subsection A, B, or C of this section, the existing pH or concentration shall be the allowable limit, provided that the discharge at such concentrations will not result in concentrations at any place of withdrawal for present or reasonably foreseeable future use in excess of the standards of this section. These standards shall apply to the dissolved portion of the contaminants specified with a definition of dissolved being that given in the publication "*methods for chemical analysis of water and waste of the U.S. environmental protection agency*," with the exception that standards for mercury, organic compounds and non-aqueous phase liquids shall apply to the total nonfiltered concentrations of the contaminants. If the secretary determines that there is a reasonable probability of facilitated contaminant transport by colloids or organic macromolecules, or that proper filtration procedures are not being followed, the discharger may be required to test for both filtered and nonfiltered portions of inorganic contaminants to develop appropriate protocol for monitoring contaminants that have the potential to migrate through the aquifer.

A. Human Health Standards

(1) Numerical Standards

- | | | |
|-----|-------------------------------------|------------|
| (a) | Antimony (Sb) (CAS 7440-36-0)..... | 0.006 mg/l |
| (b) | Arsenic (As) (CAS 7440-38-2)..... | 0.01 mg/l |
| (c) | Barium (Ba) (CAS 7440-39-3)..... | 2 mg/l |
| (d) | Beryllium (be) (CAS 7440-41-7)..... | 0.004 mg/l |
| (e) | Cadmium (Cd) (CAS 7440-43-9)..... | 0.005 mg/l |
| (f) | Chromium (Cr) (CAS 7440-47-3)..... | 0.05 mg/l |

(g)	Cyanide (CN) (CAS 57-12-5).....	0.2 mg/l
(h)	Fluoride (F) (CAS 16984-48-8).....	1.6 mg/l
(i)	Lead (Pb) (CAS 7439-92-1).....	0.015 mg/l
(j)	Total Mercury (Hg) (CAS 7439-97-6).....	0.002 mg/l
(k)	Nitrate (NO ₃ as N) (CAS 14797-55-8).....	10.0 mg/l
(l)	Nitrite (NO ₂ as N) (CAS 10102-44-0).....	1.0 mg/l
(m)	Selenium (Se) (CAS 7782-49-2).....	0.05 mg/l
(n)	Silver (Ag) (CAS 7440-224).....	0.05 mg/l
(o)	Thallium (Tl) (CAS 7440-28-0).....	0.002 mg/l
(p)	Uranium (U) (CAS 7440-61-1).....	0.03 mg/l
(q)	Radioactivity: Combined Radium-226 (CAS 13982-63-3) and Radium-228 (CAS 15262-20-1).....	5 pCi/l
(r)	Benzene (CAS 71-43-2).....	0.005 mg/l
(s)	Polychlorinated biphenyls (PCB's) (CAS 1336-36-3).....	0.0005 mg/l
(t)	Toluene (CAS 108-88-3).....	1 mg/l
(u)	Carbon Tetrachloride (CAS 56-23-5).....	0.005 mg/l
(v)	1,2-dichloroethane (EDC) (CAS 107-06-2).....	0.005 mg/l
(w)	1,1-dichloroethylene (1,1-DCE) (CAS 75-35-4).....	0.007 mg/l
(x)	tetrachloroethylene (PCE) (CAS 127-18-4).....	0.005 mg/l
(y)	trichloroethylene (TCE) (CAS 79-01-6).....	0.005 mg/l
(z)	ethylbenzene (CAS 100-41-4).....	0.7 mg/l
(aa)	total xylenes (CAS 1330-20-7).....	0.62 mg/l
(bb)	methylene chloride (CAS 75-09-2).....	0.005 mg/l
(cc)	chloroform (CAS 67-66-3).....	0.1 mg/l
(dd)	1,1-dichloroethane (CAS 75-34-3).....	0.025 mg/l
(ee)	ethylene dibromide (EDB) (CAS 106-93-4).....	0.00005 mg/l
(ff)	1,1,1-trichloroethane (CAS 71-55-6).....	0.2 mg/l
(gg)	1,1,2-trichloroethane (CAS 79-00-5).....	0.005 mg/l
(hh)	1,1,2,2-tetrachloroethane (CAS 79-34-5).....	0.01 mg/l
(ii)	vinyl chloride (CAS 75-01-4).....	0.002 mg/l
(jj)	PAHs: total naphthalene (CAS 91-20-3) plus monomethylnaphthalenes ..	0.03 mg/l
(kk)	benzo-a-pyrene (CAS 50-32-8).....	0.0002 mg/l
(ll)	cis-1,2-dichloroethene (CAS 156-59-2).....	0.07 mg/l
(mm)	trans-1,2-dichloroethene (CAS 156-60-5).....	0.1 mg/l
(nn)	1,2-dichloropropane (PDC) (CAS 78-87-5).....	0.005 mg/l
(oo)	styrene (CAS 100-42-5).....	0.1 mg/l
(pp)	1,2-dichlorobenzene (CAS 95-50-1).....	0.6 mg/l
(qq)	1,4-dichlorobenzene (CAS 106-46-7).....	0.075 mg/l
(rr)	1,2,4-trichlorobenzene (CAS 120-82-1).....	0.07 mg/l
(ss)	pentachlorophenol (CAS 87-86-5).....	0.001 mg/l
(tt)	atrazine (CAS 1912-24-9).....	0.003 mg/l

(2) **Standards for Toxic Pollutants.** A toxic pollutant shall not be present at a concentration shown by credible scientific data and other evidence appropriate under the Water Quality Act, currently available to the public, to have potential for causing one or more of the following effects upon exposure, ingestion, or assimilation either directly from the environment or indirectly by ingestion through food chains: (1) unreasonably threatens to injure human health, or the health of animals or plants which are commonly hatched, bred, cultivated or protected for use by man for food or economic benefit; as used in this definition injuries to health include death, histopathologic change, clinical symptoms of disease, behavioral abnormalities, genetic mutation, physiological malfunctions or physical deformations in such organisms or their offspring; or (2) creates a lifetime risk of more than one cancer per 100,000 exposed persons.

(3) **Standards for Non-Aqueous Phase Liquids.** Non-aqueous phase liquid shall not be present floating atop of or immersed within ground water, as can be reasonably measured.

B. Other Standards for Domestic Water Supply

(1)	Chloride (Cl) (CAS 16887-00-6).....	250.0 mg/l
(2)	Copper (Cu) (CAS 7440-50-8).....	1.0 mg/l
(3)	Iron (Fe) (CAS 7439-89-6).....	1.0 mg/l

(4)	Manganese (Mn) (CAS 7439-96-5).....	0.2 mg/l
(5)	Phenols	0.005 mg/l
(6)	Sulfate (SO ₄) (CAS 14808-79-8).....	600.0 mg/l
(7)	Total Dissolved Solids (TDS) TDS.....	1000.0 mg/l
(8)	Zinc (Zn) (CAS 7440-66-6).....	10.0 mg/l
(9)	pH.....	between 6 and 9
(10)	Methyl tertiary-butyl ether (MTBE) (CAS 1634-04-4).....	0.1 mg/l

C. Standards for Irrigation Use - Ground water shall meet the standards of Subsection A, B, and C of this section unless otherwise provided.

(1)	Aluminum (Al) (CAS 7429-90-5).....	5.0 mg/l
(2)	Boron (B) (CAS 7440-42-8).....	0.75 mg/l
(3)	Cobalt (Co) (CAS 7440-48-4).....	0.05 mg/l
(4)	Molybdenum (Mo) (CAS 7439-98-7).....	1.0 mg/l
(5)	Nickel (Ni) (CAS 7440-02-0).....	0.2 mg/l

D. For purposes of application of the amended numeric standards for arsenic, cadmium, lead, combined radium-226 & radium-228; benzene, PCBs, carbon tetrachloride, EDC, PCE, TCE, ethylbenzene, methylene chloride, EDB, 1,1,2-trichloroethane and benzo-a-pyrene, to past and current water discharges (as of July 1, 2017), the new standards will not become effective until July 1, 2020. With regard to sites for which the secretary has approved an abatement completion report as of the effective date of this rule pursuant to 20.6.2.4112 NMAC, the amended numeric standards for arsenic, cadmium, lead, combined radium-226 & radium-228; benzene, PCBs, carbon tetrachloride, EDC, PCE, TCE, ethylbenzene, methylene chloride, EDB, 1,1,2-trichloroethane and benzo-a-pyrene shall not apply unless the secretary notifies the responsible person that the site is a source of these contaminants in ground water that pose a hazard to public health.

[2-18-77, 1-29-82, 11-17-83, 3-3-86, 12-1-95; 20.6.2.3103 NMAC - Rn, 20 NMAC 6.2.III.3103, 1-15-01; A, 9-26-04; A, 12-21-18]

[Note: For purposes of application of the amended numeric uranium standard to past and current water discharges (as of 9-26-04), the new standard will not become effective until June 1, 2007.]

20.6.2.3104 DISCHARGE PERMIT REQUIRED: Unless otherwise provided by this Part, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless he is discharging pursuant to a discharge permit issued by the secretary. When a permit has been issued, discharges must be consistent with the terms and conditions of the permit. In the event of a transfer of the ownership, control, or possession of a facility for which a discharge permit is in effect, the transferee shall have authority to discharge under such permit, provided that the transferee has complied with Section 20.6.2.3111 NMAC, regarding transfers. [2-18-77, 12-24-87, 12-1-95; Rn & A, 20.6.2.3104 NMAC - 20 NMAC 6.2.III.3104, 1-15-01; A, 12-1-01]

20.6.2.3105 EXEMPTIONS FROM DISCHARGE PERMIT REQUIREMENT: Sections 20.6.2.3104 and 20.6.2.3106 NMAC do not apply to the following:

A. Effluent or leachate which conforms to all the standards in Subsections A, B, and C of Section 20.6.2.3103 NMAC and has a total nitrogen concentration of 10 mg/l or less. To determine conformance, samples may be taken by the agency before the effluent or leachate is discharged so that it may move directly or indirectly into ground water; provided that if the discharge is by seepage through non-natural or altered natural materials, the agency may take samples of the solution before or after seepage. If for any reason the agency does not have access to obtain the appropriate samples, this exemption shall not apply;

B. Effluent which is regulated pursuant to 20.7.3 NMAC, "Liquid Waste Disposal and Treatment" regulations;

C. Water used for irrigated agriculture, for watering of lawns, trees, gardens or shrubs, or for irrigation for a period not to exceed five years for the revegetation of any disturbed land area, unless that water is received directly from any sewerage system;

D. Discharges resulting from the transport or storage of water diverted, provided that the water diverted has not had added to it after the point of diversion any effluent received from a sewerage system, that the source of the water diverted was not mine workings, and that the secretary has not determined that a hazard to public health may result;

E. Effluent which is discharged to a watercourse which is naturally perennial; discharges to dry arroyos and ephemeral streams are not exempt from the discharge permit requirement, except as otherwise provided in this section;

F. Those constituents which are subject to effective and enforceable effluent limitations in a National Pollutant Discharge Elimination System (NPDES) permit, where discharge onto or below the surface of the ground so that water contaminants may move directly or indirectly into ground water occurs downstream from the outfall where NPDES effluent limitations are imposed, unless the secretary determines that a hazard to public health may result. For purposes of this subsection, monitoring requirements alone do not constitute effluent limitations;

G. Discharges resulting from flood control systems;

H. Leachate which results from the direct natural infiltration of precipitation through disturbed materials, unless the secretary determines that a hazard to public health may result;

I. Leachate which results entirely from the direct natural infiltration of precipitation through undisturbed materials;

J. Natural ground water seeping or flowing into conventional mine workings which re-enters the ground by natural gravity flow prior to pumping or transporting out of the mine and without being used in any mining process; this exemption does not apply to solution mining;

K. Effluent or leachate discharges resulting from activities regulated by permit issued by the mining and minerals division of the energy, minerals and natural resources department pursuant to the Surface Mining Act, NMSA 1978, Sections 69-25A-1 to 36, provided that this exemption shall not be construed as limiting the application of appropriate ground water protection requirements by the mining and minerals division and the New Mexico Coal Surface Mining Commission; or

L. Discharges resulting from activities regulated by the energy conservation and management division of the energy, minerals and natural resources department under the authority of the Geothermal Resources Development Act, NMSA 1978, Sections 71-9-1 to -11 (2016).

[2-18-77, 6-26-80, 7-2-81, 12-24-87, 12-1-95; 20.6.2.3105 NMAC - Rn, 20 NMAC 6.2.III.3105, 1-15-01; A, 12-1-01; A, 8-1-14; A, 12-21-18]

20.6.2.3106 APPLICATION FOR DISCHARGE PERMITS, RENEWALS, AND MODIFICATIONS:

A. Any person who, before or on June 18, 1977, is discharging any of the water contaminants listed in 20.6.2.3103 NMAC or any toxic pollutant so that they may move directly or indirectly into ground water shall, within 120 days of receipt of written notice from the secretary that a discharge permit is required, or such longer time as the secretary shall for good cause allow, submit a discharge plan to the secretary for approval; such person may discharge without a discharge permit until 240 days after written notification by the secretary that a discharge permit is required or such longer time as the secretary shall for good cause allow.

B. Any person who intends to begin, after June 18, 1977, discharging any of the water contaminants listed in 20.6.2.3103 NMAC or any toxic pollutant so that they may move directly or indirectly into ground water shall notify the secretary giving the information enumerated in Subsection B of 20.6.2.1201 NMAC; the secretary shall, within 60 days, notify such person if a discharge permit is required; upon submission of a discharge plan, the secretary shall review the discharge plan pursuant to 20.6.2.3108 and 20.6.2.3109 NMAC. For good cause shown the secretary may allow such person to discharge without a discharge permit for a period not to exceed 120 days.

C. Any person who intends to modify the discharge of any of the water contaminants listed in 20.6.2.3103 NMAC or any toxic pollutant in a manner that is a discharge permit modification as defined in this part shall submit a discharge plan for modification that contains the information required in Subsection D of 20.6.2.3106 NMAC; upon submission of a discharge plan for modification, the secretary shall review the discharge plan for modification pursuant to 20.6.2.3108 and 20.6.2.3109 NMAC.

D. A proposed discharge plan shall set forth in detail the methods or techniques the discharger proposes to use or processes expected to naturally occur which will ensure compliance with this part. At least the following information shall be included in the plan:

- (1) quantity, quality and flow characteristics of the discharge;
- (2) location of the discharge and of any bodies of water, watercourses and ground water discharge sites within one mile of the outside perimeter of the discharge site, and existing or proposed wells to be used for monitoring;
- (3) depth to and TDS concentration of the ground water most likely to be affected by the discharge;
- (4) flooding potential of the site;
- (5) location and design of site(s) and method(s) to be available for sampling, and for measurement or calculation of flow;
- (6) depth to and lithological description of rock at base of alluvium below the discharge site if such information is available;

(7) any additional information that may be necessary to demonstrate that the discharge permit will not result in concentrations in excess of the standards of 20.6.2.3103 NMAC at any place of withdrawal of water for present or reasonably foreseeable future use; detailed information on site geologic and hydrologic conditions may be required for a technical evaluation of the applicant's proposed discharge plan; and

(8) additional detailed information required for a technical evaluation of underground injection control wells as provided in 20.6.2.5000 through 20.6.2.5399 NMAC.

E. An applicant for a discharge permit shall pay fees as specified in 20.6.2.3114 and 20.6.2.5302 NMAC.

F. An applicant for a permit to dispose of or use septage or sludge, or within a source category designated by the commission, may be required by the secretary to file a disclosure statement as specified in 74-6-5.1 of the Water Quality Act.

G. If the holder of a discharge permit submits an application for discharge permit renewal at least 120 days before the discharge permit expires, and the discharger is not in violation of the discharge permit on the date of its expiration, then the existing discharge permit for the same activity shall not expire until the application for renewal has been approved or disapproved. A discharge permit continued under this provision remains fully effective and enforceable. An application for discharge permit renewal must include and adequately address all of the information necessary for evaluation of a new discharge permit. Previously submitted materials may be included by reference provided they are current, readily available to the secretary and sufficiently identified to be retrieved. [2-18-77, 6-26-80, 7-2-81, 9-20-82, 8-17-91, 12-1-95; 20.6.2.3106 NMAC - Rn, 20 NMAC 6.2.III.3106, 1-15-01; A, 12-1-01; A, 9-15-02; A, 8-31-15; A, 12-21-18]

20.6.2.3107 MONITORING, REPORTING, AND OTHER REQUIREMENTS:

A. Each discharge plan shall provide for the following as the secretary may require:

- (1) the installation, use, and maintenance of effluent monitoring devices;
- (2) the installation, use, and maintenance of monitoring devices for the ground water most likely to be affected by the discharge;
- (3) monitoring in the vadose zone;
- (4) continuation of monitoring after cessation of operations;
- (5) periodic submission to the secretary of results obtained pursuant to any monitoring requirements in the discharge permit and the methods used to obtain these results;
- (6) periodic reporting to the secretary of any other information that may be required as set forth in the discharge permit;
- (7) the discharger to retain for a period of at least five years any monitoring data required in the discharge permit;
- (8) a system of monitoring and reporting to verify that the permit is achieving the expected results;
- (9) procedures for detecting failure of the discharge system;
- (10) contingency plans to cope with failure of the discharge permit or system;
- (11) a closure plan to prevent the exceedance of standards of 20.6.2.3103 NMAC in ground water after the cessation of operation which includes: a description of closure measures, maintenance and monitoring plans, post-closure maintenance and monitoring plans, financial assurance, and other measures necessary to prevent or abate such contamination; the obligation to implement the closure plan as well as the requirements of the closure plan, if any is required, survives the termination or expiration of the permit; a closure plan for any underground injection control well must also incorporate the applicable requirements of 20.6.2.5005, 20.6.2.5209, and 20.6.2.5361 NMAC.

B. Sampling and analytical techniques shall conform with the following references unless otherwise specified by the secretary:

- (1) standard methods for the examination of water and wastewater, latest edition, American public health association; or
- (2) methods for chemical analysis of water and waste, and other publications of the analytical quality laboratory, EPA; or
- (3) techniques of water resource investigations of the U.S. geological survey; or
- (4) annual book of ASTM standards; Part 31; water, latest edition, American society for testing and materials; or
- (5) federal register, latest methods published for monitoring pursuant to Resource Conservation and Recovery Act regulations; or

(6) national handbook of recommended methods for water-data acquisition, latest edition, prepared cooperatively by agencies of the United States government under the sponsorship of the U.S. geological survey.

C. The discharger shall notify the secretary of any facility expansion, production increase or process modification that would result in any significant modification in the discharge of water contaminants.

D. Any discharger of effluent or leachate shall allow any authorized representative of the secretary to:

- (1) inspect and copy records required by a discharge permit;
- (2) inspect any treatment works, monitoring and analytical equipment;
- (3) sample any effluent before or after discharge;
- (4) use monitoring systems and wells installed pursuant to a discharge permit requirement in

order to collect samples from ground water or the vadose zone.

E. Each discharge permit for an underground injection control well shall incorporate the applicable requirements of 20.6.2.5000 through 20.6.2.5399 NMAC.

[2-18-77, 9-20-82, 11-17-83, 12-1-95; 20.6.2.3107 NMAC - Rn, 20 NMAC 6.2.III.3107, 1-15-01; A, 12-1-01; A, 8-31-15; A, 12-21-18]

20.6.2.3108 PUBLIC NOTICE AND PARTICIPATION:

A. Within 15 days of receipt of an application for a discharge permit, modification or renewal, the department shall review the application for administrative completeness. To be deemed administratively complete, an application shall provide all of the information required by Paragraphs (1) through (5) of Subsection F of 20.6.2.3108 NMAC and shall indicate, for department approval, the proposed locations and newspaper for providing notice required by Paragraphs (1) and (4) of Subsection B or Paragraph (2) of Subsection C of 20.6.2.3108 NMAC. The department shall notify the applicant in writing when the application is deemed administratively complete. If the department determines that the application is not administratively complete, the department shall notify the applicant of the deficiencies in writing within 30 days of receipt of the application and state what additional information is necessary.

B. Within 30 days of the department deeming an application for discharge permit or discharge permit modification administratively complete, the applicant shall provide notice, in accordance with the requirements of Subsection F of 20.6.2.3108 NMAC, to the general public in the locale of the proposed discharge in a form provided by the department by each of the methods listed below:

(1) for each 640 contiguous acres or less of a discharge site, prominently posting a synopsis of the public notice at least 2 feet by 3 feet in size, in English and in Spanish, at a place conspicuous to the public, approved by the department, at or near the proposed facility for 30 days; one additional notice, in a form approved by and may be provided by the department, shall be posted at a place located off the discharge site, at a place conspicuous to the public and approved by the department; the department may require a second posting location for more than 640 contiguous acres or when the discharge site is not located on contiguous properties;

(2) providing written notice of the discharge by mail or electronic mail, to owners of record of all properties within a 1/3 mile distance from the boundary of the property where the discharge site is located; if there are no properties other than properties owned by the discharger within a 1/3 mile distance from the boundary of property where the discharge site is located, the applicant shall provide notice to owners of record of the next nearest adjacent properties not owned by the discharger;

(3) providing notice by certified mail, return receipt requested, to the owner of the discharge site if the applicant is not the owner; and

(4) publishing a synopsis of the notice in English and in Spanish, in a display ad at least three inches by four inches not in the classified or legal advertisements section, in a newspaper of general circulation in the location of the proposed discharge.

C. Within 30 days of the department deeming an application for discharge permit renewal administratively complete, the applicant shall provide notice, in accordance with the requirements of Subsection F of 20.6.2.3108 NMAC, to the general public in the locale of the proposed discharge in a form provided by the department by each of the methods listed below:

(1) providing notice by certified mail to the owner of the discharge site if the applicant is not the owner; and

(2) publishing a synopsis of the notice, in English and in Spanish, in a display ad at least two inches by three inches, not in the classified or legal advertisements section, in a newspaper of general circulation in the location of the discharge.

D. Within 15 days of completion of the public notice requirements in Subsections B or C of 20.6.2.3108 NMAC, the applicant shall submit to the department proof of notice, including an affidavit of mailing(s) and the list of property owner(s), proof of publication, and an affidavit of posting, as appropriate.

E. Within 30 days of determining an application for a discharge permit, modification or renewal is administratively complete, the department shall post a notice on its website and shall mail notice to any affected local, state, federal, tribal or pueblo governmental agency, political subdivisions, ditch associations and land grants, as identified by the department. The department shall also mail or e-mail notice to those persons on a general and facility-specific list maintained by the department who have requested notice of discharge permit applications. The notice shall include the information listed in Subsection F of 20.6.2.3108 NMAC.

F. The notice provided under Subsection B, C and E of 20.6.2.3108 NMAC shall include:

- (1) the name and address of the proposed discharger;
- (2) the location of the discharge, including a street address, if available, and sufficient information to locate the facility with respect to surrounding landmarks;
- (3) a brief description of the activities that produce the discharge described in the application;
- (4) a brief description of the expected quality and volume of the discharge;
- (5) the depth to and total dissolved solids concentration of the ground water most likely to be affected by the discharge;
- (6) the address and phone number within the department by which interested persons may obtain information, submit comments, and request to be placed on a facility-specific mailing list for future notices; and
- (7) a statement that the department will accept comments and statements of interest regarding the application and will create a facility-specific mailing list for persons who wish to receive future notices.

G. All persons who submit comments or statements of interest to the department or previously participated in a public hearing and who provide a mail or e-mail address shall be placed on a facility-specific mailing list and the department shall send those persons the public notice issued pursuant to Subsection J of 20.6.2.3108 NMAC, and notice of any public meeting or hearing scheduled on the application. All persons who contact the department to inquire about a specific facility shall be informed of the opportunity to be placed on the facility-specific mailing list.

H. Within 60 days after the department makes its administrative completeness determination and all required technical information is available, the department shall make available a draft permit or a notice of intent to deny an application for a discharge permit, modification or renewal. The draft permit shall include all proposed effluent limitations or other conditions on proposed discharge, and all proposed monitoring, recordkeeping, and reporting requirements. A draft permit for a permit modification shall only include those permit conditions proposed to be modified.

I. The department shall prepare a fact sheet for every draft permit for a discharge at a federal facility, except for discharges comprised solely of domestic liquid waste, and for other draft permits as determined by the Secretary. The fact sheet shall include:

- (1) the information in Paragraphs 1 - 4 of Subsection F of 20.6.2.3108 NMAC;
- (2) the information in Subsection J of 20.6.2.3108 NMAC; and
- (3) a brief summary of the basis for the draft permit conditions, including references to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record.

J. The department shall mail by certified mail a copy of the draft permit and fact sheet or notice of intent to deny to the applicant and shall provide notice of the draft permit or the notice of intent to deny by:

- (1) posting on the department's website;
- (2) publishing notice in a newspaper of general circulation in this state and a newspaper of general circulation in the location of the facility;
- (3) mailing or e-mailing to those persons on a facility-specific mailing list;
- (4) mailing to any affected local, state, or federal governmental agency, ditch associations and land grants, as identified by the department; and
- (5) mailing to the governor, chairperson, or president of each Indian tribe, pueblo or nation within the state of New Mexico, as identified by the department.

K. The public notice issued under Subsection H shall include the information in Subsection F of 20.6.2.3108 NMAC and the following information:

- (1) a brief description of the procedures to be followed by the secretary in making a final determination;

(2) a statement of the comment period and description of the procedures for a person to request a hearing on the application; and

(3) the address, telephone number, and email address at which interested persons may obtain a copy of the draft permit and fact sheet or the notice of intent to deny.

L. In the event that the draft permit or notice of intent to deny is available for review within 30 days of deeming the application administratively complete, the department may combine the public notice procedures of Subsections E and H of 20.6.2.3108 NMAC.

M. Following the public notice of the draft permit or notice of intent to deny, and prior to a final decision by the secretary, there shall be a period of at least 30 days during which written comments may be submitted to the department and/or a public hearing may be requested in writing. The 30-day comment period shall begin on the date of publication of notice in the newspaper. All comments will be considered by the department. Requests for a hearing shall be in writing and shall set forth the reasons why a hearing should be held. A public hearing shall be held if the secretary determines there is substantial public interest. The department shall notify the applicant and any person requesting a hearing of the decision whether to hold a hearing and the reasons therefore in writing.

N. If a hearing is held, pursuant to Subsection M of 20.6.2.3108 NMAC, notice of the hearing shall be given by the department at least 30 days prior to the hearing in accordance with Subsection H of 20.6.2.3108 NMAC. The notice shall include the information identified in Subsection F of 20.6.2.3108 NMAC in addition to the time and place of the hearing and a brief description of the hearing procedures. The hearing shall be held pursuant to 20.6.2.3110 NMAC.

[2-18-77, 12-24-87, 12-1-95, 11-15-96; 20.6.2.3108 NMAC - Rn, 20 NMAC 6.2.III.3108, 1-15-01; A, 12-1-01; A, 9-15-02; A, 7-16-06; A, 12-21-18]

20.6.2.3109 SECRETARY APPROVAL, DISAPPROVAL, MODIFICATION OR TERMINATION OF DISCHARGE PERMITS, AND REQUIREMENT FOR ABATEMENT PLANS:

A. The department shall evaluate the application for a discharge permit, modification or renewal based on information contained in the department's administrative record. The department may request from the discharger, either before or after the issuance of any public notice, additional information necessary for the evaluation of the application. The administrative record shall consist of the application, any additional information required by the department, any information submitted by the discharger or the general public, other information considered by the department, the proposed approval or disapproval of an application for a discharge permit, modification or renewal prepared pursuant to Subsection H of 20.6.2.3108 NMAC, and, if a public hearing is held, all of the documents filed with the hearing clerk, all exhibits offered into evidence at the hearing, the written transcript or tape recording of the hearing, any hearing officer report, and any post hearing submissions.

B. The secretary shall, within 30 days after the administrative record is complete and all required information is available, approve, approve with conditions or disapprove the proposed discharge permit, modification or renewal based on the administrative record. The Secretary shall issue a response to comments which shall specify which provisions, if any, in the draft permit were changed and the reasons for the change, and shall briefly describe and respond to all significant comments on the draft permit raised during the public comment period or at any hearing. The secretary shall notify the applicant or permittee by certified mail of the action taken and the reasons for such action and shall include a copy of the response to comments. Notice shall also be given by mail or email to persons who participated in the permitting action.

C. Provided that the other requirements of this part are met and the proposed discharge plan, modification or renewal demonstrates that neither a hazard to public health nor undue risk to property will result, the secretary shall approve the proposed discharge plan, modification or renewal if the following requirements are met:

(1) ground water that has a TDS concentration of 10,000 mg/l or less will not be affected by the discharge; or

(2) the person proposing to discharge demonstrates that approval of the proposed discharge plan, modification or renewal will not result in either concentrations in excess of the standards of 20.6.2.3103 NMAC at any place of withdrawal of water for present or reasonably foreseeable future use, except for contaminants in the water diverted as provided in Subsection E of 20.6.2.3109 NMAC; or

(3) the proposed discharge plan conforms to either Subparagraph (a) or (b) below and Subparagraph (c) below:

(a) municipal, other domestic discharges, and discharges from sewerage systems handling only animal wastes: the effluent is entirely domestic, is entirely from a sewerage system handling only animal wastes or is from a municipality and conforms to the following:

(i) the discharge is from an impoundment or a leach field existing on February 18, 1977 which receives less than 10,000 gallons per day and the secretary has not found that the discharge may cause a hazard to public health; or

(ii) the discharger has demonstrated that the total nitrogen in effluent that enters the subsurface from a leach field or surface impoundment will not exceed 200 pounds per acre per year and that the effluent will meet the standards of 20.6.2.3103 NMAC except for nitrates and except for contaminants in the water diverted as provided in Subsection E of 20.6.2.3109 NMAC; or

(iii) the total nitrogen in effluent that is applied to a crop which is harvested shall not exceed by more than 25 percent the maximum amount of nitrogen reasonably expected to be taken up by the crop and the effluent shall meet the standards of 20.6.2.3103 NMAC except for nitrates and except for contaminants in the water diverted as provided in Subsection E of 20.6.2.3109 NMAC;

(b) discharges from industrial, mining or manufacturing operations:

(i) the discharger has demonstrated that the amount of effluent that enters the subsurface from a surface impoundment will not exceed 0.5 acre-feet per acre per year; or

(ii) the discharger has demonstrated that the total nitrogen in effluent that enters the subsurface from a leach field or surface impoundment shall not exceed 200 pounds per acre per year and the effluent shall meet the standards of 20.6.2.3103 NMAC except for nitrate and contaminants in the water diverted as provided in Subsection E of 20.6.2.3109 NMAC; or

(iii) the total nitrogen in effluent that is applied to a crop that is harvested shall not exceed by more than 25 percent the maximum amount of nitrogen reasonably expected to be taken up by the crop and the effluent shall meet the standards of 20.6.2.3103 NMAC except for nitrate and contaminants in the water diverted as provided in Subsection D of 20.6.2.3109 NMAC;

(c) all discharges:

(i) the monitoring system proposed in the discharge plan includes adequate provision for sampling of effluent and adequate flow monitoring so that the amount being discharged onto or below the surface of the ground can be determined;

(ii) the monitoring data is reported to the secretary at a frequency determined by the secretary.

D. The secretary shall allow the following unless he determines that a hazard to public health may result:

(1) the weight of water contaminants in water diverted from any source may be discharged provided that the discharge is to the aquifer from which the water was diverted or to an aquifer containing a greater concentration of the contaminants than contained in the water diverted; and provided further that contaminants added as a result of the means of diversion shall not be considered to be part of the weight of water contaminants in the water diverted;

(2) the water contaminants leached from undisturbed natural materials may be discharged provided that:

(a) the contaminants were not leached as a product or incidentally pursuant to a solution mining operation; and

(b) the contaminants were not leached as a result of direct discharge into the vadose zone from municipal or industrial facilities used for the storage, disposal, or treatment of effluent;

(3) the water contaminants leached from undisturbed natural materials as a result of discharge into ground water from lakes used as a source of cooling water.

E. If data submitted pursuant to any monitoring requirements specified in the discharge permit or other information available to the secretary indicates that this part is being or may be violated or that the standards of 20.6.2.3103 NMAC are being or will be exceeded in ground water at any place of withdrawal for present or reasonably foreseeable future use, or that the water quality standards for interstate and intrastate streams in New Mexico are being or may be violated in surface water, due to the discharge, except as provided in Subsection D of 20.6.2.3109 NMAC.

(1) The secretary may require a discharge permit modification within the shortest reasonable time so as to achieve compliance with this part and to provide that any exceeding of standards in ground water at any place of withdrawal for present or reasonably foreseeable future use, or in surface water, due to the discharge except as provided in Subsection E of 20.6.2.3109 NMAC will be abated or prevented. If the secretary requires a discharge permit modification to abate water pollution:

(a) the abatement shall be consistent with the requirements and provisions of 20.6.2.4101, 20.6.2.4103, Subsections C and E of 20.6.2.4106, 20.6.2.4107, 20.6.2.4108 and 20.6.2.4112 NMAC; and

(b) the discharger may request of the secretary approval to carry out the abatement under 20.6.2.4000 through 20.6.2.4115 NMAC, in lieu of modifying the discharge permit; the discharger shall make the request in writing and shall include the reasons for the request.

(2) The secretary may terminate a discharge permit when a discharger fails to modify the permit in accordance with Paragraph (1) of Subsection E of 20.6.2.3109 NMAC.

(3) The secretary may require modification, or may terminate a discharge permit for a Class I well, a Class III well or other type of well specified in Subsection A of 20.6.2.5101 NMAC, pursuant to the requirements of Subsection I of 20.6.2.5101 NMAC.

(4) If a discharge permit is terminated, the secretary shall notify the permittee by certified mail of the action taken and the reasons for that action. Notice of the termination shall also be given by mail or electronic mail to persons who participated in the permitting action and to those persons on the facility-specific list maintained by the department.

F. If a discharge permit expires or is terminated for any reason and the standards of 20.6.2.3103 NMAC are being or will be exceeded in ground water, or that the water quality standards for interstate and intrastate streams in New Mexico are being or may be violated, the secretary may require the discharger to submit an abatement plan pursuant to 20.6.2.4104 and Subsection A of 20.6.2.4106 NMAC.

G. At the request of the discharger, a discharge permit may be modified in accordance with 20.6.2.3000 through 20.6.2.3114 NMAC.

H. The secretary shall not approve a proposed discharge plan, modification, or renewal for:

(1) any discharge for which the discharger has not provided a site and method for flow measurement and sampling;

(2) any discharge that will cause any stream standard to be violated;

(3) the discharge of any water contaminant which may result in a hazard to public health; or

(4) a period longer than five years, except that for new discharges, the term of the discharge permit approval shall commence on the date the discharge begins, but in no event shall the term of the approval exceed seven years from the date the permit was issued; for those permits expiring more than five years from the date of issuance, the discharger shall give prior written notification to the department of the date the discharge is to commence; the term of the permit shall not exceed five years from that date.

[2-18-77, 6-26-80, 9-20-82, 7-2-81, 3-3-86, 12-1-95, 11-15-96; 20.6.2.3109 NMAC - Rn, 20 NMAC 6.2.III.3109, 1-15-01; A, 12-1-01; A, 9-15-02; A, 7-16-06; A, 8-31-15; A, 12-21-18]

20.6.2.3110 PUBLIC HEARING PARTICIPATION:

A. The secretary may appoint an impartial hearing officer to preside over the hearing. The hearing officer may be a department employee other than an employee of the bureau evaluating the application.

B. The hearing shall be at a place in the area affected by the facility for which the discharge permit proposal, modification or renewal is sought.

C. Any person who wishes to present technical evidence at the hearing shall, no later than ten (10) days prior to the hearing, file with the department, and if filed by a person who is not the applicant, serve on the applicant, a statement of intent to present evidence. A person who does not file a statement of intent to present evidence may present a general non-technical statement in support of or in opposition to the proposed discharge plan, modification or renewal. The statement of intent to present technical evidence shall include:

(1) the name of the person filing the statement;

(2) indication of whether the person filing the statement supports or opposes the proposed discharge plan proposal, modification or renewal;

(3) the name of each witness;

(4) an estimate of the length of the direct testimony of each witness;

(5) a list of exhibits, if any, to be offered into evidence at the hearing; and

(6) a summary or outline of the anticipated direct testimony of each witness.

D. At the hearing, the New Mexico Rules of Civil Procedure, SCRA 1986, 1-001 to 1-102 and the New Mexico Rules of Evidence, SCRA 1986, 11-101 to 11-1102 shall not apply. At the discretion of the hearing officer, the rules may be used as guidance. Any reference to the Rules of Civil Procedure and the Rules of Evidence shall not be construed to extend or otherwise modify the authority and jurisdiction of the department under the Act.

E. The hearing officer shall conduct a fair and impartial proceeding, assure that the facts are fully elicited, and avoid delay. The hearing officer shall have authority to take all measures necessary for the maintenance of order and for the efficient, fair and impartial adjudication of issues arising in the proceedings.

F. At the hearing, all persons shall be given a reasonable chance to submit data, views or arguments orally or in writing and to examine witnesses testifying at the hearing.

G. Unless otherwise allowed by the hearing officer, testimony shall be presented in the following order:

(1) testimony by and examination of the applicant or permittee proving the facts relied upon to justify the proposed discharge plan, renewal or modification and meeting the requirements of the regulations;

(2) testimony by and examination of technical witnesses supporting or opposing approval, approval subject to conditions, or disapproval of the proposed discharge plan, renewal or modification, in any reasonable order;

(3) testimony by the general public; and

(4) rebuttal testimony, if appropriate.

H. The secretary may provide translation service at a public hearing conducted in a locale where the Department can reasonably expect to receive testimony from non-English speaking people.

I. If determined useful by the hearing officer, within thirty (30) days after conclusion of the hearing, or within such time as may be fixed by the hearing officer, the hearing officer may allow proposed findings of fact and conclusions of law and closing argument. All such submissions, if allowed, shall be in writing, shall be served upon the applicant or permittee, the department and all persons who request copies in advance in writing, and shall contain adequate references to the record and authorities relied on. No new evidence shall be presented unless specifically allowed by the hearing officer.

J. The department shall make an audio recording of the hearing. If the applicant or permittee, or a participant requests a written transcript or certified copy of the audio recording, the requestor shall pay the cost of the transcription or audio copying.

K. The hearing officer shall issue a report within thirty (30) days after the close of the hearing record. The report may include findings of fact, conclusions regarding all material issues of law or discretion, as well as reasons therefore. The report shall be served on the applicant or permittee, the department, and all persons who request copies in advance in writing. The report will be available for public inspection at the department's office in Santa Fe and at the field office closest to the point of the proposed discharge.

L. The secretary shall issue a decision in the matter no later than thirty (30) days of receipt of the hearing report. The decision shall be served and made available for inspection pursuant to Subsection K of this section.

M. Any person who testifies at the hearing or submits a written statement for the record will be considered a participant for purposes of Subsection 20.6.2.3113 NMAC and NMSA 1978, Section 74-6-5.N. [2-18-77, 12-1-95, 11-15-96; 20.6.2.3110 NMAC - Rn, 20 NMAC 6.2.III.3110, 1-15-01; A, 12-1-01]

20.6.2.3111 TRANSFER OF DISCHARGE PERMIT: No purported transfer of any discharge permit shall be effective to create, alter or extinguish any right or responsibility of any person subject to this Part, unless the following transfer requirements are met:

A. Prior to any transfer of ownership, control, or possession (whether by lease, conveyance or otherwise) of a facility with a discharge permit, the transferor shall notify the transferee in writing of the existence of the discharge permit, and shall deliver or send by certified mail to the department a copy of such written notification, together with a certification or other proof that such notification has in fact been received by the transferee.

B. Upon receipt of such notification, the transferee shall have the duty to inquire into all of the provisions and requirements contained in such discharge permit, and the transferee shall be charged with notice of all such provisions and requirements as they appear of record in the department's file or files concerning such discharge permit.

C. Until both ownership and possession of the facility have been transferred to the transferee, the transferor shall continue to be responsible for any discharge from the facility.

D. Upon assuming either ownership or possession of the facility, the transferee shall have the same rights and responsibilities under the discharge permit as were applicable to the transferor.

E. Nothing in this section or in this part shall be construed to relieve any person of responsibility or liability for any act or omission which occurred while that person owned, controlled or was in possession of the facility.

[2-18-77, 12-24-87, 12-1-95, 11-15-96; 20.6.2.3111 NMAC - Rn, 20 NMAC 6.2.III.3111, 1-15-01; A, 12-1-01]

20.6.2.3112 APPEALS OF SECRETARY'S DECISIONS:

A. If the secretary approves, approves subject to conditions, or disapproves a proposed discharge plan, renewal or modification, or modifies or terminates a discharge permit, appeal therefrom shall be in accordance with the provisions of Sections 74-6-5(N), (O) and (P), NMSA 1978. The filing of an appeal does not act as a stay of any provision of the Act, the regulations, or any permit issued pursuant to the Act, unless otherwise ordered by the secretary or the commission.

B. If the secretary determines that a discharger is not exempt from obtaining a discharge permit, or that the material to be discharged contains any toxic pollutant listed in 20.6.2.7 NMAC, which is not included in the numerical standards of Paragraph (1) of Subsection A of 20.6.2.3103 NMAC, then the discharger may appeal such determination by filing with the commission's secretary a notice of appeal to the commission within thirty days after receiving the secretary's written determination, and the appeal therefrom and any action of the commission thereon shall be in accordance with the provisions of Sections 74-6-5(O), (P), (Q), (R) and (S) NMSA 1978.

C. Proceedings before the commission shall be conducted in accordance with the commission's adjudicatory procedures, 20 NMAC 1.3.

[2-18-77, 7-2-81, 12-1-95, 11-15-96; 20.6.2.3112 NMAC - Rn, 20 NMAC 6.2.III.3112, 1-15-01; A, 12-1-01; A, 7-16-06; A, 12-21-18]

20.6.2.3113 APPEALS OF COMMISSION DECISIONS: An applicant, permittee or a person who participated in a permitting action and who is adversely affected by such action may appeal the decision of the commission in accordance with the provisions of Section 74-6-7(A), NMSA 1978.

[2-18-77, 12-1-95, 11-15-96; 20.6.2.3113 NMAC - Rn, 20 NMAC 6.2.III.3113, 1-15-01; A, 12-1-01]

20.6.2.3114 FEES:

A. **FEE AMOUNT AND SCHEDULE OF PAYMENT** - Every facility submitting a discharge permit application for approval or renewal shall pay the permit fees specified in Table 1 of this section and shall pay a filing fee as specified in Table 2 of this section to the Water Quality Management Fund. Every facility submitting a request for temporary permission to discharge pursuant to Subsection B of Section 20.6.2.3106 NMAC, or financial assurance pursuant to Paragraph 11 of Subsection A of Section 20.6.2.3107 NMAC shall pay the fees specified in Table 2 of this section to the Water Quality Management Fund.

B. Facilities applying for discharge permits which are subsequently withdrawn or denied shall pay one-half of the permit fee at the time of denial or withdrawal.

C. Every facility submitting an application for discharge permit modification will be assessed a filing fee plus one-half of the permit fee. Applications for both renewal and modification will pay the filing fee plus the permit fee.

D. If the secretary requires a discharge permit modification as a component of an enforcement action, the facility shall pay the applicable discharge permit modification fee. If the secretary requires a discharge permit modification outside the context of an enforcement action, the facility shall not be assessed a fee.

E. The secretary may waive or reduce fees for discharge permit modifications or renewals which require little or no cost for investigation or issuance.

F. Facilities shall pay the filing fee at the time of discharge permit application. The filing fee is nonrefundable. The required permit fees may be paid in a single payment at the time of discharge permit approval or in equal installments over the term of the discharge permit. Installment payments shall be remitted yearly, with the first installment due on the date of discharge permit approval. Subsequent installment payments shall be remitted yearly thereafter. The discharge permit or discharge permit application review of any facility shall be suspended or terminated if the facility fails to submit an installment payment by its due date.

G. Every three years beginning in 2004, the department shall review the fees specified in Table 1 and 2 of this section and shall provide a report to the commission. The department shall revise the fees as necessary in accordance with Section 74-6-5(J), NMSA 1978.

20.6.2.3114 TABLE 1 (gpd=gallons per day)

	Permit Fee
Agriculture <10,000 gpd	\$ 1,150
Agriculture 10,000 to 49,999 gpd	\$ 2,300
Agriculture 50,000 to 99,999 gpd	\$ 3,450

Agriculture 100,000 gpd or greater	\$ 4,600
Domestic Waste <10,000 gpd	\$ 1,150
Domestic Waste 10,000 to 49,999 gpd	\$ 2,300
Domestic Waste 50,000 to 99,999 gpd	\$ 3,450
Domestic Waste 100,000 to 999,999 gpd	\$ 4,600
Domestic Waste 1,000,000 to 9,999,999 gpd	\$ 7,000
Domestic Waste 10,000,000 gpd or greater	\$ 9,200
Food Processing <10,000 gpd	\$ 1,150
Food Processing 10,000 to 49,999 gpd	\$ 2,300
Food Processing 50,000 to 99,999 gpd	\$ 3,450
Food Processing 100,000 to 999,999 gpd	\$ 4,600
Food Processing 1,000,000 or greater	\$ 7,000
Grease/Septage surface disposal <10,000 gpd	\$ 1,725
Grease/Septage surface disposal 10,000 gpd or greater	\$ 3,450
Industrial <10,000 gpd; or <10,000 yd ³ of contaminated solids	\$ 1,725
Industrial 10,000 to 99,999 gpd; or 10,000 to 99,999 yd ³ of contaminated solids	\$ 3,450
Industrial 100,000 to 999,999 gpd; or 100,000 to 999,999 yd ³ of contaminated solids or greater	\$ 6,900
Industrial 1,000,000 gpd or greater; or 1,000,000 yd ³ of contaminated solids or greater	\$10,350
Discharge of remediation system effluent - remediation plan approved under separate regulatory authority	\$ 1,600
Mining dewatering	\$ 3,250
Mining leach dump	\$13,000
Mining tailings	\$13,000
Mining waste rock	\$13,000
Mining in-situ leach (except salt) and old stope leaching	\$13,000
Mining other (mines with minimal environmental impact, post closure operation and maintenance, evaporation lagoons and land application at uranium mines)	\$ 4,750
Gas Compressor Stations 0 to 1000 Horsepower	\$ 400
Gas Compressor Stations >1001 Horsepower	\$ 1,700
Gas Processing Plants	\$ 4,000
Injection Wells: Class I (non-hazardous)	\$ 4,500
Injection Wells: Class III and Geothermal	\$ 1,700
Oil and Gas Service Companies	\$ 1,700
Refineries	\$ 8,400
Crude Pump Station	\$ 1,200
Underground Gas Storage	\$ 1,700
Abatement of ground water and vadose zone contamination	\$ 2,600
General permit	\$ 600

20.6.2.3114 Table 2

	Fee Amount
Filing fee	\$100

Temporary permission	\$50
Financial assurance: approval of instrument	greater of \$250 or .01%
Financial assurance: annual review	greater of \$100 or .001%

[8-17-91, 12-1-95; 20.6.2.3114, Rn & A, 20 NMAC 6.2.III.3114, 01-01-01; A, 12-21-18]

20.6.2.3115 - 20.6.2.3999: [RESERVED]

[12-1-95; 20.6.2.3115 - 20.6.2.3999 NMAC - Rn, 20 NMAC 6.2.III.3115-4100, 1-15-01]

20.6.2.4000 PREVENTION AND ABATEMENT OF WATER POLLUTION:

[12-1-95; 20.6.2.4000 NMAC - Rn, 20 NMAC 6.2.IV, 1-15-01]

20.6.2.4001 - 20.6.2.4100: [RESERVED]

[12-1-95; 20.6.2.4001 - 20.6.2.4100 NMAC - Rn, 20 NMAC 6.2.III.3115-4100, 1-15-01]

20.6.2.4101 PURPOSE:

A. The purposes of Sections 20.6.2.4000 through 20.6.2.4115 NMAC are to:

(1) Abate pollution of subsurface water so that all ground water of the State of New Mexico which has a background concentration of 10,000 mg/L or less TDS, is either remediated or protected for use as domestic and agricultural water supply, and to remediate or protect those segments of surface waters which are gaining because of subsurface water inflow, for uses designated in the Water Quality Standards for Interstate and Intrastate Streams in New Mexico (20.6.4 NMAC); and

(2) Abate surface water pollution so that all surface waters of the State of New Mexico are remediated or protected for designated or attainable uses as defined in the Water Quality Standards for Interstate and Intrastate Streams in New Mexico (20.6.4 NMAC).

B. If the background concentration of any water contaminant exceeds the standard or requirement of Subsections A, B, and C of Section 20.6.2.4103 NMAC, pollution shall be abated by the responsible person to the background concentration.

C. The standards and requirements set forth in Section 20.6.2.4103 NMAC are not intended as maximum ranges and concentrations for use, and nothing herein contained shall be construed as limiting the use of waters containing higher ranges and concentrations.

[12-1-95; 20.6.2.4101 NMAC - Rn, 20 NMAC 6.2.IV.4101, 1-15-01; A, 12-21-18]

20.6.2.4102: [RESERVED]

[12-1-95; 20.6.2.4102 NMAC - Rn, 20 NMAC 6.2.IV.4102, 1-15-01]

20.6.2.4103 ABATEMENT STANDARDS AND REQUIREMENTS:

A. The vadose zone shall be abated as follows:

(1) water contaminants in the vadose zone shall not be capable of contaminating ground water or surface water, in excess of the standards in Subsections B and C below, through leaching, percolation or as the water table elevation fluctuates; and

(2) any constituent listed in 20.6.2.3103 NMAC or any toxic pollutant in the vadose zone shall be abated so that it is not capable of endangering human health due to inhalation of vapors that may accumulate in structures, utility infrastructure, or construction excavations.

B. Ground water pollution at any place of withdrawal for present or reasonably foreseeable future use, where the TDS concentration is 10,000 mg/L or less, shall be abated to meet the standards of Subsections A, B, and C of Section 20.6.2.3103 NMAC.

C. Surface water pollution shall be abated to conform to the Water Quality Standards for Interstate and Intrastate Streams in New Mexico (20.6.4 NMAC).

D. Subsurface water and surface water abatement shall not be considered complete until a minimum of eight (8) consecutive sampling events collected from all compliance sampling stations approved by the secretary, with a minimum of ninety (90) days between sampling events spanning a time period no greater than four (4) years, meet the abatement standards of Subsections A, B, and C of this section. Abatement of water contaminants measured in solid-matrix samples of the vadose zone shall be considered complete after one-time sampling from compliance stations approved by the secretary.

E. Alternative Abatement Standards: If the person abating water pollution pursuant to an approved abatement plan, or pursuant to the exemptions of 20.6.2.4105 NMAC, is unable to fully meet an abatement standard set forth in Subsections A and C of this section, the person may file a petition with the commission seeking approval of an alternative abatement standard.

(1) A petition for an alternative abatement standard shall demonstrate at least one of the following criteria:

- (a) compliance with the standard set forth in Subsections A and B of this section would not be feasible by the maximum use of commercially accepted abatement technology;
- (b) compliance with the standard set forth in Subsections A and B of this section would not be feasible by the maximum use of technology within the economic capability of the person;
- (c) there is no reasonable relationship between the economic and social costs and benefits of attainment of the standard set forth in Subsections A and B of this section; or
- (d) compliance with the standard set forth in Subsections A and B of this section is technically infeasible following the maximum use of commercially accepted abatement technology, as demonstrated by a statistically valid extrapolation of the decrease in concentration of any water contaminant over a twenty (20) year period, such that projected future reductions during that time would be less than 20 percent of the concentration at the time technical infeasibility is proposed. Technical infeasibility proposals that involved the use of experimental abatement technology shall be considered at the discretion of the commission. A statistically valid decrease cannot be demonstrated by fewer than eight (8) consecutive sampling events. Sampling events demonstrating a statistically valid decrease shall be collected with a minimum of ninety (90) days between sampling events and shall not span a time period greater than four (4) years.

(2) A petition for alternative abatement standards shall specify, in addition to the information required by Subsection A of 20.6.2.1210 NMAC the following:

- (a) the water contaminant for which the alternative abatement standard is proposed;
- (b) the alternative abatement standard proposed;
- (c) the three-dimensional body of water pollution for which approval is sought;
- (d) a summary of all actions taken to abate water pollution to standards; and
- (e) other information as deemed necessary, which may include a transport, fate and risk assessment in accordance with accepted methods.

(3) The commission may approve an alternative abatement standard if the petitioner demonstrates that:

- (a) at least one of the criteria set forth in Paragraph 1 of Subsection E of this Section has been met;
- (b) the proposed alternative abatement standard is technically achievable and cost benefit justifiable; and
- (c) compliance with the proposed alternative abatement standard will not create a present or future hazard to public health or undue damage to property.

(4) An alternative abatement standard shall only be granted after a public hearing, as required by NMSA 1978, Section 74-6-4(H) of the water Quality Act.

(5) The commission shall review petitions for alternative abatement standards in accordance with the procedures for review of variance petitions provided in the commission's adjudicatory procedures, 20.1.3 NMAC.

F. For a site where abatement activities include post-completion monitoring, maintenance of engineering controls, remediation systems, affirmation of non-residential use, or port-closure care, institutional controls such as well drilling restrictions under 19.27.5 NMAC, deed restrictions, easements or other legal restrictions binding on successors in interest to the site may be required by the secretary.
[12-1-95, 11-15-96; 20.6.2.4103 NMAC - Rn, 20 NMAC 6.2.IV.4103, 1-15-01; A, 12-21-18]

20.6.2.4104 ABATEMENT PLAN REQUIRED:

A. Unless otherwise provided by this Part, all responsible persons who are abating, or who are required to abate, water pollution in excess of the standards and requirements set forth in Section 20.6.2.4103 NMAC of this Part shall do so pursuant to an abatement plan approved by the secretary. When an abatement plan has been approved, all actions leading to and including abatement shall be consistent with the terms and conditions of the abatement plan.

B. In the event of a transfer of the ownership, control or possession of a facility for which an abatement plan is required or approved, where the transferor is a responsible person, the transferee also shall be

considered a responsible person for the duration of the abatement plan, and may jointly share the responsibility to conduct the actions required by this Part with other responsible persons. The transferor shall notify the transferee in writing, at least thirty (30) days prior to the transfer, that an abatement plan has been required or approved for the facility, and shall deliver or send by certified mail to the secretary a copy of such notification together with a certificate or other proof that such notification has in fact been received by the transferee. The transferor and transferee may agree to a designated responsible person who shall assume the responsibility to conduct the actions required by this Part. The responsible persons shall notify the secretary in writing if a designated responsible person is agreed upon. If the secretary determines that the designated responsible person has failed to conduct the actions required by this Part, the secretary shall notify all responsible persons of this failure in writing and allow them thirty (30) days, or longer for good cause shown, to conduct the required actions before issuing a compliance order pursuant to Section 20.6.2.1220 NMAC.

C. The secretary may require the responsible person(s) to submit a financial assurance plan which covers the estimated costs to conduct the actions required by the abatement plan. Such a financial assurance plan shall be consistent with any financial assurance requirements adopted by the commission.

D. The Secretary may require an oversight funding agreement with the responsible person for abatement plans which compensates the department for reasonable costs associated with the oversight of activities. [12-1-95; 20.6.2.4104 NMAC - Rn, 20 NMAC 6.2.IV.4104, 1-15-01; A, 12-21-18]

20.6.2.4105 EXEMPTIONS FROM ABATEMENT PLAN REQUIREMENTS:

A. Except as provided in Subsection B of this Section, Sections 20.6.2.4104 and 20.6.2.4106 NMAC do not apply to a person who is abating water pollution:

(1) from a storage tank, under the authority of the Petroleum Storage Tank Regulations (20.5 NMAC) adopted by the New Mexico Environmental Improvement Board, or in accordance with the New Mexico Ground Water Protection Act;

(2) under the authority of the U.S. Environmental Protection Agency pursuant to either the federal Comprehensive Environmental Response, Compensation and Liability Act, and amendments, or the Resource Conservation and Recovery Act;

(3) under the authority of the secretary pursuant to the Hazardous Waste Management Regulations (20.4.1 NMAC) adopted by the New Mexico Environmental Improvement Board;

(4) under the authority of the U.S. Nuclear Regulatory Commission or the U.S. Department of Energy pursuant to the Atomic Energy Act;

(5) from a solid waste landfill, under the authority of the secretary pursuant to the Solid Waste Management Regulations (20.9.1 NMAC) adopted by the N.M. Environmental Improvement Board;

(6) under the authority of a ground water discharge plan approved by the secretary, provided that such abatement is consistent with the requirements and provisions of Sections 20.6.2.4101, 20.6.2.4103, Subsections C and E of Section 20.6.2.4106, Sections 20.6.2.4107 and 20.6.2.4112 NMAC;

(7) under the authority of a Letter of Understanding, Settlement Agreement or Administrative Order on Consent signed by the secretary prior to December 1, 1995, provided that abatement is being performed in full compliance with the terms of the Letter of Understanding, Settlement Agreement or Administrative Order on Consent; and

(8) on an emergency basis, or while abatement plan approval is pending, or in a manner that will result in compliance with the standards and requirements set forth in Section 20.6.2.4103 NMAC within one hundred and eighty (180) days after notice is required to be given pursuant to Paragraph (1) of Subsection A of Section 20.6.2.1203 NMAC, provided that the delegated agency does not object to the abatement action pursuant to Paragraphs (6) and (7) of Subsection A of Section 20.6.2.1203 NMAC.

B. If the secretary determines that abatement of water pollution subject to Subsection A of this section will not meet the standards of Subsections A, B, and C of Section 20.6.2.4103 NMAC, or that additional action is necessary to protect health, welfare, environment or property, the secretary may notify a responsible person, by certified mail, to submit an abatement plan pursuant to Section 20.6.2.4104 and Subsection A of Section 20.6.2.4106 NMAC. The notification shall state the reasons for the secretary's determination. In any appeal of the secretary's determination under this Section, the secretary shall have the burden of proof.

C. Sections 20.6.2.4104 and 20.6.2.4106 NMAC do not apply to the following activities:

(1) Discharges subject to an effective and enforceable National Pollutant Discharge Elimination System (NPDES) permit;

(2) Land application of ground water contaminated with nitrogen originating from human or animal waste and not otherwise exceeding the standards of Subsection A of Section 20.6.2.3103 NMAC, provided that it is done in compliance with a discharge plan approved by the secretary;

(3) Abatement of water pollution resulting from the withdrawal and decontamination or blending of polluted water for use as a public or private drinking-water supply, by any person other than a responsible person, unless the secretary determines that a hazard to public health may result; and

(4) Reasonable operation and maintenance of irrigation and flood control facilities.
[12-1-95; 20.6.2.4105 NMAC - Rn, 20 NMAC 6.2.IV.4105, 1-15-01; A, 10-15-03; A, 12-21-18]

20.6.2.4106 ABATEMENT PLAN PROPOSAL:

A. Except as provided for in Section 20.6.2.4105 NMAC, a responsible person shall, within sixty (60) days of receipt of written notice from the secretary that an abatement plan is required, submit an abatement plan proposal to the secretary for approval. For good cause shown, the secretary may allow for a total of one hundred and twenty (120) days to prepare and submit the abatement plan proposal.

B. Voluntary Abatement:

(1) Any person wishing to abate water pollution in excess of the standards and requirements set forth in Section 20.6.2.4103 NMAC may submit a Stage 1 abatement plan proposal to the secretary for approval. Following approval by the secretary of a final site investigation report prepared pursuant to Stage 1 of an abatement plan, any person may submit a Stage 2 abatement plan proposal to the secretary for approval.

(2) Following approval of a Stage 1 or Stage 2 abatement plan proposal under Paragraph (1) of Subsection B of this Section, the person submitting the approved plan shall be a responsible person under Sections 20.6.2.4000 through 20.6.2.4115 NMAC for the purpose of performing the approved Stage 1 or Stage 2 abatement plan. Nothing in this Section shall preclude the secretary from applying Paragraph (9) of Subsection A of Section 20.6.2.1203 NMAC to a responsible person if applicable.

C. Stage 1 Abatement Plan: The purpose of Stage 1 of the abatement plan shall be to design and conduct a site investigation that will adequately define site conditions, and provide the data necessary to select and design an effective abatement option. Stage 1 of the abatement plan may include, but not necessarily be limited to, the following information depending on the media affected, and as reasonably needed to select and implement an expeditious abatement option:

(1) Descriptions of the site, including a site map, and of site history including the nature of the discharge that caused the water pollution, and a summary of previous investigations;

(2) Site investigation workplan to define:
(a) site geology and hydrogeology, the vertical and horizontal extent and magnitude of vadose-zone and ground water contamination, subsurface hydraulic parameters including hydraulic conductivity, transmissivity, storativity, and rate and direction of contaminant migration, inventory of water wells inside and within one (1) mile from the perimeter of the three-dimensional body where the standards set forth in Subsection B of Section 20.6.2.4103 NMAC are exceeded, and location and number of such wells actually or potentially affected by the pollution; and

(b) surface water hydrology, seasonal stream flow characteristics, ground water/surface water relationships, the vertical and horizontal extent and magnitude of contamination and impacts to surface water and stream sediments. The magnitude of contamination and impacts on surface water may be, in part, defined by conducting a biological assessment of fish, benthic macroinvertebrates and other wildlife populations. Seasonal variations should be accounted for when conducting these assessments.

(3) Monitoring program, including sampling stations and frequencies, for the duration of the abatement plan that may be modified, after approval by the secretary, as additional sampling stations are created;

(4) Quality assurance plan, consistent with the sampling and analytical techniques listed in Subsection B of Section 20.6.2.3107 NMAC and with Section 20.6.4.10 NMAC of the Water Quality Standards for Interstate and Intrastate Streams in New Mexico (20.6.4 NMAC), for all work to be conducted pursuant to the abatement plan;

(5) Site health and safety plan for all work to be performed pursuant to the abatement plan;

(6) A schedule for all Stage 1 abatement plan activities, including the submission of summary quarterly progress reports, and the submission, for approval by the secretary, of a detailed final site investigation report; and

(7) Any additional information that may reasonably be required to design and perform an adequate site investigation.

D. Stage 2 Abatement Plan: Any responsible person shall submit a Stage 2 abatement plan proposal to the secretary for approval within sixty (60) days after approval by the secretary of the final site investigation report prepared pursuant to Stage 1 of the abatement plan. The secretary may grant approval for an extension of time to submit a State 2 abatement plan for good cause shown.

E. The purpose of Stage 2 of the abatement plan shall be to select and design, if necessary, an abatement option that, when implemented, will result in attainment of the abatement standards and requirements set forth in Section 20.6.2.4103 NMAC, including post-closure maintenance activities. Stage 2 of the abatement plan should include, at a minimum, the following information:

- (1) Brief description of the current situation at the site;
 - (2) Development and assessment of abatement options;
 - (3) Description, justification and design, if necessary, of preferred abatement option;
 - (4) Modification, if necessary, of the monitoring program approved pursuant to Stage 1 of the abatement plan, including the designation of pre and post abatement-completion sampling stations and sampling frequencies to be used to demonstrate compliance with the standards and requirements set forth in Section 20.6.2.4103 NMAC;
 - (5) Site maintenance activities, if needed, proposed to be performed after termination of abatement activities;
 - (6) A schedule for the duration of abatement activities, including the submission of summary quarterly progress reports;
 - (7) A public notification proposal designed to satisfy the requirements of Subsections B and C of Sections 20.6.2.4108 and 20.6.2.4108 NMAC; and
 - (8) Any additional information that may be reasonably required to select, describe, justify and design an effective abatement option.
- [12-1-95; 20.6.2.4106 NMAC - Rn, 20 NMAC 6.2.IV.4106, 1-15-01; A, 12-21-18]

20.6.2.4107 OTHER REQUIREMENTS:

A. Any responsible person shall allow any authorized representative of the secretary to:

- (1) upon presentation of proper credentials, enter the facility at reasonable times;
- (2) inspect and copy records required by an abatement plan;
- (3) inspect any treatment works, monitoring and analytical equipment;
- (4) sample any wastes, ground water, surface water, stream sediment, plants, animals, or vadose-zone material including vadose-zone vapor;
- (5) use monitoring systems and wells under such responsible person's control in order to collect samples of any media listed in Paragraph (4) of Subsection A of this section; and
- (6) gain access to off-site property not owned or controlled by such responsible person, but accessible to such responsible person through a third-party access agreement, provided that it is allowed by the agreement.

B. Any responsible person shall provide the secretary, or a representative of the secretary, with at least four (4) working days advance notice of any sampling to be performed pursuant to an abatement plan, or any well plugging, abandonment or destruction at any facility where an abatement plan has been required.

C. Any responsible person wishing to plug, abandon or destroy a monitoring or water supply well within the perimeter of the 3-dimensional body where the standards set forth in Subsection B of Section 20.6.2.4103 NMAC are exceeded, at any facility where an abatement plan has been required, shall propose such action by certified mail to the secretary for approval, unless such approval is required from the State Engineer. The proposed action shall be designed to prevent water pollution that could result from water contaminants migrating through the well or borehole. The proposed action shall not take place without written approval from the secretary, unless written approval or disapproval is not received by the responsible person within thirty (30) days of the date of receipt of the proposal.

[12-1-95; 20.6.2.4107 NMAC - Rn, 20 NMAC 6.2.IV.4107, 1-15-01]

20.6.2.4108 PUBLIC NOTICE AND PARTICIPATION:

A. Within thirty (30) days of filing of a Stage 1 abatement plan proposal, the secretary shall issue a news release summarizing:

- (1) the source, extent, magnitude and significance of water pollution, as known at that time;
- (2) the proposed Stage 1 abatement plan investigation; and

(3) the name and telephone number of an agency contact who can provide additional information.

B. Any person proposing a Stage 2 abatement plan, a significant modification to a Stage 2 abatement plan, or an alternative abatement standard shall provide notice of the proposal to the following persons:

(1) the public, who shall be notified through publication of a notice in newspapers of general circulation in this state and in the county where the abatement will occur or where the water body that would be affected by a proposed alternative abatement standard is located, and, in areas with large percentages of non-English speaking people, through the mailing of the public notice in English to a bilingual radio station serving the area where the abatement will occur with a request that it be aired as a public service announcement in the predominant non-English language of the area;

(2) those persons, as identified by the secretary, who have requested notification, who shall be notified by mail or email;

(3) the New Mexico Trustee for Natural Resources, and any other local, state or federal governmental agency affected, as identified by the secretary, which shall be notified by certified mail;

(4) owners and residents of surface property located inside, and within one (1) mile from, the perimeter of the geographic area where the standards and requirements set forth in Section 20.6.2.4103 NMAC are exceeded who shall be notified by a means approved by the secretary; and

(5) the Governor or President of each Indian Tribe, Pueblo or Nation within the state of New Mexico, as identified by the secretary, who shall be notified by mail or email.

C. The public notice proposal for a Stage 2 abatement plan proposal or significant modification of a Stage 2 abatement plan shall be submitted to the secretary for approval with a proposed Stage 2 abatement plan, or significant modification of a Stage 2 abatement plan, and shall include:

(1) name and address of the responsible person;

(2) location of the proposed abatement;

(3) brief description of the nature of the water pollution and of the proposed abatement action;

(4) brief description of the procedures followed by the secretary in making a final determination;

(5) statement on the comment period;

(6) statement that a copy of the abatement plan can be viewed by the public at the department's main office or at the department field office for the area in which the discharge occurred;

(7) statement that written comments on the abatement plan, and requests for a public meeting or hearing that include the reasons why a meeting or hearing should be held, will be accepted for consideration if sent to the secretary within sixty (60) days after the date of public notice; and

(8) address and phone number at which interested persons may obtain further information.

D. The public notice proposal for a proposed alternative abatement standard shall be submitted to the secretary for approval thirty (30) days prior to the filing of a petition for alternative abatement standards, and shall include:

(1) name and address of the responsible person;

(2) location of the proposed alternative abatement standards;

(3) brief description of the nature of the water pollution and of the proposed alternative abatement standards;

(4) brief description of the procedures followed by the commission in making a final determination on a petition for alternate abatement standards;

(5) statement that a copy of the petition for alternate abatement standards petition can be viewed by the public at the department's main office or at the department field office for the area in which the affected water body is occurring;

(6) statement on how the public can request to be placed on a facility-specific mailing list for notification of any hearing conducted on the petition for alternate abatement standards pursuant to 20.1.3 NMAC; and

(7) address and phone number at which interested persons may obtain further information.

E. Within thirty (30) days of the secretary's approval of a Stage 2 abatement plan public notice proposal, any responsible person shall provide to the secretary proof of public notice to the persons listed in Subsection B of 20.6.2.4108 NMAC.

F. For a proposed Stage 2 abatement plan or significant modification of a Stage 2 abatement plan, a public meeting or hearing may be held if the secretary determines there is significant public interest. Notice of the

time and place of the meeting or hearing shall be given at least thirty (30) days prior to the meeting or hearing pursuant to Subsections A and B above. The secretary may appoint a meeting facilitator or hearing officer. The secretary may require the responsible person to prepare for approval by the secretary a fact sheet, to be distributed at the public meeting or hearing and afterwards upon request, written in English and Spanish, describing site history, the nature and extent of water pollution, and the proposed abatement. The record of the meeting or hearing, requested under this Section, consists of a tape recorded or transcribed session, provided that the cost of a court recorder shall be paid by the person requesting the transcript. If requested by the secretary, the responsible person will provide a translator approved by the secretary at a public meeting or hearing conducted in a locale where testimony from non-English speaking people can reasonably be expected. At the meeting or hearing, all interested persons shall be given a reasonable chance to submit data, views or arguments orally or in writing, and to ask questions of the secretary or the secretary's designee and of the responsible person, or their authorized representatives.

G. An alternative abatement standard shall only be granted after a public hearing before the commission, as required by NMSA 1978, Section 74-6-4(H) of the Water Quality Act. The commission shall review petitions for alternative abatement standards in accordance with the procedures for review of variance petitions provided in the commission's adjudicatory procedures, 20.1.3 NMAC.
[12-1-95; 20.6.2.4108 NMAC - Rn, 20 NMAC 6.2.IV.4108, 1-15-01; A, 12-21-18]

20.6.2.4109 SECRETARY APPROVAL OR NOTICE OF DEFICIENCY OF SUBMITTALS:

A. The secretary shall, within sixty (60) days of receiving a Stage 1 abatement plan proposal, a site investigation report, or an abatement completion report, approve the document, or notify the responsible person of the document's deficiency, based upon the information available.

B. The secretary shall, within thirty (30) days of receiving a fact sheet, or Stage 2 abatement plan public notice proposal, approve or notify the responsible person of the document's deficiency, based upon the information available.

C. If no public meeting or hearing is held pursuant to Subsection E of Section 20.6.2.4108 NMAC, then the secretary shall, within 120 days of receiving a Stage 2 abatement plan proposal, approve the plan, or notify the responsible person of the plan's deficiency, based upon the information available.

D. If a public meeting or hearing is held pursuant to Subsection E of Section 20.6.2.4108, then the secretary shall, within sixty (60) days of receipt of all required information, approve Stage 2 of the abatement plan proposal, or notify the responsible person of the plan's deficiency, based upon the information contained in the plan and information submitted at the meeting or hearing.

E. If the secretary notifies a responsible person of any deficiencies in a site investigation report, or in a Stage 1 or Stage 2 abatement plan proposal, the responsible person shall submit a modified document to cure the deficiencies specified by the secretary within thirty (30) days of receipt of the notice of deficiency. The responsible person shall be in violation of Sections 20.6.2.4000 through 20.6.2.4115 NMAC if he fails to submit a modified document within the required time, or if the modified document does not make a good faith effort to cure the deficiencies specified by the secretary.

F. Provided that the other requirements of this Part are met and provided further that Stage 2 of the abatement plan, if implemented, will result in the standards and requirements set forth in Section 20.6.2.4103 NMAC being met within a schedule that is reasonable given the particular circumstances of the site, the secretary shall approve the plan.

[12-1-95; 20.6.2.4109 NMAC - Rn, 20 NMAC 6.2.IV.4109, 1-15-01; A, 12-21-18]

20.6.2.4110 INVESTIGATION AND ABATEMENT: Any responsible person who receives approval for Stage 1 and/or Stage 2 of an abatement plan shall conduct all investigation, abatement, monitoring and reporting activity in full compliance with Sections 20.6.2.4000 through 20.6.2.4115 NMAC and according to the terms and schedules contained in the approved abatement plans.

[12-1-95; 20.6.2.4110 NMAC - Rn, 20 NMAC 6.2.IV.4110, 1-15-01]

20.6.2.4111 ABATEMENT PLAN MODIFICATION:

A. Any approved abatement plan may be modified, at the written request of the responsible person, in accordance with Sections 20.6.2.4000 through 20.6.2.4115 NMAC, and with written approval of the secretary.

B. If data submitted pursuant to any monitoring requirements specified in the approved abatement plan or other information available to the secretary indicates that the abatement action is ineffective, or is creating unreasonable injury to or interference with health, welfare, environment or property, the secretary may require a

responsible person to modify an abatement plan within the shortest reasonable time so as to effectively abate water pollution which exceeds the standards and requirements set forth in Section 20.6.2.4103 NMAC, and to abate and prevent unreasonable injury to or interference with health, welfare, environment or property.
[12-1-95; 20.6.2.4111 NMAC - Rn, 20 NMAC 6.2.IV.4111, 1-15-01]

20.6.2.4112 COMPLETION AND TERMINATION:

A. Abatement shall be considered complete when the standards and requirements set forth in Section 20.6.2.4103 NMAC are met. At that time, the responsible person shall submit an abatement completion report, documenting compliance with the standards and requirements set forth in Section 20.6.2.4103 NMAC, to the secretary for approval. The abatement completion report also shall propose any changes to long term monitoring and site maintenance activities, if needed, to be performed after termination of the abatement plan.

B. Provided that the other requirements of this Part are met and provided further that the standards and requirements set forth in Section 20.6.2.4103 NMAC have been met, the secretary shall approve the abatement completion report. When the secretary approves the abatement completion report, he shall also notify the responsible person in writing that the abatement plan is terminated.

[12-1-95; 20.6.2.4112 NMAC - Rn, 20 NMAC 6.2.IV.4112, 1-15-01]

20.6.2.4113 DISPUTE RESOLUTION: In the event of any technical dispute regarding the requirements of Paragraph (9) of Subsection A and Subsection E of Section 20.6.2.1203, Sections 20.6.2.4103, 20.6.2.4105, 20.6.2.4106, 20.6.2.4111 or 20.6.2.4112 NMAC, including notices of deficiency, the responsible person may notify the secretary by certified mail that a dispute has arisen, and desires to invoke the dispute resolution provisions of this Section, provided that such notification must be made within thirty (30) days after receipt by the responsible person of the decision of the secretary that causes the dispute. Upon such notification, all deadlines affected by the technical dispute shall be extended for a thirty (30) day negotiation period, or for a maximum of sixty (60) days if approved by the secretary for good cause shown. During this negotiation period, the secretary or his/her designee and the responsible person shall meet at least once. Such meeting(s) may be facilitated by a mutually agreed upon third party, but the third party shall assume no power or authority granted or delegated to the secretary by the Water Quality Act or by the commission. If the dispute remains unresolved after the negotiation period, the decision of secretary shall be final.

[12-1-95; 20.6.2.4113 NMAC - Rn, 20 NMAC 6.2.IV.4113, 1-15-01]

20.6.2.4114 APPEALS FROM SECRETARY'S DECISIONS:

A. If the secretary determines that an abatement plan is required pursuant to Paragraph (9) of Subsection A of 20.6.2.1203, Subsection F of 20.6.2.3109, or Subsection B of 20.6.2.4105 NMAC, approves or provides notice of deficiency of a proposed abatement plan, or abatement completion report, or modifies or terminates an approved abatement plan, he shall provide written notice of such action by certified mail to the responsible person and any person who participated in the action.

B. Any person who participated in the action before the secretary and who is adversely affected by the action listed in Subsection A of 20.6.2.4114 NMAC may file a petition requesting a review before the commission.

C. The petition shall be made in writing to the commission and shall be filed with the commission's secretary within thirty (30) days after receiving notice of the secretary's action. The petition shall specify the portions of the action to which the petitioner objects, certify that a copy of the petition has been mailed or hand-delivered to the secretary, and to the applicant or permittee if the petitioner is not the applicant or permittee, and attach a copy of the action for which review is sought. Unless a timely petition for hearing is made, the secretary's action is final.

D. The proceedings before the commission shall be conducted as provided in the commission's adjudicatory procedures, 20 NMAC 1.3.

E. The cost of the court reporter for the hearing shall be paid by the petitioner.

F. The appeal provisions do not relieve the owner, operator or responsible person of their obligations to comply with any federal or state laws or regulations.

[12-1-95, 11-15-96; 20.6.2.4114 NMAC - Rn, 20 NMAC 6.2.IV.4114, 1-15-01; A, 7-16-06; A, 12-21-18]

20.6.2.4115 COURT REVIEW OF COMMISSION DECISIONS: Court review of commission decisions shall be as provided by law.

[12-1-95; 20.6.2.4115 NMAC - Rn, 20 NMAC 6.2.IV.4115, 1-15-01]

20.6.2.4116 - 20.6.2.4999: [RESERVED]

[12-1-95; 20.6.2.4116 - 20.6.2.4999 NMAC - Rn, 20 NMAC 6.2.IV.4116-5100, 1-15-01]

20.6.2.5000 UNDERGROUND INJECTION CONTROL:

[12-1-95; 20.6.2.5000 NMAC - Rn, 20 NMAC 6.2.V, 1-15-01]

20.6.2.5001 PURPOSE: The purpose of 20.6.2.5000 through 20.6.2.5399 NMAC controlling discharges from underground injection control wells is to protect all ground water of the state of New Mexico which has an existing concentration of 10,000 mg/l or less TDS, for present and potential future use as domestic and agricultural water supply, and to protect those segments of surface waters which are gaining because of ground water inflow for uses designated in the New Mexico water quality standards. 20.6.2.5000 through 20.6.2.5399 NMAC include notification requirements, and requirements for discharges directly into the subsurface through underground injection control wells.

[20.6.2.5001 NMAC - N, 12-1-01; A, 8-31-15]

20.6.2.5002 UNDERGROUND INJECTION CONTROL WELL CLASSIFICATIONS:

A. Underground injection control wells include the following.

(1) Any dug hole or well that is deeper than its largest surface dimension, where the principal function of the hole is emplacement of fluids.

(2) Any septic tank or cesspool used by generators of hazardous waste, or by owners or operators of hazardous waste management facilities, to dispose of fluids containing hazardous waste.

(3) Any subsurface distribution system, cesspool or other well which is used for the injection of wastes.

B. Underground injection control wells are classified as follows:

(1) Class I wells inject fluids beneath the lowermost formation that contains 10,000 milligrams per liter or less TDS. Class I hazardous or radioactive waste injection wells inject fluids containing any hazardous or radioactive waste as defined in 74-4-3 and 74-4A-4 NMSA 1978 or 20.4.1.200 NMAC (incorporating 40 C.F.R. Section 261.3), including any combination of these wastes. Class I non-hazardous waste injection wells inject non-hazardous and non-radioactive fluids, and they inject naturally-occurring radioactive material (NORM) as provided by 20.3.1.1407 NMAC.

(2) Class II wells inject fluids associated with oil and gas recovery;

(3) Class III wells inject fluids for extraction of minerals or other natural resources, including sulfur, uranium, metals, salts or potash by in situ extraction. This classification includes only in situ production from ore bodies that have not been conventionally mined. Solution mining of conventional mines such as stopes leaching is included in Class V.

(4) Class IV wells inject fluids containing any radioactive or hazardous waste as defined in 74-4-3 and 74-4A-4 NMSA 1978, including any combination of these wastes, above or into a formation that contains 10,000 mg/l or less TDS.

(5) Class V wells inject a variety of fluids and are those wells not included in Class I, II, III or IV. Types of Class V wells include, but are not limited to, the following:

(a) domestic liquid waste injection wells:

(i) domestic liquid waste disposal wells used to inject liquid waste volumes greater than that regulated by 20.7.3 NMAC through subsurface fluid distribution systems or vertical wells;

(ii) septic system wells used to emplace liquid waste volumes greater than that regulated by 20.7.3 NMAC into the subsurface, which are comprised of a septic tank and subsurface fluid distribution system;

(iii) large capacity cesspools used to inject liquid waste volumes greater than that regulated by 20.7.3 NMAC, including drywells that sometimes have an open bottom or perforated sides;

(b) industrial waste injection wells:

(i) air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling;

(ii) dry wells used for the injection of wastes into a subsurface formation;

(iii) injection wells associated with the recovery of geothermal energy for heating, aquaculture and production of electrical power;

into the subsurface;

- (iv) stormwater drainage wells used to inject storm runoff from the surface
- (v) motor vehicle waste disposal wells that receive or have received fluids from vehicular repair or maintenance activities;
- (vi) car wash waste disposal wells used to inject fluids from motor vehicle washing activities;

(c) mining injection wells:

- (i) stopes leaching wells used for solution mining of conventional mines;
- (ii) brine injection wells used to inject spent brine into the same formation from which it was withdrawn after extraction of halogens or their salts;
- (iii) backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined out portions of subsurface mines whether water injected is a radioactive waste or not;
- (iv) injection wells used for in situ recovery of lignite, coal, tar sands, and oil shale;

(d) ground water management injection wells:

- (i) ground water remediation injection wells used to inject contaminated ground water that has been treated to ground water quality standards;
- (ii) in situ ground water remediation wells used to inject a fluid that facilitates vadose zone or ground water remediation.
- (iii) recharge wells used to replenish the water in an aquifer, including use to reclaim or improve the quality of existing ground water;
- (iv) barrier wells used to inject fluids into ground water to prevent the intrusion of saline or contaminated water into ground water of better quality;
- (v) subsidence control wells (not used for purposes of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water;
- (vi) wells used in experimental technologies;

(e) agricultural injection wells - drainage wells used to inject fluids into ground water to prevent the intrusion of saline or contaminated water into ground water of better quality.

[20.6.2.5002 NMAC - N, 12-1-01; A, 8-1-14; A, 8-31-15; A, 12-21-18]

20.6.2.5003 NOTIFICATION AND GENERAL OPERATION REQUIREMENTS FOR ALL

UNDERGROUND INJECTION CONTROL WELLS: All operators of underground injection control wells, except those wells regulated under the Oil and Gas Act, the Geothermal Resources Development Act, and the Surface Mining Act, shall:

- A.** for existing underground injection control wells, submit to the secretary the information enumerated in Subsection C of 20.6.2.1201 NMAC of this part; provided, however, that if the information in Subsection C of 20.6.2.1201 NMAC has been previously submitted to the secretary and acknowledged by him, the information need not be resubmitted; and
 - B.** operate and continue to operate in conformance with 20.6.2.1 through 20.6.2.5399 NMAC;
 - C.** for new underground injection control wells, submit to the secretary the information enumerated in Subsection C of 20.6.2.1201 NMAC of this part at least 120 days prior to well construction.
- [9-20-82, 12-1-95; 20.6.2.5300 NMAC - Rn, 20 NMAC 6.2.V.5300, 1-15-01; 20.6.2.5003 NMAC - Rn, 20.6.2.5300 NMAC, 12-1-01; A, 12-1-01; A, 9-15-02; A, 8-31-15; A, 12-21-18]

20.6.2.5004 PROHIBITED UNDERGROUND INJECTION CONTROL ACTIVITIES AND WELLS:

A. No person shall perform the following underground injection activities nor operate the following underground injection control wells.

(1) The injection of fluids into a motor vehicle waste disposal well is prohibited. Motor vehicle waste disposal wells are prohibited. Any person operating a new motor vehicle waste disposal well (for which construction began after April 5, 2000) must close the well immediately. Any person operating an existing motor vehicle waste disposal well must cease injection immediately and must close the well by December 31, 2002, except as provided in this subsection.

(2) The injection of fluids into a large capacity cesspool is prohibited. Large capacity cesspools are prohibited. Any person operating a new large capacity cesspool (for which construction began after

April 5, 2000) must close the cesspool immediately. Any person operating an existing large capacity cesspool must cease injection immediately and must close the cesspool by December 31, 2002.

(3) The injection of any hazardous or radioactive waste into a well is prohibited, except as provided in 20.6.2.5300 through 20.6.2.5399 NMAC or this subsection.

(a) Class I radioactive waste injection wells are prohibited, except naturally-occurring radioactive material (NORM) regulated under 20.3.1.1407 NMAC is allowed as a Class I non-hazardous waste injection well pursuant to Paragraph (1) of Subsection B of 20.6.2.5002 NMAC.

(b) Class IV wells are prohibited, except for wells re-injecting treated ground water into the same formation from which it was drawn as part of a removal or remedial action if the injection has prior approval from the environmental protection agency (EPA) or the department under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or the Resource Conservation and Recovery Act (RCRA).

(4) Barrier wells, drainage wells, recharge wells, return flow wells, and motor vehicle waste disposal wells are prohibited, except when the discharger can demonstrate that the discharge will not adversely affect the health of persons, and

(a) the injection fluid does not contain a constituent or exhibit a physical parameter (which could include pH, redox condition or temperature) which may cause an exceedance at any place of present or reasonable foreseeable future use of any primary state drinking water maximum contaminant level as specified in the water supply regulations, "Drinking Water" (20.7.10 NMAC), adopted by the environmental improvement board under the Environmental Improvement Act or the standard of 20.6.2.3103 NMAC, whichever is more stringent;

(b) the discharger can demonstrate that the injection will result in an overall or net improvement in water quality as determined by the secretary.

B. Closure of prohibited underground injection control wells shall be in accordance with 20.6.2.5005 and 20.6.2.5209 NMAC.

[20.6.2.5004 NMAC - N, 12-1-01; A, 8-31-15; A, 12-21-18]

20.6.2.5005 PRE-CLOSURE NOTIFICATION AND CLOSURE REQUIREMENTS:

A. Any person proposing to close a Class I, III, IV or V underground injection control well must submit pre-closure notification to the department at least 30 days prior to closure. Pre-closure notification must include the following information:

- (1) Name of facility.
- (2) Address of facility.
- (3) Name of Owner/Operator.
- (4) Address of Owner/Operator.
- (5) Contact Person.
- (6) Phone Number.
- (7) Type of Well(s).
- (8) Number of Well(s).
- (9) Well Construction (e.g. drywell, improved sinkhole, septic tank, leachfield, cesspool, other...).
- (10) Type of Discharge.
- (11) Average Flow (gallons per day).
- (12) Year of Well Construction.
- (13) Proposed Well Closure Activities (e.g. sample fluids/sediment, appropriate disposal of remaining fluids/sediments, remove well and any contaminated soil, clean out well, install permanent plug, conversion to other type well, ground water and vadose zone investigation, other).
- (14) Proposed Date of Well Closure.
- (15) Name of Preparer.
- (16) Date.
- (17) Well plugging plan as submitted to the Office of the State Engineer pursuant to 19.27.4 NMAC.

B. Proposed well closure activities must be approved by the department prior to implementation. [20.6.2.5005 NMAC - N, 12-1-01; A; 12-21-18]

20.6.2.5006 DISCHARGE PERMIT REQUIREMENTS FOR CLASS V INJECTION WELLS: Class V injection wells must meet the requirements of Sections 20.6.2.3000 through 20.6.2.3999 NMAC and Sections

20.6.2.5000 through 20.6.2.5006 NMAC. Class V injection wells or surface impoundments constructed as recharge basins used to replenish the water in an aquifer, including use to reclaim or improve the quality of existing water must additionally provide documentation of compliance with 19.25.8 NMAC (Underground Storage and Recovery) and shall not be subject to the exemptions of 20.6.2.3105 NMAC.
[20.6.2.5006 NMAC - N, 12-1-01; A, 12-21-18]

20.6.2.5007 - 20.6.2.5100: [RESERVED]

[12-1-95; 20.6.2.5001 - 20.6.2.5100 NMAC - Rn, 20 NMAC 6.2.IV.4116-5100, 1-15-01; 20.6.2.5007 -20.6.2.5100 NMAC - Rn 20.6.2.5001 - 20.6.2.5100 NMAC, 12-1-01]

20.6.2.5101 DISCHARGE PERMIT AND OTHER REQUIREMENTS FOR CLASS I WELLS AND CLASS III WELLS:

A. Class I wells and Class III wells must meet the requirements of 20.6.2.5000 through 20.6.2.5399 NMAC in addition to other applicable requirements of the commission regulations. The secretary may also require that some Class IV and Class V wells comply with the requirements for Class I wells in 20.6.2.5000 through 20.6.2.5399 NMAC if the secretary determines that the additional requirements are necessary to prevent the movement of water contaminants from a specified injection zone into ground water having 10,000 mg/l or less TDS. No Class I well or Class III well may be approved which allows for movement of fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to 20.6.2.5103 NMAC, or pursuant to a temporary designation as provided in Paragraph (2) of Subsection C of 20.6.2.5101 NMAC.

B. Operation of a Class I well or Class III well must be pursuant to a discharge permit meeting the requirements of 20.6.2.3000 through 20.6.2.3999 NMAC and 20.6.2.5000 through 20.6.2.5399 NMAC.

C. Discharge permits for Class I wells, or Class III wells affecting ground water of 10,000 mg/l or less TDS submitted for secretary approval shall:

(1) receive an aquifer designation if required in 20.6.2.5103 NMAC prior to discharge permit issuance; or

(2) for Class III wells only, address the methods or techniques to be used to restore ground water so that upon final termination of operations including restoration efforts, ground water at any place of withdrawal for present or reasonably foreseeable future use will not contain either concentrations in excess of the standards of 20.6.2.3103 NMAC or any toxic pollutant; issuance of a discharge permit or project discharge permit for Class III wells that provides for restoration of ground water in accordance with the requirements of this subsection shall substitute for the aquifer designation provisions of 20.6.2.5103 NMAC; the approval shall constitute a temporary aquifer designation for a mineral bearing or producing aquifer, or portion thereof, to allow injection as provided for in the discharge permit; such temporary designation shall expire upon final termination of operations including restoration efforts.

D. The exemptions from the discharge permit requirement listed in 20.6.2.3105 NMAC do not apply to underground injection control wells except as provided below:

(1) wells regulated by the energy conservation management division of the energy, minerals and natural resources department under the "Geothermal Resources Development Act";

(2) wells regulated by the mining and minerals division of the energy, minerals and natural resources department under the "Surface Mining Act";

(3) wells for the disposal of effluent from systems which are regulated under the "Liquid Waste Disposal and Treatment" regulations (20.7.3 NMAC) adopted by the environmental improvement board under the "Environmental Improvement Act".

E. Project permits for Class III wells.

(1) The secretary may consider a project discharge permit for Class III wells, if the wells are:

(a) within the same well field, facility site or similar unit;

(b) within the same aquifer and ore deposit;

(c) of similar construction;

(d) of the same purpose; and

(e) operated by a single owner or operator.

(2) A project discharge permit does not allow the discharger to commence injection in any individual operational area until the secretary approves an application for injection in that operational area (operational area approval).

(3) A project discharge permit shall:

(a) specify the approximate locations and number of wells for which operational area approvals are or will be sought with approximate time frames for operation and restoration (if restoration is required) of each area; and

(b) provide the information required under the following sections of this part, except for such additional site-specific information as needed to evaluate applications for individual operational area approvals: Subsection C of 20.6.2.3106, 20.6.2.3107, 20.6.2.5204 through 20.6.2.5209, and Subsection B of 20.6.2.5210 NMAC.

(4) Applications for individual operational area approval shall include the following:

(a) site-specific information demonstrating that the requirements of this part are met; and

(b) information required under 20.6.2.5202 through 20.6.2.5210 NMAC and not previously provided pursuant to Subparagraph (b) of Paragraph (3) of Subsection E of this section.

(5) Applications for project discharge permits and for operational area approval shall be processed in accordance with the same procedures provided for discharge permits under 20.6.2.3000 through 20.6.2.3114 NMAC, allowing for public notice on the project discharge permit and on each application for operational area approval pursuant to 20.6.2.3108 NMAC with opportunity for public hearing prior to approval or disapproval.

(6) The discharger shall comply with additional requirements that may be imposed by the secretary pursuant to this part on wells in each new operational area.

F. If the holder of a discharge permit for a Class I well, or Class III well submits an application for discharge permit renewal at least 120 days before discharge permit expiration, and the discharger is in compliance with his discharge permit on the date of its expiration, then the existing discharge permit for the same activity shall not expire until the application for renewal has been approved or disapproved. An application for discharge permit renewal must include and adequately address all of the information necessary for evaluation of a new discharge permit. Previously submitted materials may be included by reference provided they are current, readily available to the secretary and sufficiently identified to be retrieved.

G. Discharge permit signatory requirements: No discharge permit for a Class I well or Class III well may be issued unless:

(1) the application for a discharge permit has been signed as follows:

(a) for a corporation: by a principal executive officer of at least the level of vice-president, or a representative who performs similar policy-making functions for the corporation who has authority to sign for the corporation; or

(b) for a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(c) for a municipality, state, federal, or other public agency: by either a principal executive officer who has authority to sign for the agency, or a ranking elected official; and

(2) all reports required by Class I hazardous waste injection well permits and other information requested by the director pursuant to a Class I hazardous waste injection well permit shall be signed by a person described in Paragraph (1) of this subsection, or by a duly authorized representative of that person; a person is a duly authorized representative only if:

(a) the authorization is made in writing by a person described in Paragraph (1) of this subsection;

(b) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility; (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and

(c) the written authorization is submitted to the director.

(3) *Changes to authorization.* If an authorization under Paragraph (2) of this subsection is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Paragraph (2) of this subsection must be submitted to the director prior to or together with any reports, information, or applications to be signed by an authorized representative.

(4) The signature on an application, report or other information requested by the director must be directly preceded by the following certification: "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information

is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.”

H. Transfer of Class I non-hazardous waste injection well and Class III well discharge permits.

(1) The transfer provisions of 20.6.2.3111 NMAC do not apply to a discharge permit for a Class I non-hazardous waste injection well or Class III well.

(2) A Class I non-hazardous waste injection well or Class III well discharge permit may be transferred if:

(a) the secretary receives written notice 30 days prior to the transfer date; and

(b) the secretary does not object prior to the proposed transfer date; the secretary may require modification of the discharge permit as a condition of transfer, and may require demonstration of adequate financial responsibility.

(3) The written notice required by Subparagraph (a) of Paragraph (2) of Subsection H above shall:

(a) have been signed by the discharger and the succeeding discharger, including an acknowledgement that the succeeding discharger shall be responsible for compliance with the discharge permit upon taking possession of the facility; and

(b) set a specific date for transfer of discharge permit responsibility, coverage and liability; and

(c) include information relating to the succeeding discharger’s financial responsibility required by Paragraph (17) of Subsection B of 20.6.2.5210 NMAC.

I. Modification or termination of a discharge permit for a Class I well or Class III well: If data submitted pursuant to any monitoring requirements specified in the discharge permit or other information available to the secretary indicate that this part are being or may be violated, the secretary may require modification or, if it is determined by the secretary that the modification may not be adequate, may terminate a discharge permit for a Class I well, or Class III well or well field, that was approved pursuant to the requirements of this under 20.6.2.5000 through 20.6.2.5399 NMAC for the following causes:

(1) noncompliance by the discharger with any condition of the discharge permit; or

(2) the discharger’s failure in the discharge permit application or during the discharge permit review process to disclose fully all relevant facts, or the discharger’s misrepresentation of any relevant facts at any time; or

(3) a determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by discharge permit modification or termination.

[9-20-82, 12-1-95, 11-15-96; 20.6.2.5101 NMAC - Rn, 20 NMAC 6.2.V.5101, 1-15-01; A, 12-1-01; A, 9-15-02; A, 8-1-14; A, 8-31-15; A, 12-21-18]

20.6.2.5102 PRE-CONSTRUCTION REQUIREMENTS FOR CLASS I WELLS AND CLASS III WELLS:

A. Discharge permit requirement for Class I wells.

(1) Prior to construction of a Class I well or conversion of an existing well to a Class I well, an approved discharge permit is required that incorporates the requirements of 20.6.2.5000 through 20.6.2.5399 NMAC, except Subsection C of 20.6.2.5210 NMAC. As a condition of discharge permit issuance, the operation of the Class I well under the discharge permit will not be authorized until the secretary has:

(a) reviewed the information submitted for his consideration pursuant to Subsection C of 20.6.2.5210 NMAC; and

(b) determined that the information submitted demonstrates that the operation will be in compliance with this part and the discharge permit.

(2) If conditions encountered during construction represent a substantial change which could adversely impact ground water quality from those anticipated in the discharge permit, the secretary shall require a discharge permit modification or may terminate the discharge permit pursuant to Subsection I of 20.6.2.5101 NMAC, and the secretary shall publish public notice and allow for comments and hearing in accordance with 20.6.2.3108 NMAC.

B. Notification requirement for Class III wells.

(1) The discharger shall notify the secretary in writing prior to the commencement of drilling or construction of wells which are expected to be used for in situ extraction, unless the discharger has previously received a discharge permit or project discharge permit for the Class III well operation.

(a) Any person proposing to drill or construct a new Class III well or well field, or convert an existing well to a Class III well, shall file plans, specifications and pertinent documents regarding such construction or conversion, with the ground water quality bureau of the environment department.

(b) Plans, specifications, and pertinent documents required by this section, if pertaining to carbon dioxide facilities, or facilities for the exploration, production, refinement or pipeline transmission of oil and natural gas, shall be filed instead with the oil conservation division of the energy, minerals and natural resources department.

(c) Plans, specifications and pertinent documents required to be filed under this section must be filed 90 days prior to the planned commencement of construction or conversion.

(d) The following plans, specifications and pertinent documents shall be provided with the notification:

(i) information required in Subsection C of 20.6.2.3106 NMAC;
(ii) a map showing the Class III wells which are to be constructed; the map must also show, in so far as is known or is reasonably available from the public records, the number, name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features, including residences and roads, that are within the expected area of review (20.6.2.5202 NMAC) of the Class III well or well field perimeter;

(iii) maps and cross-sections indicating the general vertical and lateral limits of all ground water having 10,000 mg/l or less TDS within one mile of the site, the position of such ground water within this area relative to the injection formation, and the direction of water movement, where known, in each zone of ground water which may be affected by the proposed injection operation;

(iv) maps and cross-sections detailing the geology and geologic structure of the local area, including faults, if known or suspected;

(v) the proposed formation testing program to obtain an analysis or description, whichever the secretary requires, of the chemical, physical, and radiological characteristics of, and other information on, the receiving formation;

(vi) the proposed stimulation program;
(vii) the proposed injection procedure;
(viii) schematic or other appropriate drawings of the surface and subsurface construction details of the well;

(ix) proposed construction procedures, including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program;

(x) information, as described in Paragraph (17) of Subsection B of 20.6.2.5210 NMAC, showing the ability of the discharger to undertake measures necessary to prevent ground water contamination; and

(xi) a plugging and abandonment plan showing that the requirements of Subsections B, C and D of 20.6.2.5209 NMAC will be met.

(2) Prior to construction, the discharger shall have received written notice from the secretary that the information submitted under item 10 of Subparagraph (d) of Paragraph (1) of Subsection B of 20.6.2.5102 NMAC is acceptable. Within 30 days of submission of the above information the secretary shall notify the discharger that the information submitted is acceptable or unacceptable.

(3) Prior to construction, the secretary shall review said plans, specifications and pertinent documents and shall comment upon their adequacy of design for the intended purpose and their compliance with pertinent sections of this part. Review of plans, specifications and pertinent documents shall be based on the criteria contained in 20.6.2.5205, Subsection E of 20.6.2.5209, and Subparagraph (d) of Paragraph (1) of Subsection B of 20.6.2.5102 NMAC.

(4) Within 30 days of receipt, the secretary shall issue public notice, consistent with Subsection B of 20.6.2.3108 NMAC, that notification was submitted pursuant to Subsection B of 20.6.2.5102 NMAC. The secretary shall allow a period of at least 30 days during which comments may be submitted. The public notice shall include:

(a) name and address of the proposed discharger;
(b) location of the discharge;
(c) brief description of the proposed activities;
(d) statement of the public comment period; and
(e) address and telephone number at which interested persons may obtain further information.

(5) The secretary shall comment in writing upon the plans and specifications within 60 days of their receipt by the secretary.

(6) Within 30 days after completion, the discharger shall submit written notice to the secretary that the construction or conversion was completed in accordance with submitted plans and specifications, or shall submit as-built plans detailing changes from the originally submitted plans and specifications.

(7) In the event a discharge permit application is not submitted or approved, all wells which may cause ground water contamination shall be plugged and abandoned by the applicant pursuant to the plugging and abandonment plan submitted in the notification; these measures shall be consistent with any comments made by the secretary in his review. If the wells are not to be permanently abandoned and the discharger demonstrates that plugging at this time is unnecessary to prevent ground water contamination, plugging pursuant to the notification is not required. Financial responsibility established pursuant to 20.6.2.5000 through 20.6.2.5299 NMAC will remain in effect until the discharger permanently abandons and plugs the wells in accordance with the plugging and abandonment plan.

[9-20-82, 12-24-87, 12-1-95; 20.6.2.5102 NMAC - Rn, 20 NMAC 6.2.V.5102, 1-15-01; A, 12-1-01; A, 8-31-15; A, 12-21-18]

20.6.2.5103 DESIGNATED AQUIFERS FOR CLASS I WELLS AND CLASS III WELLS:

A. Any person may file a written petition with the secretary seeking commission consideration of certain aquifers or portions of aquifers as "designated aquifers". The purpose of aquifer designation is:

(1) for Class I wells, to allow as a result of injection, the addition of water contaminants into ground water, which before initiation of injection has a concentration between 5,000 and 10,000 mg/l TDS; or

(2) for Class III wells, to allow as a result of injection, the addition of water contaminants into ground water, which before initiation of injection has a concentration between 5,000 and 10,000 mg/l TDS, and not provide for restoration or complete restoration of that ground water pursuant to Paragraph (2) of Subsection C of 20.6.2.5101 NMAC.

B. The applicant shall identify (by narrative description, illustrations, maps or other means) and describe such aquifers, in geologic and geometric terms (such as vertical and lateral limits and gradient) which are clear and definite.

C. An aquifer or portion of an aquifer may be considered for aquifer designation under Subsection A of this section, if the applicant demonstrates that the following criteria are met:

(1) it is not currently used as a domestic or agricultural water supply; and

(2) there is no reasonable relationship between the economic and social costs of failure to designate and benefits to be obtained from its use as a domestic or agricultural water supply because:

(a) it is situated at a depth or location which makes recovery of water for drinking or agricultural purposes economically or technologically impractical at present and in the reasonably foreseeable future; or

(b) it is already so contaminated that it would be economically or technologically impractical to render that water fit for human consumption or agricultural use at present and in the reasonably foreseeable future.

D. The petition shall state the extent to which injection would add water contaminants to ground water and why the proposed aquifer designation should be approved. For Class III wells, the applicant shall state whether and to what extent restoration will be carried out.

E. The secretary shall either transmit the petition to the commission within 60 recommending that a public hearing be held, or refuse to transmit the petition and notify the applicant in writing citing reasons for such refusal.

F. If the secretary transmits the petition to the commission, the commission shall review the petition and determine to either grant or deny a public hearing on the petition. If the commission grants a public hearing, it shall issue a public notice, including the following information:

(1) name and address of the applicant;

(2) location, depth, TDS, areal extent, general description and common name or other identification of the aquifer for which designation is sought;

(3) nature of injection and extent to which the injection will add water contaminants to ground water; and

(4) address and telephone number at which interested persons may obtain further information.

G. If the secretary refuses to transmit the petition to the commission, then the applicant may appeal the secretary's disapproval of the proposed aquifer designation to the commission within 30 days, and address the issue of whether the proposed aquifer designation meets the criteria of Subsections A, B, C, and D of this section.

H. If the commission grants a public hearing, the hearing shall be held in accordance with the provisions of Section 74-6-6 NMSA 1978.

I. If the commission does not grant a public hearing on the petition, the aquifer designation shall not be approved.

J. After public hearing and consideration of all facts and circumstances included in Section 74-6-4(D) NMSA 1978, the commission may authorize the secretary to approve a proposed designated aquifer if the commission determines that the criteria of Subsections A, B, C, and D of this section are met.

K. Approval of a designated aquifer petition does not alleviate the applicant from complying with other sections of 20.6.2.5000 through 20.6.2.5399 NMAC, or of the responsibility for protection, pursuant to this part, of other nondesignated aquifers containing ground water having 10,000 mg/l or less TDS.

L. Persons other than the petitioner may add water contaminants as a result of injection into an aquifer designated for injection, provided the person receives a discharge permit pursuant to the requirements of 20.6.2.5000 through 20.6.2.5399 NMAC. Persons, other than the original petitioner or his designee, requesting addition of water contaminants as a result of injection into aquifers previously designated only for injection with partial restoration shall file a petition with the commission pursuant to the requirements of Subsections A, B, C, and D of this section.

[9-20-82, 12-1-95; 20.6.2.5103 NMAC - Rn, 20 NMAC 6.2.V.5103, 1-15-01; A, 12-1-01; A, 8-31-15]

20.6.2.5104 WAIVER OF REQUIREMENT BY SECRETARY FOR CLASS I WELLS AND CLASS III WELLS:

A. Where a Class I well or a Class III well or well field, does not penetrate, or inject into or above, and which will not affect, ground water having 10,000 mg/l of less TDS, the secretary may:

(1) issue a discharge permit for a well or well field with less stringent requirements for area of review, construction, mechanical integrity, operation, monitoring, and reporting than required by 20.6.2.5000 through 20.6.2.5399 NMAC; or

(2) for Class III wells only, issue a discharge permit pursuant to the requirements of 20.6.2.3000 through 20.6.2.3114 NMAC.

B. Authorization of a reduction in requirements under Subsection A of this section shall be granted only if injection will not result in an increased risk of movement of fluids into ground water having 10,000 mg/l or less TDS, except for fluid movement approved pursuant to 20.6.2.5103 NMAC.

[9-20-82, 12-1-95; 20.6.2.5104 NMAC - Rn & A, 20 NMAC 6.2.V.5104, 1-15-01; A, 12-1-01; A, 8-31-15]

20.6.2.5105 - 20.6.2.5199: [RESERVED]

[12-1-95; 20.6.2.5105 - 20.6.2.5199 NMAC - Rn, 20 NMAC 6.2.V.5105-5199, 1-15-01]

20.6.2.5200 TECHNICAL CRITERIA AND PERFORMANCE STANDARDS FOR CLASS I WELLS AND CLASS III WELLS:

[12-1-95; 20.6.2.5200 NMAC - Rn, 20 NMAC 6.2.V.5200, 1-15-01; A, 12-1-01; A, 8-31-15]

20.6.2.5201 PURPOSE: 20.6.2.5200 through 20.6.2.5210 NMAC provide the technical criteria and performance standards for Class I wells and Class III wells. (20.6.2.5300 through 20.6.2.5399 NMAC provide certain additional technical and performance standards for Class I hazardous waste injection wells.)

[9-20-82; 20.6.2.5201 NMAC - Rn, 20 NMAC 6.2.V.5201, 1-15-01; A, 12-1-01; A, 8-31-15; A, 12-21-18]

20.6.2.5202 AREA OF REVIEW:

A. The area of review is the area surrounding a Class I non-hazardous waste injection well or Class III well or the area within and surrounding a well field that is to be examined to identify possible fluid conduits, including the location of all known wells and fractures which may penetrate the injection zone.

B. The area of review for each Class I non-hazardous waste injection well, or each Class III well or well field shall be an area which extends:

(1) two and one half (2 1/2) miles from the well, or well field; or

(2) one-quarter (1/4) mile from a well or well field where the area of review is calculated to be zero pursuant to Paragraph (3) of Subsection B below, or where the well field production at all times exceeds injection to produce a net withdrawal; or

(3) a suitable distance, not less than one-quarter (1/4) mile, proposed by the discharger and approved by the secretary, based upon a mathematical calculation to determine the area of review; computations to determine the area of review may be based upon the parameters listed below and should be calculated for an injection time period equal to the expected life of the Class I non-hazardous waste injection well, or Class III well or well field; the following modified Theis equation illustrates one form which the mathematical model may take to compute the area of review; the discharger must demonstrate that any equation or simulation used to compute the area of review applies to the hydrogeologic conditions in the area of review.

$$r = \left(\frac{2.25 K H t}{S 10^x} \right)^{1/2}$$

Where:

$4BKH (H_w - H_{bo}) \times S_p G_b$

r = Radius of the area of review for a Class I non-hazardous waste injection well or Class III well (length)

K = Hydraulic conductivity of the injection zone (length/time)

H = Thickness of the injection zone (length)

t = Time of injection (time)

S = Storage coefficient (dimensionless)

Q = Injection rate (volume/time)

H_{bo} = Observed original hydrostatic head of injection zone (length) measured from the base of the lowest aquifer containing ground water of 10,000 mg/l or less TDS

H_w = Hydrostatic head of underground source of drinking water (length) measured from the base of the lowest aquifer containing ground water of 10,000 mg/l or less TDS

$S_p G_b$ = Specific gravity of fluid in the injection zone (dimensionless)

B = 3.142 (dimensionless)

(4) The above equation is based on the following assumptions:

- (a) the injection zone is homogenous and isotropic;
- (b) the injection zone has infinite areal extent;
- (c) the Class I non-hazardous waste injection well or Class III well penetrates the entire thickness of the injection zone;
- (d) the well diameter is infinitesimal compared to "r" when injection time is longer than a few minutes; and
- (e) the emplacement of fluid into the injection zone creates an instantaneous increase in pressure.

C. The secretary shall require submittal by the discharger of information regarding the area of review including the information to be considered by the secretary in Subsection B of Section 20.6.2.5210 NMAC. [9-20-82, 12-1-95; 20.6.2.5202 NMAC - Rn, 20 NMAC 6.2.V.5202, 1-15-01; A, 12-1-01; A, 12-21-18]

20.6.2.5203 CORRECTIVE ACTION FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS AND CLASS III WELLS:

A. Persons applying for approval of a Class I non-hazardous waste injection well, or a Class III well or well field shall identify the location of all known wells, drill holes, shafts, stopes and other conduits within the area of review which may penetrate the injection zone, in so far as is known or is reasonably available from the public records. For such wells or other conduits which are improperly sealed, completed, or abandoned, or otherwise provide a pathway for the migration of contaminants, the discharger shall address in the proposed discharge plan such steps or modifications (corrective action) as are necessary to prevent movement of fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC.

B. Prior to operation, or continued operation of a well for which corrective action is required pursuant to Subsections A or D of Section 20.6.2.5203 NMAC, the discharger must demonstrate that:

(1) all required corrective action has been taken; or
(2) injection pressure is to be limited so that pressure in the injection zone does not cause fluid movement through any well or other conduit within the area of review into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC; this pressure limitation may be removed after all required corrective action has been taken.

C. In determining the adequacy of corrective action proposed in the discharge permit application, the following factors will be considered by the secretary:

- (1) chemical nature and volume of the injected fluid;
- (2) chemical nature of native fluids and by-products of injection;
- (3) geology and hydrology;
- (4) history of the injection and production operation;
- (5) completion and plugging records;
- (6) abandonment procedures in effect at the time a well, drill hole, or shaft was abandoned;

and

- (7) hydraulic connections with waters having 10,000 mg/l or less TDS

D. In the event that, after approval for a Class I non-hazardous waste injection well or Class III well has been granted, additional information is submitted or it is discovered that a well or other conduit within the applicable area of review might allow movement of fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC, the secretary may require action in accordance with Subsection I of Section 20.6.2.5101 and Subsection B Section 20.6.2.5203 NMAC. [9-20-82, 12-1-95; 20.6.2.5203 NMAC - Rn, 20 NMAC 6.2.V.5203, 1-15-01; A, 12-1-01]

20.6.2.5204 MECHANICAL INTEGRITY FOR CLASS I WELLS AND CLASS III WELLS:

A. A Class I well or Class III well has mechanical integrity if there is no detectable leak in the casing, tubing or packer which the secretary considers to be significant at maximum operating temperature and pressure; and no detectable conduit for fluid movement out of the injection zone through the well bore or vertical channels adjacent to the well bore which the secretary considers to be significant.

B. Prior to well injection and at least once every five years or more frequently as the secretary may require for good cause during the life of the well, the discharger must demonstrate that a Class I well or Class III well has mechanical integrity. The demonstration shall be made through use of the following tests:

- (1) for evaluation of leaks:
 - (a) monitoring of annulus pressure (after an initial pressure test with liquid or gas before operation commences); or
 - (b) pressure test with liquid or gas;
- (2) for determination of conduits for fluid movement:
 - (a) the results of a temperature or noise log; or
 - (b) where the nature of the casing used for Class III wells precludes use of these logs, cementing records and an appropriate monitoring program as the secretary may require which will demonstrate the presence of adequate cement to prevent such movement;
- (3) other appropriate tests as the secretary may require.

C. The secretary may consider the use by the discharger of equivalent alternative test methods to determine mechanical integrity. The discharger shall submit information on the proposed test and all technical data supporting its use. The secretary may approve the request if it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. For Class III wells this demonstration may be made by submission of adequate monitoring data after the initial mechanical integrity tests.

D. In conducting and evaluating the tests enumerated in this section or others to be allowed by the secretary, the discharger and the secretary shall apply methods and standards generally accepted in the affected industry. When the discharger reports the results of mechanical integrity tests to the secretary, he shall include a description of the test(s), the method(s) used, and the test results. In making an evaluation, the secretary's review shall include monitoring and other test data submitted since the previous evaluation.

[9-20-82, 12-1-95; 20.6.2.5204 NMAC - Rn, 20 NMAC 6.2.V.5204, 1-15-01; A, 12-1-01; A, 8-31-15]

20.6.2.5205 CONSTRUCTION REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS AND CLASS III WELLS:

A. General Construction Requirements Applicable to Class I non-hazardous waste injection wells and Class III wells.

(1) Construction of all Class I non-hazardous waste injection wells and all new Class III wells shall include casing and cementing. Prior to well injection, the discharger shall demonstrate that the construction and operation of:

(a) Class I non-hazardous waste injection wells will not cause or allow movement of fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC;

(b) Class III wells will not cause or allow movement of fluids out of the injection zone into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC.

(2) The construction of each newly drilled well shall be designed for the proposed life expectancy of the well.

(3) In determining if the discharger has met the construction requirements of this section and has demonstrated adequate construction, the secretary shall consider the following factors:

(a) depth to the injection zone;

(b) injection pressure, external pressure, annular pressure, axial loading, and other stresses that may cause well failure;

(c) hole size;

(d) size and grade of all casing strings, including wall thickness, diameter, nominal weight, length, joint specification, and construction material;

(e) type and grade of cement;

(f) rate, temperature, and volume of injected fluid;

(g) chemical and physical characteristics of the injected fluid, including corrosiveness, density, and temperature;

(h) chemical and physical characteristics of the formation fluids including pressure and temperature;

(i) chemical and physical characteristics of the receiving formation and confining zones including lithology and stratigraphy, and fracture pressure; and

(j) depth, thickness and chemical characteristics of penetrated formations which may contain ground water.

(4) To demonstrate adequate construction, appropriate logs and other tests shall be conducted during the drilling and construction of new Class I non-hazardous waste injection wells or Class III wells or during work-over of existing wells in preparation for reactivation or for change to injection use. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the secretary for review prior to well injection. The logs and tests appropriate to each type of injection well shall be based on the intended function, depth, construction and other characteristics of the well, availability of similar data in the area of the drilling site and the need for additional information that may arise from time to time as the construction of the well progresses.

(a) The discharger shall demonstrate through use of sufficiently frequent deviation checks, or another equivalent method, that a Class I non-hazardous waste injection well or Class III well drilled

using a pilot hole then enlarged by reaming or another method, does not allow a vertical avenue for fluid migration in the form of diverging holes created during drilling.

(b) The secretary may require use by the discharger of the following logs to assist in characterizing the formations penetrated and to demonstrate the integrity of the confining zones and the lack of vertical avenues for fluid migration:

(i) for casing intended to protect ground water having 10,000 mg/l or less TDS: resistivity, spontaneous potential, and caliper logs before the casing is installed; and a cement bond, or temperature log after the casing is set and cemented.

(ii) for intermediate and long strings of casing intended to facilitate injection: resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed; and fracture finder or spectral logs; and a cement bond or temperature log after the casing is set and cemented.

(5) In addition to the requirements of Section 20.6.2.5102 NMAC, the discharger shall provide notice prior to commencement of drilling, cementing and casing, well logging, mechanical integrity tests, and any well work-over to allow opportunity for on-site inspection by the secretary or his representative.

B. Additional construction requirements for Class I non-hazardous waste injection wells.

(1) All Class I non-hazardous waste injection wells shall be sited in such a manner that they inject into a formation which is beneath the lowermost formation containing, within one quarter mile of the well bore, ground water having 10,000 mg/l TDS or less except as approved pursuant to Section 20.6.2.5103 NMAC.

(2) All Class I non-hazardous waste injection wells shall be cased and cemented by circulating cement to the surface.

(3) All Class I non-hazardous waste injection wells, except those municipal wells injecting noncorrosive wastes, shall inject fluids through tubing with a packer set in the annulus immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected length of service.

(a) The use of other alternatives to a packer may be allowed with the written approval of the secretary. To obtain approval, the operator shall submit a written request to the secretary which shall set forth the proposed alternative and all technical data supporting its use. The secretary may approve the request if the alternative method will reliably provide a comparable level of protection to ground water. The secretary may approve an alternative method solely for an individual well or for general use.

(b) In determining the adequacy of the specifications proposed by the discharger for tubing and packer, or a packer alternative, the secretary shall consider the following factors:

- (i)** depth of setting;
- (ii)** characteristics of injection fluid (chemical nature or characteristics, corrosiveness, and density);
- (iii)** injection pressure;
- (iv)** annular pressure;
- (v)** rate, temperature and volume of injected fluid; and
- (vi)** size of casing.

C. Additional construction requirements for Class III wells.

(1) Where injection is into a formation containing ground water having 10,000 mg/l or less TDS, monitoring wells shall be completed into the injection zone and into the first formation above the injection zone containing ground water having 10,000 mg/l or less TDS which could be affected by the extraction operation. If ground water having 10,000 mg/l or less TDS below the injection zone could be affected by the extraction operation, monitoring of such ground water may be required. These wells shall be of sufficient number, located and constructed so as to detect any excursion of injection fluids, process byproducts, or formation fluids outside the extraction area or injection zone. The requirement for monitoring wells in aquifers designated pursuant to Section 20.6.2.5103 NMAC may be waived by the secretary, provided that the absence of monitoring wells does not result in an increased risk of movement of fluids into protected ground waters having 10,000 mg/l or less TDS.

(2) Where injection is into a formation which does not contain ground water having 10,000 mg/l or less TDS, no monitoring wells are necessary in the injection zone. However, monitoring wells may be necessary in adjoining zones with ground water having 10,000 mg/l or less TDS that could be affected by the extraction operation.

(3) In an area that the secretary determines is subject to subsidence or collapse, the required monitoring wells may be required to be located outside the physical influence of that area.

(4) In determining the adequacy of monitoring well location, number, construction and frequency of monitoring proposed by the discharger, the secretary shall consider the following factors:

- (a) the local geology and hydrology;
 - (b) the operating pressures and whether a negative pressure gradient to the monitor well is being maintained;
 - (c) the nature and volume of injected fluid, formation water, and process by-products; and
 - (d) the number and spacing of Class III wells in the well field.
- [9-20-82, 12-1-95; 20.6.2.5205 NMAC - Rn, 20 NMAC 6.2.V.5205, 1-15-01; A, 12-1-01]

20.6.2.5206 OPERATING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS AND CLASS III WELLS:

A. General operating requirements applicable to Class I non-hazardous waste injection wells and Class III wells.

(1) The maximum injection pressure at the wellhead shall not initiate new fractures or propagate existing fractures in the confining zone, or cause the movement of injection or formation fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC.

(2) Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone.

B. Additional operating requirements for Class I non-hazardous waste injection wells.

(1) Except during well stimulation, the maximum injection pressure shall not initiate new fractures or propagate existing fractures in the injection zone.

(2) Unless an alternative to a packer has been approved under Subparagraph (c) of Paragraph (3) of Subsection B of Section 20.6.2.5205 NMAC, the annulus between the tubing and the long string of casing shall be filled with a fluid approved by the secretary and a pressure, also approved by the secretary shall be maintained on the annulus.

C. Additional operating requirements for Class III wells: Initiation of new fractures or propagation of existing fractures in the injection zone will not be approved by the secretary as part of a discharge permit unless it is done during well stimulation and the discharger demonstrates:

(1) that such fracturing will not cause movement of fluids out of the injection zone into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC; and

(2) that the provisions of Subsection D of Section 20.6.2.3109 and Subsection C of Section 20.6.2.5101 NMAC for protection of ground water are met.

[9-20-82, 12-1-95; 20.6.2.5206 NMAC - Rn, 20 NMAC 6.2.V.5206, 1-15-01; A, 12-1-01; A, 12-21-18]

20.6.2.5207 MONITORING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS AND CLASS III WELLS:

A. The discharger shall demonstrate mechanical integrity for each Class I non-hazardous waste injection well or Class III well at least once every five years during the life of the well pursuant to Section 20.6.2.5204 NMAC.

B. Additional monitoring requirements for Class I non-hazardous waste injection wells.

(1) The discharger shall provide analysis of the injected fluids at least quarterly or, if necessary, more frequently to yield data representative of their characteristics.

(2) Continuous monitoring devices shall be used to provide a record of injection pressure, flow rate, flow volume, and pressure on the annulus between the tubing and the long string of casing.

(3) The discharger shall provide wells within the area of review as required by the discharge permit to be used by the discharger to monitor pressure in, and possible fluid movement into, ground water having 10,000 mg/l or less TDS except for such ground waters designated pursuant to Section 20.6.2.5103 NMAC. This Section does not require monitoring wells for Class I non-hazardous waste injection wells unless monitoring wells are necessary due to possible flow paths within the area of review.

C. Additional monitoring requirements for Class III wells.

(1) The discharger shall provide an analysis or description, whichever the secretary requires, of the injected fluids at least quarterly or, if necessary, more frequently to yield representative data.

(2) The discharger shall perform:

(a) appropriate monitoring of injected and produced fluid volumes by whichever of the following methods the secretary requires:

- weeks; or
 - (i) recording injection pressure and either flow rate or volume every two weeks; or
 - (ii) metering and daily recording of fluid volumes;
 - (b) monitoring every two weeks, or more frequently as the secretary determines, of the monitor wells, required in Subsection C of Section 20.6.2.5205 NMAC for:
 - (i) water chemistry parameters used to detect any migration from the injection zone;
 - (ii) fluid levels adjacent to the injection zone; and
 - (c) other necessary monitoring as the secretary for good cause may require to detect movement of fluids from the injection zone into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103 NMAC.
 - (3) With the approval of the secretary, all Class III wells may be monitored on a well field basis by manifold monitoring rather than on an individual well basis. Manifold monitoring to determine the quality, pressure, and flow rate of the injected fluid may be approved in cases of facilities consisting of more than one Class III well, operating with a common manifold, provided that the discharger demonstrates that manifold monitoring is comparable to individual well monitoring.
- [9-20-82, 12-1-95; 20.6.2.5207 NMAC - Rn, 20 NMAC 6.2.V.5207, 1-15-01; A, 12-1-01]

20.6.2.5208 REPORTING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS AND CLASS III WELLS:

- A.** Reporting requirements for Class I non-hazardous waste injection wells.
 - (1) If a Class I non-hazardous waste injection well is found to be discharging or is suspected of discharging fluids into a zone or zones other than the permitted or authorized injection zone, the discharger shall within 24 hours notify the secretary of the circumstances and action taken. The discharger shall provide subsequent written reports as required by the secretary.
 - (2) The discharger shall provide reports quarterly to the secretary on:
 - (a) the physical, chemical and other relevant characteristics of injection fluids;
 - (b) monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure; and
 - (c) the results of monitoring prescribed under Subsection B of Section 20.6.2.5207 NMAC.
 - (3) The discharger shall report, no later than the first quarterly report after completion, the results of:
 - (a) periodic tests of mechanical integrity as required in Sections 20.6.2.5204 and 20.6.2.5207 NMAC;
 - (b) any other test of the Class I non-hazardous waste injection well conducted by the discharger if required by the secretary;
 - (c) any well work-over; and
 - (d) any changes within the area of review which might impact subsurface conditions.
- B.** Reporting requirements for Class III wells.
 - (1) The discharger shall notify the secretary within 48 hours of the detection or suspected detection of a leachate excursion, and provide subsequent reports as required by the secretary.
 - (2) The discharger shall provide to the secretary:
 - (a) reports on required monitoring quarterly, or more frequently as required by the secretary; and
 - (b) results of mechanical integrity testing as required in Sections 20.6.2.5204 and 20.6.2.5207 NMAC and any other periodic tests required by the secretary; these results are to be reported no later than the first regular report after the completion of the test.
 - (3) Where manifold monitoring is permitted, monitoring results may be reported on a well field basis, rather than individual well basis.
- C.** Report signatory requirements.
 - (1) All reports submitted pursuant to this section shall be signed and certified as provided in Subsection G of Section 20.6.2.5101 NMAC, or by a duly authorized representative.
 - (2) For a person to be a duly authorized representative, authorization must:

(a) be made in writing by a signatory described in Paragraph (1) of Subsection G of Section 20.6.2.5101 NMAC;

(b) specify either an individual or a position having responsibility for the overall operation of that regulated facility or activity, such as the position of plant manager, operator of a well or well field, superintendent, or position of equivalent responsibility; and

(c) have been submitted to the secretary.

[9-20-82, 12-1-95; 20.6.2.5208 NMAC - Rn, 20 NMAC 6.2.V.5208, 1-15-01; A, 12-1-01]

20.6.2.5209 PLUGGING AND ABANDONMENT FOR CLASS I WELLS AND CLASS III WELLS:

A. The discharger shall submit as part of the discharge permit application, a plan for plugging and abandonment of a Class I well or a Class III well that meets the requirements of Subsection D of 20.6.2.3109, Subsection C of 20.6.2.5101, and 20.6.2.5005 NMAC for protection of ground water. If requested, a revised or updated abandonment plan shall be submitted for approval prior to closure. The obligation to implement the plugging and abandonment plan as well as the requirements of the plan survives the termination or expiration of the permit.

B. Prior to abandonment of a well used in a Class I well or Class III well operation, the well shall be plugged in a manner which will not allow the movement of fluids through the well bore out of the injection zone or between other zones of ground water. Cement plugs shall be used unless a comparable method has been approved by the secretary for the plugging of Class III wells at that site.

C. Prior to placement of the plugs, the well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or by a comparable method approved by the secretary.

D. Placement of the plugs shall be accomplished by one of the following:

- (1) the balance method; or
- (2) the dump bailer method; or
- (3) the two-plug method; or
- (4) an equivalent method with the approval of the secretary.

E. The following shall be considered by the secretary in determining the adequacy of a plugging and abandonment plan:

- (1) the type and number of plugs to be used;
- (2) the placement of each plug, including the elevation of the top and bottom;
- (3) the type, grade and quantity of cementing slurry to be used;
- (4) the method of placement of the plugs;
- (5) the procedure to be used to plug and abandon the well; and
- (6) such other factors that may affect the adequacy of the plan.

F. The discharger shall retain all records concerning the nature and composition of injected fluids until five years after completion of any plugging and abandonment procedures.

[9-20-82, 12-1-95; 20.6.2.5209 NMAC - Rn, 20 NMAC 6.2.V.5209, 1-15-01; A, 12-1-01; A, 8-31-15; A, 12-21-18]

20.6.2.5210 INFORMATION TO BE CONSIDERED BY THE SECRETARY FOR CLASS I WELLS AND CLASS III WELLS:

A. This section sets forth the information to be considered by the secretary in authorizing construction and use of a Class I well or Class III well or well field. Certain maps, cross-sections, tabulations of all wells within the area of review, and other data may be included in the discharge permit application submittal by reference provided they are current, readily available to the secretary and sufficiently identified to be retrieved.

B. Prior to the issuance of a discharge permit or project discharge permit allowing construction of a new Class I well, operation of an existing Class I well, or operation of a new or existing Class III well or well field, or conversion of any well to injection use, the secretary shall consider the following:

(1) information required in Subsection C of 20.6.2.3106 NMAC;

(2) a map showing the Class I well, or Class III well or well fields, for which approval is sought and the applicable area of review; within the area of review, the map must show, in so far as is known or is reasonably available from the public records, the number, name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features, including residences and roads;

(3) a tabulation of data on all wells within the area of review which may penetrate into the proposed injection zone; such data shall include, as available, a description of each well's type, the distance and

direction to the injection well or well field, construction, date drilled, location, depth, record of plugging or completion, and any additional information the secretary may require;

(4) for wells within the area of review which penetrate the injection zone, but are not properly completed or plugged, the corrective action proposed to be taken under 20.6.2.5203 NMAC;

(5) maps and cross-sections indicating the general vertical and lateral limits of all ground water having 10,000 mg/l or less TDS within the area of review, the position of such ground water within the area of review relative to the injection formation, and the direction of water movement, where known, in each zone of ground water which may be affected by the proposed injection operation;

(6) maps and cross-sections detailing the geology and geologic structure of the local area, including faults, if known or suspected;

(7) generalized maps and cross-sections illustrating the regional geologic setting;

(8) proposed operating data, including:

(a) average and maximum daily flow rate and volume of the fluid to be injected;

(b) average and maximum injection pressure;

(c) source of injection fluids and an analysis or description, whichever the secretary requires, of their chemical, physical, radiological and biological characteristics;

(9) results of the formation testing program to obtain an analysis or description, whichever the secretary requires, of the chemical, physical, and radiological characteristics of, and other information on, the receiving formation, provided that the secretary may issue a conditional approval of a discharge permit if he finds that further formation testing is necessary for final approval;

(10) expected pressure changes, native fluid displacement, and direction of movement of the injected fluid;

(11) proposed stimulation program;

(12) proposed or actual injection procedure;

(13) schematic or other appropriate drawings of the surface and subsurface construction details of the well;

(14) construction procedures, including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program;

(15) contingency plans to cope with all shut-ins or well failures so as to prevent movement of fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to 20.6.2.5103 NMAC;

(16) plans, including maps, for meeting the monitoring requirements of 20.6.2.5207 NMAC; and

(17) the ability of the discharger to undertake measures necessary to prevent contamination of ground water having 10,000 mg/l or less TDS after the cessation of operation, including the proper closing, plugging and abandonment of a well, ground water restoration if applicable, and any post-operational monitoring as may be needed; methods by which the discharger shall demonstrate the ability to undertake these measures shall include submission of a surety bond or other adequate assurances, such as financial statements or other materials acceptable to the secretary, such as: (1) a surety bond; (2) a trust fund with a New Mexico bank in the name of the state of New Mexico, with the state as beneficiary; (3) a non-renewable letter of credit made out to the state of New Mexico; (4) liability insurance specifically covering the contingencies listed in this paragraph; or (5) a performance bond, generally in conjunction with another type of financial assurance; such bond or materials shall be approved and executed prior to discharge permit issuance and shall become effective upon commencement of construction; if an adequate bond is posted by the discharger to a federal or another state agency, and this bond covers all of the measures referred to above, the secretary shall consider this bond as satisfying the bonding requirements of 20.6.2.5000 through 20.6.2.5299 NMAC wholly or in part, depending upon the extent to which such bond is adequate to ensure that the discharger will fully perform the measures required hereinabove.

C. Prior to the secretary's approval that allows the operation of a new or existing Class I well or Class III well or well field, the secretary shall consider the following:

(1) update of pertinent information required under Subsection B of 20.6.2.5210 NMAC;

(2) all available logging and testing program data on the well;

(3) the demonstration of mechanical integrity pursuant to 20.6.2.5204 NMAC;

(4) the anticipated maximum pressure and flow rate at which the permittee will operate;

(5) the results of the formation testing program;

(6) the physical, chemical, and biological interactions between the injected fluids and fluids in the injection zone, and minerals in both the injection zone and the confining zone; and

(7) the status of corrective action on defective wells in the area of review.
[9-20-82, 12-24-87, 12-1-95; 20.6.2.5210 NMAC - Rn, 20 NMAC 6.2.V.5210, 1-15-01; A, 12-1-01; A, 8-31-15]

20.6.2.5211 - 20.6.2.5299: [RESERVED]

[12-1-95; 20.6.2.5211 - 20.6.2.5299 NMAC - Rn, 20 NMAC 6.2.V.5211-5299, 1-15-01]

20.6.2.5300 REQUIREMENTS FOR CLASS I HAZARDOUS WASTE INJECTION WELLS:

A. Except as otherwise provided for in 20.6.2.5300 through 20.6.2.5399 NMAC, Class I hazardous waste wells are subject to the minimum permit requirements for all Class I wells in 20.6.2.5000 through 20.6.2.5299 NMAC, in addition to the requirements of 20.6.2.5300 through 20.6.2.5399 NMAC. To the extent any requirement in 20.6.2.5300 through 20.6.2.5399 NMAC conflicts with a requirement of 20.6.2.5000 through 20.6.2.5299 NMAC, Class I hazardous waste injection wells must comply with 20.6.2.5300 through 20.6.2.5399 NMAC.

B. Class I hazardous waste injection wells are only authorized for use by petroleum refineries for the waste generated by the refinery ("generator").

C. The New Mexico energy, minerals and natural resources department, oil conservation division will administer and oversee all permitting of Class I hazardous waste wells pursuant to 20.6.2.5300 through 20.6.2.5399 NMAC.

[20.6.2.5300 NMAC - N, 8-31-15]

20.6.2.5301 DEFINITIONS: As used in 20.6.2.5300 through 20.6.2.5399 NMAC:

A. "cone of influence" means that area around the well within which increased injection zone pressures caused by injection into the hazardous waste injection well would be sufficient to drive fluids into groundwater of the state of New Mexico;

B. "director" means the director of the New Mexico energy, minerals and natural resources department, oil conservation division or his/her designee;

C. "existing well" means a Class I hazardous waste injection well which has become a Class I hazardous waste injection well as a result of a change in the definition of the injected waste which would render the waste hazardous under 20.4.1.200 NMAC (incorporating 40 C.F.R. Section 261.3);

D. "ground water of the state of New Mexico" means, consistent with 20.6.2.5001 NMAC, an aquifer that contains ground water having a TDS concentration of 10,000 mg/l or less;

E. "injection interval" means that part of the injection zone in which the well is screened, or in which the waste is otherwise directly emplaced;

F. "new well" means any Class I hazardous waste injection well which is not an existing well;

G. "transmissive fault or fracture" is a fault or fracture that has sufficient permeability and vertical extent to allow fluids to move between formations.

[20.6.2.5301 NMAC - N, 8-31-15]

20.6.2.5302 FEES FOR CLASS I HAZARDOUS WASTE INJECTION WELLS: For the purposes of Class I hazardous waste wells, this section shall apply to the exclusion of 20.6.2.3114 NMAC.

A. *Filing Fee.* Every facility submitting a discharge permit application for approval of a Class I hazardous waste injection well shall pay a filing fee of \$100 to the water quality management fund at the time the permit application is submitted. The filing fee is nonrefundable.

B. *Permit fee.*

(1) Every facility submitting a discharge permit application for approval of a Class I hazardous waste injection well shall pay a permit fee of \$30,000 to the water quality management fund. The permit fee may be paid in a single payment at the time of permit approval or in equal installments over the term of the permit. Installment payments shall be remitted yearly, with the first installment due on the date of permit approval. Subsequent installments shall be remitted yearly thereafter. The permit or permit application review of any facility shall be suspended or terminated if the facility fails to submit an installment payment by its due date.

(2) Facilities applying for permits which are subsequently withdrawn or denied shall pay one-half of the permit fee at the time of denial or withdrawal.

C. *Annual administration fee.* Every facility that receives a Class I hazardous waste injection well permit shall pay an annual administrative fee of \$20,000 to the water quality management fund. The initial administrative fee shall be remitted one year after commencement of disposal operations pursuant to the permit. Subsequent administrative fees shall be remitted annually thereafter.

D. *Renewal fee.*

(1) Every facility submitting a discharge permit application for renewal of a Class I hazardous waste injection well shall pay a renewal fee of \$10,000 to the water quality management fund. The renewal fee may be paid in a single payment at the time of permit renewal or in equal installments over the term of the permit. Installment payments shall be remitted yearly, with the first installment due on the date of permit renewal. Subsequent installments shall be remitted yearly thereafter. The permit or permit renewal review of any facility shall be suspended or terminated if the facility fails to submit an installment payment by its due date.

(2) The director may waive or reduce fees for discharge permit renewals which require little or no cost for investigation or issuance.

E. Modification fees.

(1) Every facility submitting an application for a discharge permit modification of a Class I hazardous waste injection well will be assessed a filing fee plus a modification fee of \$10,000 to the water quality management fund.

(2) Every facility submitting an application for other changes to a Class I hazardous waste injection well discharge permit will be assessed a filing fee plus a minor modification fee of \$1,000 to the water quality management fund.

(3) Applications for both renewal and modification shall pay a filing fee plus renewal fee.

(4) If the director requires a discharge permit change as a component of an enforcement action, the facility shall pay the applicable modification fee. If the director requires a discharge permit change outside the context of an enforcement action, the facility shall not be assessed a fee.

(5) The director may waive or reduce fees for discharge permit changes which require little or no cost for investigation or issuance.

F. Financial assurance fees.

(1) Facilities with approved Class I hazardous waste injection well permits shall pay the financial assurance fees specified in Table 2 of 20.6.2.3114 NMAC.

(2) Facilities relying on the corporate guarantee for financial assurance shall pay an additional fee of \$5,000 to the water quality management fund.

[20.6.2.5302 NMAC - N, 8-31-15]

20.6.2.5303 CONVERSION OF EXISTING INJECTION WELLS: An existing Class I non-hazardous waste injection well may be converted to a Class I hazardous waste injection well provided the well meets the modeling, design, compatibility, and other requirements set forth in 20.6.2.5300 through 20.6.2.5399 NMAC and the permittee receives a Class I hazardous waste permit pursuant to those sections.

[20.6.2.5303 NMAC - N, 8-31-15]

20.6.2.5304 - 20.6.2.5309: [RESERVED]

20.6.2.5310 REQUIREMENTS FOR WELLS INJECTING HAZARDOUS WASTE REQUIRED TO BE ACCOMPANIED BY A MANIFEST:

A. Applicability. The regulations in this section apply to all generators of hazardous waste, and to the owners or operators of all hazardous waste management facilities, using any class of well to inject hazardous wastes accompanied by a manifest. (See also Subparagraph (b) of Paragraph (3) of Subsection A of 20.6.2.5004 NMAC.)

B. Authorization. The owner or operator of any well that is used to inject hazardous waste required to be accompanied by a manifest or delivery document shall apply for authorization to inject as specified in 20.6.2.5102 NMAC within six months after the approval or promulgation of the state UIC program.

C. Requirements. In addition to complying with the applicable requirements of this part, the owner or operator of each facility meeting the requirements of Subsection B of this section, shall comply with the following.

(1) *Notification.* The owner or operator shall comply with the notification requirements of 42 U.S.C. Section 6930.

(2) *Identification number.* The owner or operator shall comply with the requirements of 20.4.1.500 NMAC (incorporating 40 CFR Section 264.11).

(3) *Manifest system.* The owner or operator shall comply with the applicable recordkeeping and reporting requirements for manifested wastes in 20.4.1.500 NMAC (incorporating 40 CFR Section 264.71).

(4) *Manifest discrepancies.* The owner or operator shall comply with 20.4.1.500 NMAC (incorporating 40 CFR Section 264.72).

(5) *Operating record.* The owner or operator shall comply with 20.4.1.500 NMAC (incorporating 40 CFR Sections 264.73(a), (b)(1), and (b)(2)).

(6) *Annual report.* The owner or operator shall comply with 20.4.1.500 NMAC (incorporating 40 CFR Section 264.75).

(7) *Unmanifested waste report.* The owner or operator shall comply with 20.4.1.500 NMAC (incorporating 40 CFR Section 264.75).

(8) *Personnel training.* The owner or operator shall comply with the applicable personnel training requirements of 20.4.1.500 NMAC (incorporating 40 CFR Section 264.16).

(9) *Certification of closure.* When abandonment is completed, the owner or operator must submit to the director certification by the owner or operator and certification by an independent registered professional engineer that the facility has been closed in accordance with the specifications in 20.6.2.5209 NMAC. [20.6.2.5310 NMAC - N, 8-31-15]

20.6.2.5311 - 20.6.2.5319: [RESERVED]

20.6.2.5320 ADOPTION OF 40 CFR PART 144, SUBPART F (FINANCIAL RESPONSIBILITY: CLASS I HAZARDOUS WASTE INJECTION WELLS): Except as otherwise provided, the regulations of the United States environmental protection agency set forth in 40 CFR Part 144, Subpart F are hereby incorporated by reference. [20.6.2.5320 NMAC - N, 8-31-15]

20.6.2.5321 MODIFICATIONS, EXCEPTIONS, AND OMISSIONS: Except as otherwise provided, the following modifications, exceptions, and omissions are made to the incorporated federal regulations.

A. The following term defined in 40 CFR Section 144.61 has the meaning set forth herein, in lieu of the meaning set forth in 40 CFR Section 144.61: “plugging and abandonment plan” means the plan for plugging and abandonment prepared in accordance with the requirements of 20.6.2.5341 NMAC.

B. The following terms not defined in 40 CFR Part 144, Subsection F have the meanings set forth herein when the terms are used in this part:

(1) “administrator,” “regional administrator” and other similar variations means the director of the New Mexico energy, minerals and natural resources department, oil conservation division or his/her designee;

(2) “United States environmental protection agency” or “EPA” means New Mexico energy, minerals and natural resources department, oil conservation division or OCD, except when used in 40 CFR Section 144.70(f).

C. The following provisions of 40 CFR Part 144, Subpart F are modified in 20.6.2.5321 NMAC:

(1) cross references to 40 CFR Part 144 shall be replaced by cross references to 20.6.2.5300 through 20.6.2.5399 NMAC;

(2) the cross reference to Sections 144.28 and 144.51 in Section 144.62(a) shall be replaced by a cross reference to 20.6.2.5341 NMAC;

(3) the cross references to 40 CFR Parts 264, Subpart H and 265, Subpart H shall be modified to include cross references to 40 CFR Parts 264, Subpart H and 265, Subpart H and 20.4.1.500 and 20.4.1.600 NMAC;

(4) references to EPA identification numbers in financial assurance documents shall be replaced by references to API well numbers (US well numbers);

(5) the first sentence of 40 CFR Section 144.63(f)(1) shall be replaced with the following sentence: “An owner or operator may satisfy the requirements of this section by obtaining a guarantee from a corporate parent that meets the requirements of 40 CFR Section 144.63(f)(10), including the guarantor meeting the requirements for the owner or operator under the financial test specified in this paragraph.”;

(6) trust agreements prepared in accordance with 40 CFR Section 144.70(a) must state that they will be administered, construed, and enforced according to the laws of New Mexico;

(7) surety companies issuing bonds prepared in accordance with 40 CFR Section 144, Subpart F must be registered with the New Mexico office of superintendent of insurance;

D. The following provisions of 40 CFR Part 144, Subpart F are omitted from 20.6.2.5320 NMAC:

(1) Section 144.65;

(2) Section 144.66;

(3) the third sentence in 40 CFR Section 144.63(h).

[20.6.2.5321 NMAC - N, 8-31-15]

20.6.2.5322 - 20.6.2.5340 [RESERVED]

20.6.2.5341 CONDITIONS APPLICABLE TO ALL PERMITS: The following conditions apply to all Class I hazardous permits. All conditions applicable to all permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these regulations must be given in the permit.

A. *Duty to comply.* The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the New Mexico Water Quality Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application; except that the permittee need not comply with the provisions of this permit to the extent and for the duration such noncompliance is authorized in a variance issued under 20.6.2.1210 NMAC.

B. *Duty to reapply.* If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a permit renewal pursuant to Subsection F of 20.6.2.3106 NMAC.

C. *Need to halt or reduce activity not a defense.* It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. *Duty to mitigate.* The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

E. *Proper operation and maintenance.* The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

F. *Permit actions.* This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

G. *Property rights.* This permit does not convey any property rights of any sort, or any exclusive privilege.

H. *Duty to provide information.* The permittee shall furnish to the director, within a time specified, any information which the director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the director, upon request, copies of records required to be kept by this permit.

I. *Duty to provide notice.* Public notice, when required, shall be provided as set forth in 20.6.2.3108 NMAC except that the following notice shall be provided in lieu of the notice required by Paragraph (2) of Subsection B of 20.6.2.3108 NMAC: a written notice must be sent by certified mail, return receipt requested, to all surface and mineral owners of record within a ½ mile radius of the proposed well or wells.

J. *Inspection and entry.* The permittee shall allow the director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

(1) enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(2) have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(3) inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(4) sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the 20.6.2.5300 through 20.6.2.5399 NMAC, any substances or parameters at any location.

K. *Monitoring and records.*

(1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(2) The permittee shall retain records of all monitoring information, including the following:

(a) calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report, or application; this period may be extended by request of the director at any time; and

(b) the nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures specified under 20.6.2.5351 through 20.6.2.5363 NMAC; the director may require the owner or operator to deliver the records to the director at the conclusion of the retention period.

(3) Records of monitoring information shall include:

- (a) the date, exact place, and time of sampling or measurements;
- (b) the individual(s) who performed the sampling or measurements;
- (c) the date(s) analyses were performed;
- (d) the individual(s) who performed the analyses;
- (e) the analytical techniques or methods used; and
- (f) the results of such analyses.

L. Signatory requirement. All applications, reports, or information submitted to the director shall be signed and certified. (See Subsection G of 20.6.2.5101 NMAC.)

M. Reporting requirements.

(1) *Planned changes.* The permittee shall give notice to the director as soon as possible of any planned physical alterations or additions to the permitted facility.

(2) *Anticipated noncompliance.* The permittee shall give advance notice to the director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(3) *Monitoring reports.* Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(4) *Compliance schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 30 days following each schedule date.

(5) *Twenty-four hour reporting.* The permittee shall report any noncompliance which may endanger health or the environment, including:

(a) any monitoring or other information which indicates that any contaminant may cause an endangerment to ground water of the state of New Mexico; or

(b) any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between ground water of the state of New Mexico; any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances; a written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances; the written submission shall contain a description of the noncompliance and its cause; the area affected by the noncompliance, including any ground water of the state of New Mexico; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; the date and time the permittee became aware of the noncompliance; and steps taken or planned to reduce, remediate, eliminate, and prevent reoccurrence of the noncompliance.

(6) *Other noncompliance.* The permittee shall report all instances of noncompliance not reported under Paragraphs (3), (4), and (5) of Subsection M of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph (5) of Subsection M of this section.

(7) *Other information.* Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the director, it shall promptly submit such facts or information.

N. Requirements prior to commencing injection. A new injection well may not commence injection until construction is complete; and

(1) the permittee has submitted notice of completion of construction to the director; and

(2) the director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or the permittee has not received notice from the director of his or her intent to inspect or otherwise review the new injection well within 13 days of the date of the notice in Paragraph (1) of Subsection N of this section, in which case prior inspection or review is waived and the permittee may commence injection; the director shall include in his notice a reasonable time period in which he shall inspect the well.

O. The permittee shall notify the director at such times as the permit requires before conversion or abandonment of the well.

P. The permittee shall meet the requirements of 20.6.2.5209 NMAC.

Q. *Plugging and abandonment report.* Within 60 days after plugging a well or at the time of the next quarterly report (whichever is less) the owner or operator shall submit a report to the director. If the quarterly report is due less than 15 days before completion of plugging, then the report shall be submitted within 60 days. The report shall be certified as accurate by the person who performed the plugging operation. Such report shall consist of either:

(1) a statement that the well was plugged in accordance with the plan previously submitted to the director; or

(2) where actual plugging differed from the plan previously submitted, and updated version of the plan on the form supplied by the director, specifying the differences.

R. *Duty to establish and maintain mechanical integrity.*

(1) The permittee shall meet the requirements of 20.6.2.5204 NMAC.

(2) When the director determines that a Class I hazardous well lacks mechanical integrity pursuant to 20.6.2.5204 NMAC, the director shall give written notice of the director's determination to the owner or operator. Unless the director requires immediate cessation, the owner or operator shall cease injection into the well within 48 hours of receipt of the director's determination. The director may allow plugging of the well pursuant to the requirements of 20.6.2.5209 NMAC or require the permittee to perform such additional construction, operation, monitoring, reporting and corrective action as is necessary to prevent the movement of fluid into or between ground water of the state of New Mexico caused by the lack of mechanical integrity. The owner or operator may resume injection upon written notification from the director that the owner or operator has demonstrated mechanical integrity pursuant to 20.6.2.5204 and 20.6.2.5358 NMAC.

(3) The director may allow the owner or operator of a well which lacks mechanical integrity pursuant to Subsection A of 20.6.2.5204 NMAC to continue or resume injection, if the owner or operator has made a satisfactory demonstration that there is no movement of fluid into or between groundwater of the state of New Mexico.

S. *Transfer of a permit.* The operator shall not transfer a permit without the director's prior written approval. A request for transfer of a permit shall identify officers, directors and owners of 25% or greater in the transferee. Unless the director otherwise orders, public notice or hearing are not required for the transfer request's approval. If the director denies the transfer request, it shall notify the operator and the proposed transferee of the denial by certified mail, return receipt requested, and either the operator or the proposed transferee may request a hearing with 10 days after receipt of the notice. Until the director approves the transfer and the required financial assurance is in place, the director shall not release the transferor's financial assurance.
[20.6.2.5341 NMAC - N, 8-31-15]

20.6.2.5342 ESTABLISHING PERMIT CONDITIONS:

A. In addition to conditions required in 20.6.2.5341 NMAC, the director shall establish conditions, as required on a case-by-case basis under Subsection I of 20.6.2.3109 NMAC, Subsection A of 20.6.2.5343 NMAC, and 20.6.2.5344 NMAC. Permits for owners or operators of hazardous waste injection wells shall also include conditions meeting the requirements of 20.6.2.5310 NMAC, Paragraphs (1) and (2) of Subsection A of this section, and 20.6.2.5351 through 20.6.2.5363 NMAC.

(1) *Financial responsibility.*

(a) The permittee, including the transferor of a permit, is required to demonstrate and maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner prescribed by the director until:

(i) the well has been plugged and abandoned in accordance with an approved plugging and abandonment plan pursuant to Subsection P of 20.6.2.5341 NMAC, and 20.6.2.5209 NMAC, and submitted a plugging and abandonment report pursuant to Subsection Q of 20.6.2.5341 NMAC; or

(ii) the well has been converted in compliance with the requirements of Subsection O of 20.6.2.5341 NMAC; or

(iii) the transferor of a permit has received notice from the director that the transfer has been approved and that the transferee's required financial assurance is in place.

(b) The owner or operator of a well injecting hazardous waste must comply with the financial responsibility requirements of 20.6.2.5320 NMAC.

(2) *Additional conditions.* The director shall impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into ground water of the state of New Mexico.

B. Applicable requirements.

(1) In addition to conditions required in all permits the director shall establish conditions in permits as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of this part.

(2) An applicable requirement is a state statutory or regulatory requirement which takes effect prior to final administrative disposition of the permit. An applicable requirement is also any requirement which takes effect prior to the modification or revocation and reissuance of a permit.

(3) New or renewed permits, and to the extent allowed under 20.6.2.3109 NMAC modified or terminated permits, shall incorporate each of the applicable requirements referenced in 20.6.2.5342 NMAC.

C. Incorporation. All permit conditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable regulations or requirements must be given in the permit.

[20.6.2.5342 NMAC - N, 8-31-15]

20.6.2.5343 SCHEDULE OF COMPLIANCE:

A. General. The permit may, when appropriate, specify a schedule of compliance leading to compliance with this part.

(1) *Time for compliance.* Any schedules of compliance shall require compliance as soon as possible, and in no case later than three years after the effective date of the permit.

(2) *Interim dates.* Except as provided in Subparagraph (b) of Paragraph (1) of Subsection B of this section, if a permit establishes a schedule of compliance which exceeds one year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.

(a) The time between interim dates shall not exceed one year.

(b) If the time necessary for completion of any interim requirement is more than one year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

(3) *Reporting.* The permit shall be written to require that if Paragraph (1) of Subsection A of this section is applicable, progress reports be submitted no later than 30 days following each interim date and the final date of compliance.

B. Alternative schedules of compliance. A permit applicant or permittee may cease conducting regulated activities (by plugging and abandonment) rather than continue to operate and meet permit requirements as follows.

(1) If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued:

(a) the permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or

(b) the permittee shall cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.

(2) If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to termination which will ensure timely compliance with applicable requirements.

(3) If the permittee is undecided whether to cease conducting regulated activities, the director may issue or modify a permit to contain two schedules as follows:

(a) both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities;

(b) one schedule shall lead to timely compliance with applicable requirements;

(c) the second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable requirements;

(d) each permit containing two schedules shall include a requirement that after the permittee has made a final decision under Subparagraph (a) of Paragraph (3) of Subsection B of this section it shall follow the schedule leading to compliance if the decision is to continue conducting regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities.

(4) The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the director, such as a resolution of the board of directors of a corporation.
[20.6.2.5343 NMAC - N, 8-31-15]

20.6.2.5344 REQUIREMENTS FOR RECORDING AND REPORTING OF MONITORING

RESULTS: All permits shall specify:

- A.** requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods (including biological monitoring methods when appropriate);
 - B.** required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including when appropriate, continuous monitoring;
 - C.** applicable reporting requirements based upon the impact of the regulated activity and as specified in 20.6.2.5359 NMAC; reporting shall be no less frequent than specified in the above regulations.
- [20.6.2.5344 NMAC - N, 8-31-15]

20.6.2.5345 - 20.6.2.5350: [RESERVED]

20.6.2.5351 APPLICABILITY: 20.6.2.5351 through 20.6.2.5363 NMAC establish criteria and standards for underground injection control programs to regulate Class I hazardous waste injection wells. Unless otherwise noted, these sections supplement the requirements of 20.6.2.5000 through 20.6.2.5299 NMAC and apply instead of any inconsistent requirements for Class I non-hazardous waste injection wells.
[20.6.2.5351 NMAC - N, 8-31-15]

20.6.2.5352 MINIMUM CRITERIA FOR SITING:

A. All Class I hazardous waste injection wells shall be sited such that they inject into a formation that is beneath the lowermost formation containing within one quarter mile of the well bore groundwater of the state of New Mexico.

B. The siting of Class I hazardous waste injection wells shall be limited to areas that are geologically suitable. The director shall determine geologic suitability based upon:

- (1) an analysis of the structural and stratigraphic geology, the hydrogeology, and the seismicity of the region;
- (2) an analysis of the local geology and hydrogeology of the well site, including, at a minimum, detailed information regarding stratigraphy, structure and rock properties, aquifer hydrodynamics and mineral resources; and
- (3) a determination that the geology of the area can be described confidently and that limits of waste fate and transport can be accurately predicted through the use of models.

C. Class I hazardous waste injection wells shall be sited such that:

- (1) the injection zone has sufficient permeability, porosity, thickness and areal extent to prevent migration of fluids into ground water of the state of New Mexico; and
- (2) the confining zone:
 - (a) is laterally continuous and free of transecting, transmissive faults or fractures over an area sufficient to prevent the movement of fluids into ground water of the state of New Mexico; and
 - (b) contains at least one formation of sufficient thickness and with lithologic and stress characteristics capable of preventing vertical propagation of fractures.

D. The owner or operator shall demonstrate to the satisfaction of the director that:

- (1) the confining zone is separated from the base of the lowermost ground water of the state of New Mexico by at least one sequence of permeable and less permeable strata that will provide an added layer of protection for ground water of the state of New Mexico in the event of fluid movement in an unlocated borehole or transmissive fault; or
 - (2) within the area of review, the piezometric surface of the fluid in the injection zone is less than the piezometric surface of the lowermost groundwater of the state of New Mexico, considering density effects, injection pressures and any significant pumping in the overlying ground water of the state of New Mexico; or
 - (3) there is no ground water of the state of New Mexico present.
- (4) The director may approve a site which does not meet the requirements in Paragraphs (1), (2), or (3) of Subsections D of this section if the owner or operator can demonstrate to the director that because of

the geology, nature of the waste, or other considerations, abandoned boreholes or other conduits would not cause endangerment of ground water of the state of New Mexico.
[20.6.2.5352 NMAC - N, 8-31-15]

20.6.2.5353 AREA OF REVIEW: For the purposes of Class I hazardous waste wells, this section shall apply to the exclusion of 20.6.2.5202 NMAC. The area of review for Class I hazardous waste injection wells shall be a two-mile radius around the well bore. The director may specify a larger area of review based on the calculated cone of influence of the well.
[20.6.2.5353 NMAC - N, 8-31-15]

20.6.2.5354 CORRECTIVE ACTION FOR WELLS IN THE AREA OF REVIEW: For the purposes of Class I hazardous waste wells, this section shall apply to the exclusion of 20.6.2.5203 NMAC.

A. The owner or operator of a Class I hazardous waste well shall as part of the permit application submit a plan to the director outlining the protocol used to:

(1) identify all wells penetrating the confining zone or injection zone within the area of review; and

(2) determine whether wells are adequately completed or plugged.

B. The owner or operator of a Class I hazardous waste well shall identify the location of all wells within the area of review that penetrate the injection zone or the confining zone and shall submit as required in Subsection A of 20.6.2.5360 NMAC:

(1) a tabulation of all wells within the area of review that penetrate the injection zone or the confining zone; and

(2) a description of each well or type of well and any records of its plugging or completion.

C. For wells that the director determines are improperly plugged, completed, or abandoned, or for which plugging or completion information is unavailable, the applicant shall also submit a plan consisting of such steps or modification as are necessary to prevent movement of fluids into or between groundwater of the state of New Mexico. Where the plan is adequate, the director shall incorporate it into the permit as a condition. Where the director's review of an application indicates that the permittee's plan is inadequate (based at a minimum on the factors in Subsection E of this section), the director shall:

(1) require the applicant to revise the plan;

(2) prescribe a plan for corrective action as a condition of the permit; or

(3) deny the application.

D. Requirements.

(1) Existing injection wells. Any permit issued for an existing Class I hazardous waste injection well requiring corrective action other than pressure limitations shall include a compliance schedule requiring any corrective action accepted or prescribed under Subsection C of this section. Any such compliance schedule shall provide for compliance no later than two years following issuance of the permit and shall require observance of appropriate pressure limitations under Paragraph (3) of Subsection D until all other corrective action measures have been implemented.

(2) New injection wells. No owner or operator of a new Class I hazardous waste injection well may begin injection until all corrective actions required under this section have been taken.

(3) The director may require pressure limitations in lieu of plugging. If pressure limitations are used in lieu of plugging, the director shall require as a permit condition that injection pressure be so limited that pressure in the injection zone at the site of any improperly completed or abandoned well within the area of review would not be sufficient to drive fluids into or between groundwater of the state of New Mexico. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such injection pressure limitation may be made part of a compliance schedule and may be required to be maintained until all other required corrective actions have been implemented.

E. In determining the adequacy of corrective action proposed by the applicant under Subsection C of this section and in determining the additional steps needed to prevent fluid movement into and between groundwater of the state of New Mexico, the following criteria and factors shall be considered by the director:

(1) nature and volume of injected fluid;

(2) nature of native fluids or byproducts of injection;

(3) geology;

(4) hydrology;

(5) history of the injection operation;

- (6) completion and plugging records;
- (7) closure procedures in effect at the time the well was closed;
- (8) hydraulic connections with groundwater of the state of New Mexico;
- (9) reliability of the procedures used to identify abandoned wells; and
- (10) any other factors which might affect the movement of fluids into or between ground

water of the state of New Mexico.
[20.6.2.5354 NMAC - N, 8-31-15]

20.6.2.5355 CONSTRUCTION REQUIREMENTS:

A. General. All existing and new Class I hazardous waste injection wells shall be constructed and completed to:

- (1) prevent the movement of fluids into or between ground water of the state of New Mexico or into any unauthorized zones;
- (2) permit the use of appropriate testing devices and workover tools; and
- (3) permit continuous monitoring of injection tubing and long string casing as required pursuant to Subsection F of 20.6.2.5357 NMAC.

B. Compatibility. All well materials must be compatible with fluids with which the materials may be expected to come into contact. A well shall be deemed to have compatibility as long as the materials used in the construction of the well meet or exceed standards developed for such materials by the American petroleum institute, ASTM, or comparable standards acceptable to the director.

C. Casing and cementing of new wells.

(1) Casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well, including the post-closure care period. The casing and cementing program shall be designed to prevent the movement of fluids into or between ground water of the state of New Mexico, and to prevent potential leaks of fluids from the well. In determining and specifying casing and cementing requirements, the director shall consider the following information as required by 20.6.2.5360 NMAC:

- (a) depth to the injection zone;
- (b) injection pressure, external pressure, internal pressure and axial loading;
- (c) hole size;
- (d) size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification and construction material);

- (e) corrosiveness of injected fluid, formation fluids and temperature;
- (f) lithology of injection and confining zones;
- (g) type or grade of cement; and
- (h) quantity and chemical composition of the injected fluid.

(2) One surface casing string shall, at a minimum, extend into the confining bed below the lowest formation that contains ground water of the state of New Mexico and be cemented by circulating cement from the base of the casing to the surface, using a minimum of 120% of the calculated annual volume. The director may require more than 120% when the geology or other circumstances warrant it.

(3) At least one long string casing, using a sufficient number of centralizers, shall extend to the injection zone and shall be cemented by circulating cement to the surface in one or more stages:

- (a) of sufficient quantity and quality to withstand the maximum operating pressure; and

(b) in a quantity no less than 120% of the calculated volume necessary to fill the annular space; the director may require more than 120% when the geology or other circumstances warrant it.

(4) Circulation of cement may be accomplished by staging. The director may approve an alternative method of cementing in cases where the cement cannot be recirculated to the surface, provided the owner or operator can demonstrate by using logs that the cement is continuous and does not allow fluid movement behind the well bore.

(5) Casings, including any casing connections, must be rated to have sufficient structural strength to withstand, for the design life of the well:

- (a) the maximum burst and collapse pressures which may be experienced during the construction, operation and closure of the well; and
- (b) the maximum tensile stress which may be experienced at any point along the length of the casing during the construction, operation, and closure of the well.

(6) At a minimum, cement and cement additives must be of sufficient quality and quantity to maintain integrity over the design life of the well.

D. Tubing and packer.

(1) All Class I hazardous waste injection wells shall inject fluids through tubing with a packer set at a point specified by the director.

(2) In determining and specifying requirements for tubing and packer, the following factors shall be considered:

(a) depth of setting;
(b) characteristics of injection fluid (chemical content, corrosiveness, temperature and density);

- (c) injection pressure;
- (d) annular pressure;
- (e) rate (intermittent or continuous), temperature and volume of injected fluid;
- (f) size of casing; and
- (g) tubing tensile, burst, and collapse strengths.

(3) The director may approve the use of a fluid seal if he determines that the following conditions are met:

- (a) the operator demonstrates that the seal will provide a level of protection comparable to a packer;
- (b) the operator demonstrates that the staff is, and will remain, adequately trained to operate and maintain the well and to identify and interpret variations in parameters of concern;
- (c) the permit contains specific limitations on variations in annular pressure and loss of annular fluid;
- (d) the design and construction of the well allows continuous monitoring of the annular pressure and mass balance of annular fluid; and
- (e) a secondary system is used to monitor the interface between the annulus fluid and the injection fluid and the permit contains requirements for testing the system every three months and recording the results.

[20.6.2.5355 NMAC - N, 8-31-15]

20.6.2.5356 LOGGING, SAMPLING, AND TESTING PRIOR TO NEW WELL OPERATION:

A. During the drilling and construction of a new Class I hazardous waste injection well, appropriate logs and tests shall be run to determine or verify the depth, thickness, porosity, permeability, and rock type of, and the salinity of any entrained fluids in, all relevant geologic units to assure conformance with performance standards in 20.6.2.5355 NMAC, and to establish accurate baseline data against which future measurements may be compared. A descriptive report interpreting results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the director. At a minimum, such logs and tests shall include:

(1) deviation checks during drilling on all holes constructed by drilling pilot holes which are enlarged by reaming or another method; such checks shall be at sufficiently frequent intervals to determine the location of the borehole and to assure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling; and

(2) such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information that may arise from time to time as the construction of the well progresses; at a minimum, the following logs shall be required in the following situations:

- (a) upon installation of the surface casing:
 - (i) resistivity, spontaneous potential, and caliper logs before the casing is installed; and
 - (ii) a cement bond and variable density log, and a temperature log after the casing is set and cemented;
- (b) upon installation of the long string casing:
 - (i) resistivity, spontaneous potential, porosity, caliper, gamma ray, and fracture finder logs before the casing is installed; and
 - (ii) a cement bond and variable density log, and a temperature log after the casing is set and cemented;

(c) the director may allow the use of an alternative to the above logs when an alternative will provide equivalent or better information; and

(3) a mechanical integrity test consisting of:

(a) a pressure test with liquid or gas;

(b) a radioactive tracer survey;

(c) a temperature or noise log;

(d) a casing inspection log, if required by the director; and

(e) any other test required by the director.

B. Whole cores or sidewall cores of the confining and injection zones and formation fluid samples from the injection zone shall be taken. The director may accept cores from nearby wells if the owner or operator can demonstrate that core retrieval is not possible and that such cores are representative of conditions at the well. The director may require the owner or operator to core other formations in the borehole.

C. The fluid temperature, pH, conductivity, pressure and the static fluid level of the injection zone must be recorded.

D. At a minimum, the following information concerning the injection and confining zones shall be determined or calculated for Class I hazardous waste injection wells:

(1) fracture pressure;

(2) other physical and chemical characteristics of the injection and confining zones; and

(3) physical and chemical characteristics of the formation fluids in the injection zone.

E. Upon completion, but prior to operation, the owner or operator shall conduct the following tests to verify hydrogeologic characteristics of the injection zone:

(1) a pump test; or

(2) injectivity tests.

F. The director shall have the opportunity to witness all logging and testing required by 20.6.2.5351 through 20.6.2.5363 NMAC. The owner or operator shall submit a schedule of such activities to the director 30 days prior to conducting the first test.

[20.6.2.5356 NMAC - N, 8-31-15]

20.6.2.5357 OPERATING REQUIREMENTS:

A. Except during stimulation, the owner or operator shall assure that injection pressure at the wellhead does not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. The owner or operator shall assure that the injection pressure does not initiate fractures or propagate existing fractures in the confining zone, nor cause the movement of injection or formation fluids into ground water of the state of New Mexico.

B. Injection between the outermost casing protecting ground water of the state of New Mexico and the well bore is prohibited.

C. The owner or operator shall maintain an annulus pressure that exceeds the operating injection pressure, unless the director determines that such a requirement might harm the integrity of the well. The fluid in the annulus shall be noncorrosive, or shall contain a corrosion inhibitor.

D. The owner or operator shall maintain mechanical integrity of the injection well at all times.

E. Permit requirements for owners or operators of hazardous waste wells which inject wastes which have the potential to react with the injection formation to generate gases shall include:

(1) conditions limiting the temperature, pH or acidity of the injected waste; and

(2) procedures necessary to assure that pressure imbalances which might cause a backflow or blowout do not occur.

F. The owner or operator shall install and use continuous recording devices to monitor: the injection pressure; the flow rate, volume, and temperature of injected fluids; and the pressure on the annulus between the tubing and the long string casing, and shall install and use:

(1) automatic alarm and automatic shut-off systems, designed to sound and shut-in the well when pressures and flow rates or other parameters approved by the director exceed a range or gradient specified in the permit; or

(2) automatic alarms, designed to sound when the pressures and flow rates or other parameters approved by the director exceed a rate or gradient specified in the permit, in cases where the owner or operator certifies that a trained operator will be on-site at all times when the well is operating.

G. If an automatic alarm or shutdown is triggered, the owner or operator shall immediately investigate and identify as expeditiously as possible the cause of the alarm or shutoff. If, upon such investigation, the well appears to be lacking mechanical integrity, or if monitoring required under Subsection F of this section otherwise indicates that the well may be lacking mechanical integrity, the owner or operator shall:

(1) cease injection of waste fluids unless authorized by the director to continue or resume injection;

(2) take all necessary steps to determine the presence or absence of a leak; and

(3) notify the director within 24 hours after the alarm or shutdown.

H. If a loss of mechanical integrity is discovered pursuant to Subsection G of this section or during periodic mechanical integrity testing, the owner or operator shall:

(1) immediately cease injection of waste fluids;

(2) take all steps reasonably necessary to determine whether there may have been a release of hazardous wastes or hazardous waste constituents into any unauthorized zone;

(3) notify the director within 24 hours after loss of mechanical integrity is discovered;

(4) notify the director when injection can be expected to resume; and

(5) restore and demonstrate mechanical integrity to the satisfaction of the director prior to resuming injection of waste fluids.

I. Whenever the owner or operator obtains evidence that there may have been a release of injected wastes into an unauthorized zone:

(1) the owner or operator shall immediately cease injection of waste fluids, and:

(a) notify the director within 24 hours of obtaining such evidence;

(b) take all necessary steps to identify and characterize the extent of any release;

(c) comply with any remediation plan specified by the director;

(d) implement any remediation plan approved by the director; and

(e) where such release is into ground water of the state of New Mexico currently serving as a water supply, place a notice in a newspaper of general circulation.

(2) The director may allow the operator to resume injection prior to completing cleanup action if the owner or operator demonstrates that the injection operation will not endanger groundwater of the state of New Mexico.

J. The owner or operator shall notify the director and obtain his approval prior to conducting any well workover.

[20.6.2.5357 NMAC - N, 8-31-15]

20.6.2.5358 TESTING AND MONITORING REQUIREMENTS: Testing and monitoring requirements shall at a minimum include.

A. Monitoring of the injected wastes.

(1) The owner or operator shall develop and follow an approved written waste analysis plan that describes the procedures to be carried out to obtain a detailed chemical and physical analysis of a representative sample of the waste, including the quality assurance procedures used. At a minimum, the plan shall specify:

(a) the parameters for which the waste will be analyzed and the rationale for the selection of these parameters;

(b) the test methods that will be used to test for these parameters; and

(c) the sampling method that will be used to obtain a representative sample of the waste to be analyzed.

(2) The owner or operator shall repeat the analysis of the injected wastes as described in the waste analysis plan at frequencies specified in the waste analysis plan and when process or operating changes occur that may significantly alter the characteristics of the waste stream.

(3) The owner or operator shall conduct continuous or periodic monitoring of selected parameters as required by the director.

(4) The owner or operator shall assure that the plan remains accurate and the analyses remain representative.

B. Hydrogeologic compatibility determination. The owner or operator shall submit information demonstrating to the satisfaction of the director that the waste stream and its anticipated reaction products will not alter the permeability, thickness or other relevant characteristics of the confining or injection zones such that they would no longer meet the requirements specified in 20.6.2.5352 NMAC.

C. Compatibility of well materials.

(1) The owner or operator shall demonstrate that the waste stream will be compatible with the well materials with which the waste is expected to come into contact, and submit to the director a description of the methodology used to make that determination. Compatibility for purposes of this requirement is established if contact with injected fluids will not cause the well materials to fail to satisfy any design requirement imposed under Subsection B of 20.6.2.5355 NMAC.

(2) The director shall require continuous corrosion monitoring of the construction materials used in the well for wells injecting corrosive waste, and may require such monitoring for other waste, by:

- (a) placing coupons of the well construction materials in contact with the waste stream; or
- (b) routing the waste stream through a loop constructed with the material used in the well; or
- (c) using an alternative method approved by the director.

(3) If a corrosion monitoring program is required:

(a) the test shall use materials identical to those used in the construction of the well, and such materials must be continuously exposed to the operating pressures and temperatures (measured at the well head) and flow rates of the injection operation; and

(b) the owner or operator shall monitor the materials for loss of mass, thickness, cracking, pitting and other signs of corrosion on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in Subsection B of 20.6.2.5355 NMAC.

D. Periodic mechanical integrity testing. In fulfilling the requirements of 20.6.2.5204 NMAC, the owner or operator of a Class I hazardous waste injection well shall conduct the mechanical integrity testing as follows:

(1) the long string casing, injection tube, and annular seal shall be tested by means of an approved pressure test with a liquid or gas annually and whenever there has been a well workover;

(2) the bottom-hole cement shall be tested by means of an approved radioactive tracer survey annually;

(3) an approved temperature, noise, or other approved log shall be run at least once every five years to test for movement of fluid along the borehole; the director may require such tests whenever the well is worked over;

(4) casing inspection logs shall be run whenever the owner or operator conducts a workover in which the injection string is pulled, unless the director waives this requirement due to well construction or other factors which limit the test's reliability, or based upon the satisfactory results of a casing inspection log run within the previous five years; the director may require that a casing inspection log be run every five years, if he has reason to believe that the integrity of the long string casing of the well may be adversely affected by naturally-occurring or man-made events;

(5) any other test approved by the director in accordance with the procedures in 40 CFR Section 146.8(d) may also be used.

E. Ambient monitoring.

(1) Based on a site-specific assessment of the potential for fluid movement from the well or injection zone, and on the potential value of monitoring wells to detect such movement, the director shall require the owner or operator to develop a monitoring program. At a minimum, the director shall require monitoring of the pressure buildup in the injection zone annually, including at a minimum, a shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve.

(2) When prescribing a monitoring system the director may also require:

(a) continuous monitoring for pressure changes in the first aquifer overlying the confining zone; when such a well is installed, the owner or operator shall, on a quarterly basis, sample the aquifer and analyze for constituents specified by the director;

(b) the use of indirect, geophysical techniques to determine the position of the waste front, the water quality in a formation designated by the director, or to provide other site specific data;

(c) periodic monitoring of the ground water quality in the first aquifer overlying the injection zone;

(d) periodic monitoring of the ground water quality in the lowermost ground water of the state of New Mexico; and

(e) any additional monitoring necessary to determine whether fluids are moving into or between ground water of the state of New Mexico.

F. The director may require seismicity monitoring when he has reason to believe that the injection activity may have the capacity to cause seismic disturbances.
[20.6.2.5358 NMAC - N, 8-31-15]

20.6.2.5359 REPORTING REQUIREMENTS: Reporting requirements shall, at a minimum, include:

- A.** quarterly reports to the director containing:
- (1) the maximum injection pressure;
 - (2) a description of any event that exceeds operating parameters for annulus pressure or injection pressure as specified in the permit;
 - (3) a description of any event which triggers an alarm or shutdown device required pursuant to Subsection F of 20.6.2.5357 NMAC and the response taken;
 - (4) the total volume of fluid injected;
 - (5) any change in the annular fluid volume;
 - (6) the physical, chemical and other relevant characteristics of injected fluids; and
 - (7) the results of monitoring prescribed under 20.6.2.5358 NMAC;
- B.** reporting, within 30 days or with the next quarterly report whichever comes later, the results of:
- (1) periodic tests of mechanical integrity;
 - (2) any other test of the injection well conducted by the permittee if required by the director;
- and
- (3) any well workover.

[20.6.2.5359 NMAC - N, 8-31-15]

20.6.2.5360 INFORMATION TO BE EVALUATED BY THE DIRECTOR: This section sets forth the information which must be evaluated by the director in authorizing Class I hazardous waste injection wells. For a new Class I hazardous waste injection well, the owner or operator shall submit all the information listed below as part of the permit application. For an existing or converted Class I hazardous waste injection well, the owner or operator shall submit all information listed below as part of the permit application except for those items of information which are current, accurate, and available in the existing permit file. For both existing and new Class I hazardous waste injection wells, certain maps, cross-sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current and readily available to the director (for example, in the permitting agency's files) and sufficiently identifiable to be retrieved.

A. Prior to the issuance of a permit for an existing Class I hazardous waste injection well to operate or the construction or conversion of a new Class I hazardous waste injection well, the director shall review the following to assure that the requirements of 20.6.2.5000 through 20.6.2.5399 NMAC are met:

- (1) information required in 20.6.2.5102 NMAC;
- (2) a map showing the injection well for which a permit is sought and the applicable area of review; within the area of review, the map must show the number or name and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features, including residences and roads; the map should also show faults, if known or suspected;
- (3) a tabulation of all wells within the area of review which penetrate the proposed injection zone or confining zone; such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging or completion and any additional information the director may require;
- (4) the protocol followed to identify, locate and ascertain the condition of abandoned wells within the area of review which penetrate the injection or the confining zones;
- (5) maps and cross-sections indicating the general vertical and lateral limits of all ground water of the state of New Mexico within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each groundwater of the state of New Mexico which may be affected by the proposed injection;
- (6) maps and cross-sections detailing the geologic structure of the local area;
- (7) maps and cross-sections illustrating the regional geologic setting;
- (8) proposed operating data:
 - (a) average and maximum daily rate and volume of the fluid to be injected; and
 - (b) average and maximum injection pressure;
- (9) proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the injection formation and the confining zone;

- (10) proposed stimulation program;
- (11) proposed injection procedure;
- (12) schematic or other appropriate drawings of the surface and subsurface construction details of the well;
- (13) contingency plans to cope with all shut-ins or well failures so as to prevent migration of fluids into any ground water of the state of New Mexico;
- (14) plans (including maps) for meeting monitoring requirements of 20.6.2.5358 NMAC;
- (15) for wells within the area of review which penetrate the injection zone or the confining zone but are not properly completed or plugged, the corrective action to be taken under 20.6.2.5354 NMAC;
- (16) construction procedures including a cementing and casing program, well materials specifications and their life expectancy, logging procedures, deviation checks, and a drilling, testing and coring program; and
- (17) a demonstration pursuant to 20.6.2.5320 NMAC, that the applicant has the resources necessary to close, plug or abandon the well and for post-closure care.

B. Prior to the director's granting approval for the operation of a Class I hazardous waste injection well, the owner or operator shall submit and the director shall review the following information, which shall be included in the completion report:

- (1) all available logging and testing program data on the well;
- (2) a demonstration of mechanical integrity pursuant to 20.6.2.5358 NMAC;
- (3) the anticipated maximum pressure and flow rate at which the permittee will operate;
- (4) the results of the injection zone and confining zone testing program as required in Paragraph (9) of Subsection A of 20.6.2.5360 NMAC;
- (5) the actual injection procedure;
- (6) the compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone and with the materials used to construct the well;
- (7) the calculated area of review based on data obtained during logging and testing of the well and the formation, and where necessary revisions to the information submitted under Paragraphs (2) and (3) of Subsection A of 20.6.2.5360 NMAC;
- (8) the status of corrective action on wells identified in Paragraph (15) of Subsection A of 20.6.2.5360 NMAC; and
- (9) evidence that the permittee has obtained an exemption under 40 C.F.R. Part 148, Subpart C for the hazardous wastes permitted for disposal through underground injection.

C. Prior to granting approval for the plugging and abandonment (*i.e.*, closure) of a Class I hazardous waste injection well, the director shall review the information required in Paragraph (4) of Subsection A of 20.6.2.5361 NMAC and Subsection A of 20.6.2.5362 NMAC.

D. Any permit issued for a Class I hazardous waste injection well for disposal on the premises where the waste is generated shall contain a certification by the owner or operator that:

- (1) the generator of the hazardous waste has a program to reduce the volume or quantity and toxicity of such waste to the degree determined by the generator to be economically practicable; and
 - (2) injection of the waste is that practicable method of disposal currently available to the generator which minimizes the present and future threat to human health and the environment.
- [20.6.2.5360 NMAC - N, 8-31-15]

20.6.2.5361 CLOSURE:

A. *Closure plan.* The owner or operator of a Class I hazardous waste injection well shall prepare, maintain, and comply with a plan for closure of the well that meets the requirements of Subsection D of this section and is acceptable to the director. The obligation to implement the closure plan survives the termination of a permit or the cessation of injection activities. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.

(1) The owner or operator shall submit the plan as a part of the permit application and, upon approval by the director, such plan shall be a condition of any permit issued.

(2) The owner or operator shall submit any proposed significant revision to the method of closure reflected in the plan for approval by the director no later than the date on which notice of closure is required to be submitted to the director under Subsection B of this section.

(3) The plan shall assure financial responsibility as required in Paragraph (1) of Subsection A of 20.6.2.5342 NMAC.

- (4) The plan shall include the following information:
- (a) the type and number of plugs to be used;
 - (b) the placement of each plug including the elevation of the top and bottom of each plug;
 - (c) the type and grade and quantity of material to be used in plugging;
 - (d) the method of placement of the plugs;
 - (e) any proposed test or measure to be made;
 - (f) the amount, size, and location (by depth) of casing and any other materials to be left in the well;
 - (g) the method and location where casing is to be parted, if applicable;
 - (h) the procedure to be used to meet the requirements of Paragraph (5) of Subsection D of this section;

- (i) the estimated cost of closure; and
 - (j) any proposed test or measure to be made.
- (5) The director may modify a closure plan following the procedures of 20.6.2.3109 NMAC.
- (6) An owner or operator of a Class I hazardous waste injection well who ceases injection temporarily, may keep the well open provided he:

- (a) has received authorization from the director; and
- (b) has described actions or procedures, satisfactory to the director, that the owner or operator will take to ensure that the well will not endanger ground water of the state of New Mexico during the period of temporary disuse; these actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the director.

(7) The owner or operator of a well that has ceased operations for more than two years shall notify the director 30 days prior to resuming operation of the well.

B. Notice of intent to close. The owner or operator shall notify the director at least 60 days before closure of a well. At the discretion of the director, a shorter notice period may be allowed.

C. Closure report. Within 60 days after closure or at the time of the next quarterly report (whichever is less) the owner or operator shall submit a closure report to the director. If the quarterly report is due less than 15 days after completion of closure, then the report shall be submitted within 60 days after closure. The report shall be certified as accurate by the owner or operator and by the person who performed the closure operation (if other than the owner or operator). Such report shall consist of either:

- (1) a statement that the well was closed in accordance with the closure plan previously submitted and approved by the director; or
- (2) where actual closure differed from the plan previously submitted, a written statement specifying the differences between the previous plan and the actual closure.

D. Standards for well closure.

(1) Prior to closing the well, the owner or operator shall observe and record the pressure decay for a time specified by the director. The director shall analyze the pressure decay and the transient pressure observations conducted pursuant to Paragraph (1) of Subsection E of 20.6.2.5358 NMAC and determine whether the injection activity has conformed with predicted values.

(2) Prior to well closure, appropriate mechanical integrity testing shall be conducted to ensure the integrity of that portion of the long string casing and cement that will be left in the ground after closure. Testing methods may include:

- (a) pressure tests with liquid or gas;
 - (b) radioactive tracer surveys;
 - (c) noise, temperature, pipe evaluation, or cement bond logs; and
 - (d) any other test required by the director.
- (3) Prior to well closure, the well shall be flushed with a buffer fluid.
- (4) Upon closure, a Class I hazardous waste well shall be plugged with cement in a manner that will not allow the movement of fluids into or between groundwater of the state of New Mexico.
- (5) Placement of the cement plugs shall be accomplished by one of the following:
- (a) the balance method;
 - (b) the dump bailer method;
 - (c) the two-plug method; or
 - (d) an alternate method, approved by the director, that will reliably provide a comparable level of protection.

(6) Each plug used shall be appropriately tagged and tested for seal and stability before closure is completed.

(7) The well to be closed shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or by a comparable method prescribed by the director, prior to the placement of the cement plug(s).

[20.6.2.5361 NMAC - N, 8-31-15]

20.6.2.5362 POST-CLOSURE CARE:

A. The owner or operator of a Class I hazardous waste well shall prepare, maintain, and comply with a plan for post-closure care that meets the requirements of Subsection B of this section and is acceptable to the director. The obligation to implement the post-closure plan survives the termination of a permit or the cessation of injection activities. The requirement to maintain an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.

(1) The owner or operator shall submit the plan as a part of the permit application and, upon approval by the director, such plan shall be a condition of any permit issued.

(2) The owner or operator shall submit any proposed significant revision to the plan as appropriate over the life of the well, but no later than the date of the closure report required under Subsection C of 20.6.2.5361 NMAC.

(3) The plan shall assure financial responsibility as required in 20.6.2.5363 NMAC.

(4) The plan shall include the following information:

- (a) the pressure in the injection zone before injection began;
- (b) the anticipated pressure in the injection zone at the time of closure;
- (c) the predicted time until pressure in the injection zone decays to the point that the well's cone of influence no longer intersects the base of the lowermost ground water of the state of New Mexico;
- (d) predicted position of the waste front at closure;
- (e) the status of any cleanups required under 20.6.2.5354 NMAC; and
- (f) the estimated cost of proposed post-closure care.

(5) At the request of the owner or operator, or on his own initiative, the director may modify the post-closure plan after submission of the closure report following the procedures in 20.6.2.3109 NMAC.

B. The owner or operator shall:

(1) continue and complete any cleanup action required under 20.6.2.5354 NMAC, if applicable;

(2) continue to conduct any ground water monitoring required under the permit until pressure in the injection zone decays to the point that the well's cone of influence no longer intersects the base of the lowermost ground water of the state of New Mexico; the director may extend the period of post-closure monitoring if he determines that the well may endanger ground water of the state of New Mexico;

(3) submit a survey plat to the local zoning authority designated by the director; the plat shall indicate the location of the well relative to permanently surveyed benchmarks; a copy of the plat shall be submitted to the director;

(4) provide appropriate notification and information to such state and local authorities as have cognizance over drilling activities to enable such state and local authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the well's confining or injection zone;

(5) retain, for a period of three years following well closure, records reflecting the nature, composition and volume of all injected fluids; the director shall require the owner or operator to deliver the records to the director at the conclusion of the retention period, and the records shall thereafter be retained at a location designated by the director for that purpose.

C. Each owner of a Class I hazardous waste injection well, and the owner of the surface or subsurface property on or in which a Class I hazardous waste injection well is located, must record a notation on the deed to the facility property or on some other instrument which is normally examined during title search that will in perpetuity provide any potential purchaser of the property the following information:

(1) the fact that land has been used to manage hazardous waste;

(2) the name of the state agency or local authority with which the plat was filed, as well as the address of the director;

(3) the type and volume of waste injected, the injection interval or intervals into which it was injected, and the period over which injection occurred.

[20.6.2.5362 NMAC - N, 8-31-15]

20.6.2.5363 FINANCIAL RESPONSIBILITY FOR POST-CLOSURE CARE: The owner or operator shall demonstrate and maintain financial responsibility for post-closure by using a trust fund, surety bond, letter of credit, financial test, insurance or corporate guarantee that meets the specifications for the mechanisms and instruments revised as appropriate to cover closure and post-closure care in 20.6.2.5320 NMAC. The amount of the funds available shall be no less than the amount identified in Subparagraph (f) of Paragraph (4) of Subsection A of 20.6.2.5362 NMAC. The obligation to maintain financial responsibility for post-closure care survives the termination of a permit or the cessation of injection. The requirement to maintain financial responsibility is enforceable regardless of whether the requirement is a condition of the permit.
[20.6.2.5363 NMAC - N, 8-31-15]

20.6.2.5364 - 20.6.2.5399: [RESERVED]

HISTORY of 20.6.2 NMAC:

Pre-NMAC History:

Material in this Part was derived from that previously filed with the commission of public records - state records center and archives:

WQC 67-2, Regulations Governing Water Pollution Control in New Mexico, filed 12-5-67, effective 1-4-68

WQC 72-1, Water Quality Control Commission Regulations, filed 8-4-72, effective 9-3-72

WQC 77-1, Amended Water Quality Control Commission Regulations, filed 1-18-77, effective 2-18-77

WQC 81-2, Water Quality Control Commission Regulations, filed 6-2-81, effective 7-2-81

WQC 82-1, Water Quality Control Commission Regulations, filed 8-19-82, effective 9-20-82

History of Repealed Material: [Reserved]

Other History:

20 NMAC 6.2, Water Quality - Ground and Surface Water Protection, filed 10-27-95, effective 12-1-95

20 NMAC 6.2, Water Quality - Ground and Surface Water Protection, filed 10-15-96, effective 11-15-96

20 NMAC 6.2, Water Quality - Ground and Surface Water Protection, filed 11-30-00, effective 1-15-01

20 NMAC 6.2, Water Quality - Ground and Surface Water Protection, filed 9-16-01, effective 12-1-01

20 NMAC 6.2, Water Quality - Ground and Surface Water Protection, filed 8-1-02, effective 9-15-02

20 NMAC 6.2, Water Quality - Ground and Surface Water Protection, filed 11-21-18, effective 12-21-18

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(b) The effective dates for § 141.62 are as follows:

(1) The effective date of paragraph (b)(1) of § 141.62 is October 2, 1987.

(2) The effective date for paragraphs (b)(2) and (b)(4) through (b)(10) of § 141.62 is July 30, 1992.

(3) The effective date for paragraphs (b)(11) through (b)(15) of § 141.62 is January 17, 1994.

(4) The effective date for § 141.62(b)(16) is January 23, 2006.

[56 FR 3593, Jan. 30, 1991, as amended at 57 FR 31846, July 17, 1992; 59 FR 34324, July 1, 1994; 66 FR 7063, Jan. 22, 2001]

§ 141.61 Maximum contaminant levels for organic contaminants.

(a) The following maximum contaminant levels for organic contaminants apply to community and non-transient, non-community water systems.

CAS No.	Contaminant	MCL (mg/l)
(1) 75-01-4	Vinyl chloride	0.002
(2) 71-43-2	Benzene	0.005
(3) 56-23-5	Carbon tetrachloride	0.005
(4) 107-06-2	1,2-Dichloroethane	0.005
(5) 79-01-6	Trichloroethylene	0.005
(6) 106-46-7	para-Dichlorobenzene	0.075
(7) 75-35-4	1,1-Dichloroethylene	0.007
(8) 71-55-6	1,1,1-Trichloroethane	0.2
(9) 156-59-2	cis-1,2-Dichloroethylene	0.07
(10) 78-87-5	1,2-Dichloropropane	0.005
(11) 100-41-4	Ethylbenzene	0.7
(12) 108-90-7	Monochlorobenzene	0.1
(13) 95-50-1	o-Dichlorobenzene	0.6
(14) 100-42-5	Styrene	0.1
(15) 127-18-4	Tetrachloroethylene	0.005
(16) 108-88-3	Toluene	1
(17) 156-60-5	trans-1,2-Dichloroethylene	0.1
(18) 1330-20-7	Xylenes (total)	10
(19) 75-09-2	Dichloromethane	0.005
(20) 120-82-1	1,2,4-Trichloro- benzene	.07
(21) 79-00-5	1,1,2-Trichloro- ethane	.005

(b) The Administrator, pursuant to section 1412 of the Act, hereby identifies as indicated in the Table below granular activated carbon (GAC), packed tower aeration (PTA), or oxidation (OX) as the best technology treat-

ment technique, or other means available for achieving compliance with the maximum contaminant level for organic contaminants identified in paragraphs (a) and (c) of this section:

BAT FOR ORGANIC CONTAMINANTS LISTED IN § 141.61 (a) AND (c)

CAS No.	Contaminant	GAC	PTA	OX
15972-60-8	Alachlor	X		
116-06-3	Aldicarb	X		
1646-88-4	Aldicarb sulfone	X		
1646-87-3	Aldicarb sulfoxide	X		
1912-24-9	Atrazine	X		
71-43-2	Benzene	X	X	
50-32-8	Benzo[a]pyrene	X		
1563-66-2	Carbofuran	X		
56-23-5	Carbon tetrachloride	X	X	
57-74-9	Chlordane	X		
75-99-0	Dalapon	X		
94-75-7	2,4-D	X		
103-23-1	Di (2-ethylhexyl) adipate	X	X	
117-81-7	Di (2-ethylhexyl) phthalate	X		
96-12-8	Dibromochloropropane (DBCP)	X	X	
95-50-1	o-Dichlorobenzene	X	X	
106-46-7	para-Dichlorobenzene	X	X	
107-06-2	1,2-Dichloroethane	X	X	
75-35-4	1,1-Dichloroethylene	X	X	
156-59-2	cis-1,2-Dichloroethylene	X	X	
156-60-5	trans-1,2-Dichloroethylene	X	X	

BAT FOR ORGANIC CONTAMINANTS LISTED IN § 141.61 (a) AND (c)—Continued

CAS No.	Contaminant	GAC	PTA	OX
75-09-2	Dichloromethane		X	
78-87-5	1,2-Dichloropropane	X	X	
88-85-7	Dinoseb	X		
85-00-7	Diquat	X		
145-73-3	Endothall	X		
72-20-8	Endrin	X		
100-41-4	Ethylbenzene	X	X	
106-93-4	Ethylene Dibromide (EDB)	X	X	
1071-83-6	Glyphosate			X
76-44-8	Heptachlor	X		
1024-57-3	Heptachlor epoxide	X		
118-74-1	Hexachlorobenzene	X		
77-47-3	Hexachlorocyclopentadiene	X	X	
58-89-9	Lindane	X		
72-43-5	Methoxychlor	X		
108-90-7	Monochlorobenzene	X	X	
23135-22-0	Oxamyl (Vydate)	X		
87-86-5	Pentachlorophenol	X		
1918-02-1	Picloram	X		
1336-36-3	Polychlorinated biphenyls (PCB)	X		
122-34-9	Simazine	X		
100-42-5	Styrene	X	X	
1746-01-6	2,3,7,8-TCDD (Dioxin)	X		
127-18-4	Tetrachloroethylene	X	X	
108-88-3	Toluene	X	X	
8001-35-2	Toxaphene	X		
93-72-1	2,4,5-TP (Silvex)	X		
120-82-1	1,2,4-Trichlorobenzene	X	X	
71-55-6	1,1,1-Trichloroethane	X	X	
79-00-5	1,1,2-Trichloroethane	X	X	
79-01-6	Trichloroethylene	X	X	
75-01-4	Vinyl chloride		X	
1330-20-7	Xylene	X	X	

(c) The following maximum contaminant levels for synthetic organic contaminants apply to community water

systems and non-transient, non-community water systems:

CAS No.	Contaminant	MCL (mg/l)
(1) 15972-60-8	Alachlor	0.002
(2) 116-06-3	Aldicarb	0.003
(3) 1646-87-3	Aldicarb sulfoxide	0.004
(4) 1646-87-4	Aldicarb sulfone	0.002
(5) 1912-24-9	Atrazine	0.003
(6) 1563-66-2	Carbofuran	0.04
(7) 57-74-9	Chlordane	0.002
(8) 96-12-8	Dibromochloropropane	0.0002
(9) 94-75-7	2,4-D	0.07
(10) 106-93-4	Ethylene dibromide	0.00005
(11) 76-44-8	Heptachlor	0.0004
(12) 1024-57-3	Heptachlor epoxide	0.0002
(13) 58-89-9	Lindane	0.0002
(14) 72-43-5	Methoxychlor	0.04
(15) 1336-36-3	Polychlorinated biphenyls	0.0005
(16) 87-86-5	Pentachlorophenol	0.001
(17) 8001-35-2	Toxaphene	0.003
(18) 93-72-1	2,4,5-TP	0.05
(19) 50-32-8	Benzo[a]pyrene	0.0002
(20) 75-99-0	Dalapon	0.2
(21) 103-23-1	Di(2-ethylhexyl) adipate	0.4
(22) 117-81-7	Di(2-ethylhexyl) phthalate	0.006
(23) 88-85-7	Dinoseb	0.007
(24) 85-00-7	Diquat	0.02
(25) 145-73-3	Endothall	0.1
(26) 72-20-8	Endrin	0.002
(27) 1071-53-6	Glyphosate	0.7
(28) 118-74-1	Hexachlorobenzene	0.001
(29) 77-47-4	Hexachlorocyclopentadiene	0.05

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CAS No.	Contaminant	MCL (mg/l)
(30) 23135-22-0	Oxamyl (Vydate)	0.2
(31) 1918-02-1	Picloram	0.5
(32) 122-34-9	Simazine	0.004
(33) 1746-01-6	2,3,7,8-TCDD (Dioxin)	3×10^{-8}

[56 FR 3593, Jan. 30, 1991, as amended at 56 FR 30280, July 1, 1991; 57 FR 31846, July 17, 1992; 59 FR 34324, July 1, 1994]

§ 141.62 Maximum contaminant levels for inorganic contaminants.

(a) [Reserved]

(b) The maximum contaminant levels for inorganic contaminants specified in paragraphs (b) (2)-(6), (b)(10), and (b) (11)-(16) of this section apply to community water systems and non-transient, non-community water systems. The maximum contaminant level specified in paragraph (b)(1) of this section only applies to community water systems. The maximum contaminant levels specified in (b)(7), (b)(8), and (b)(9) of this section apply to community water systems; non-transient, non-community water systems; and transient non-community water systems.

Contaminant	MCL (mg/l)
(1) Fluoride	4.0
(2) Asbestos	7 Million Fibers/liter (longer than 10 μ m).
(3) Barium	2
(4) Cadmium	0.005
(5) Chromium	0.1
(6) Mercury	0.002
(7) Nitrate	10 (as Nitrogen)
(8) Nitrite	1 (as Nitrogen)
(9) Total Nitrate and Nitrite	10 (as Nitrogen)
(10) Selenium	0.05
(11) Antimony	0.006
(12) Beryllium	0.004
(13) Cyanide (as free Cyanide).	0.2
(14) [Reserved].	
(15) Thallium	0.002
(16) Arsenic	0.010

(c) The Administrator, pursuant to section 1412 of the Act, hereby identifies the following as the best technology, treatment technique, or other means available for achieving compliance with the maximum contaminant levels for inorganic contaminants identified in paragraph (b) of this section, except fluoride:

BAT FOR INORGANIC COMPOUNDS LISTED IN SECTION 141.62(b)

Chemical Name	BAT(s)
Antimony	2,7
Arsenic ⁴	1, 2, 5, 6, 7, 9, 12 ⁵
Asbestos	2,3,8
Barium	5,6,7,9
Beryllium	1,2,5,6,7
Cadmium	2,5,6,7
Chromium	2,5,6 ² ,7
Cyanide	5,7,13
Mercury	2 ¹ ,4,6 ¹ ,7 ¹
Nickel	5,6,7
Nitrate	5,7,9
Nitrite	5,7
Selenium	1,2 ³ ,6,7,9
Thallium	1,5

¹ BAT only if influent Hg concentrations $\leq 10 \mu\text{g/l}$.

² BAT for Chromium III only.

³ BAT for Selenium IV only.

⁴ BATs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

⁵ To obtain high removals, iron to arsenic ratio must be at least 20:1.

Key to BATs in Table

- 1 = Activated Alumina
- 2 = Coagulation/Filtration (not BAT for systems <500 service connections)
- 3 = Direct and Diatomite Filtration
- 4 = Granular Activated Carbon
- 5 = Ion Exchange
- 6 = Lime Softening (not BAT for systems <500 service connections)
- 7 = Reverse Osmosis
- 8 = Corrosion Control
- 9 = Electrodialysis
- 10 = Chlorine
- 11 = Ultraviolet
- 12 = Oxidation/Filtration
- 13 = Alkaline Chlorination (pH ≥ 8.5)

(d) The Administrator, pursuant to section 1412 of the Act, hereby identifies in the following table the affordable technology, treatment technique, or other means available to systems serving 10,000 persons or fewer for achieving compliance with the maximum contaminant level for arsenic:

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CAS No.	Contaminant	MCL (mg/l)
(30) 23135-22-0	Oxamyl (Vydate)	0.2
(31) 1918-02-1	Picloram	0.5
(32) 122-34-9	Simazine	0.004
(33) 1746-01-6	2,3,7,8-TCDD (Dioxin)	3×10^{-8}

[56 FR 3593, Jan. 30, 1991, as amended at 56 FR 30280, July 1, 1991; 57 FR 31846, July 17, 1992; 59 FR 34324, July 1, 1994]

§ 141.62 Maximum contaminant levels for inorganic contaminants.

(a) [Reserved]

(b) The maximum contaminant levels for inorganic contaminants specified in paragraphs (b) (2)-(6), (b)(10), and (b) (11)-(16) of this section apply to community water systems and non-transient, non-community water systems. The maximum contaminant level specified in paragraph (b)(1) of this section only applies to community water systems. The maximum contaminant levels specified in (b)(7), (b)(8), and (b)(9) of this section apply to community water systems; non-transient, non-community water systems; and transient non-community water systems.

Contaminant	MCL (mg/l)
(1) Fluoride	4.0
(2) Asbestos	7 Million Fibers/liter (longer than 10 µm).
(3) Barium	2
(4) Cadmium	0.005
(5) Chromium	0.1
(6) Mercury	0.002
(7) Nitrate	10 (as Nitrogen)
(8) Nitrite	1 (as Nitrogen)
(9) Total Nitrate and Nitrite	10 (as Nitrogen)
(10) Selenium	0.05
(11) Antimony	0.006
(12) Beryllium	0.004
(13) Cyanide (as free Cyanide).	0.2
(14) [Reserved].	
(15) Thallium	0.002
(16) Arsenic	0.010

(c) The Administrator, pursuant to section 1412 of the Act, hereby identifies the following as the best technology, treatment technique, or other means available for achieving compliance with the maximum contaminant levels for inorganic contaminants identified in paragraph (b) of this section, except fluoride:

BAT FOR INORGANIC COMPOUNDS LISTED IN SECTION 141.62(b)

Chemical Name	BAT(s)
Antimony	2,7
Arsenic ⁴	1, 2, 5, 6, 7, 9, 12 ⁵
Asbestos	2,3,8
Barium	5,6,7,9
Beryllium	1,2,5,6,7
Cadmium	2,5,6,7
Chromium	2,5,6,7
Cyanide	5,7,13
Mercury	2 ¹ ,4,6 ¹ ,7 ¹
Nickel	5,6,7
Nitrate	5,7,9
Nitrite	5,7
Selenium	1,2 ³ ,6,7,9
Thallium	1,5

¹ BAT only if influent Hg concentrations ≤10 µg/l.

² BAT for Chromium III only.

³ BAT for Selenium IV only.

⁴ BATs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

⁵ To obtain high removals, iron to arsenic ratio must be at least 20:1.

Key to BATS in Table

- 1 = Activated Alumina
- 2 = Coagulation/Filtration (not BAT for systems <500 service connections)
- 3 = Direct and Diatomite Filtration
- 4 = Granular Activated Carbon
- 5 = Ion Exchange
- 6 = Lime Softening (not BAT for systems <500 service connections)
- 7 = Reverse Osmosis
- 8 = Corrosion Control
- 9 = Electrodialysis
- 10 = Chlorine
- 11 = Ultraviolet
- 12 = Oxidation/Filtration
- 13 = Alkaline Chlorination (pH ≥8.5)

(d) The Administrator, pursuant to section 1412 of the Act, hereby identifies in the following table the affordable technology, treatment technique, or other means available to systems serving 10,000 persons or fewer for achieving compliance with the maximum contaminant level for arsenic:

Environmental Protection Agency

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SMALL SYSTEM COMPLIANCE TECHNOLOGIES (SSCTs) ¹ FOR ARSENIC ²

Small system compliance technology	Affordable for listed small system categories ³
Activated Alumina (centralized).	All size categories.
Activated Alumina (Point-of-Use) ⁴ .	All size categories.
Coagulation/Filtration ⁵	501–3,300, 3,301–10,000.
Coagulation-assisted Micro-filtration.	501–3,300, 3,301–10,000.
Electrodialysis reversal ⁶	501–3,300, 3,301–10,000.
Enhanced coagulation/filtration.	All size categories.
Enhanced lime softening (pH>10.5).	All size categories.
Ion Exchange	All size categories.
Lime Softening ⁵	501–3,300, 3,301–10,000.
Oxidation/Filtration ⁷	All size categories.
Reverse Osmosis (centralized) ⁶ .	501–3,300, 3,301–10,000.
Reverse Osmosis (Point-of-Use) ⁴ .	All size categories.

¹Section 1412(b)(4)(E)(ii) of SDWA specifies that SSCTs must be affordable and technically feasible for small systems.

²SSCTs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

³The Act (ibid.) specifies three categories of small systems: (i) those serving 25 or more, but fewer than 501, (ii) those serving more than 500, but fewer than 3,301, and (iii) those serving more than 3,300, but fewer than 10,001.

⁴When POU or POE devices are used for compliance, programs to ensure proper long-term operation, maintenance, and monitoring must be provided by the water system to ensure adequate performance.

⁵Unlikely to be installed solely for arsenic removal. May require pH adjustment to optimal range if high removals are needed.

⁶Technologies reject a large volume of water—may not be appropriate for areas where water quantity may be an issue.

⁷To obtain high removals, iron to arsenic ratio must be at least 20:1.

[56 FR 3594, Jan. 30, 1991, as amended at 56 FR 30280, July 1, 1991; 57 FR 31847, July 17, 1992; 59 FR 34325, July 1, 1994; 60 FR 33932, June 29, 1995; 66 FR 7063, Jan. 22, 2001; 68 FR 14506, Mar. 25, 2003; 69 FR 38855, June 29, 2004]

§ 141.63 Maximum contaminant levels (MCLs) for microbiological contaminants.

(a) Until March 31, 2016, the total coliform MCL is based on the presence or absence of total coliforms in a sample, rather than coliform density.

(1) For a system that collects at least 40 samples per month, if no more than 5.0 percent of the samples collected during a month are total coliform-positive, the system is in compliance with the MCL for total coliforms.

(2) For a system that collects fewer than 40 samples per month, if no more than one sample collected during a month is total coliform-positive, the system is in compliance with the MCL for total coliforms.

(b) Until March 31, 2016, any fecal coliform-positive repeat sample or *E. coli*-positive repeat sample, or any total coliform-positive repeat sample following a fecal coliform-positive or *E. coli*-positive routine sample, constitutes a violation of the MCL for total coliforms. For purposes of the public notification requirements in subpart Q of this part, this is a violation that may pose an acute risk to health.

(c) Beginning April 1, 2016, a system is in compliance with the MCL for *E. coli* for samples taken under the provisions of subpart Y of this part unless any of the conditions identified in paragraphs (c)(1) through (c)(4) of this section occur. For purposes of the public notification requirements in subpart Q of this part, violation of the MCL may pose an acute risk to health.

(1) The system has an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

(2) The system has a total coliform-positive repeat sample following an *E. coli*-positive routine sample.

(3) The system fails to take all required repeat samples following an *E. coli*-positive routine sample.

(4) The system fails to test for *E. coli* when any repeat sample tests positive for total coliform.

(d) Until March 31, 2016, a public water system must determine compliance with the MCL for total coliforms in paragraphs (a) and (b) of this section for each month in which it is required to monitor for total coliforms. Beginning April 1, 2016, a public water system must determine compliance with the MCL for *E. coli* in paragraph (c) of this section for each month in which it is required to monitor for total coliforms.

(e) The Administrator, pursuant to section 1412 of the Act, hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant level for total coliforms in paragraphs (a) and (b) of this section and for achieving compliance with the maximum contaminant level for *E. coli* in paragraph (c) of this section:

February 2019 NMED Soil Screening Levels Summary Table (Updated 3/5/19)

Chemical	CAS	Residential Soil, Cancer (mg/kg)	Residential Soil, Noncancer (mg/kg)	Industrial/Occupational Soil, Cancer (mg/kg)	Industrial/Occupational Soil, Noncancer (mg/kg)	Construction Worker Soil, Cancer (mg/kg)	Construction Worker Soil, Noncancer (mg/kg)	Tap Water, Cancer (µg/L)	Tap Water, Noncancer (µg/L)	Cw, DAF 20 (mg/kg)
Acenaphthene	83-32-9		3.48E+03		5.05E+04		1.51E+04		5.35E+02	8.25E+01
Acetaldehyde	75-07-0	3.38E+02	2.49E+02	1.64E+03	1.17E+03	7.61E+03	2.17E+02	2.55E+01	1.88E+01	6.58E-02
Acetone	67-64-1		6.63E+04		9.60E+05		2.42E+05		1.41E+04	4.98E+01
Acetophenone	98-86-2		7.82E+03		1.30E+05		3.54E+04		1.92E+03	9.64E+00
Acrolein	107-02-8		4.54E-01		2.16E+00		4.01E-01		4.15E-02	1.46E-04
Acrylonitrile	107-13-1	4.93E+00	3.99E+01	2.46E+01	1.90E+02	1.29E+02	3.52E+01	5.23E-01	4.15E+00	1.95E-03
Alachlor	15972-60-8	9.51E+01	6.16E+02	4.58E+02	9.16E+03	3.36E+03	2.69E+03	1.37E-01	1.86E+02	2.57E-02
Aldrin	309-00-2	3.11E-01	1.85E+00	1.50E+00	2.75E+01	1.09E+01	8.07E+00	1.98E-03	3.31E-02	4.88E-03
Aluminum	7429-90-5		7.80E+04		1.29E+06		4.14E+04		1.99E+04	5.97E+05
Anthracene	120-12-7		1.74E+04		2.53E+05		7.53E+04		1.72E+03	8.51E+02
Antimony	7440-36-0		3.13E+01		5.19E+02		1.42E+02		7.26E+00	6.56E+00
Arsenic	7440-38-2	7.07E+00	1.30E+01	3.59E+01	2.08E+02	2.16E+02	4.12E+01	8.55E-01	3.55E+00	5.83E+00
Atrazine	1912-24-9	2.32E+01	2.16E+03	1.12E+02	3.21E+04	8.19E+02	9.42E+03	3.39E+00	7.02E+02	3.41E-02
Barium	7440-39-3		1.56E+04		2.55E+05		4.39E+03		3.28E+03	2.70E+03
Benzene	71-43-2	1.78E+01	1.14E+02	8.72E+01	7.29E+02	4.23E+02	1.42E+02	4.55E+00	3.32E+01	4.18E-02
Benzidine	92-87-5	5.18E-03	1.85E+02	1.12E-01	2.75E+03	8.12E-01	8.07E+02	1.09E-03	5.89E+01	4.27E-05
Benzo(a)anthracene	56-55-3	1.53E+00		3.23E+01		2.40E+02		1.20E-01		6.37E-01
Benzo(a)pyrene	50-32-8	1.12E+00		2.36E+01		1.73E+02		2.51E-01	6.02E+00	4.42E+00
Benzo(b)fluoranthene	205-99-2	1.53E+00		3.23E+01		2.40E+02		3.43E-01		6.17E+00
Benzo(k)fluoranthene	207-08-9	1.53E+01		3.23E+02		2.31E+03		3.43E+00		6.05E+01
Beryllium	7440-41-7	6.44E+04	1.56E+02	3.13E+05	2.58E+03	2.71E+03	1.48E+02		1.24E+01	1.96E+02
a-BHC (a-Hexachlorocyclohexane, a-HCH)	319-84-6	8.45E-01	4.93E+02	4.07E+00	7.33E+03	2.97E+01	2.15E+03	6.93E-02	9.18E+01	6.08E-03
b-BHC (b-Hexachlorocyclohexane, b-HCH)	319-85-7	2.96E+00		1.43E+01		1.04E+02		2.43E-01		2.13E-02
γ-BHC (γ-Hexachlorocyclohexane, Lindane)	58-89-9	5.63E+00	2.12E+01	2.83E+01	3.34E+02	1.98E+02	9.43E+01	4.15E-01	3.60E+00	3.64E-02
1,1-Biphenyl	92-52-4	8.48E+02	3.91E+04	4.43E+03	6.49E+05	3.02E+04	1.77E+05	3.71E+01	8.34E-01	1.31E-01
Bis(2-chloroethyl) ether	111-44-4	3.11E+00		1.57E+01		1.95E+00		1.37E-01		6.05E-04
Bis(2-chloroisopropyl) ether	108-60-1	9.93E+01		5.19E+02		3.54E+03		9.81E+00		4.75E-02
Bis(2-ethylhexyl)phthalate (di(2-ethylhexyl)phthalate)	117-81-7	3.80E+02	1.23E+03	1.83E+03	1.83E+04	1.34E+04	5.38E+03	5.56E+01	4.01E+02	2.00E+02
Bis(chloromethyl) ether	542-88-1	2.08E-03		1.02E-02		4.81E-02		7.20E-04		3.00E-06
Boron	7440-42-8		1.56E+04		2.59E+05		5.14E+04		3.95E+03	2.51E+02
Bromodichloromethane	75-27-4	6.19E+00	1.56E+03	3.02E+01	2.60E+04	1.43E+02	7.08E+03	1.34E+00	3.77E+02	6.21E-03
Bromomethane	74-83-9		1.77E+01		9.45E+01		1.79E+01		7.54E+00	3.43E-02
1,3-Butadiene	106-99-0	6.86E-01	2.30E+00	3.41E+00	1.08E+01	1.77E+01	2.02E+00	1.81E-01	4.17E+00	2.08E-03
2-Butanone (Methyl ethyl ketone, MEK)	78-93-3		3.74E+04		4.11E+05		9.17E+04		5.56E+03	2.01E+01
tert-Butyl methyl ether (MTBE)	1634-04-4	9.75E+02	3.78E+04	4.82E+03	1.78E+05	2.42E+04	3.31E+04	1.43E+02	6.26E+03	5.53E-01
Cadmium	7440-43-9	8.59E+04	7.05E+01	4.17E+05	1.11E+03	3.61E+03	7.21E+01		6.24E+00	9.39E+00
Carbofuran	1563-66-2		3.08E+02		4.58E+03		1.35E+03		9.36E+01	5.91E-01
Carbon disulfide	75-15-0		1.55E+03		8.54E+03		1.62E+03		8.10E+02	4.42E+00
Carbon tetrachloride (Tetrachloromethane)	56-23-5	1.07E+01	1.44E+02	5.25E+01	1.02E+03	2.52E+02	2.02E+02	4.55E+00	4.92E+01	3.67E-02
Chlordane	12789-03-6	1.77E+01	3.53E+01	8.90E+01	5.56E+02	6.23E+02	1.53E+02	4.48E-01	1.27E+00	2.03E+00
2-Chloroacetophenone	532-27-4		1.72E+05		8.12E+05		2.81E+02			
2-Chloro-1,3-butadiene	126-99-8	1.75E-01	3.80E+01	8.48E-01	1.82E+02	3.95E+00	3.40E+01	1.87E-01	3.70E+01	1.97E-03
1-Chloro-1,1-difluoroethane	75-68-3		1.09E+05		5.15E+05		9.58E+04		1.04E+05	1.07E+03
Chlorobenzene (Monochlorobenzene)	108-90-7		3.78E+02		2.16E+03		4.12E+02		7.76E+01	1.08E+00
1-Chlorobutane	109-69-3		3.13E+03		5.19E+04		1.42E+04		6.31E+02	4.53E+00
Chlorodifluoromethane	75-45-6		1.02E+05		4.83E+05		8.98E+04		1.04E+05	8.55E+02
Chloroform (Trichloromethane)	67-66-3	5.90E+00	3.06E+02	2.87E+01	2.00E+03	1.34E+02	3.91E+02	2.29E+00	9.72E+01	1.09E-02
Chloromethane	74-87-3	4.11E+01	2.68E+02	2.01E+02	1.26E+03	9.56E+02	2.35E+02	2.03E+01	1.88E+02	9.52E-02
b-Chloronaphthalene	91-58-7		6.26E+03		1.04E+05		2.83E+04		7.33E+02	5.70E+01
o-Chloronitrobenzene	88-73-3	1.78E+01	1.84E+02	8.55E+01	2.72E+03	6.28E+02	8.39E+01	2.36E+00	5.49E+01	3.44E-02
p-Chloronitrobenzene	100-00-5	8.45E+02	6.16E+01	4.07E+03	9.16E+02	2.99E+04	2.57E+02	1.10E+02	1.79E+01	2.57E-01
2-Chlorophenol	95-57-8		3.91E+02		6.49E+03		1.77E+03		9.10E+01	1.15E+00
2-Chloropropane	75-29-6		2.86E+02		1.35E+03		2.51E+02		2.09E+02	1.26E+00
o-Chlorotoluene	95-49-8		1.56E+03		2.60E+04		7.08E+03		2.33E+02	3.56E+00
Chromium III	16065-83-1		1.17E+05		1.95E+06		5.31E+05		1.36E+04	4.91E+08
Chromium VI	18540-29-9	3.05E+00	2.35E+02	7.21E+01	3.89E+03	6.69E+01	4.98E+02	5.01E-01	2.67E+01	1.92E-01
Chromium (Total)		9.66E+01	4.52E+04	5.05E+02	3.14E+05	4.68E+02	1.34E+02	5.70E+00	1.17E+04	2.05E+05
Chrysene	218-01-9	1.53E+02		3.23E+03		2.31E+04		3.43E+01		1.86E+02
Cobalt	7440-48-4	1.72E+04	2.34E+01	8.34E+04	3.88E+02	7.22E+02	3.67E+01		5.98E+00	5.40E+00
Copper	7440-50-8		3.13E+03		5.19E+04		1.42E+04		7.90E+02	9.15E+02
Crotonaldehyde	123-73-9	3.66E+00	7.82E+01	1.91E+01	1.30E+03	1.30E+02	3.54E+02	4.04E-01	1.98E+01	1.42E-03
Cumene (isopropylbenzene)	98-82-8		2.36E+03		1.42E+04		2.74E+03		4.47E+02	1.14E+01
Cyanide	57-12-5		1.12E+01		6.33E+01		1.21E+01		1.46E+00	7.13E-01
Cyanogen	460-19-5		7.82E+01		1.30E+03		3.54E+02		1.99E+01	8.01E-02
Cyanogen bromide	506-68-3		7.04E+03		1.17E+05		3.19E+04		1.80E+03	1.06E+01
Cyanogen chloride	506-77-4		3.91E+03		6.49E+04		1.77E+04		9.99E+02	5.88E+00
DDD	72-54-8	2.22E+01		1.07E+02		7.78E+02		3.17E-01		1.12E+00
DDE	72-55-9	1.57E+01		7.55E+01		5.49E+02		4.62E-01		1.63E+00
DDT	50-29-3	1.87E+01	3.62E+01	9.50E+01	5.77E+02	6.59E+02	1.62E+02	2.29E+00	1.00E+01	1.16E+01
Dibenz(a,h)anthracene	53-70-3	1.53E-01		3.23E+00		2.40E+01		3.43E-02		1.97E+00
1,2-Dibromo-3-chloropropane	96-12-8	8.58E-02	5.88E+00	1.18E+00	4.11E+01	5.53E+00	8.29E+00	3.34E-03	3.72E-01	1.39E-03
Dibromochloromethane	124-48-1	1.39E+01	1.23E+03	6.74E+01	1.83E+04	3.40E+02	5.38E+03	1.68E+00	3.78E+02	7.55E-03
1,2-Dibromoethane (Ethylene dibromide, EDB)	106-93-4	6.72E-01	1.35E+02	3.31E+00	7.38E+02	1.63E+01	1.40E+02	7.47E-02	1.69E+01	3.52E-04
1,4-Dichloro-2-butene	764-41-0	1.15E-01		5.58E-01		2.59E+00		1.34E-02		9.99E-05
1,2-Dichlorobenzene (ortho-Dichlorobenzene)	95-50-1		2.15E+03		1.30E+04		2.50E+03		3.02E+02	9.08E+00
1,4-Dichlorobenzene (para-Dichlorobenzene)	106-46-7	1.29E+03	5.48E+03	6.73E+03	9.08E+04	4.59E+04	2.48E+04	4.82E+00	5.63E+02	1.12E+00

Chemical	CAS	Residential Soil, Cancer (mg/kg)	Residential Soil, Noncancer (mg/kg)	Industrial/ Occupational Soil, Cancer (mg/kg)	Industrial/ Occupational Soil, Noncancer (mg/kg)	Construction Worker Soil, Cancer (mg/kg)	Construction Worker Soil, Noncancer (mg/kg)	Tap Water, Cancer (µg/L)	Tap Water, Noncancer (µg/L)	Cw, DAF 20 (mg/kg)
3,3-Dichlorobenzidine	91-94-1	1.18E+01		5.70E+01		4.10E+02		1.25E+00		1.24E-01
Dichlorodifluoromethane (Fluorocarbon-12)	75-71-8		1.82E+02		8.65E+02		1.61E+02		1.97E+02	7.23E+00
1,1-Dichloroethane (1,1-DCA)	75-34-3	7.86E+01	1.56E+04	3.83E+02	2.60E+05	1.82E+03	7.08E+04	2.75E+01	3.74E+03	1.36E-01
1,2-Dichloroethane (Ethylene dichloride, EDC)	107-06-2	8.32E+00	5.56E+01	4.07E+01	2.86E+02	1.95E+02	5.38E+01	1.71E+00	1.30E+01	2.38E-02
cis-1,2-Dichloroethene (cis-1,2-DCE)	156-59-2		1.56E+02		2.60E+03		7.08E+02		3.65E+01	3.52E-01
trans-1,2-Dichloroethene (trans-1,2-DCE)	156-60-5		2.95E+02		1.61E+03		3.05E+02		9.32E+01	5.03E-01
1,1-Dichloroethene (1,1-DCE)	75-35-4		4.40E+02		2.26E+03		4.24E+02		2.84E+02	1.95E+00
2,4-Dichlorophenol	120-83-2		1.85E+02		2.75E+03		8.07E+02		4.53E+01	8.25E-01
1,2-Dichloropropane (propylene dichloride, PDC)	78-87-5	1.78E+01	2.90E+01	8.68E+01	1.37E+02	4.15E+02	2.54E+01	4.38E+00	8.30E+00	2.77E-02
1,3-Dichloropropene	542-75-6	2.93E+01	1.41E+02	1.46E+02	6.95E+02	7.81E+02	1.30E+02	4.71E+00	3.88E+01	2.81E-02
Dicyclopentadiene	77-73-6		6.26E+03		1.04E+05		2.83E+04		6.25E-01	3.42E-02
Dieldrin	60-57-1	3.33E-01	3.08E+00	1.60E+00	4.58E+01	1.17E+01	1.35E+01	1.75E-02	3.72E-01	1.06E-02
Diethyl phthalate (DEP)	84-66-2		4.93E+04		7.33E+05		2.15E+05		1.48E+04	9.79E+01
Di-n-butyl phthalate (Dibutyl phthalate)	84-74-2		6.16E+03		9.16E+04		2.69E+04		8.85E+02	3.38E+01
2,4-Dimethylphenol	105-67-9		1.23E+03		1.83E+04		5.38E+03		3.54E+02	6.45E+00
Dimethyl phthalate (DMP, Phthalic Acid)	100-21-0		6.16E+04		9.16E+05		2.69E+05		6.12E+02	3.57E+00
4,6-Dinitro-o-cresol	534-52-1		4.93E+00		7.33E+01		2.15E+01		1.52E+00	3.98E-02
2,4-Dinitrophenol	51-28-5		1.23E+02		1.83E+03		5.38E+02		3.87E+01	6.69E-01
2,4-Dinitrotoluene (2,4-DNT)	121-14-2	1.71E+01	1.23E+02	8.23E+01	1.82E+03	6.00E+02	5.36E+02	2.37E+00	3.80E+01	4.92E-02
2,6-Dinitrotoluene (2,6-DNT)	606-20-2	3.56E+00	1.85E+01	1.72E+01	2.76E+02	1.65E+02	8.09E+01	4.85E-01	5.64E+00	1.02E-02
2,4/2,6-Dinitrotoluene Mixture	25321-14-6	7.83E+00		3.77E+01		2.77E+02		1.06E+00		2.24E-02
1,4-Dioxane	123-91-1	5.33E+01	1.85E+03	2.57E+02	2.75E+04	1.88E+03	7.85E+03	4.59E+00	5.67E+01	1.63E-02
1,2-Diphenylhydrazine	122-66-7	6.66E+00		3.21E+01		2.34E+02		7.80E-01		3.79E-02
Endosulfan	115-29-7		3.70E+02		5.50E+03		1.61E+03		9.87E+01	2.04E+01
Endrin	72-20-8		1.85E+01		2.75E+02		8.07E+01		2.23E+00	1.35E+00
Epichlorohydrin	106-89-8	4.22E+02	4.27E+01	2.14E+03	2.15E+02	1.22E+04	4.02E+01	2.92E+01	2.05E+00	7.72E-03
Ethyl acetate	141-78-6		1.82E+03		8.75E+03		1.63E+03		1.45E+02	5.28E-01
Ethyl acrylate	140-88-5	1.45E+02		7.57E+02		5.16E+03		1.57E+01		5.98E-02
Ethyl chloride	75-00-3		1.90E+04		8.95E+04		1.66E+04		2.09E+04	1.07E+02
Ethyl ether	60-29-7		1.56E+04		2.60E+05		7.08E+04		3.93E+03	1.52E+01
Ethyl methacrylate	97-63-2		2.73E+03		1.78E+04		3.48E+03		4.55E+02	1.83E+00
Ethylbenzene	100-41-4	7.51E+01	3.93E+03	3.68E+02	2.90E+04	1.77E+03	5.80E+03	1.50E+01	8.00E+02	1.23E+01
Ethylene oxide	75-21-8	1.88E-01	6.35E+02	9.15E-01	2.99E+03	4.26E+00	5.55E+02	1.86E-02	6.26E+01	6.65E-05
Fluoranthene	206-44-0		2.32E+03		3.37E+04		1.00E+04		8.02E+02	1.34E+03
Fluorene	86-73-7		2.32E+03		3.37E+04		1.00E+04		2.88E+02	8.00E+01
Fluoride	7782-41-4		4.69E+03		7.78E+04		1.81E+04		1.18E+03	1.20E+04
Furan	110-00-9		7.24E+01		1.15E+03		3.54E+02		1.92E+01	1.22E-01
Glyphosate	1071-83-6		6.16E+03		9.16E+04		2.69E+04		2.01E+03	1.33E+02
Heptachlor	76-44-8	1.18E+00	3.08E+01	5.70E+00	4.58E+02	4.15E+01	1.35E+02	2.21E-02	2.72E+00	4.97E-01
Hexachlorobenzene	118-74-1	3.33E+00	4.93E+01	1.60E+01	7.33E+02	1.17E+02	2.15E+02	9.76E-02	1.60E+01	1.89E-01
Hexachloro-1,3-butadiene	87-68-3	6.83E+01	6.16E+01	5.21E+01	9.16E+02	2.40E+03	2.69E+02	1.39E+00	6.30E+00	4.13E-02
Hexachlorocyclopentadiene	77-47-4		2.30E+00		5.49E+03		8.67E+02		4.11E-01	2.40E+00
Hexachloroethane	67-72-1	1.33E+02	4.31E+01	6.41E+02	6.41E+02	4.67E+03	1.88E+02	3.28E+00	6.14E+00	3.20E-02
n-Hexane	110-54-3		6.15E+02		3.20E+03		6.03E+02		3.19E+02	5.57E+01
HMX (Octrahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazo)	2691-41-0		3.85E+03		6.33E+04		1.74E+04		1.00E+03	1.94E+01
Hydrazine anhydride	302-01-2	1.78E+00	1.72E+05	8.55E+00	8.12E+05	5.99E+01	2.81E+02	2.60E-01		9.00E-04
Hydrogen cyanide	74-90-8		1.02E+01		5.72E+01		1.09E+01		1.46E+00	5.22E-03
Indeno(1,2,3-c,d)pyrene	193-39-5	1.53E+00		3.23E+01		2.40E+02		3.43E-01		2.01E+01
Iron	7439-89-6		5.48E+04		9.08E+05		2.48E+05		1.38E+04	6.96E+03
Isobutanol (Isobutyl alcohol)	78-83-1		1.85E+04		2.75E+05		8.07E+04		5.91E+03	2.10E+01
Isophorone	78-59-1	5.61E+03	1.23E+04	2.70E+04	1.83E+05	1.98E+05	5.37E+04	7.81E+02	3.83E+03	4.23E+00
Lead	7439-92-1									2.70E+02
Lead (tetraethyl-)	78-00-2		6.16E-03		9.16E-02		3.54E-02		1.24E-03	9.41E-05
Maleic hydrazide	123-33-1		3.08E+04		4.58E+05		1.35E+05		1.00E+04	3.57E+01
Manganese	7439-96-5		1.05E+04		1.60E+05		4.64E+02		2.02E+03	2.63E+03
Mercury (elemental)	7439-97-6		2.38E+01		1.12E+02		2.07E+01		6.26E-01	2.09E+00
Mercury (methyl)	22967-92-6		7.82E+00		1.30E+02		3.54E+01		1.96E+00	7.58E-03
Mercury (salts)	7487-94-7		2.35E+01		3.89E+02		7.71E+01		4.92E+00	5.13E+00
Methacrylonitrile	126-98-7		7.70E+00		1.23E+02		3.28E+01		1.91E+00	7.43E-03
Methomyl	16752-77-5		1.54E+03		2.29E+04		6.73E+03		4.98E+02	1.87E+00
Methyl acetate	79-20-9		7.82E+04		1.30E+06		3.54E+05		1.99E+04	7.11E+01
Methyl acrylate	96-33-3		3.50E+02		1.85E+03		3.48E+02		3.90E+01	1.43E-01
Methyl isobutyl ketone	108-10-1		5.81E+03		8.16E+04		2.02E+04		1.24E+03	4.80E+00
Methyl methacrylate	80-62-6		1.11E+04		5.65E+04		1.06E+04		1.39E+03	5.22E+00
Methyl styrene (alpha)	98-83-9		5.48E+03		9.08E+04		2.48E+04		7.65E+02	1.89E+01
Methyl styrene (mixture)	25013-15-4		2.73E+02		2.20E+03		4.49E+02		3.73E+01	9.40E-01
Methylcyclohexane	108-87-2		5.50E+03		2.59E+04		4.82E+03		6.26E+03	3.16E+02
Methylene bromide (Dibromomethane)	74-95-3		5.79E+01		2.88E+02		5.39E+01		8.00E+00	3.35E-02
Methylene chloride (Dichloromethane)	75-09-2	7.66E+02	4.09E+02	1.44E+04	5.13E+03	8.96E+04	1.21E+03	1.18E+02	1.06E+02	4.71E-01
1-Methylnaphthalene	90-12-0	1.72E+02	4.06E+03	8.13E+02	5.89E+04	6.06E+03	1.76E+04	1.14E+01	6.11E+02	8.93E-01
2-Methylnaphthalene	91-57-6		2.32E+02		3.37E+03		1.00E+03		3.51E+01	2.76E+00
Molybdenum	7439-98-7		3.91E+02		6.49E+03		1.77E+03		9.87E+01	3.98E+01
Naphthalene	91-20-3		1.16E+03		1.68E+04		5.02E+03	1.65E+00	6.11E+00	8.23E-02
Nickel	7440-02-0	5.95E+05	1.56E+03	2.89E+06	2.57E+04	2.50E+04	7.53E+02		3.72E+02	4.85E+02
Nitrate	14797-55-8		1.25E+05		2.08E+06		5.66E+05		3.16E+04	4.25E+02
Nitrite	14797-65-0		7.82E+03		1.30E+05		3.54E+04		1.97E+03	2.66E+01
Nitrobenzene	98-95-3	6.04E+01	1.31E+02	2.93E+02	1.54E+03	1.35E+03	3.53E+02	1.40E+00	1.25E+01	1.44E-02

Chemical	CAS	Residential Soil, Cancer (mg/kg)	Residential Soil, Noncancer (mg/kg)	Industrial/ Occupational Soil, Cancer (mg/kg)	Industrial/ Occupational Soil, Noncancer (mg/kg)	Construction Worker Soil, Cancer (mg/kg)	Construction Worker Soil, Noncancer (mg/kg)	Tap Water, Cancer (µg/L)	Tap Water, Noncancer (µg/L)	Cw, DAF 20 (mg/kg)
Nitroglycerin	55-63-0	3.13E+02	6.16E+00	1.51E+03	9.16E+01	1.11E+04	2.69E+01	4.47E+01	1.96E+00	1.36E-02
p-Nitrophenol										
N-Nitrosodiethylamine	55-18-5	7.94E-03		1.71E-01		1.25E+00		1.67E-03		9.94E-06
N-Nitrosodimethylamine	62-75-9	2.34E-02	4.93E-01	5.03E-01	7.33E+00	3.66E+00	2.14E+00	4.91E-03	1.60E-01	2.04E-05
N-Nitrosodi-n-butylamine	924-16-3	7.81E-01		3.77E+00		2.46E+01		2.73E-02		8.42E-04
N-Nitrosodiphenylamine	86-30-6	1.09E+03		5.24E+03		3.79E+04		1.22E+02		1.00E+01
N-Nitrosopyrrolidine	930-55-2	2.54E+00		1.22E+01		8.89E+01		3.70E-01		2.30E-03
m-Nitrotoluene	99-08-1		6.16E+00		9.16E+01		2.69E+01		1.74E+00	2.50E-02
o-Nitrotoluene	88-72-2	3.16E+01	7.04E+01	1.65E+02	1.17E+03	1.13E+03	3.19E+02	3.14E+00	1.61E+01	4.58E-02
p-Nitrotoluene	99-99-0	3.33E+02	2.47E+02	1.60E+03	3.67E+03	1.18E+04	1.08E+03	4.27E+01	7.07E+01	6.13E-01
Pentachlorobenzene	608-93-5		4.93E+01		7.33E+02		2.15E+02		3.07E+00	3.52E-01
Pentachlorophenol (PCP)	87-86-5	9.85E+00	2.34E+02	4.45E+01	3.18E+03	3.46E+02	9.89E+02	4.13E-01	2.21E+01	1.52E-01
Perchlorate	14797-73-0		5.48E+01		9.08E+02		2.48E+02		1.38E+01	1.17E-01
Polyfluoroalkyl and Perfluoroalkyl Compounds (PFAS) - Refer to Section 5.3 on use of these preliminary screening levels										
Perfluorohexane sulfonic acid (PFHxS)	335-46-4		1.56E+00		2.60E+01		7.08E+00		7.00E-02	
Perfluorooctane sulfonate (PFO, PFOS)	2795-39-3		1.56E+00		2.60E+01		7.08E+00		7.00E-02	
Perfluorooctanoic acid (PFOA)	335-67-1		1.56E+00		2.60E+01		7.08E+00		7.00E-02	
Phenanthrene	85-01-8		1.74E+03		2.53E+04		7.53E+03		1.70E+02	8.59E+01
Phenol	108-95-2		1.85E+04		2.75E+05		7.74E+04		5.76E+03	5.23E+01
Polychlorinated biphenyls (PCBs)										
Aroclor 1016	12674-11-2	6.96E+01	3.98E+00	3.04E+02	5.74E+01	2.44E+03	1.72E+01	2.24E+00	1.40E+00	2.01E+00
Aroclor 1221	11104-28-2	1.81E+00		8.57E+00		5.53E+01		5.61E-02		1.43E-02
Aroclor 1232	11141-16-5	1.86E+00		8.82E+00		5.76E+01		5.61E-02		1.43E-02
Aroclor 1242	53469-21-9	2.43E+00		1.09E+01		8.53E+01		7.86E-02		1.84E-01
Aroclor 1248	12672-29-6	2.43E+00		1.07E+01		8.53E+01		7.86E-02		1.81E-01
Aroclor 1254	11097-69-1	2.43E+00	1.14E+00	1.10E+01	1.64E+01	8.53E+01	4.91E+00	7.86E-02	4.01E-01	3.08E-01
Aroclor 1260	11096-82-5	2.43E+00		1.11E+01		8.53E+01		7.86E-02		8.25E-01
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 17)	35065-30-6	3.75E-01	3.98E-01	1.77E+00	5.74E+00	1.31E+01	1.72E+00	5.99E-02	1.40E-01	6.42E-01
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 18)	35065-29-3	3.75E+00	3.98E+00	1.77E+01	5.74E+01	1.31E+02	1.72E+01	5.99E-01	1.40E+00	6.29E+00
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 18)	39635-31-9	1.25E+00	1.33E+00	5.81E+00	1.91E+01	4.37E+01	5.73E+00	3.95E-02	4.01E-01	4.15E-01
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	52663-72-6	1.25E+00	1.33E+00	5.78E+00	1.91E+01	4.37E+01	5.73E+00	3.95E-02	4.01E-01	2.48E-01
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	69782-90-7	1.25E+00	1.33E+00	5.78E+00	1.91E+01	4.37E+01	5.73E+00	3.95E-02	4.01E-01	2.53E-01
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	38380-08-4	1.25E+00	1.33E+00	5.75E+00	1.91E+01	4.37E+01	5.73E+00	3.95E-02	4.01E-01	2.53E-01
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	32774-16-6	1.25E-03	1.33E-03	5.78E-03	1.91E-02	4.37E-02	5.73E-03	3.95E-05	4.01E-04	2.48E-04
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	65510-44-3	1.25E+00	1.33E+00	5.73E+00	1.91E+01	4.37E+01	5.73E+00	3.95E-02	4.01E-01	1.55E-01
2',3',4,4',5-Pentachlorobiphenyl (PCB 118)	31508-00-6	1.25E+00	1.32E+00	5.64E+00	1.91E+01	4.37E+01	5.73E+00	3.95E-02	4.01E-01	1.52E-01
2',3,3',4,4'-Pentachlorobiphenyl (PCB 105)	32598-14-4	1.25E+00	1.32E+00	5.64E+00	1.91E+01	4.37E+01	5.73E+00	3.95E-02	4.01E-01	1.55E-01
2,3,4,4',5-Pentachlorobiphenyl (PCB 114)	74472-37-0	1.25E+00	1.33E+00	5.73E+00	1.91E+01	4.37E+01	5.73E+00	3.95E-02	4.01E-01	1.55E-01
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	57465-28-8	3.75E-04	3.98E-04	1.72E-03	5.74E-03	1.31E-02	1.72E-03	1.19E-05	1.20E-04	4.55E-05
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	32598-13-3	3.75E-01	3.98E-01	1.77E+00	5.74E+00	1.31E+01	1.72E+00	5.99E-02	1.40E-01	1.41E-01
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	70362-50-4	1.25E-01	1.32E-01	5.66E-01	1.91E+00	4.37E+00	5.73E-01	3.95E-03	4.01E-02	9.27E-03
Prometon	1610-18-0		9.25E+02		1.37E+04		4.04E+03		2.50E+02	1.92E+00
Propylene oxide	75-56-9	2.56E+01	9.14E+02	1.33E+02	4.31E+03	8.55E+02	7.99E+02	2.66E+00	6.26E+01	9.65E-03
Pyrene	129-00-0		1.74E+03		2.53E+04		7.53E+03		1.17E+02	1.92E+02
RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine)	121-82-4	8.31E+01	3.01E+02	4.28E+02	4.89E+03	2.96E+03	1.35E+03	9.66E+00	7.96E+01	5.93E-02
Selenium	7782-49-2		3.91E+02		6.49E+03		1.75E+03		9.87E+01	1.02E+01
Silver	7440-22-4		3.91E+02		6.49E+03		1.77E+03		8.12E+01	1.38E+01
Simazine	122-34-9	4.44E+01	3.08E+02	2.14E+02	4.58E+03	1.57E+03	1.35E+03	6.07E+00	9.40E+01	4.83E-02
Strontium	7440-24-6		4.69E+04		7.79E+05		2.12E+05		1.18E+04	8.33E+03
Styrene (Ethenylbenzene)	100-42-5		7.26E+03		5.13E+04		1.02E+04		1.21E+03	2.06E+01
Sulfolate (thiolane 1,1 dioxide)	126-33-0		6.16E+01		9.16E+02		2.65E+02		2.00E+01	7.49E-02
2,3,7,8-TCDD	1746-01-6	4.90E-05	5.06E-05	2.38E-04	8.08E-04	1.72E-03	2.26E-04	1.19E-06	1.20E-05	2.24E-04
2,3,7,8-TCDF	51207-31-9	4.90E-04		2.43E-03		1.72E-02		1.84E-06		7.69E-06
1,2,4,5-Tetrachlorobenzene	95-94-3		1.85E+01		2.75E+02		8.07E+01		1.66E+00	1.17E-01
1,1,1,2-Tetrachloroethane	630-20-6	2.81E+01	2.35E+03	1.37E+02	3.89E+04	6.59E+02	1.06E+04	5.74E+00	4.77E+02	3.60E-02
1,1,2,2-Tetrachloroethane	79-34-5	7.98E+00	1.56E+03	3.94E+01	2.60E+04	1.97E+02	7.08E+03	7.57E-01	3.60E+02	4.81E-03
Tetrachloroethene (Perchloroethylene, PCE)	127-18-4	3.37E+02	1.11E+02	1.65E+03	6.29E+02	7.91E+03	1.20E+02	1.13E+02	4.03E+01	3.21E-01
Tetryl (Trinitrophenylmethyl nitramine)	479-45-8		1.56E+02		2.59E+03		7.06E+02		3.94E+01	5.59E+00
Thallium	7440-28-0		7.82E-01		1.30E+01		3.54E+00		1.97E-01	2.85E+00
Toluene (Methylbenzene)	108-88-3		5.23E+03		6.13E+04		1.40E+04		1.09E+03	1.21E+01
Toxaphene	8001-35-2	4.84E+00		2.33E+01		1.70E+02		1.58E-01		6.96E+00
Tribromomethane (Bromoform)	75-25-2	6.74E+02	1.23E+03	1.76E+03	1.83E+04	2.37E+04	5.38E+03	3.29E+01	3.76E+02	1.47E-01
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		5.08E+04		2.43E+05		4.53E+04		5.50E+04	3.20E+03
1,2,4-Trichlorobenzene	120-82-1	2.40E+02	8.29E+01	1.25E+03	4.23E+02	8.54E+03	7.91E+01	1.15E+01	3.98E+00	3.10E+00
1,1,1-Trichloroethane (TCA)	71-55-6		1.44E+04		7.25E+04		1.36E+04		8.00E+03	5.11E+01
1,1,2-Trichloroethane (1,2,-TCA)	79-00-5	1.88E+01	2.61E+00	9.21E+01	1.24E+01	4.30E+03	2.30E+00	2.75E+00	4.15E-01	2.68E-02
Trichloroethylene (trichloroethene, TCE)	79-01-6	1.55E+01	6.77E+00	1.12E+02	3.65E+01	5.37E+03	6.90E+00	2.59E+00	2.82E+00	3.10E-02
Trichlorofluoromethane (Fluorocarbon-11)	75-69-4		1.23E+03		6.03E+03		1.13E+03		1.14E+03	1.57E+01
2,4,5-Trichlorophenol	95-95-4		6.16E+03		9.16E+04		2.69E+04		1.17E+03	6.62E+01
2,4,6-Trichlorophenol	88-06-2	4.84E+02	6.16E+01	2.33E+03	9.16E+02	1.70E+04	2.69E+02	4.11E+01	1.19E+01	6.74E-01
1,1,2-Trichloropropane	598-77-6		3.91E+02		6.49E+03		1.77E+03		8.81E+01	5.59E-01
1,2,3-Trichloropropane	96-18-4	5.10E-02	7.09E+00	1.21E+00	3.40E+01	8.26E+00	6.31E+00	8.35E-03	6.20E-01	5.82E-05
Triethylamine	121-44-8		1.93E+02		9.09E+02		1.69E+02		1.46E+01	7.31E-02
2,4,6-Trinitrotoluene (TNT)	118-96-7	2.11E+02	3.60E+01	1.07E+03	5.73E+02	7.50E+03	1.61E+02	2.53E+01	9.80E+00	8.61E-01
Uranium (soluble salts)	--		2.34E+02		3.88E+03		2.77E+02		5.92E+01	5.33E+02
Vanadium	7440-62-2		3.94E+02		6.53E+03		6.14E+02		6.31E+01	1.26E+03
Vinyl acetate	108-05-4		2.56E+03		1.24E+04		2.30E+03		4.09E+02	1.50E+00

Chemical	CAS	Residential Soil, Cancer (mg/kg)	Residential Soil, Noncancer (mg/kg)	Industrial/ Occupational Soil, Cancer (mg/kg)	Industrial/ Occupational Soil, Noncancer (mg/kg)	Construction Worker Soil, Cancer (mg/kg)	Construction Worker Soil, Noncancer (mg/kg)	Tap Water, Cancer (µg/L)	Tap Water, Noncancer (µg/L)	Cw, DAF 20 (mg/kg)
Vinyl bromide	593-60-2	2.71E+00	9.66E+00	1.31E+01	4.55E+01	6.12E+01	8.46E+00	1.75E+00	6.26E+00	9.23E-03
Vinyl chloride (Chloroethene)	75-01-4	7.42E-01	1.13E+02	2.84E+01	8.16E+02	1.61E+02	1.62E+02	3.24E-01	4.43E+01	1.34E-02
m-Xylene	108-38-3		7.64E+02		3.73E+03		6.96E+02		1.93E+02	2.97E+00
o-Xylene	95-47-6		8.05E+02		3.94E+03		7.36E+02		1.93E+02	2.98E+00
p-Xylene	106-42-3		7.92E+02		3.87E+03		7.23E+02		1.93E+02	2.99E+00
Xylenes	1330-20-7		8.71E+02		4.28E+03		7.98E+02		1.93E+02	1.54E+02
Zinc	7440-66-6		2.35E+04		3.89E+05		1.06E+05		5.96E+03	7.41E+03
Essential Nutrients										
Calcium			1.30E+07		3.24E+07		8.85E+06			
Chloride			1.20E+07		5.84E+07		1.59E+07			
Magnesium			1.56E+07		5.68E+06		1.55E+06			
Phosphorus			1.56E+07		6.49E+07		1.77E+07			
Potassium			1.56E+07		7.62E+07		2.08E+07			
Sodium			7.82E+06		3.73E+07		1.02E+07			

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (see FQ #31); H = HEAST; F = See FAQ; W = see user guide Section 2.3.5; E = see user's guide Section 2.3.5; V = volatile; R = RBA applied (see user's guide Section 5.10); c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where: n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (see user's guide Section 5.13); s = concentration may exceed Csat (see user's guide Section 5.12)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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SFO (mg/kg-day) ⁻¹	k _e	k _d	IUR (mg/kg-day) ⁻¹	R ₁₀ (mg/kg-day) ⁻¹	k _e	k _d	R ₁₀ (mg/kg-day) ⁻¹	k _e	k _d	R ₁₀ (mg/kg-day) ⁻¹	LOGP	GIABS	FA	EPD?	In	Analyte	Carcinogenic SL				Noncarcinogenic SL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
																	Ingestion SL TR=1E-06 (ug/L)	Dermal SL TR=1E-06 (ug/L)	Inhalation SL TR=1E-06 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Ingestion SL Child THQ-1 (ug/L)	Dermal SL Child THQ-1 (ug/L)	Inhalation SL Child THQ-1 (ug/L)	Noncarcinogenic SL Child THQ-1 (ug/L)	MCL (ug/L)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
2.2E-06	I																Acophate	30560-19-1	75-07-0	34256-82-1	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00	2.4E+01	3.4E+04	1.9E+01	2.6E+00

[illegible]

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = APPENDX PPRTV SCREEN (see FQ 311); H = HEAST; F = See user's guide Section 5.2; M = mutagen; S = see user's guide Section 5.2; V = volatile; R = RBA applied (see user's guide Section 5.10); c = cancer; n = noncancer; * = where: n SL < 100X cSL; ** = where: n SL < 10X cSL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (see user's guide Section 5.12) user's guide Section 5.10); c = cancer; n = noncancer; * = where: n SL < 100X cSL; ** = where: n SL < 10X cSL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (see user's guide Section 5.12)

Toxicity and Chemical-specific Information													Contaminant	Carcinogenic Target Risk (IR) = 1E-05				Noncarcinogenic Target Risk (HI) = 1							
SFO (mg/kg-day) ⁻¹	k e	IUR (μg(m ³) ⁻¹)	k e	RfD _o (mg/kg-day)	RC ₁₀ (mg(m ³) ⁻¹)	k v	e	LOAEL	muta	GIABS	FA	In	EPD?	Analyte	CAS No.	Ingestion SL TR=1E-06 (μg/L)	Dermal SL TR=1E-06 (μg/L)	Inhalation SL TR=1E-06 (μg/L)	Carcinogenic SL TR=1E-06 (μg/L)	Ingestion SL THQ=1 (μg/L)	Dermal SL THQ=1 (μg/L)	Inhalation SL THQ=1 (μg/L)	Child THQ=1 (μg/L)	Child THQ=1 (μg/L)	MCL (μg/L)
5.0E-02	C	1.1E-05	C	7.0E-02	A	8.0E-01	I	V	3.44	1	1	Yes	Yes	Dichloroacetic Acid	79-43-6	1.6E+00	9.6E+01	1.5E+00	1.5E+00	8.0E+01	5.4E+03	4.2E+02	7.9E+01	60	
5.4E-03	C	1.1E-05	C	7.0E-02	A	8.0E-01	I	V	3.44	1	1	Yes	Yes	Dichlorobenzene, 1,2-	95-50-1	1.4E+01	2.1E+01	4.8E-01	4.8E-01	1.8E+03	2.9E+03	4.2E+02	3.0E+02	600	
4.5E-01	I	3.4E-04	C	9.0E-03	X	4.44	1	0.9	Yes	90-98-2	75-34-3	1	Yes	Dichlorobenzene, 1,4-	91-94-1	1.7E-01	4.5E-01	1.3E-01	1.3E-01	1.4E+03	2.2E+03	1.7E+03	5.7E+02	75	
5.7E-03	C	1.6E-06	C	2.0E-01	P	1.0E-01	X	V	2.16	1	1	Yes	Yes	Dichlorodifluoromethane	75-71-8	1.8E+02	1.4E+02	2.1E+02	2.1E+02	1.8E+02	1.4E+02	3.6E+01	7.8E+01		
9.1E-02	I	2.8E-05	I	6.0E-03	X	7.0E-03	P	V	1.48	1	1	Yes	Yes	Dichloroethane, 1,1-	75-34-3	1.4E+01	1.8E+02	3.5E+00	2.8E+00	4.0E+03	5.8E+04	2.1E+02	3.8E+03		
5.0E-02	I	5.0E-02	I	5.0E-02	I	2.0E-01	I	V	2.13	1	1	Yes	Yes	Dichloroethane, 1,2-	107-06-2	8.6E-01	1.8E+01	2.2E-01	1.7E-01	1.2E+02	2.8E+03	1.5E+01	1.3E+01	5	
2.0E-03	I	2.0E-03	I	2.0E-03	I	2.0E-03	I	V	1.86	1	1	Yes	Yes	Dichloroethylene, 1,1-	75-35-4	2.1E+00	2.3E+01	1.5E+00	8.5E-01	1.0E+03	8.5E+03	4.2E+02	2.8E+02	7	
2.0E-02	I	2.0E-02	I	2.0E-02	I	2.0E-02	I	V	2.09	1	1	Yes	Yes	Dichloroethylene, 1,2-trans-	156-59-2	4.0E+01	4.0E+02	3.6E+02	3.6E+02	4.0E+01	3.6E+02	3.6E+02	3.6E+02	100	
3.0E-03	I	3.0E-03	I	3.0E-03	I	3.0E-03	I	V	3.06	1	1	Yes	Yes	Dichlorophenol, 2,4-	120-83-2	6.0E+01	1.9E+02	1.4E+01	1.4E+01	6.0E+01	1.9E+02	1.4E+01	1.4E+01	70	
3.7E-02	P	3.7E-06	P	4.0E-02	P	4.0E-03	I	V	1.98	1	1	Yes	Yes	Dichlorophenol Acetic Acid, 2,4-	94-75-7	2.1E+00	2.3E+01	1.5E+00	8.5E-01	2.0E+02	1.4E+03	8.3E+00	1.7E+02	70	
3.0E-03	I	3.0E-03	I	3.0E-03	I	3.0E-03	I	V	2	1	1	Yes	Yes	Dichloropropane, 1,2-	78-57-5	8.0E+02	4.6E+03	9.6E+03	8.3E+00	8.0E+02	4.6E+03	9.6E+03	8.3E+00	5	
1.0E-01	I	4.0E-06	I	3.0E-02	I	2.0E-02	I	V	2.04	1	1	Yes	Yes	Dichloropropane, 1,3-	142-28-9	7.8E-01	7.8E+00	1.4E+01	4.7E-01	6.0E+01	5.0E+03	4.2E+01	5.9E+01		
2.9E-01	I	8.3E-05	C	5.0E-04	I	5.0E-04	I	1.43	1	1	Yes	Yes	Diethyleneglycol Monomethyl Ether	616-29-9	2.7E-01	1.4E+01	2.6E-01	2.6E-01	6.0E+02	6.5E+03	3.9E+01	3.9E+01	9.9E+00		
3.5E+02	C	1.0E-01	C	8.3E-02	O	0	1	1	Yes	Diethylformamide	542-75-6	1	Yes	Diethylstilbestrol	62-73-7	1.0E+01	5.9E+02	4.2E+01	4.2E+01	1.0E+01	5.9E+02	4.2E+01	6.0E+01	6.0E+01	
1.8E+01	I	4.6E-03	I	5.0E-05	I	3.0E-04	X	V	3.16	1	1	Yes	Yes	Dieldrin	141-66-2	4.9E-03	2.7E-03	1.8E-03	1.8E-03	1.8E+03	3.5E+03	6.3E-01	6.3E-01		
3.0E-04	C	3.0E-04	C	5																					

Toxicity and Chemical-Specific Information																	Contaminant										Carcinogenic Target Risk (TR) = 1E-06										Noncarcinogenic Hazard Index (HI) = 1																														
user's guide Section 5.10): C = cancer, n = noncancer. * = where n SL < 100X c SL; ** = where n SL < 100X c SL; SSL values are based on DAFe1; m = Concentration may exceed ceiling limit (see user's guide Section 5.13); s = concentration may exceed Csat (see user's guide Section 5.12)																	See user's guide Section 2.3.5; E = see user's guide Section 2.3.6; L = see user's guide Section 5.2; M = mutagen; S = see user's guide Section 5; V = volatile; R = RBA applied (see user's guide Section 5.10); C = cancer; n = noncancer. * = where n SL < 100X c SL; ** = where n SL < 100X c SL; SSL values are based on DAFe1; m = Concentration may exceed ceiling limit (see user's guide Section 5.13); s = concentration may exceed Csat (see user's guide Section 5.12)																	See user's guide Section 2.3.5; E = see user's guide Section 2.3.6; L = see user's guide Section 5.2; M = mutagen; S = see user's guide Section 5; V = volatile; R = RBA applied (see user's guide Section 5.10); C = cancer; n = noncancer. * = where n SL < 100X c SL; ** = where n SL < 100X c SL; SSL values are based on DAFe1; m = Concentration may exceed ceiling limit (see user's guide Section 5.13); s = concentration may exceed Csat (see user's guide Section 5.12)																	See user's guide Section 2.3.5; E = see user's guide Section 2.3.6; L = see user's guide Section 5.2; M = mutagen; S = see user's guide Section 5; V = volatile; R = RBA applied (see user's guide Section 5.10); C = cancer; n = noncancer. * = where n SL < 100X c SL; ** = where n SL < 100X c SL; SSL values are based on DAFe1; m = Concentration may exceed ceiling limit (see user's guide Section 5.13); s = concentration may exceed Csat (see user's guide Section 5.12)																
SFO (mg/kg-day) ¹ V	k e	IUR (ug/m ³ -1) V	k e	RfD ₅₀ (mg/kg-day) V	k e	RIC (mg/m ³) V	k v	e l	muta l gen	LOGP	GIABS	FA	EPD?	In	Analyte	CAS No.	Ingestion SL TR=1E-06 (ug/L)	Dermal SL TR=1E-06 (ug/L)	Inhalation SL TR=1E-06 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Ingestion SL Child THQ=1 (ug/L)	Dermal SL Child THQ=1 (ug/L)	Inhalation SL Child THQ=1 (ug/L)	Noncarcinogenic SL Child THQ=1 (ug/L)	MCL (ug/L)																																										
8.0E-01	I	2.2E-04	I	2.2E-03	I	4.6	1	1	Yes	2.94	1	1	Yes	Diphenylhydrazine, 1,2-	122-66-7	85-00-7	9.7E-02	3.9E-01	7.8E-02	4.4E+01	4.4E+01	4.4E+01	4.4E+01	4.4E+01	20																																										
7.1E+00	C	1.4E-01	C	7.4E+00	C	4.9	1	1	No	4.9	1	1	No	Direct Black 38	1937-37-7	1937-37-7	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02																																											
6.7E+00	C	1.4E-01	C	7.4E+00	C	2.6	1	1	No	2.6	1	1	No	Direct Blue 6	2602-46-2	2602-46-2	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02																																											
4.0E-05	I	4.0E-05	I	4.0E-05	I	4.02	1	0.9	Yes	-6.53	1	1	No	Direct Brown 95	16071-86-6	298-04-4	1.2E-02	1.2E-02	1.2E-02	1.2E-02	1.2E-02	1.2E-02	1.2E-02	1.2E-02																																											
1.0E-02	I	1.0E-02	I	1.0E-02	I	0.77	1	1	Yes	0.77	1	1	Yes	Disulfoton	298-04-4	505-29-3	8.0E-01	1.3E+04	2.1E+00	4.2E+01	8.0E-02	1.3E+00	1.3E+00	5.0E-01																																											
2.0E-02	O	2.0E-02	O	2.0E-02	O	1.15	1	1	Yes	2.68	1	1	Yes	Diuron	330-54-1	330-54-1	4.0E-01	1.3E+04	2.1E+00	4.2E+01	4.0E-01	1.3E+00	1.3E+00	5.0E-01																																											
5.0E-02	O	5.0E-02	O	5.0E-02	O	3.21	1	1	Yes	1.15	1	1	Yes	Dofine	2439-10-3	2439-10-3	4.0E-01	1.3E+04	2.1E+00	4.2E+01	4.0E-01	1.3E+00	1.3E+00	5.0E-01																																											
6.0E-03	I	6.0E-03	I	6.0E-03	I	3.83	1	0.9	Yes	3.21	1	1	Yes	EPTC	759-94-4	759-94-4	1.2E+02	3.9E+05	8.0E+02	2.0E+00	1.2E+02	3.9E+05	8.0E+02	2.0E+00																																											
2.0E-02	I	2.0E-02	I	2.0E-02	I	1.91	1	1	Yes	5.2	1	1	Yes	Endosulfan	115-29-7	115-29-7	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
3.0E-04	I	3.0E-04	I	3.0E-04	I	5.2	1	0.8	Yes	5.2	1	0.8	Yes	Endothal	148-73-3	148-73-3	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
6.0E-03	P	6.0E-03	P	6.0E-03	P	0.45	1	1	Yes	0.45	1	1	Yes	Epoxybutane, 1,2-	106-88-7	106-88-7	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
4.0E-02	P	4.0E-02	P	4.0E-02	P	-1.18	1	1	Yes	-1.18	1	1	Yes	Ethanol, 2-(2-methoxyethoxy)-	111-77-3	111-77-3	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
5.0E-03	I	5.0E-03	I	5.0E-03	I	-0.22	1	1	Yes	-0.22	1	1	Yes	Ethephon	16672-87-0	16672-87-0	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
5.0E-04	I	5.0E-04	I	5.0E-04	I	5.07	1	0.8	Yes	5.07	1	0.8	Yes	Ethion	563-12-2	563-12-2	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
1.0E-01	P	6.0E-02	P	6.0E-02	P	0.59	1	1	Yes	0.59	1	1	Yes	Ethoxyethanol Acetate, 2-	111-15-9	111-15-9	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
9.0E-02	P	2.0E-01	P	2.0E-01	P	-0.32	1	1	Yes	-0.32	1	1	Yes	Ethoxyethanol, 2-	110-80-5	110-80-5	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
9.0E-01	P	7.0E-02	P	7.0E-02	P	0.73	1	1	Yes	0.73	1	1	Yes	Ethyl Acetate	141-78-6	141-78-6	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
5.0E-03	P	8.0E-03	P	8.0E-03	P	1.32	1	1	Yes	1.32	1	1	Yes	Ethyl Acrylate	140-88-5	140-88-5	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
2.0E-01	I	1.0E+01	I	1.0E+01	I	1.43	1	1	Yes	1.43	1	1	Yes	Ethyl Chloride (Chloroethane)	75-00-3	75-00-3	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
8.0E-05	I	3.0E-02	C	3.0E-02	C	0.89	1	1	Yes	0.89	1	1	Yes	Ethyl Ether	60-29-7	60-29-7	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
3.0E+00	I	3.0E-01	P	3.0E-01	P	1.94	1	1	Yes	1.94	1	1	Yes	Ethyl Methacrylate	97-63-2	97-63-2	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
1.0E-05	I	1.0E+00	I	1.0E+00	I	4.78	1	0.8	Yes	4.78	1	0.8	Yes	Ethyl-p-nitrophenyl Phosphonate	2104-64-5	2104-64-5	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
7.0E-02	P	1.0E+00	I	1.0E+00	I	3.15	1	1	Yes	3.15	1	1	Yes	Ethylbenzene	100-41-4	100-41-4	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
9.0E-02	P	1.0E+00	I	1.0E+00	I	-0.94	1	1	Yes	-0.94	1	1	Yes	Ethylene Cyanohydrin	109-78-4	109-78-4	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
2.0E+00	I	4.0E-01	C	4.0E-01	C	-2.04	1	1	No	-2.04	1	1	No	Ethylene Diamine	107-15-3	107-15-3	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
1.0E-01	I	1.8E+00	I	1.8E+00	I	-1.36	1	1	Yes	-1.36	1	1	Yes	Ethylene Glycol	107-21-1	107-21-1	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
3.0E-03	I	3.0E-02	C	3.0E-02	C	0.83	1	1	Yes	0.83	1	1	Yes	Ethylene Glycol Monobutyl Ether	111-76-2	111-76-2	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
8.0E-05	I	3.0E-02	C	3.0E-02	C	-0.3	1	1	Yes	-0.3	1	1	Yes	Ethylene Oxide	75-21-8	75-21-8	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
3.0E+00	I	3.0E-02	C	3.0E-02	C	-0.68	1	1	Yes	-0.68	1	1	Yes	Ethylene Thiourea	98-45-7	98-45-7	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
2.5E-02	I	2.5E-02	I	2.5E-02	I	-0.28	1	1	Yes	-0.28	1	1	Yes	Ethyleneimine	151-56-4	151-56-4	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
2.5E-04	I	2.5E-04	I	2.5E-04	I	2.19	1	1	Yes	2.19	1	1	Yes	Ethylphenyl Ethyl Glycolate	84-72-0	84-72-0	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
2.5E-02	I	2.5E-02	I	2.5E-02	I	3.23	1	0.9	Yes	3.23	1	0.9	Yes	Flenaphos	22224-92-6	22224-92-6	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
2.5E-02	I	2.5E-02	I	2.5E-02	I	5.7	1	0.8	Yes	5.7	1	0.8	Yes	Flenpropathrin	39515-41-8	39515-41-8	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
2.5E-02	I	2.5E-02	I	2.5E-02	I	6.2	1	0.7	No	6.2	1	0.7	No	Flenvalerate	51630-58-1	51630-58-1	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
1.3E-02	I	1.3E-02	I	1.3E-02	I	2.42	1	1	Yes	2.42	1	1	Yes	Flometuron	2164-17-2	2164-17-2	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
4.0E-02	C	1.3E-02	C	1.3E-02	C	2.42	1	1	Yes	2.42	1	1	Yes	Fluoride	16984-48-8	16984-48-8	7.9E+00	7.9E+02	4.7E+00	2.9E+00	7.9E+00	7.9E+02	4.7E+00	2.9E+00																																											
6.0E-02	I	1.3E-02	C	1.3E-02	C	3.16	1	0.9	Yes	3.16	1	0.9	Yes	Fluorine (Soluble Fluoride)	7782-41-4	7782-41-4	7.9E+00																																																		

Toxicity and Chemical-specific Information																				Contaminant		Carcinogenic Target Risk (TR) = 1E-06						Noncarcinogenic Hazard Index (HI) = 1													
user's guide Section 5.10): c = cancer, n = noncancer, * = where: n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed Ceiling limit (see user's guide Section 5.13); s = concentration may exceed Ceal (see user's guide Section 5.12)																		Analyte		CAS No.		Ingestion SL TR=1E-06 (ug/L)		Dermal SL TR=1E-06 (ug/L)		Inhalation SL TR=1E-06 (ug/L)		Carcinogenic SL TR=1E-06 (ug/L)		Ingestion SL TR=1E-06 (ug/L)		Dermal SL THQ=1 (ug/L)		Inhalation SL THQ=1 (ug/L)		Noncarcinogenic SL Child THQ=1 (ug/L)		Child THI=1 (ug/L)		MCL (ug/L)	
SFO (mg/kg-day) ⁻¹	k _e	IUR (ug/m ³ ·h) ⁻¹	k _e	RID ₅₀ (mg/kg-day)	k _e	RIC ₅₀ (mg/m ³ ·h)	k _v	e _o	muta	gen	LOGP	GIABS	FA	EPD?	In	Analyte	CAS No.	Ingestion SL TR=1E-06 (ug/L)	Dermal SL TR=1E-06 (ug/L)	Inhalation SL TR=1E-06 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Ingestion SL TR=1E-06 (ug/L)	Dermal SL THQ=1 (ug/L)	Inhalation SL THQ=1 (ug/L)	Child THI=1 (ug/L)	Child THQ=1 (ug/L)	MCL (ug/L)														
3.0E-04	X	4.0E-01	P	V	4.66	1	0.7	No	Hexaplane, N-	142-82-5	Hexabromobenzene	687-82-1	4.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00													
1.6E+00	I	4.8E-04	I	8.0E-04	I	5.73	1	0.9	No	Hexachlorodiphenyl ether, 2,2',4,4',5,5'-(BDE-153)	68631-49-2	4.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00														
7.8E-02	I	2.2E-05	I	1.0E-03	P	4.78	1	0.9	Yes	Hexachlorobenzene	118-74-1	4.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00														
6.3E+00	I	1.8E-03	I	8.0E-03	P	3.8	1	0.9	Yes	Hexachlorobutadiene	319-84-6	4.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00														
1.8E+00	I	5.3E-04	I	1.0E-03	P	3.78	1	0.9	Yes	Hexachlorocyclohexane, Alpha-	319-85-7	4.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00														
1.1E+00	C	3.1E-04	C	3.0E-04	I	3.72	1	0.9	Yes	Hexachlorocyclohexane, Beta-	58-89-9	4.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00														
1.3E+00	I	3.1E-04	I	3.0E-04	I	4.14	1	0.9	Yes	Hexachlorocyclohexane, Gamma-(Lindane)	608-73-1	4.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00														
4.0E-02	I	1.1E-05	C	7.0E-04	I	5.04	1	0.9	Yes	Hexachlorocyclopentadiene	77-47-4	4.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00														
8.0E-02	I	3.0E-04	I	3.0E-02	I	4.14	1	0.9	Yes	Hexachlorocyclopentadiene	67-72-1	4.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00														
3.0E+00	I	4.9E-03	I	3.0E-02	I	7.54	1	0.9	Yes	Hexachlorocyclopentadiene	77-47-4	4.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00														
3.0E+00	I	4.9E-03	I	3.0E-02	I	0.87	1	0.9	Yes	Hexachlorocyclopentadiene	67-72-1	4.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00	8.3E+02	6.0E+00	4.0E+01	4.0E+01	6.0E+00														

[illegible]

user's guide Section 5.10): c = cancer; n = noncancer; * = where n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (see user's guide Section 5.12)																									
Toxicity and Chemical-specific Information										Contaminant					Carcinogenic Target Risk (TR) = 1E-06					Ingestion SL, Dermal SL, Inhalation SL, Noncarcinogenic SL					
SFO (mg/kg-day) ⁻¹	k _e	IUR (ug/m ³ -day) ⁻¹	k _e	RD ₅₀ (mg/kg-day)	R ₁₀ (mg/m ³ -day) ⁻¹	k _v	k _v	IC ₅₀ (mg/m ³ -day) ⁻¹	IC ₁₀ (mg/m ³ -day) ⁻¹	LOGP	GIABS	FA	EPD?	In	Analyte	CAS No.	Ingestion SL TR=1E-06 (ug/L)	Dermal SL TR=1E-06 (ug/L)	Inhalation SL TR=1E-06 (ug/L)	Carcinogenic SL TR=1E-06 (ug/L)	Ingestion SL Child THQ=1 (ug/L)	Dermal SL Child THQ=1 (ug/L)	Inhalation SL Child THQ=1 (ug/L)	Noncarcinogenic SL Child THQ=1 (ug/L)	MCL (ug/L)
															Polymeric Methylene Diphenyl Diisocyanate (PMDI)	9016-87-9	1.2E+03	9.6E+02	6.0E+03	5.3E+02	1.8E+03				
															-Acenaphthene	83-32-9	2.5E-01	6.5E-02	3.4E-02	3.0E-02	6.5E-02				
															-Anthracene	120-12-7	2.5E-01	6.5E-02	3.4E-02	3.0E-02	6.5E-02				
															-Benz[a]anthracene	56-55-3	2.5E-01	6.5E-02	3.4E-02	3.0E-02	6.5E-02				
															-Benz[a]fluoranthene	205-83-3	2.5E-01	6.5E-02	3.4E-02	3.0E-02	6.5E-02				
															-Benz[b]fluoranthene	50-32-8	2.5E-01	6.5E-02	3.4E-02	3.0E-02	6.5E-02				
															-Benz[b]fluoranthene	205-89-2	2.5E-01	6.5E-02	3.4E-02	3.0E-02	6.5E-02				
															-Benz[k]fluoranthene	207-09-9	2.5E+00			2.5E+00		0.2			
															-Chrysene	91-38-7	2.5E+01			2.5E+01					
															-Dibenz[a,h]anthracene	53-70-3	2.5E-02			2.5E-02					
															-Dibenz[a,h]anthracene	192-65-4	6.5E-03			6.5E-03					
															-Dimethylbenz[a]anthracene, 7,12-	57-97-6	1.0E-04			1.0E-04					
															-Fluorene	86-73-7	8.0E+02			8.0E+02					
															-Indeno[1,2,3-cd]pyrene	193-39-5	8.0E+02			8.0E+02					
															-Methylnaphthalene, 1-	90-12-0	2.7E+00			2.7E+00					
															-Naphthalene	91-20-3	1.4E+03			1.4E+03					
															-Nitrofluorene, 4-	57835-92-4	4.0E+02			4.0E+02					
															-Pyrene	129-00-0	6.5E-02			6.5E-02					
															Potassium Perfluorobutane Sulfonate	29420-49-3	6.0E+02			6.0E+02					
															Prochloraz	67747-09-5	4.0E+02			4.0E+02					
															Prometon	26399-36-0	1.8E+02			1.8E+02					
															Prometon	1610-18-0	1.2E+02			1.2E+02					
															Prometon	7287-19-6	3.0E+02			3.0E+02					
															Prometon	23950-58-5	8.0E+02			8.0E+02					
															Prometon	1918-16-7	1.5E+03			1.5E+03					
															Propachlor	709-98-8	2.6E+02			2.6E+02					
															Propachlor	2312-35-8	1.0E+02			1.0E+02					
															Propachlor	107-19-7	8.0E+02			8.0E+02					
															Propazine	139-40-2	4.0E+01			4.0E+01					
															Propazine	122-42-9	4.0E+02			4.0E+02					
															Propionazide	60207-90-1	2.0E+03			2.0E+03					
															Propionazide	123-38-8	2.0E+03			2.0E+03					
															Propyl benzene	103-65-1	2.0E+03			2.0E+03					
															Propylene Glycol	115-07-1	2.0E+03			2.0E+03					
															Propylene Glycol	57-55-6	4.0E+05			4.0E+05					
															Propylene Glycol Dinitrate	6423-43-4	2.0E+03			2.0E+03					
															Propylene Glycol Monomethyl Ether	107-98-2	1.4E+04			1.4E+04					
															Propylene Glycol Monomethyl Ether	75-56-9	2.0E+01			2.0E+01					
															Pyridine	110-86-1	2.0E+01			2.0E+01					
															Quinalphos	13593-03-8	1.0E+01			1.0E+01					
															Quinoline	91-22-5	2.6E-02			2.6E-02					
															Quotalop-ethyl	76578-14-8	1.8E+02			1.8E+02					
															Refractory Ceramic Fibers (units in fibers)	E715557	6.0E+02			6.0E+02					
															Resmethrin	10453-86-8	1.0E+03			1.0E+03					
															Romel	299-84-3	8.0E+01			8.0E+01					
															Rotenone	83-79-4	1.1E-01			1.1E-01					
															Saltore	94-59-7	9.6E-02			9.6E-02					
															Selenious Acid	7783-00-8	1.0E+02			1.0E+02					
															Selenium	7782-49-2	1.0E+02			1.0E+02					
															Selenium Sulfide	7446-34-6	1.0E+02			1.0E+02					
															Selioxidim	74051-80-2	2.8E+03			2.8E+03					
															Silica (crystalline, respirable)	7631-86-9	1.0E+02			1.0E+02					
															Silver	7440-22-4	1.0E+02			1.0E+02					
															Simazine	122-34-9	6.5E-01			6.5E-01					
															Sodium Acifluorfen	62476-59-9	1.0E+02			1.0E+02					
															Sodium Azide	26628-22-8	8.0E+01			8.0E+01					
															Sodium Diethyldithiocarbamate	148-18-5	2.9E-01			2.9E-01					
															Sodium Fluoride	7681-49-4	1.0E+03			1.0E+03					
															Sodium Fluoroacetate	62-74-8	4.0E-01			4.0E-01					
															Sodium Metavanadate	13718-26-8	2.0E+01			2.0E+01					
															Sodium Tungstate	13472-45-2	1.6E+01			1.6E+01					
															Sodium Tungstate Dihydrate	10213-10-2	1.6E+01			1.6E+01					
															Stirofos (Tetrachloroethylenes)	961-11-5	3.2E+00			3.2E+00					
															Strochnine	7440-24-6	6.0E+02			6.0E+02					
															Strochnine	57-24-9	6.0E+00			6.0E+00					
															Styrene-Acrolein (SAN) Trimer	100-42-5	4.0E+03			4.0E+03					
															Styrene-Acrolein (SAN) Trimer	57984-39-3	6.0E+01			6.0E+01					

[illegible]

[illegible]

APPENDIX D
SUMMARY OF EPA / NMED / NMOCD / RCRA ACTIVITY

Appendix D
Summary of EPA / NMED / NMOCD / RCRA Activity

January 12, 2018 - Submittal to EPA - Consent Agreement and Final Order - Request for Termination

January 25, 2018 - Submittal to NMED - Response to Approval with Modifications - 2014 Annual Groundwater Monitoring Report

January 31, 2018 - Submittal to NMED - Hydrocarbon Seep Interim Measures 2017 4th Quarter Status Report

February 1, 2018 - Submittal to NMOCD - Sanitary Lagoon Investigation

February 5, 2018 thru March 1, 2018 - First quarter groundwater monitoring and surface water sampling

February 20, 2018 - Submittal to NMOCD - Voluntary Disclosure of Shipments of Listed Waste to Gandy Marley, Inc.

March 5, 2018 thru March 21, 2018 - Subsurface investigation and installation of observation wells OW-61 thru OW-65

March 23, 2018 - Submittal to NMED - 2018 Financial Assurance

March 29, 2018 - Submittal to NMED - Annual Facility-Wide Ground Water Monitoring Work Plan - Updates for 2018

April 29, 2018 thru May 16, 2018 - Second quarter groundwater monitoring

April 30, 2018 - Submittal to NMED - Second Disapproval Sanitary Lagoon Investigation – Revised Interim Measures Report Hydrocarbon Seep Area

May 1, 2018 - Submittal to NMED - Hydrocarbon Seep Interim Measures 2018 1st Quarter Status Report

May 31, 2018 - Submittal to NMED - Second Response to NMED and NMOCD - Second Response to NMED Disapproval Sanitary Lagoon Investigation

June 29, 2018 - Central OCD Landfarm Semiannual Soil Sampling

July 16, 2018 - Submittal to NMED - Response to Disapproval Facility-Wide Groundwater Monitoring Work Plans - Updates for 2016, 2017, and 2018

July 30, 2018 - Submittal to NMED - Hydrocarbon Seep Interim Measures 2018 2nd Quarter Status Report

July 31, 2018 - Submittal to NMED - Response to Comments - Disapproval Facility-Wide Groundwater Monitoring Work Plans - Updates for 2016, 2017, and 2018

August 2, 2018 - Submittal to NMED - Investigation Work Plan for Installation of Well OW-58 Twin Well

August 17, 2018 thru September 19, 2018 - Third quarter groundwater monitoring and surface water sampling

Appendix D
Summary of EPA / NMED / NMOCD / RCRA Activity
(continued)

August 20, 2018 - Submittal to NMED - Investigation Report North Drainage Ditch and OW-29 & OW-30 Areas

August 22, 2018 - Submittal to NMED - Investigation Work Plan SMW-1 and GWM-1

September 19, 2018 - Submittal to NMED - Investigation Work Plan for Area of Concern 35

September 19, 2018 - Submittal to NMED - Investigation Work Plan for Upgradient MKTF Wells

October 4, 2018 - Submittal to NMED - Response to Disapproval Investigation Work Plan Sanitary Lagoon

October 19, 2018 - Submittal to NMED - Response to Disapproval Investigation Report SWMU No. 4 (Old Burn Pits) and No. 5 (Landfill Areas)

October 31, 2018 - Submittal to NMED - Work Plan 2015 Annual Groundwater Report Comments

November 7, 2018 thru December 3, 2018 - Fourth quarter groundwater monitoring

November 7, 2018 - Submittal to NMED - Response to Disapproval Hydrocarbon Seep Interim Measures 2018 2nd Quarter Status Report

November 28, 2018 - Submittal to NMED - Investigation Work Plan Background Concentrations

November 28, 2018 - Submittal to NMED - Response to Disapproval Investigation Work Plan SWMU No. 1 (Aeration Basin) and SWMU No. 14 (Old API Separator)

November 28, 2018 - Submittal to NMED - Response to Approval with Modifications Revised Facility Wide Groundwater Monitoring Work Plan 2018 - Updates for 2018

November 29, 2018 - Submittal to NMED - 2017 Annual Groundwater Monitoring Report

December 6, 2018 - Submittal to NMED - Update Regarding October 19, 2018 Disapproval Letter Item 2 Investigation Work Plan OW-58 Twin Well

December 6, 2018 - Land Treatment Unit Post Closure Groundwater Sampling

December 10, 2018 - Central OCD Landfarm Semiannual Soil Sampling

December 11, 2018 - Land Treatment Unit Post Closure Soil Sampling

December 11, 2018 - Submittal to NMED - Railroad Loading-Unloading Facility Assessment Report Area of Concern 17

December 12, 2018 - Submittal to NMED - Investigation Work Plan SWMU No. 9 – Drainage Ditch and Inactive Landfarm

December 13, 2018 - Submittal to NMED - Hydrocarbon Seep Interim Measures 2018 3rd Quarter Status Report

APPENDIX E

SUMMARY OF ALL LEAKS, SPILLS AND RELEASES

APPENDIX E

SUMMARY OF ALL LEAKS, SPILLS, AND RELEASES

February 6, 2019 – Naphtha Release

At approximately 11:00 am on February 6, 2018 a mixture of petroleum produce (20%) and water was found releasing out of a 4" diameter PVC pipe that discharges into a stormwater drainage ditch south of STP-1. Sample analysis indicated the product to be naphtha. The flow from the pipe was estimated to be 1.7 gallons per minute. The drainage ditch feeds into a small collection pond equipped with a drain valve. The valve remained closed and no product was discharged from the pond. A catch basin was placed beneath the PVC pipe to prevent any further release of product to the ground. Site personnel monitored the catch basin and utilized a vacuum truck to transfer the contents back into the process. Based on the flow rate and 20% content of naphtha, the release to the ground was estimated to be less than 25 barrels. Investigation into the source upstream of the discharge point continued into the following day (February 7, 2018).

After obtaining drawing of project work that had taken place near STP-1, site personnel began excavating a suspect area. At approximately 5 feet below ground level, hydrocarbon saturated soil was encountered in the area east of STP-1. At 08:30 pm, it was determined that the catch basins were not preventing any further release to the ground.

According to the initial calculations, the on-going release was estimated to be greater than 25 barrels after 10:00 am on February 8, 2018. Due to safety concerns, excavation work was stopped.

Notification of the release was provided to the NMED Hazardous Waste Bureau and the Oil Conservation Division on February 7, 2018 at 9:15 pm. An initial written report (Form C-141) was completed on February 8, 2018.

November 27, 2018 – Gasoline Spill at Tank 563

While transferring gasoline, a level gauge malfunctioned causing Tank 563 to overfill and spill onto the ground. Approximately 35 barrels of gasoline was spilled to the soil. All material was contained inside the containment dikes. The material was removed by a vacuum truck.

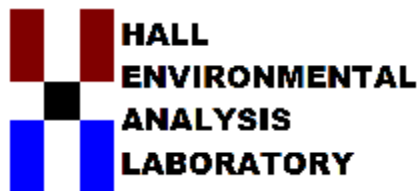
Notification of the release was provided to the NMED Hazardous Waste Bureau and the Oil Conservation Division on November 23, 2018 at 10:09 am. An initial written report (Form C-141) was completed on November 29, 2018.

December 22, 2018 – Wastewater Spill at Wastewater Treatment Plant

On December 22, 2018 a crack in a welded seam was discovered in the bottom of the North Carbon Canister at the wastewater treatment plant. Approximately 5 barrels of treated wastewater leaked to the ground.

Notification of the release was provided to the NMED Hazardous Waste Bureau and the Oil Conservation Division on December 26, 2018 at 1:44 pm. An initial written report (Form C-141) was completed on December 26, 2018 at 1:44 pm.

APPENDIX F
OCD CENTRAL LANDFARM – SOIL ANALYTICAL DATA
(ON ATTACHED CD)



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 06, 2018

Cheryl Johnson

Western Refining Southwest, Gallup
92 Giant Crossing Road
Gallup, NM 87301
TEL: (505) 722-3833
FAX (505) 722-0210

RE: Central OCD Landfarm Semiannual Sampling

OrderNo.: 1807001

Dear Cheryl Johnson:

Hall Environmental Analysis Laboratory received 13 sample(s) on 6/29/2018 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued August 01, 2018.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 9:20:00 AM

Lab ID: 1807001-001

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								
						Analyst: TOM		
Aroclor 1016	ND	0.052	0.095		mg/Kg	1	7/18/2018 1:27:03 PM	39114
Aroclor 1221	ND	0.095	0.095		mg/Kg	1	7/18/2018 1:27:03 PM	39114
Aroclor 1232	ND	0.095	0.095		mg/Kg	1	7/18/2018 1:27:03 PM	39114
Aroclor 1242	ND	0.095	0.095		mg/Kg	1	7/18/2018 1:27:03 PM	39114
Aroclor 1248	ND	0.095	0.095		mg/Kg	1	7/18/2018 1:27:03 PM	39114
Aroclor 1254	ND	0.095	0.095		mg/Kg	1	7/18/2018 1:27:03 PM	39114
Aroclor 1260	ND	0.045	0.095		mg/Kg	1	7/18/2018 1:27:03 PM	39114
Surr: Decachlorobiphenyl	112	0	26.3-128		%Rec	1	7/18/2018 1:27:03 PM	39114
Surr: Tetrachloro-m-xylene	124	0	20.7-151		%Rec	1	7/18/2018 1:27:03 PM	39114
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
						Analyst: Irm		
Diesel Range Organics (DRO)	460	1.9	9.9		mg/Kg	1	7/10/2018 11:28:48 AM	39058
Motor Oil Range Organics (MRO)	540	49	49		mg/Kg	1	7/10/2018 11:28:48 AM	39058
Surr: DNOP	128	0	70-130		%Rec	1	7/10/2018 11:28:48 AM	39058
EPA METHOD 8015D: GASOLINE RANGE								
						Analyst: NSB		
Gasoline Range Organics (GRO)	ND	1.4	4.8		mg/Kg	1	7/5/2018 6:07:24 PM	39039
Surr: BFB	90.4	0	15-316		%Rec	1	7/5/2018 6:07:24 PM	39039
EPA METHOD 300.0: ANIONS								
						Analyst: MRA		
Fluoride	9.3	0.030	0.30		mg/Kg	1	7/11/2018 3:14:18 PM	39148
Chloride	310	8.2	30		mg/Kg	20	7/11/2018 3:26:43 PM	39148
Nitrogen, Nitrate (As N)	2.3	0.17	0.30		mg/Kg	1	7/11/2018 3:14:18 PM	39148
Sulfate	550	17	30		mg/Kg	20	7/11/2018 3:26:43 PM	39148
EPA METHOD 7471: MERCURY								
						Analyst: rde		
Mercury	0.032	0.0065	0.032		mg/Kg	1	7/6/2018 5:13:40 PM	39078
EPA METHOD 6010B: SOIL METALS								
						Analyst: ELS		
Arsenic	ND	4.5	12		mg/Kg	5	7/10/2018 9:11:51 AM	39100
Barium	240	0.11	0.50		mg/Kg	5	7/10/2018 9:11:51 AM	39100
Cadmium	ND	0.16	0.50		mg/Kg	5	7/10/2018 9:11:51 AM	39100
Chromium	15	0.20	1.5		mg/Kg	5	7/10/2018 9:11:51 AM	39100
Copper	2.5	1.5	1.5		mg/Kg	5	7/10/2018 9:11:51 AM	39100
Iron	19000	250	250		mg/Kg	100	7/10/2018 9:13:48 AM	39100
Lead	3.5	1.2	1.2		mg/Kg	5	7/10/2018 9:11:51 AM	39100
Manganese	320	0.50	0.50		mg/Kg	5	7/10/2018 9:11:51 AM	39100
Selenium	ND	5.0	12		mg/Kg	5	7/10/2018 9:11:51 AM	39100
Silver	ND	0.16	1.2		mg/Kg	5	7/10/2018 9:11:51 AM	39100
Uranium	ND	25	25		mg/Kg	5	7/10/2018 10:47:31 AM	39100
Zinc	24	12	12		mg/Kg	5	7/10/2018 10:47:31 AM	39100

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 1 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 9:20:00 AM

Lab ID: 1807001-001

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	1.1	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Acenaphthylene	ND	0.98	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Aniline	ND	0.94	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Anthracene	ND	1.0	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Azobenzene	ND	1.3	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Benz(a)anthracene	ND	1.3	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Benzo(a)pyrene	ND	1.5	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Benzo(b)fluoranthene	ND	1.5	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Benzo(g,h,i)perylene	ND	1.6	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Benzo(k)fluoranthene	ND	1.6	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Benzoic acid	ND	1.4	4.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Benzyl alcohol	ND	1.3	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Bis(2-chloroethoxy)methane	ND	1.1	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Bis(2-chloroethyl)ether	ND	1.2	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Bis(2-chloroisopropyl)ether	ND	1.2	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Bis(2-ethylhexyl)phthalate	ND	2.7	4.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
4-Bromophenyl phenyl ether	ND	1.3	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Butyl benzyl phthalate	ND	1.3	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Carbazole	ND	1.2	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
4-Chloro-3-methylphenol	ND	1.3	4.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
4-Chloroaniline	ND	1.1	4.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
2-Chloronaphthalene	ND	1.1	2.4	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
2-Chlorophenol	ND	1.3	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
4-Chlorophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Chrysene	ND	1.0	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Di-n-octyl phthalate	ND	1.1	3.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Dibenz(a,h)anthracene	ND	1.6	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Dibenzofuran	ND	1.1	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
1,2-Dichlorobenzene	ND	1.2	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
1,3-Dichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
1,4-Dichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
3,3'-Dichlorobenzidine	ND	0.96	2.4	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Diethyl phthalate	ND	1.5	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Dimethyl phthalate	ND	0.99	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
2,4-Dichlorophenol	ND	1.2	3.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
2,4-Dimethylphenol	ND	0.92	2.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
4,6-Dinitro-2-methylphenol	ND	0.89	3.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
2,4-Dinitrophenol	ND	0.62	4.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 2 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 9:20:00 AM

Lab ID: 1807001-001

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.99	4.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
2,6-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Fluoranthene	ND	1.1	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Fluorene	ND	1.0	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Hexachlorobenzene	ND	1.2	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Hexachlorobutadiene	ND	1.0	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Hexachlorocyclopentadiene	ND	0.96	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Hexachloroethane	ND	1.2	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Indeno(1,2,3-cd)pyrene	ND	1.4	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Isophorone	ND	1.2	3.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
1-Methylnaphthalene	ND	1.4	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
2-Methylnaphthalene	ND	1.2	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
2-Methylphenol	ND	1.3	3.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
3+4-Methylphenol	ND	1.3	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
N-Nitrosodi-n-propylamine	ND	1.5	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
N-Nitrosodiphenylamine	ND	0.99	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Naphthalene	ND	1.1	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
2-Nitroaniline	ND	1.3	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
3-Nitroaniline	ND	1.0	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
4-Nitroaniline	ND	0.94	3.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Nitrobenzene	ND	1.1	3.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
2-Nitrophenol	ND	1.2	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
4-Nitrophenol	ND	1.5	2.4	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Pentachlorophenol	ND	0.98	3.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Phenanthrene	ND	0.99	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Phenol	ND	1.3	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Pyrene	ND	1.0	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Pyridine	ND	1.2	3.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
1,2,4-Trichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
2,4,5-Trichlorophenol	ND	1.1	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
2,4,6-Trichlorophenol	ND	1.3	1.9	D	mg/Kg	1	7/23/2018 6:43:21 PM	39166
Surr: 2-Fluorophenol	0		41.1-115	SD	%Rec	1	7/23/2018 6:43:21 PM	39166
Surr: Phenol-d5	0		46.8-124	SD	%Rec	1	7/23/2018 6:43:21 PM	39166
Surr: 2,4,6-Tribromophenol	0		49.3-130	SD	%Rec	1	7/23/2018 6:43:21 PM	39166
Surr: Nitrobenzene-d5	0		44.6-124	SD	%Rec	1	7/23/2018 6:43:21 PM	39166
Surr: 2-Fluorobiphenyl	0		46.1-123	SD	%Rec	1	7/23/2018 6:43:21 PM	39166
Surr: 4-Terphenyl-d14	0		29.8-107	SD	%Rec	1	7/23/2018 6:43:21 PM	39166

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0047	0.024		mg/Kg	1	7/5/2018 1:39:05 PM	39039
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 3 of 71
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 9:20:00 AM

Lab ID: 1807001-001

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0039	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Ethylbenzene	ND	0.0034	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Methyl tert-butyl ether (MTBE)	ND	0.0073	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,2,4-Trimethylbenzene	ND	0.0042	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,3,5-Trimethylbenzene	ND	0.0030	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,2-Dichloroethane (EDC)	ND	0.0050	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,2-Dibromoethane (EDB)	ND	0.0061	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Naphthalene	ND	0.0048	0.096		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1-Methylnaphthalene	ND	0.0034	0.19		mg/Kg	1	7/5/2018 1:39:05 PM	39039
2-Methylnaphthalene	ND	0.0039	0.19		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Acetone	ND	0.052	0.72		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Bromobenzene	ND	0.0035	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Bromodichloromethane	ND	0.0062	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Bromoform	ND	0.012	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Bromomethane	0.0087	0.0083	0.14	J	mg/Kg	1	7/5/2018 1:39:05 PM	39039
2-Butanone	0.083	0.028	0.48	J	mg/Kg	1	7/5/2018 1:39:05 PM	39039
Carbon disulfide	ND	0.0057	0.48		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Carbon tetrachloride	ND	0.0047	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Chlorobenzene	ND	0.0029	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Chloroethane	ND	0.016	0.096		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Chloroform	ND	0.0029	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Chloromethane	ND	0.010	0.14		mg/Kg	1	7/5/2018 1:39:05 PM	39039
2-Chlorotoluene	ND	0.0037	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
4-Chlorotoluene	ND	0.0043	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
cis-1,2-DCE	ND	0.0061	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
cis-1,3-Dichloropropene	ND	0.0036	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,2-Dibromo-3-chloropropane	ND	0.0066	0.096		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Dibromochloromethane	ND	0.0040	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Dibromomethane	ND	0.0023	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,2-Dichlorobenzene	ND	0.0024	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,3-Dichlorobenzene	ND	0.0042	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,4-Dichlorobenzene	ND	0.0053	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Dichlorodifluoromethane	ND	0.020	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,1-Dichloroethane	ND	0.019	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,1-Dichloroethene	ND	0.019	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,2-Dichloropropane	ND	0.0030	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,3-Dichloropropane	ND	0.012	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
2,2-Dichloropropane	ND	0.0054	0.096		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,1-Dichloropropene	ND	0.0054	0.096		mg/Kg	1	7/5/2018 1:39:05 PM	39039

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 4 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 9:20:00 AM

Lab ID: 1807001-001

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.012	0.096		mg/Kg	1	7/5/2018 1:39:05 PM	39039
2-Hexanone	ND	0.0093	0.48		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Isopropylbenzene	ND	0.0032	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
4-Isopropyltoluene	ND	0.0036	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
4-Methyl-2-pentanone	ND	0.010	0.48		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Methylene chloride	ND	0.019	0.14		mg/Kg	1	7/5/2018 1:39:05 PM	39039
n-Butylbenzene	ND	0.0043	0.14		mg/Kg	1	7/5/2018 1:39:05 PM	39039
n-Propylbenzene	ND	0.0030	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
sec-Butylbenzene	ND	0.0049	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Styrene	ND	0.0083	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
tert-Butylbenzene	ND	0.0039	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,1,1,2-Tetrachloroethane	ND	0.0054	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,1,2,2-Tetrachloroethane	ND	0.014	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Tetrachloroethene (PCE)	ND	0.0038	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
trans-1,2-DCE	ND	0.019	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
trans-1,3-Dichloropropene	ND	0.0057	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,2,3-Trichlorobenzene	ND	0.0044	0.096		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,2,4-Trichlorobenzene	ND	0.0048	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,1,1-Trichloroethane	ND	0.0062	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,1,2-Trichloroethane	ND	0.0051	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Trichloroethene (TCE)	ND	0.0058	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Trichlorofluoromethane	ND	0.0072	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
1,2,3-Trichloropropane	ND	0.024	0.096		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Vinyl chloride	ND	0.0040	0.048		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Xylenes, Total	ND	0.015	0.096		mg/Kg	1	7/5/2018 1:39:05 PM	39039
Surr: Dibromofluoromethane	98.8		70-130		%Rec	1	7/5/2018 1:39:05 PM	39039
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	1	7/5/2018 1:39:05 PM	39039
Surr: Toluene-d8	99.4		70-130		%Rec	1	7/5/2018 1:39:05 PM	39039
Surr: 4-Bromofluorobenzene	111		70-130		%Rec	1	7/5/2018 1:39:05 PM	39039

EPA METHOD 418.1: TPH

Analyst: **CLP**

Petroleum Hydrocarbons, TR	460	38	200	mg/Kg	10	7/12/2018	39126
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CYANIDE-TOTAL

Analyst: **SUB**

Cyanide	ND	0.25	0.25	mg/Kg	1	7/10/2018	R53202
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EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED

Analyst: **SUB**

Radium-226	0.956	0.173	0.173	pCi/L	1	8/1/2018	R53202
Radium-226 ±	0.24	0.173	0.173	pCi/L	1	8/1/2018	R53202
Radium-228	1.602	0.372	0.372	pCi/L	1	8/1/2018	R53202
Radium-228 ±	0.432	0.372	0.372	pCi/L	1	8/1/2018	R53202

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 5 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 9:50:00 AM

Lab ID: 1807001-002

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								
						Analyst: TOM		
Aroclor 1016	ND	0.011	0.020		mg/Kg	1	7/18/2018 4:27:58 AM	39114
Aroclor 1221	ND	0.020	0.020		mg/Kg	1	7/18/2018 4:27:58 AM	39114
Aroclor 1232	ND	0.020	0.020		mg/Kg	1	7/18/2018 4:27:58 AM	39114
Aroclor 1242	ND	0.020	0.020		mg/Kg	1	7/18/2018 4:27:58 AM	39114
Aroclor 1248	ND	0.020	0.020		mg/Kg	1	7/18/2018 4:27:58 AM	39114
Aroclor 1254	ND	0.020	0.020		mg/Kg	1	7/18/2018 4:27:58 AM	39114
Aroclor 1260	ND	0.0092	0.020		mg/Kg	1	7/18/2018 4:27:58 AM	39114
Surr: Decachlorobiphenyl	68.0	0	26.3-128		%Rec	1	7/18/2018 4:27:58 AM	39114
Surr: Tetrachloro-m-xylene	57.2	0	20.7-151		%Rec	1	7/18/2018 4:27:58 AM	39114
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
						Analyst: TOM		
Diesel Range Organics (DRO)	19	1.9	10		mg/Kg	1	7/9/2018 7:06:40 PM	39058
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	7/9/2018 7:06:40 PM	39058
Surr: DNOP	108	0	70-130		%Rec	1	7/9/2018 7:06:40 PM	39058
EPA METHOD 8015D: GASOLINE RANGE								
						Analyst: NSB		
Gasoline Range Organics (GRO)	ND	1.4	4.8		mg/Kg	1	7/5/2018 6:30:51 PM	39039
Surr: BFB	91.3	0	15-316		%Rec	1	7/5/2018 6:30:51 PM	39039
EPA METHOD 300.0: ANIONS								
						Analyst: MRA		
Fluoride	3.9	0.030	0.30		mg/Kg	1	7/11/2018 3:39:07 PM	39148
Chloride	170	8.2	30		mg/Kg	20	7/11/2018 3:51:32 PM	39148
Nitrogen, Nitrate (As N)	2.9	0.17	0.30		mg/Kg	1	7/11/2018 3:39:07 PM	39148
Sulfate	340	17	30		mg/Kg	20	7/11/2018 3:51:32 PM	39148
EPA METHOD 7471: MERCURY								
						Analyst: rde		
Mercury	ND	0.0067	0.033		mg/Kg	1	7/6/2018 5:15:22 PM	39078
EPA METHOD 6010B: SOIL METALS								
						Analyst: ELS		
Arsenic	ND	4.4	12		mg/Kg	5	7/10/2018 9:15:45 AM	39100
Barium	270	0.11	0.49		mg/Kg	5	7/10/2018 9:15:45 AM	39100
Cadmium	ND	0.15	0.49		mg/Kg	5	7/10/2018 9:15:45 AM	39100
Chromium	15	0.20	1.5		mg/Kg	5	7/10/2018 9:15:45 AM	39100
Copper	2.1	1.5	1.5		mg/Kg	5	7/10/2018 9:15:45 AM	39100
Iron	19000	240	240		mg/Kg	100	7/10/2018 9:29:52 AM	39100
Lead	2.0	1.2	1.2		mg/Kg	5	7/10/2018 9:15:45 AM	39100
Manganese	420	0.49	0.49		mg/Kg	5	7/10/2018 9:15:45 AM	39100
Selenium	ND	4.9	12		mg/Kg	5	7/10/2018 9:15:45 AM	39100
Silver	ND	0.16	1.2		mg/Kg	5	7/10/2018 9:15:45 AM	39100
Uranium	ND	24	24		mg/Kg	5	7/10/2018 10:49:05 AM	39100
Zinc	21	12	12		mg/Kg	5	7/10/2018 10:49:05 AM	39100

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Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 6 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 9:50:00 AM

Lab ID: 1807001-002

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.10	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Acenaphthylene	ND	0.094	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Aniline	ND	0.090	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Anthracene	ND	0.099	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Azobenzene	ND	0.12	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Benz(a)anthracene	ND	0.13	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Benzo(a)pyrene	ND	0.14	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Benzo(b)fluoranthene	ND	0.14	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Benzo(g,h,i)perylene	ND	0.15	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Benzo(k)fluoranthene	ND	0.15	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Benzoic acid	ND	0.13	0.46		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Bis(2-chloroethoxy)methane	ND	0.10	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Bis(2-chloroethyl)ether	ND	0.11	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Bis(2-ethylhexyl)phthalate	ND	0.26	0.46		mg/Kg	1	7/16/2018 6:47:44 PM	39166
4-Bromophenyl phenyl ether	ND	0.12	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Butyl benzyl phthalate	ND	0.12	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Carbazole	ND	0.11	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
4-Chloro-3-methylphenol	ND	0.13	0.46		mg/Kg	1	7/16/2018 6:47:44 PM	39166
4-Chloroaniline	ND	0.10	0.46		mg/Kg	1	7/16/2018 6:47:44 PM	39166
2-Chloronaphthalene	ND	0.10	0.23		mg/Kg	1	7/16/2018 6:47:44 PM	39166
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
4-Chlorophenyl phenyl ether	ND	0.097	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Chrysene	ND	0.099	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Di-n-butyl phthalate	ND	0.25	0.37		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Di-n-octyl phthalate	ND	0.11	0.37		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Dibenz(a,h)anthracene	ND	0.15	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Dibenzofuran	ND	0.11	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
1,2-Dichlorobenzene	ND	0.11	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
3,3'-Dichlorobenzidine	ND	0.092	0.23		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Diethyl phthalate	ND	0.14	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Dimethyl phthalate	ND	0.094	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
2,4-Dichlorophenol	ND	0.12	0.37		mg/Kg	1	7/16/2018 6:47:44 PM	39166
2,4-Dimethylphenol	ND	0.087	0.28		mg/Kg	1	7/16/2018 6:47:44 PM	39166
4,6-Dinitro-2-methylphenol	ND	0.085	0.37		mg/Kg	1	7/16/2018 6:47:44 PM	39166
2,4-Dinitrophenol	ND	0.059	0.46		mg/Kg	1	7/16/2018 6:47:44 PM	39166

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 7 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 9:50:00 AM

Lab ID: 1807001-002

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.094	0.46		mg/Kg	1	7/16/2018 6:47:44 PM	39166
2,6-Dinitrotoluene	ND	0.12	0.46		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Fluoranthene	ND	0.10	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Fluorene	ND	0.098	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Hexachlorobenzene	ND	0.11	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Hexachlorobutadiene	ND	0.098	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Hexachlorocyclopentadiene	ND	0.092	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Indeno(1,2,3-cd)pyrene	ND	0.13	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Isophorone	ND	0.12	0.37		mg/Kg	1	7/16/2018 6:47:44 PM	39166
1-Methylnaphthalene	ND	0.13	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
2-Methylnaphthalene	ND	0.12	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
2-Methylphenol	ND	0.13	0.37		mg/Kg	1	7/16/2018 6:47:44 PM	39166
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
N-Nitrosodiphenylamine	ND	0.094	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Naphthalene	ND	0.11	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
2-Nitroaniline	ND	0.12	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
3-Nitroaniline	ND	0.099	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
4-Nitroaniline	ND	0.089	0.37		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Nitrobenzene	ND	0.11	0.37		mg/Kg	1	7/16/2018 6:47:44 PM	39166
2-Nitrophenol	ND	0.12	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
4-Nitrophenol	ND	0.14	0.23		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Pentachlorophenol	ND	0.093	0.37		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Phenanthrene	ND	0.094	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Phenol	ND	0.12	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Pyrene	ND	0.10	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Pyridine	ND	0.11	0.37		mg/Kg	1	7/16/2018 6:47:44 PM	39166
1,2,4-Trichlorobenzene	ND	0.11	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
2,4,5-Trichlorophenol	ND	0.11	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
2,4,6-Trichlorophenol	ND	0.12	0.19		mg/Kg	1	7/16/2018 6:47:44 PM	39166
Surr: 2-Fluorophenol	33.8		41.1-115	S	%Rec	1	7/16/2018 6:47:44 PM	39166
Surr: Phenol-d5	37.4		46.8-124	S	%Rec	1	7/16/2018 6:47:44 PM	39166
Surr: 2,4,6-Tribromophenol	43.4		49.3-130	S	%Rec	1	7/16/2018 6:47:44 PM	39166
Surr: Nitrobenzene-d5	40.8		44.6-124	S	%Rec	1	7/16/2018 6:47:44 PM	39166
Surr: 2-Fluorobiphenyl	38.8		46.1-123	S	%Rec	1	7/16/2018 6:47:44 PM	39166
Surr: 4-Terphenyl-d14	57.2		29.8-107		%Rec	1	7/16/2018 6:47:44 PM	39166

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0047	0.024		mg/Kg	1	7/5/2018 2:08:34 PM	39039
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 8 of 71
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 9:50:00 AM

Lab ID: 1807001-002

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0039	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Ethylbenzene	ND	0.0034	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Methyl tert-butyl ether (MTBE)	ND	0.0074	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,2,4-Trimethylbenzene	ND	0.0042	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,3,5-Trimethylbenzene	ND	0.0030	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,2-Dichloroethane (EDC)	ND	0.0050	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,2-Dibromoethane (EDB)	ND	0.0061	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Naphthalene	ND	0.0049	0.096		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1-Methylnaphthalene	ND	0.0034	0.19		mg/Kg	1	7/5/2018 2:08:34 PM	39039
2-Methylnaphthalene	ND	0.0039	0.19		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Acetone	ND	0.052	0.72		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Bromobenzene	ND	0.0035	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Bromodichloromethane	ND	0.0063	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Bromoform	ND	0.012	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Bromomethane	ND	0.0083	0.14		mg/Kg	1	7/5/2018 2:08:34 PM	39039
2-Butanone	0.051	0.029	0.48	J	mg/Kg	1	7/5/2018 2:08:34 PM	39039
Carbon disulfide	ND	0.0057	0.48		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Carbon tetrachloride	ND	0.0048	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Chlorobenzene	ND	0.0029	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Chloroethane	ND	0.016	0.096		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Chloroform	ND	0.0029	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Chloromethane	ND	0.010	0.14		mg/Kg	1	7/5/2018 2:08:34 PM	39039
2-Chlorotoluene	ND	0.0037	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
4-Chlorotoluene	ND	0.0044	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
cis-1,2-DCE	ND	0.0061	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
cis-1,3-Dichloropropene	ND	0.0037	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,2-Dibromo-3-chloropropane	ND	0.0066	0.096		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Dibromochloromethane	ND	0.0040	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Dibromomethane	ND	0.0024	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,2-Dichlorobenzene	ND	0.0024	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,3-Dichlorobenzene	ND	0.0042	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,4-Dichlorobenzene	ND	0.0053	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Dichlorodifluoromethane	ND	0.020	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,1-Dichloroethane	ND	0.019	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,1-Dichloroethene	ND	0.019	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,2-Dichloropropane	ND	0.0030	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,3-Dichloropropane	ND	0.012	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
2,2-Dichloropropane	ND	0.0055	0.096		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,1-Dichloropropene	ND	0.0054	0.096		mg/Kg	1	7/5/2018 2:08:34 PM	39039

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 9 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 9:50:00 AM

Lab ID: 1807001-002

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.012	0.096		mg/Kg	1	7/5/2018 2:08:34 PM	39039
2-Hexanone	ND	0.0094	0.48		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Isopropylbenzene	ND	0.0032	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
4-Isopropyltoluene	ND	0.0037	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
4-Methyl-2-pentanone	ND	0.010	0.48		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Methylene chloride	ND	0.019	0.14		mg/Kg	1	7/5/2018 2:08:34 PM	39039
n-Butylbenzene	ND	0.0043	0.14		mg/Kg	1	7/5/2018 2:08:34 PM	39039
n-Propylbenzene	ND	0.0030	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
sec-Butylbenzene	ND	0.0050	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Styrene	ND	0.0084	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
tert-Butylbenzene	ND	0.0039	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,1,1,2-Tetrachloroethane	ND	0.0054	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,1,2,2-Tetrachloroethane	ND	0.014	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Tetrachloroethene (PCE)	ND	0.0038	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
trans-1,2-DCE	ND	0.019	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
trans-1,3-Dichloropropene	ND	0.0057	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,2,3-Trichlorobenzene	ND	0.0044	0.096		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,2,4-Trichlorobenzene	ND	0.0049	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,1,1-Trichloroethane	ND	0.0062	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,1,2-Trichloroethane	ND	0.0051	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Trichloroethene (TCE)	ND	0.0058	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Trichlorofluoromethane	ND	0.0072	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
1,2,3-Trichloropropane	ND	0.024	0.096		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Vinyl chloride	ND	0.0040	0.048		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Xylenes, Total	ND	0.015	0.096		mg/Kg	1	7/5/2018 2:08:34 PM	39039
Surr: Dibromofluoromethane	103		70-130		%Rec	1	7/5/2018 2:08:34 PM	39039
Surr: 1,2-Dichloroethane-d4	107		70-130		%Rec	1	7/5/2018 2:08:34 PM	39039
Surr: Toluene-d8	98.3		70-130		%Rec	1	7/5/2018 2:08:34 PM	39039
Surr: 4-Bromofluorobenzene	114		70-130		%Rec	1	7/5/2018 2:08:34 PM	39039

EPA METHOD 418.1: TPH

Analyst: **CLP**

Petroleum Hydrocarbons, TR	7.1	3.8	20	J	mg/Kg	1	7/12/2018	39126
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CYANIDE-TOTAL

Analyst: **SUB**

Cyanide	ND	0.25	0.25		mg/Kg	1	7/11/2018	R53202
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EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED

Analyst: **SUB**

Radium-226	1.104	0.246	0.246		pCi/L	1	8/1/2018	R53202
Radium-226 ±	0.249	0.246	0.246		pCi/L	1	8/1/2018	R53202
Radium-228	1.77	0.264	0.264		pCi/L	1	8/1/2018	R53202
Radium-228 ±	0.431	0.264	0.264		pCi/L	1	8/1/2018	R53202

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 10 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ02

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 10:35:00 AM

Lab ID: 1807001-003

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								Analyst: TOM
Aroclor 1016	ND	0.010	0.018		mg/Kg	1	7/18/2018 6:07:08 AM	39114
Aroclor 1221	ND	0.018	0.018		mg/Kg	1	7/18/2018 6:07:08 AM	39114
Aroclor 1232	ND	0.018	0.018		mg/Kg	1	7/18/2018 6:07:08 AM	39114
Aroclor 1242	ND	0.018	0.018		mg/Kg	1	7/18/2018 6:07:08 AM	39114
Aroclor 1248	ND	0.018	0.018		mg/Kg	1	7/18/2018 6:07:08 AM	39114
Aroclor 1254	ND	0.018	0.018		mg/Kg	1	7/18/2018 6:07:08 AM	39114
Aroclor 1260	ND	0.0086	0.018		mg/Kg	1	7/18/2018 6:07:08 AM	39114
Surr: Decachlorobiphenyl	82.0	0	26.3-128		%Rec	1	7/18/2018 6:07:08 AM	39114
Surr: Tetrachloro-m-xylene	83.6	0	20.7-151		%Rec	1	7/18/2018 6:07:08 AM	39114
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	ND	1.9	9.9		mg/Kg	1	7/6/2018 5:38:42 PM	39058
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	7/6/2018 5:38:42 PM	39058
Surr: DNOP	110	0	70-130		%Rec	1	7/6/2018 5:38:42 PM	39058
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.8		mg/Kg	1	7/5/2018 7:40:41 PM	39039
Surr: BFB	92.6	0	15-316		%Rec	1	7/5/2018 7:40:41 PM	39039
EPA METHOD 300.0: ANIONS								Analyst: MRA
Fluoride	8.5	0.030	0.30		mg/Kg	1	7/11/2018 4:53:35 PM	39148
Chloride	110	8.2	30		mg/Kg	20	7/11/2018 5:05:59 PM	39148
Nitrogen, Nitrate (As N)	4.3	0.17	0.30		mg/Kg	1	7/11/2018 4:53:35 PM	39148
Sulfate	500	17	30		mg/Kg	20	7/11/2018 5:05:59 PM	39148
EPA METHOD 7471: MERCURY								Analyst: rde
Mercury	0.018	0.0064	0.032	J	mg/Kg	1	7/6/2018 5:20:32 PM	39078
EPA METHOD 6010B: SOIL METALS								Analyst: ELS
Arsenic	ND	4.3	12		mg/Kg	5	7/10/2018 9:31:50 AM	39100
Barium	340	0.11	0.48		mg/Kg	5	7/10/2018 9:31:50 AM	39100
Cadmium	ND	0.15	0.48		mg/Kg	5	7/10/2018 9:31:50 AM	39100
Chromium	12	0.20	1.5		mg/Kg	5	7/10/2018 9:31:50 AM	39100
Copper	3.5	1.5	1.5		mg/Kg	5	7/10/2018 9:31:50 AM	39100
Iron	16000	240	240		mg/Kg	100	7/10/2018 9:33:50 AM	39100
Lead	ND	1.2	1.2		mg/Kg	5	7/10/2018 9:31:50 AM	39100
Manganese	400	0.48	0.48		mg/Kg	5	7/10/2018 9:31:50 AM	39100
Selenium	ND	4.9	12		mg/Kg	5	7/10/2018 9:31:50 AM	39100
Silver	ND	0.16	1.2		mg/Kg	5	7/10/2018 9:31:50 AM	39100
Uranium	ND	24	24		mg/Kg	5	7/10/2018 11:35:31 AM	39100
Zinc	26	12	12		mg/Kg	5	7/10/2018 10:59:38 AM	39100

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 11 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ02

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 10:35:00 AM

Lab ID: 1807001-003

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Acenaphthylene	ND	0.10	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Aniline	ND	0.096	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Anthracene	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Azobenzene	ND	0.13	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Benz(a)anthracene	ND	0.13	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Benzo(a)pyrene	ND	0.15	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Benzo(b)fluoranthene	ND	0.15	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Benzo(g,h,i)perylene	ND	0.16	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Benzo(k)fluoranthene	ND	0.16	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Benzoic acid	ND	0.14	0.49		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Benzyl alcohol	ND	0.13	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Bis(2-chloroethoxy)methane	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Bis(2-chloroisopropyl)ether	ND	0.12	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Bis(2-ethylhexyl)phthalate	ND	0.27	0.49		mg/Kg	1	7/23/2018 7:13:32 PM	39166
4-Bromophenyl phenyl ether	ND	0.13	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Butyl benzyl phthalate	ND	0.13	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Carbazole	ND	0.12	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
4-Chloro-3-methylphenol	ND	0.13	0.49		mg/Kg	1	7/23/2018 7:13:32 PM	39166
4-Chloroaniline	ND	0.11	0.49		mg/Kg	1	7/23/2018 7:13:32 PM	39166
2-Chloronaphthalene	ND	0.11	0.25		mg/Kg	1	7/23/2018 7:13:32 PM	39166
2-Chlorophenol	ND	0.13	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
4-Chlorophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Chrysene	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Di-n-butyl phthalate	ND	0.27	0.40		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Di-n-octyl phthalate	ND	0.12	0.40		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Dibenz(a,h)anthracene	ND	0.16	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Dibenzofuran	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
1,3-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
3,3'-Dichlorobenzidine	ND	0.098	0.25		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Diethyl phthalate	ND	0.15	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Dimethyl phthalate	ND	0.10	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
2,4-Dichlorophenol	ND	0.12	0.40		mg/Kg	1	7/23/2018 7:13:32 PM	39166
2,4-Dimethylphenol	ND	0.093	0.30		mg/Kg	1	7/23/2018 7:13:32 PM	39166
4,6-Dinitro-2-methylphenol	ND	0.091	0.40		mg/Kg	1	7/23/2018 7:13:32 PM	39166
2,4-Dinitrophenol	ND	0.063	0.49		mg/Kg	1	7/23/2018 7:13:32 PM	39166

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 12 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ02

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 10:35:00 AM

Lab ID: 1807001-003

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	7/23/2018 7:13:32 PM	39166
2,6-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Fluoranthene	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Fluorene	ND	0.10	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Hexachlorobutadiene	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Hexachlorocyclopentadiene	ND	0.098	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Hexachloroethane	ND	0.12	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Indeno(1,2,3-cd)pyrene	ND	0.14	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Isophorone	ND	0.13	0.40		mg/Kg	1	7/23/2018 7:13:32 PM	39166
1-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
2-Methylnaphthalene	ND	0.13	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
2-Methylphenol	ND	0.14	0.40		mg/Kg	1	7/23/2018 7:13:32 PM	39166
3+4-Methylphenol	ND	0.13	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
N-Nitrosodi-n-propylamine	ND	0.15	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Naphthalene	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
2-Nitroaniline	ND	0.13	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
4-Nitroaniline	ND	0.095	0.40		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Nitrobenzene	ND	0.11	0.40		mg/Kg	1	7/23/2018 7:13:32 PM	39166
2-Nitrophenol	ND	0.13	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
4-Nitrophenol	ND	0.15	0.25		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Pentachlorophenol	ND	0.10	0.40		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Phenanthrene	ND	0.10	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Phenol	ND	0.13	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Pyrene	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Pyridine	ND	0.12	0.40		mg/Kg	1	7/23/2018 7:13:32 PM	39166
1,2,4-Trichlorobenzene	ND	0.12	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
2,4,5-Trichlorophenol	ND	0.11	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
2,4,6-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	7/23/2018 7:13:32 PM	39166
Surr: 2-Fluorophenol	47.0		41.1-115		%Rec	1	7/23/2018 7:13:32 PM	39166
Surr: Phenol-d5	56.2		46.8-124		%Rec	1	7/23/2018 7:13:32 PM	39166
Surr: 2,4,6-Tribromophenol	54.3		49.3-130		%Rec	1	7/23/2018 7:13:32 PM	39166
Surr: Nitrobenzene-d5	59.9		44.6-124		%Rec	1	7/23/2018 7:13:32 PM	39166
Surr: 2-Fluorobiphenyl	59.4		46.1-123		%Rec	1	7/23/2018 7:13:32 PM	39166
Surr: 4-Terphenyl-d14	79.8		29.8-107		%Rec	1	7/23/2018 7:13:32 PM	39166

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0047	0.024		mg/Kg	1	7/5/2018 3:37:06 PM	39039
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 13 of 71
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ02

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 10:35:00 AM

Lab ID: 1807001-003

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0039	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Ethylbenzene	ND	0.0034	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Methyl tert-butyl ether (MTBE)	ND	0.0074	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,2,4-Trimethylbenzene	ND	0.0042	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,3,5-Trimethylbenzene	ND	0.0030	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,2-Dichloroethane (EDC)	ND	0.0050	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,2-Dibromoethane (EDB)	ND	0.0061	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Naphthalene	ND	0.0049	0.096		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1-Methylnaphthalene	ND	0.0034	0.19		mg/Kg	1	7/5/2018 3:37:06 PM	39039
2-Methylnaphthalene	ND	0.0039	0.19		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Acetone	ND	0.052	0.72		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Bromobenzene	ND	0.0035	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Bromodichloromethane	ND	0.0063	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Bromoform	ND	0.012	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Bromomethane	ND	0.0083	0.14		mg/Kg	1	7/5/2018 3:37:06 PM	39039
2-Butanone	0.067	0.029	0.48	J	mg/Kg	1	7/5/2018 3:37:06 PM	39039
Carbon disulfide	ND	0.0057	0.48		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Carbon tetrachloride	ND	0.0048	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Chlorobenzene	ND	0.0029	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Chloroethane	ND	0.016	0.096		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Chloroform	ND	0.0029	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Chloromethane	ND	0.010	0.14		mg/Kg	1	7/5/2018 3:37:06 PM	39039
2-Chlorotoluene	ND	0.0037	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
4-Chlorotoluene	ND	0.0044	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
cis-1,2-DCE	ND	0.0061	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
cis-1,3-Dichloropropene	ND	0.0037	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,2-Dibromo-3-chloropropane	ND	0.0066	0.096		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Dibromochloromethane	ND	0.0040	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Dibromomethane	ND	0.0024	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,2-Dichlorobenzene	ND	0.0024	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,3-Dichlorobenzene	ND	0.0042	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,4-Dichlorobenzene	ND	0.0053	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Dichlorodifluoromethane	ND	0.020	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,1-Dichloroethane	ND	0.019	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,1-Dichloroethene	ND	0.019	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,2-Dichloropropane	ND	0.0030	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,3-Dichloropropane	ND	0.012	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
2,2-Dichloropropane	ND	0.0055	0.096		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,1-Dichloropropene	ND	0.0054	0.096		mg/Kg	1	7/5/2018 3:37:06 PM	39039

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 14 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ02

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 10:35:00 AM

Lab ID: 1807001-003

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.012	0.096		mg/Kg	1	7/5/2018 3:37:06 PM	39039
2-Hexanone	ND	0.0094	0.48		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Isopropylbenzene	ND	0.0032	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
4-Isopropyltoluene	ND	0.0037	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
4-Methyl-2-pentanone	ND	0.010	0.48		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Methylene chloride	ND	0.019	0.14		mg/Kg	1	7/5/2018 3:37:06 PM	39039
n-Butylbenzene	ND	0.0043	0.14		mg/Kg	1	7/5/2018 3:37:06 PM	39039
n-Propylbenzene	ND	0.0030	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
sec-Butylbenzene	ND	0.0050	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Styrene	ND	0.0084	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
tert-Butylbenzene	ND	0.0039	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,1,1,2-Tetrachloroethane	ND	0.0054	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,1,2,2-Tetrachloroethane	ND	0.014	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Tetrachloroethene (PCE)	ND	0.0038	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
trans-1,2-DCE	ND	0.019	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
trans-1,3-Dichloropropene	ND	0.0057	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,2,3-Trichlorobenzene	ND	0.0044	0.096		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,2,4-Trichlorobenzene	ND	0.0049	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,1,1-Trichloroethane	ND	0.0062	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,1,2-Trichloroethane	ND	0.0051	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Trichloroethene (TCE)	ND	0.0058	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Trichlorofluoromethane	ND	0.0072	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
1,2,3-Trichloropropane	ND	0.024	0.096		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Vinyl chloride	ND	0.0040	0.048		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Xylenes, Total	ND	0.015	0.096		mg/Kg	1	7/5/2018 3:37:06 PM	39039
Surr: Dibromofluoromethane	104		70-130		%Rec	1	7/5/2018 3:37:06 PM	39039
Surr: 1,2-Dichloroethane-d4	108		70-130		%Rec	1	7/5/2018 3:37:06 PM	39039
Surr: Toluene-d8	97.6		70-130		%Rec	1	7/5/2018 3:37:06 PM	39039
Surr: 4-Bromofluorobenzene	116		70-130		%Rec	1	7/5/2018 3:37:06 PM	39039
EPA METHOD 418.1: TPH							Analyst: CLP	
Petroleum Hydrocarbons, TR	4.6	3.7	20	J	mg/Kg	1	7/12/2018	39126
CYANIDE-TOTAL							Analyst: SUB	
Cyanide	ND	0.25	0.25		mg/Kg	1	7/10/2018	R53202
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED							Analyst: SUB	
Radium-226	1.129	0.203	0.203		pCi/L	1	8/1/2018	R53202
Radium-226 ±	0.328	0.203	0.203		pCi/L	1	8/1/2018	R53202
Radium-228	1.321	0.589	0.589		pCi/L	1	8/1/2018	R53202
Radium-228 ±	0.524	0.589	0.589		pCi/L	1	8/1/2018	R53202

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 15 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ02

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 10:45:00 AM

Lab ID: 1807001-004

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								
						Analyst: TOM		
Aroclor 1016	ND	0.010	0.019		mg/Kg	1	7/18/2018 6:40:12 AM	39114
Aroclor 1221	ND	0.019	0.019		mg/Kg	1	7/18/2018 6:40:12 AM	39114
Aroclor 1232	ND	0.019	0.019		mg/Kg	1	7/18/2018 6:40:12 AM	39114
Aroclor 1242	ND	0.019	0.019		mg/Kg	1	7/18/2018 6:40:12 AM	39114
Aroclor 1248	ND	0.019	0.019		mg/Kg	1	7/18/2018 6:40:12 AM	39114
Aroclor 1254	ND	0.019	0.019		mg/Kg	1	7/18/2018 6:40:12 AM	39114
Aroclor 1260	ND	0.0088	0.019		mg/Kg	1	7/18/2018 6:40:12 AM	39114
Surr: Decachlorobiphenyl	77.6	0	26.3-128		%Rec	1	7/18/2018 6:40:12 AM	39114
Surr: Tetrachloro-m-xylene	66.4	0	20.7-151		%Rec	1	7/18/2018 6:40:12 AM	39114
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
						Analyst: TOM		
Diesel Range Organics (DRO)	ND	1.9	10		mg/Kg	1	7/6/2018 6:03:11 PM	39058
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	7/6/2018 6:03:11 PM	39058
Surr: DNOP	105	0	70-130		%Rec	1	7/6/2018 6:03:11 PM	39058
EPA METHOD 8015D: GASOLINE RANGE								
						Analyst: NSB		
Gasoline Range Organics (GRO)	ND	1.3	4.6		mg/Kg	1	7/5/2018 8:03:55 PM	39039
Surr: BFB	90.1	0	15-316		%Rec	1	7/5/2018 8:03:55 PM	39039
EPA METHOD 300.0: ANIONS								
						Analyst: MRA		
Fluoride	3.9	0.030	0.30		mg/Kg	1	7/11/2018 5:18:24 PM	39148
Chloride	210	8.2	30		mg/Kg	20	7/11/2018 5:30:49 PM	39148
Nitrogen, Nitrate (As N)	1.2	0.17	0.30		mg/Kg	1	7/11/2018 5:18:24 PM	39148
Sulfate	780	17	30		mg/Kg	20	7/11/2018 5:30:49 PM	39148
EPA METHOD 7471: MERCURY								
						Analyst: rde		
Mercury	ND	0.0063	0.031		mg/Kg	1	7/6/2018 5:22:15 PM	39078
EPA METHOD 6010B: SOIL METALS								
						Analyst: ELS		
Arsenic	ND	4.3	12		mg/Kg	5	7/10/2018 9:35:48 AM	39100
Barium	270	0.11	0.48		mg/Kg	5	7/10/2018 9:35:48 AM	39100
Cadmium	ND	0.15	0.48		mg/Kg	5	7/10/2018 9:35:48 AM	39100
Chromium	16	0.20	1.5		mg/Kg	5	7/10/2018 9:35:48 AM	39100
Copper	1.9	1.5	1.5		mg/Kg	5	7/10/2018 9:35:48 AM	39100
Iron	20000	240	240		mg/Kg	100	7/10/2018 9:37:53 AM	39100
Lead	2.0	1.2	1.2		mg/Kg	5	7/10/2018 9:35:48 AM	39100
Manganese	410	0.48	0.48		mg/Kg	5	7/10/2018 9:35:48 AM	39100
Selenium	ND	4.9	12		mg/Kg	5	7/10/2018 9:35:48 AM	39100
Silver	ND	0.16	1.2		mg/Kg	5	7/10/2018 9:35:48 AM	39100
Uranium	ND	24	24		mg/Kg	5	7/10/2018 11:36:48 AM	39100
Zinc	24	12	12		mg/Kg	5	7/10/2018 11:01:14 AM	39100

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 16 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1807001

Date Reported: 8/6/2018

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ02

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 10:45:00 AM

Lab ID: 1807001-004

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Acenaphthylene	ND	0.10	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Aniline	ND	0.097	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Anthracene	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Azobenzene	ND	0.13	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Benz(a)anthracene	ND	0.14	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Benzo(a)pyrene	ND	0.15	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Benzo(b)fluoranthene	ND	0.15	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Benzo(g,h,i)perylene	ND	0.16	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Benzo(k)fluoranthene	ND	0.16	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Benzoic acid	ND	0.15	0.50		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Benzyl alcohol	ND	0.14	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Bis(2-chloroethoxy)methane	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Bis(2-chloroisopropyl)ether	ND	0.12	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Bis(2-ethylhexyl)phthalate	ND	0.28	0.50		mg/Kg	1	7/16/2018 8:48:55 PM	39166
4-Bromophenyl phenyl ether	ND	0.13	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Butyl benzyl phthalate	ND	0.13	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Carbazole	ND	0.12	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
4-Chloro-3-methylphenol	ND	0.14	0.50		mg/Kg	1	7/16/2018 8:48:55 PM	39166
4-Chloroaniline	ND	0.11	0.50		mg/Kg	1	7/16/2018 8:48:55 PM	39166
2-Chloronaphthalene	ND	0.11	0.25		mg/Kg	1	7/16/2018 8:48:55 PM	39166
2-Chlorophenol	ND	0.13	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
4-Chlorophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Chrysene	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Di-n-butyl phthalate	0.34	0.27	0.40	J	mg/Kg	1	7/16/2018 8:48:55 PM	39166
Di-n-octyl phthalate	ND	0.12	0.40		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Dibenz(a,h)anthracene	ND	0.16	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Dibenzofuran	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
1,3-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
3,3'-Dichlorobenzidine	ND	0.099	0.25		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Diethyl phthalate	0.20	0.15	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Dimethyl phthalate	ND	0.10	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
2,4-Dichlorophenol	ND	0.13	0.40		mg/Kg	1	7/16/2018 8:48:55 PM	39166
2,4-Dimethylphenol	ND	0.095	0.30		mg/Kg	1	7/16/2018 8:48:55 PM	39166
4,6-Dinitro-2-methylphenol	ND	0.092	0.40		mg/Kg	1	7/16/2018 8:48:55 PM	39166
2,4-Dinitrophenol	ND	0.064	0.50		mg/Kg	1	7/16/2018 8:48:55 PM	39166

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 17 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**Date Reported: **8/6/2018****CLIENT:** Western Refining Southwest, Gallup**Client Sample ID:** CENTRAL OCD LF VZ02**Project:** Central OCD Landfarm Semiannual Sam**Collection Date:** 6/29/2018 10:45:00 AM**Lab ID:** 1807001-004**Matrix:** SOIL**Received Date:** 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.10	0.50		mg/Kg	1	7/16/2018 8:48:55 PM	39166
2,6-Dinitrotoluene	ND	0.13	0.50		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Fluoranthene	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Fluorene	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Hexachlorobutadiene	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Hexachlorocyclopentadiene	ND	0.099	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Hexachloroethane	ND	0.12	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Indeno(1,2,3-cd)pyrene	ND	0.15	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Isophorone	ND	0.13	0.40		mg/Kg	1	7/16/2018 8:48:55 PM	39166
1-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
2-Methylnaphthalene	ND	0.13	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
2-Methylphenol	ND	0.14	0.40		mg/Kg	1	7/16/2018 8:48:55 PM	39166
3+4-Methylphenol	ND	0.13	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
N-Nitrosodi-n-propylamine	ND	0.15	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Naphthalene	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
2-Nitroaniline	ND	0.13	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
4-Nitroaniline	ND	0.096	0.40		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Nitrobenzene	ND	0.12	0.40		mg/Kg	1	7/16/2018 8:48:55 PM	39166
2-Nitrophenol	ND	0.13	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
4-Nitrophenol	ND	0.15	0.25		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Pentachlorophenol	ND	0.10	0.40		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Phenanthrene	ND	0.10	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Phenol	ND	0.14	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Pyrene	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Pyridine	ND	0.12	0.40		mg/Kg	1	7/16/2018 8:48:55 PM	39166
1,2,4-Trichlorobenzene	ND	0.12	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
2,4,5-Trichlorophenol	ND	0.11	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
2,4,6-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	7/16/2018 8:48:55 PM	39166
Surr: 2-Fluorophenol	53.8		41.1-115		%Rec	1	7/16/2018 8:48:55 PM	39166
Surr: Phenol-d5	66.7		46.8-124		%Rec	1	7/16/2018 8:48:55 PM	39166
Surr: 2,4,6-Tribromophenol	72.1		49.3-130		%Rec	1	7/16/2018 8:48:55 PM	39166
Surr: Nitrobenzene-d5	68.8		44.6-124		%Rec	1	7/16/2018 8:48:55 PM	39166
Surr: 2-Fluorobiphenyl	76.1		46.1-123		%Rec	1	7/16/2018 8:48:55 PM	39166
Surr: 4-Terphenyl-d14	84.5		29.8-107		%Rec	1	7/16/2018 8:48:55 PM	39166

EPA METHOD 8260B: VOLATILESAnalyst: **DJF**

Benzene	ND	0.0045	0.023		mg/Kg	1	7/5/2018 4:06:38 PM	39039
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 18 of 71
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ02

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 10:45:00 AM

Lab ID: 1807001-004

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0037	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Ethylbenzene	ND	0.0032	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Methyl tert-butyl ether (MTBE)	ND	0.0071	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,2,4-Trimethylbenzene	ND	0.0040	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,3,5-Trimethylbenzene	ND	0.0029	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,2-Dichloroethane (EDC)	ND	0.0048	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,2-Dibromoethane (EDB)	ND	0.0059	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Naphthalene	ND	0.0047	0.093		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1-Methylnaphthalene	ND	0.0033	0.19		mg/Kg	1	7/5/2018 4:06:38 PM	39039
2-Methylnaphthalene	ND	0.0038	0.19		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Acetone	ND	0.050	0.69		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Bromobenzene	ND	0.0034	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Bromodichloromethane	ND	0.0060	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Bromoform	ND	0.011	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Bromomethane	ND	0.0080	0.14		mg/Kg	1	7/5/2018 4:06:38 PM	39039
2-Butanone	0.055	0.027	0.46	J	mg/Kg	1	7/5/2018 4:06:38 PM	39039
Carbon disulfide	ND	0.0055	0.46		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Carbon tetrachloride	ND	0.0046	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Chlorobenzene	ND	0.0028	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Chloroethane	ND	0.015	0.093		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Chloroform	ND	0.0028	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Chloromethane	ND	0.0097	0.14		mg/Kg	1	7/5/2018 4:06:38 PM	39039
2-Chlorotoluene	ND	0.0036	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
4-Chlorotoluene	ND	0.0042	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
cis-1,2-DCE	ND	0.0059	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
cis-1,3-Dichloropropene	ND	0.0035	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,2-Dibromo-3-chloropropane	ND	0.0064	0.093		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Dibromochloromethane	ND	0.0039	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Dibromomethane	ND	0.0023	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,2-Dichlorobenzene	ND	0.0023	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,3-Dichlorobenzene	ND	0.0041	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,4-Dichlorobenzene	ND	0.0051	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Dichlorodifluoromethane	ND	0.019	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,1-Dichloroethane	ND	0.019	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,1-Dichloroethene	ND	0.019	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,2-Dichloropropane	ND	0.0029	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,3-Dichloropropane	ND	0.011	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
2,2-Dichloropropane	ND	0.0053	0.093		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,1-Dichloropropene	ND	0.0052	0.093		mg/Kg	1	7/5/2018 4:06:38 PM	39039

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 19 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ02

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 10:45:00 AM

Lab ID: 1807001-004

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.011	0.093		mg/Kg	1	7/5/2018 4:06:38 PM	39039
2-Hexanone	ND	0.0090	0.46		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Isopropylbenzene	ND	0.0031	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
4-Isopropyltoluene	ND	0.0035	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
4-Methyl-2-pentanone	ND	0.0099	0.46		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Methylene chloride	ND	0.019	0.14		mg/Kg	1	7/5/2018 4:06:38 PM	39039
n-Butylbenzene	ND	0.0041	0.14		mg/Kg	1	7/5/2018 4:06:38 PM	39039
n-Propylbenzene	ND	0.0029	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
sec-Butylbenzene	ND	0.0048	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Styrene	ND	0.0080	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
tert-Butylbenzene	ND	0.0037	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,1,1,2-Tetrachloroethane	ND	0.0052	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,1,2,2-Tetrachloroethane	ND	0.013	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Tetrachloroethene (PCE)	ND	0.0037	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
trans-1,2-DCE	ND	0.019	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
trans-1,3-Dichloropropene	ND	0.0055	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,2,3-Trichlorobenzene	ND	0.0042	0.093		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,2,4-Trichlorobenzene	ND	0.0047	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,1,1-Trichloroethane	ND	0.0060	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,1,2-Trichloroethane	ND	0.0049	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Trichloroethene (TCE)	ND	0.0056	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Trichlorofluoromethane	ND	0.0069	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
1,2,3-Trichloropropane	ND	0.023	0.093		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Vinyl chloride	ND	0.0039	0.046		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Xylenes, Total	ND	0.014	0.093		mg/Kg	1	7/5/2018 4:06:38 PM	39039
Surr: Dibromofluoromethane	104		70-130		%Rec	1	7/5/2018 4:06:38 PM	39039
Surr: 1,2-Dichloroethane-d4	108		70-130		%Rec	1	7/5/2018 4:06:38 PM	39039
Surr: Toluene-d8	96.5		70-130		%Rec	1	7/5/2018 4:06:38 PM	39039
Surr: 4-Bromofluorobenzene	114		70-130		%Rec	1	7/5/2018 4:06:38 PM	39039

EPA METHOD 418.1: TPH

Analyst: **CLP**

Petroleum Hydrocarbons, TR	ND	3.8	20		mg/Kg	1	7/12/2018	39126
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CYANIDE-TOTAL

Analyst: **SUB**

Cyanide	ND	0.25	0.25		mg/Kg	1	7/10/2018	R53202
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EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED

Analyst: **SUB**

Radium-226	1.311	0.262	0.262		pCi/L	1	8/1/2018	R53202
Radium-226 ±	0.374	0.262	0.262		pCi/L	1	8/1/2018	R53202
Radium-228	1.877	0.216	0.216		pCi/L	1	8/1/2018	R53202
Radium-228 ±	0.447	0.216	0.216		pCi/L	1	8/1/2018	R53202

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 20 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: Trip Blank

Project: Central OCD Landfarm Semiannual Sam

Collection Date:

Lab ID: 1807001-005

Matrix: AQUEOUS

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: AG	
Benzene	ND	0.062	1.0		µg/L	1	7/6/2018 5:28:33 PM	C52504
Toluene	ND	0.064	1.0		µg/L	1	7/6/2018 5:28:33 PM	C52504
Ethylbenzene	ND	0.093	1.0		µg/L	1	7/6/2018 5:28:33 PM	C52504
Xylenes, Total	ND	0.32	1.5		µg/L	1	7/6/2018 5:28:33 PM	C52504
Surr: 4-Bromofluorobenzene	115	0	70-130		%Rec	1	7/6/2018 5:28:33 PM	C52504
Surr: Toluene-d8	101	0	70-130		%Rec	1	7/6/2018 5:28:33 PM	C52504

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 21 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ03

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 11:20:00 AM

Lab ID: 1807001-006

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								
						Analyst: TOM		
Aroclor 1016	ND	0.054	0.099		mg/Kg	1	7/18/2018 2:33:08 PM	39114
Aroclor 1221	ND	0.099	0.099		mg/Kg	1	7/18/2018 2:33:08 PM	39114
Aroclor 1232	ND	0.099	0.099		mg/Kg	1	7/18/2018 2:33:08 PM	39114
Aroclor 1242	ND	0.099	0.099		mg/Kg	1	7/18/2018 2:33:08 PM	39114
Aroclor 1248	ND	0.099	0.099		mg/Kg	1	7/18/2018 2:33:08 PM	39114
Aroclor 1254	ND	0.099	0.099		mg/Kg	1	7/18/2018 2:33:08 PM	39114
Aroclor 1260	ND	0.047	0.099		mg/Kg	1	7/18/2018 2:33:08 PM	39114
Surr: Decachlorobiphenyl	106	0	26.3-128		%Rec	1	7/18/2018 2:33:08 PM	39114
Surr: Tetrachloro-m-xylene	118	0	20.7-151		%Rec	1	7/18/2018 2:33:08 PM	39114
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
						Analyst: TOM		
Diesel Range Organics (DRO)	540	19	99		mg/Kg	10	7/9/2018 9:35:13 PM	39058
Motor Oil Range Organics (MRO)	850	490	490		mg/Kg	10	7/9/2018 9:35:13 PM	39058
Surr: DNOP	0	0	70-130	S	%Rec	10	7/9/2018 9:35:13 PM	39058
EPA METHOD 8015D: GASOLINE RANGE								
						Analyst: NSB		
Gasoline Range Organics (GRO)	ND	1.4	4.7		mg/Kg	1	7/5/2018 8:27:07 PM	39039
Surr: BFB	90.9	0	15-316		%Rec	1	7/5/2018 8:27:07 PM	39039
EPA METHOD 300.0: ANIONS								
						Analyst: MRA		
Fluoride	6.7	0.61	6.0		mg/Kg	20	7/11/2018 5:55:37 PM	39148
Chloride	210	8.2	30		mg/Kg	20	7/11/2018 5:55:37 PM	39148
Nitrogen, Nitrate (As N)	6.5	3.3	6.0		mg/Kg	20	7/11/2018 5:55:37 PM	39148
Sulfate	1000	17	30		mg/Kg	20	7/11/2018 5:55:37 PM	39148
EPA METHOD 7471: MERCURY								
						Analyst: rde		
Mercury	0.038	0.0065	0.032		mg/Kg	1	7/6/2018 5:24:00 PM	39078
EPA METHOD 6010B: SOIL METALS								
						Analyst: ELS		
Arsenic	ND	4.5	12		mg/Kg	5	7/10/2018 9:44:14 AM	39100
Barium	330	0.11	0.50		mg/Kg	5	7/10/2018 9:44:14 AM	39100
Cadmium	ND	0.16	0.50		mg/Kg	5	7/10/2018 9:44:14 AM	39100
Chromium	15	0.20	1.5		mg/Kg	5	7/10/2018 9:44:14 AM	39100
Copper	10	1.5	1.5		mg/Kg	5	7/10/2018 9:44:14 AM	39100
Iron	19000	250	250		mg/Kg	100	7/10/2018 9:46:12 AM	39100
Lead	6.4	1.2	1.2		mg/Kg	5	7/10/2018 9:44:14 AM	39100
Manganese	400	0.50	0.50		mg/Kg	5	7/10/2018 9:44:14 AM	39100
Selenium	ND	5.0	12		mg/Kg	5	7/10/2018 9:44:14 AM	39100
Silver	ND	0.16	1.2		mg/Kg	5	7/10/2018 9:44:14 AM	39100
Uranium	ND	25	25		mg/Kg	5	7/10/2018 11:38:10 AM	39100
Zinc	64	12	12		mg/Kg	5	7/10/2018 11:02:48 AM	39100

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 22 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ03

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 11:20:00 AM

Lab ID: 1807001-006

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Acenaphthylene	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Aniline	ND	0.96	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Anthracene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Azobenzene	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Benz(a)anthracene	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Benzo(a)pyrene	ND	1.5	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Benzo(b)fluoranthene	ND	1.5	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Benzo(g,h,i)perylene	ND	1.6	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Benzo(k)fluoranthene	ND	1.6	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Benzoic acid	ND	1.4	5.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Benzyl alcohol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Bis(2-chloroethoxy)methane	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Bis(2-chloroethyl)ether	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Bis(2-chloroisopropyl)ether	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Bis(2-ethylhexyl)phthalate	ND	2.7	5.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
4-Bromophenyl phenyl ether	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Butyl benzyl phthalate	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Carbazole	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
4-Chloro-3-methylphenol	ND	1.3	5.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
4-Chloroaniline	ND	1.1	5.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
2-Chloronaphthalene	ND	1.1	2.5	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
2-Chlorophenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
4-Chlorophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Chrysene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Di-n-butyl phthalate	ND	2.7	4.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Di-n-octyl phthalate	ND	1.2	4.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Dibenz(a,h)anthracene	ND	1.6	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Dibenzofuran	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
1,2-Dichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
1,3-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
1,4-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
3,3'-Dichlorobenzidine	ND	0.98	2.5	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Diethyl phthalate	ND	1.5	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Dimethyl phthalate	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
2,4-Dichlorophenol	ND	1.2	4.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
2,4-Dimethylphenol	ND	0.93	3.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
4,6-Dinitro-2-methylphenol	ND	0.91	4.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
2,4-Dinitrophenol	ND	0.63	5.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 23 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ03

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 11:20:00 AM

Lab ID: 1807001-006

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	1.0	5.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
2,6-Dinitrotoluene	ND	1.2	5.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Fluoranthene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Fluorene	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Hexachlorobenzene	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Hexachlorobutadiene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Hexachlorocyclopentadiene	ND	0.98	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Hexachloroethane	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Indeno(1,2,3-cd)pyrene	ND	1.4	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Isophorone	ND	1.3	4.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
1-Methylnaphthalene	ND	1.4	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
2-Methylnaphthalene	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
2-Methylphenol	ND	1.4	4.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
3+4-Methylphenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
N-Nitrosodi-n-propylamine	ND	1.5	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Naphthalene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
2-Nitroaniline	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
3-Nitroaniline	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
4-Nitroaniline	ND	0.95	4.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Nitrobenzene	ND	1.1	4.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
2-Nitrophenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
4-Nitrophenol	ND	1.5	2.5	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Pentachlorophenol	ND	1.0	4.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Phenanthrene	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Phenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Pyrene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Pyridine	ND	1.2	4.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
1,2,4-Trichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
2,4,5-Trichlorophenol	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
2,4,6-Trichlorophenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 7:43:35 PM	39166
Surr: 2-Fluorophenol	0		41.1-115	SD	%Rec	1	7/23/2018 7:43:35 PM	39166
Surr: Phenol-d5	0		46.8-124	SD	%Rec	1	7/23/2018 7:43:35 PM	39166
Surr: 2,4,6-Tribromophenol	0		49.3-130	SD	%Rec	1	7/23/2018 7:43:35 PM	39166
Surr: Nitrobenzene-d5	0		44.6-124	SD	%Rec	1	7/23/2018 7:43:35 PM	39166
Surr: 2-Fluorobiphenyl	0		46.1-123	SD	%Rec	1	7/23/2018 7:43:35 PM	39166
Surr: 4-Terphenyl-d14	0		29.8-107	SD	%Rec	1	7/23/2018 7:43:35 PM	39166

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0046	0.023		mg/Kg	1	7/5/2018 4:36:11 PM	39039
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 24 of 71
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ03

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 11:20:00 AM

Lab ID: 1807001-006

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0038	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Ethylbenzene	ND	0.0033	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Methyl tert-butyl ether (MTBE)	ND	0.0072	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,2,4-Trimethylbenzene	ND	0.0041	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,3,5-Trimethylbenzene	ND	0.0030	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,2-Dichloroethane (EDC)	ND	0.0049	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,2-Dibromoethane (EDB)	ND	0.0060	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Naphthalene	ND	0.0047	0.094		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1-Methylnaphthalene	ND	0.0033	0.19		mg/Kg	1	7/5/2018 4:36:11 PM	39039
2-Methylnaphthalene	ND	0.0038	0.19		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Acetone	ND	0.051	0.70		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Bromobenzene	ND	0.0034	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Bromodichloromethane	ND	0.0061	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Bromoform	ND	0.011	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Bromomethane	ND	0.0081	0.14		mg/Kg	1	7/5/2018 4:36:11 PM	39039
2-Butanone	0.057	0.028	0.47	J	mg/Kg	1	7/5/2018 4:36:11 PM	39039
Carbon disulfide	ND	0.0056	0.47		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Carbon tetrachloride	ND	0.0046	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Chlorobenzene	ND	0.0028	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Chloroethane	ND	0.015	0.094		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Chloroform	ND	0.0028	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Chloromethane	ND	0.0098	0.14		mg/Kg	1	7/5/2018 4:36:11 PM	39039
2-Chlorotoluene	ND	0.0036	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
4-Chlorotoluene	ND	0.0042	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
cis-1,2-DCE	ND	0.0060	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
cis-1,3-Dichloropropene	ND	0.0035	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,2-Dibromo-3-chloropropane	ND	0.0064	0.094		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Dibromochloromethane	ND	0.0039	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Dibromomethane	ND	0.0023	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,2-Dichlorobenzene	ND	0.0024	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,3-Dichlorobenzene	ND	0.0041	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,4-Dichlorobenzene	ND	0.0052	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Dichlorodifluoromethane	ND	0.019	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,1-Dichloroethane	ND	0.019	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,1-Dichloroethene	ND	0.019	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,2-Dichloropropane	ND	0.0029	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,3-Dichloropropane	ND	0.012	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
2,2-Dichloropropane	ND	0.0053	0.094		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,1-Dichloropropene	ND	0.0053	0.094		mg/Kg	1	7/5/2018 4:36:11 PM	39039

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 25 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ03

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 11:20:00 AM

Lab ID: 1807001-006

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Hexachlorobutadiene	ND	0.012	0.094		mg/Kg	1	7/5/2018 4:36:11 PM	39039
2-Hexanone	ND	0.0091	0.47		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Isopropylbenzene	ND	0.0031	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
4-Isopropyltoluene	ND	0.0036	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
4-Methyl-2-pentanone	ND	0.010	0.47		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Methylene chloride	ND	0.019	0.14		mg/Kg	1	7/5/2018 4:36:11 PM	39039
n-Butylbenzene	ND	0.0042	0.14		mg/Kg	1	7/5/2018 4:36:11 PM	39039
n-Propylbenzene	ND	0.0029	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
sec-Butylbenzene	ND	0.0048	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Styrene	ND	0.0081	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
tert-Butylbenzene	ND	0.0038	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,1,1,2-Tetrachloroethane	ND	0.0053	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,1,2,2-Tetrachloroethane	ND	0.013	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Tetrachloroethene (PCE)	ND	0.0037	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
trans-1,2-DCE	ND	0.019	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
trans-1,3-Dichloropropene	ND	0.0056	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,2,3-Trichlorobenzene	ND	0.0043	0.094		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,2,4-Trichlorobenzene	ND	0.0047	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,1,1-Trichloroethane	ND	0.0061	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,1,2-Trichloroethane	ND	0.0050	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Trichloroethene (TCE)	ND	0.0057	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Trichlorofluoromethane	ND	0.0070	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
1,2,3-Trichloropropane	ND	0.023	0.094		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Vinyl chloride	ND	0.0039	0.047		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Xylenes, Total	ND	0.015	0.094		mg/Kg	1	7/5/2018 4:36:11 PM	39039
Surr: Dibromofluoromethane	103		70-130		%Rec	1	7/5/2018 4:36:11 PM	39039
Surr: 1,2-Dichloroethane-d4	115		70-130		%Rec	1	7/5/2018 4:36:11 PM	39039
Surr: Toluene-d8	96.6		70-130		%Rec	1	7/5/2018 4:36:11 PM	39039
Surr: 4-Bromofluorobenzene	114		70-130		%Rec	1	7/5/2018 4:36:11 PM	39039
EPA METHOD 418.1: TPH								Analyst: CLP
Petroleum Hydrocarbons, TR	1300	37	190		mg/Kg	10	7/12/2018	39126
CYANIDE-TOTAL								Analyst: SUB
Cyanide	ND	0.25	0.25		mg/Kg	1	7/10/2018	R53202
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED								Analyst: SUB
Radium-226	1.249	0.152	0.152		pCi/L	1	8/1/2018	R53202
Radium-226 ±	0.264	0.152	0.152		pCi/L	1	8/1/2018	R53202
Radium-228	1.027	0.262	0.262		pCi/L	1	8/1/2018	R53202
Radium-228 ±	0.336	0.262	0.262		pCi/L	1	8/1/2018	R53202

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 26 of 71
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ03

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 11:30:00 AM

Lab ID: 1807001-007

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								Analyst: TOM
Aroclor 1016	ND	0.011	0.019		mg/Kg	1	7/18/2018 7:46:20 AM	39114
Aroclor 1221	ND	0.019	0.019		mg/Kg	1	7/18/2018 7:46:20 AM	39114
Aroclor 1232	ND	0.019	0.019		mg/Kg	1	7/18/2018 7:46:20 AM	39114
Aroclor 1242	ND	0.019	0.019		mg/Kg	1	7/18/2018 7:46:20 AM	39114
Aroclor 1248	ND	0.019	0.019		mg/Kg	1	7/18/2018 7:46:20 AM	39114
Aroclor 1254	ND	0.019	0.019		mg/Kg	1	7/18/2018 7:46:20 AM	39114
Aroclor 1260	ND	0.0091	0.019		mg/Kg	1	7/18/2018 7:46:20 AM	39114
Surr: Decachlorobiphenyl	88.8	0	26.3-128		%Rec	1	7/18/2018 7:46:20 AM	39114
Surr: Tetrachloro-m-xylene	82.8	0	20.7-151		%Rec	1	7/18/2018 7:46:20 AM	39114
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	12	1.9	10		mg/Kg	1	7/9/2018 10:24:31 PM	39058
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	7/9/2018 10:24:31 PM	39058
Surr: DNOP	104	0	70-130		%Rec	1	7/9/2018 10:24:31 PM	39058
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	5.0		mg/Kg	1	7/5/2018 8:50:20 PM	39039
Surr: BFB	91.1	0	15-316		%Rec	1	7/5/2018 8:50:20 PM	39039
EPA METHOD 300.0: ANIONS								Analyst: MRA
Fluoride	4.7	0.030	0.30		mg/Kg	1	7/11/2018 6:08:02 PM	39148
Chloride	190	8.2	30		mg/Kg	20	7/11/2018 6:20:27 PM	39148
Nitrogen, Nitrate (As N)	5.8	0.17	0.30		mg/Kg	1	7/11/2018 6:08:02 PM	39148
Sulfate	790	17	30		mg/Kg	20	7/11/2018 6:20:27 PM	39148
EPA METHOD 7471: MERCURY								Analyst: rde
Mercury	0.010	0.0066	0.033	J	mg/Kg	1	7/6/2018 5:29:18 PM	39078
EPA METHOD 6010B: SOIL METALS								Analyst: ELS
Arsenic	ND	4.5	13		mg/Kg	5	7/10/2018 9:53:55 AM	39100
Barium	350	0.11	0.50		mg/Kg	5	7/10/2018 9:53:55 AM	39100
Cadmium	ND	0.16	0.50		mg/Kg	5	7/10/2018 9:53:55 AM	39100
Chromium	15	0.21	1.5		mg/Kg	5	7/10/2018 9:53:55 AM	39100
Copper	3.2	1.5	1.5		mg/Kg	5	7/10/2018 9:53:55 AM	39100
Iron	18000	250	250		mg/Kg	100	7/10/2018 9:55:52 AM	39100
Lead	3.0	1.2	1.3		mg/Kg	5	7/10/2018 9:53:55 AM	39100
Manganese	410	0.50	0.50		mg/Kg	5	7/10/2018 9:53:55 AM	39100
Selenium	ND	5.0	13		mg/Kg	5	7/10/2018 9:53:55 AM	39100
Silver	ND	0.16	1.3		mg/Kg	5	7/10/2018 9:53:55 AM	39100
Uranium	ND	25	25		mg/Kg	5	7/10/2018 11:39:33 AM	39100
Zinc	27	13	13		mg/Kg	5	7/10/2018 11:04:23 AM	39100

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 27 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ03

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 11:30:00 AM

Lab ID: 1807001-007

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.10	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Acenaphthylene	ND	0.093	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Aniline	ND	0.089	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Anthracene	ND	0.099	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Azobenzene	ND	0.12	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Benz(a)anthracene	ND	0.13	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Benzo(a)pyrene	ND	0.14	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Benzo(b)fluoranthene	ND	0.14	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Benzo(g,h,i)perylene	ND	0.15	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Benzo(k)fluoranthene	ND	0.15	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Benzoic acid	ND	0.13	0.46		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Benzyl alcohol	ND	0.12	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Bis(2-chloroethoxy)methane	ND	0.10	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Bis(2-chloroethyl)ether	ND	0.11	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Bis(2-chloroisopropyl)ether	ND	0.11	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Bis(2-ethylhexyl)phthalate	ND	0.26	0.46		mg/Kg	1	7/16/2018 9:19:14 PM	39166
4-Bromophenyl phenyl ether	ND	0.12	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Butyl benzyl phthalate	ND	0.12	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Carbazole	ND	0.11	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
4-Chloro-3-methylphenol	ND	0.13	0.46		mg/Kg	1	7/16/2018 9:19:14 PM	39166
4-Chloroaniline	ND	0.10	0.46		mg/Kg	1	7/16/2018 9:19:14 PM	39166
2-Chloronaphthalene	ND	0.10	0.23		mg/Kg	1	7/16/2018 9:19:14 PM	39166
2-Chlorophenol	ND	0.12	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
4-Chlorophenyl phenyl ether	ND	0.097	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Chrysene	ND	0.099	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Di-n-butyl phthalate	0.33	0.25	0.37	J	mg/Kg	1	7/16/2018 9:19:14 PM	39166
Di-n-octyl phthalate	ND	0.11	0.37		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Dibenz(a,h)anthracene	ND	0.15	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Dibenzofuran	ND	0.10	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
1,2-Dichlorobenzene	ND	0.11	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
1,3-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
1,4-Dichlorobenzene	ND	0.10	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
3,3'-Dichlorobenzidine	ND	0.092	0.23		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Diethyl phthalate	0.24	0.14	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Dimethyl phthalate	ND	0.094	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
2,4-Dichlorophenol	ND	0.12	0.37		mg/Kg	1	7/16/2018 9:19:14 PM	39166
2,4-Dimethylphenol	ND	0.087	0.28		mg/Kg	1	7/16/2018 9:19:14 PM	39166
4,6-Dinitro-2-methylphenol	ND	0.085	0.37		mg/Kg	1	7/16/2018 9:19:14 PM	39166
2,4-Dinitrophenol	ND	0.059	0.46		mg/Kg	1	7/16/2018 9:19:14 PM	39166

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 28 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ03

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 11:30:00 AM

Lab ID: 1807001-007

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.094	0.46		mg/Kg	1	7/16/2018 9:19:14 PM	39166
2,6-Dinitrotoluene	ND	0.12	0.46		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Fluoranthene	ND	0.10	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Fluorene	ND	0.098	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Hexachlorobenzene	ND	0.11	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Hexachlorobutadiene	ND	0.098	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Hexachlorocyclopentadiene	ND	0.092	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Hexachloroethane	ND	0.11	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Indeno(1,2,3-cd)pyrene	ND	0.13	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Isophorone	ND	0.12	0.37		mg/Kg	1	7/16/2018 9:19:14 PM	39166
1-Methylnaphthalene	ND	0.13	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
2-Methylnaphthalene	ND	0.12	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
2-Methylphenol	ND	0.13	0.37		mg/Kg	1	7/16/2018 9:19:14 PM	39166
3+4-Methylphenol	ND	0.12	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
N-Nitrosodi-n-propylamine	ND	0.14	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
N-Nitrosodiphenylamine	ND	0.094	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Naphthalene	ND	0.11	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
2-Nitroaniline	ND	0.12	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
3-Nitroaniline	ND	0.099	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
4-Nitroaniline	ND	0.089	0.37		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Nitrobenzene	ND	0.11	0.37		mg/Kg	1	7/16/2018 9:19:14 PM	39166
2-Nitrophenol	ND	0.12	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
4-Nitrophenol	ND	0.14	0.23		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Pentachlorophenol	ND	0.093	0.37		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Phenanthrene	ND	0.094	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Phenol	ND	0.12	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Pyrene	ND	0.10	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Pyridine	ND	0.11	0.37		mg/Kg	1	7/16/2018 9:19:14 PM	39166
1,2,4-Trichlorobenzene	ND	0.11	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
2,4,5-Trichlorophenol	ND	0.11	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
2,4,6-Trichlorophenol	ND	0.12	0.19		mg/Kg	1	7/16/2018 9:19:14 PM	39166
Surr: 2-Fluorophenol	61.7		41.1-115		%Rec	1	7/16/2018 9:19:14 PM	39166
Surr: Phenol-d5	75.1		46.8-124		%Rec	1	7/16/2018 9:19:14 PM	39166
Surr: 2,4,6-Tribromophenol	82.8		49.3-130		%Rec	1	7/16/2018 9:19:14 PM	39166
Surr: Nitrobenzene-d5	80.0		44.6-124		%Rec	1	7/16/2018 9:19:14 PM	39166
Surr: 2-Fluorobiphenyl	79.8		46.1-123		%Rec	1	7/16/2018 9:19:14 PM	39166
Surr: 4-Terphenyl-d14	92.9		29.8-107		%Rec	1	7/16/2018 9:19:14 PM	39166

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0049	0.025		mg/Kg	1	7/5/2018 5:05:44 PM	39039
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 29 of 71
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ03

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 11:30:00 AM

Lab ID: 1807001-007

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0040	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Ethylbenzene	ND	0.0035	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Methyl tert-butyl ether (MTBE)	ND	0.0076	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,2,4-Trimethylbenzene	ND	0.0043	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,3,5-Trimethylbenzene	ND	0.0031	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,2-Dichloroethane (EDC)	ND	0.0052	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,2-Dibromoethane (EDB)	ND	0.0063	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Naphthalene	ND	0.0050	0.099		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1-Methylnaphthalene	ND	0.0035	0.20		mg/Kg	1	7/5/2018 5:05:44 PM	39039
2-Methylnaphthalene	ND	0.0040	0.20		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Acetone	ND	0.054	0.74		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Bromobenzene	ND	0.0036	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Bromodichloromethane	ND	0.0065	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Bromoform	ND	0.012	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Bromomethane	ND	0.0086	0.15		mg/Kg	1	7/5/2018 5:05:44 PM	39039
2-Butanone	0.065	0.029	0.50	J	mg/Kg	1	7/5/2018 5:05:44 PM	39039
Carbon disulfide	ND	0.0059	0.50		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Carbon tetrachloride	ND	0.0049	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Chlorobenzene	ND	0.0030	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Chloroethane	ND	0.016	0.099		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Chloroform	ND	0.0030	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Chloromethane	ND	0.010	0.15		mg/Kg	1	7/5/2018 5:05:44 PM	39039
2-Chlorotoluene	ND	0.0039	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
4-Chlorotoluene	ND	0.0045	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
cis-1,2-DCE	ND	0.0063	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
cis-1,3-Dichloropropene	ND	0.0038	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,2-Dibromo-3-chloropropane	ND	0.0068	0.099		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Dibromochloromethane	ND	0.0042	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Dibromomethane	ND	0.0024	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,2-Dichlorobenzene	ND	0.0025	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,3-Dichlorobenzene	ND	0.0044	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,4-Dichlorobenzene	ND	0.0055	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Dichlorodifluoromethane	ND	0.020	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,1-Dichloroethane	ND	0.020	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,2-Dichloropropane	ND	0.0031	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,3-Dichloropropane	ND	0.012	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
2,2-Dichloropropane	ND	0.0056	0.099		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,1-Dichloropropene	ND	0.0056	0.099		mg/Kg	1	7/5/2018 5:05:44 PM	39039

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 30 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ03

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 11:30:00 AM

Lab ID: 1807001-007

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.012	0.099		mg/Kg	1	7/5/2018 5:05:44 PM	39039
2-Hexanone	ND	0.0097	0.50		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Isopropylbenzene	ND	0.0033	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
4-Isopropyltoluene	ND	0.0038	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
4-Methyl-2-pentanone	ND	0.011	0.50		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Methylene chloride	ND	0.020	0.15		mg/Kg	1	7/5/2018 5:05:44 PM	39039
n-Butylbenzene	ND	0.0044	0.15		mg/Kg	1	7/5/2018 5:05:44 PM	39039
n-Propylbenzene	ND	0.0031	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
sec-Butylbenzene	ND	0.0051	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Styrene	ND	0.0086	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
tert-Butylbenzene	ND	0.0040	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,1,1,2-Tetrachloroethane	ND	0.0056	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,1,2,2-Tetrachloroethane	ND	0.014	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
trans-1,2-DCE	ND	0.020	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
trans-1,3-Dichloropropene	ND	0.0059	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,2,3-Trichlorobenzene	ND	0.0045	0.099		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,2,4-Trichlorobenzene	ND	0.0050	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,1,1-Trichloroethane	ND	0.0064	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,1,2-Trichloroethane	ND	0.0053	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Trichloroethene (TCE)	ND	0.0060	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Trichlorofluoromethane	ND	0.0075	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
1,2,3-Trichloropropane	ND	0.025	0.099		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Vinyl chloride	ND	0.0041	0.050		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Xylenes, Total	ND	0.015	0.099		mg/Kg	1	7/5/2018 5:05:44 PM	39039
Surr: Dibromofluoromethane	106		70-130		%Rec	1	7/5/2018 5:05:44 PM	39039
Surr: 1,2-Dichloroethane-d4	111		70-130		%Rec	1	7/5/2018 5:05:44 PM	39039
Surr: Toluene-d8	96.2		70-130		%Rec	1	7/5/2018 5:05:44 PM	39039
Surr: 4-Bromofluorobenzene	112		70-130		%Rec	1	7/5/2018 5:05:44 PM	39039

EPA METHOD 418.1: TPH

Analyst: **CLP**

Petroleum Hydrocarbons, TR	52	3.7	20	mg/Kg	1	7/12/2018	39126
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CYANIDE-TOTAL

Analyst: **SUB**

Cyanide	ND	0.25	0.25	mg/Kg	1	7/10/2018	R53202
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EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED

Analyst: **SUB**

Radium-226	1.324	0.165	0.165	pCi/L	1	8/1/2018	R53202
Radium-226 ±	0.327	0.165	0.165	pCi/L	1	8/1/2018	R53202
Radium-228	1.185	0.348	0.348	pCi/L	1	8/1/2018	R53202
Radium-228 ±	0.427	0.348	0.348	pCi/L	1	8/1/2018	R53202

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 31 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ04

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 12:00:00 PM

Lab ID: 1807001-008

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								Analyst: TOM
Aroclor 1016	ND	0.052	0.096		mg/Kg	1	7/18/2018 3:39:13 PM	39114
Aroclor 1221	ND	0.096	0.096		mg/Kg	1	7/18/2018 3:39:13 PM	39114
Aroclor 1232	ND	0.096	0.096		mg/Kg	1	7/18/2018 3:39:13 PM	39114
Aroclor 1242	ND	0.096	0.096		mg/Kg	1	7/18/2018 3:39:13 PM	39114
Aroclor 1248	ND	0.096	0.096		mg/Kg	1	7/18/2018 3:39:13 PM	39114
Aroclor 1254	ND	0.096	0.096		mg/Kg	1	7/18/2018 3:39:13 PM	39114
Aroclor 1260	ND	0.045	0.096		mg/Kg	1	7/18/2018 3:39:13 PM	39114
Surr: Decachlorobiphenyl	102	0	26.3-128		%Rec	1	7/18/2018 3:39:13 PM	39114
Surr: Tetrachloro-m-xylene	116	0	20.7-151		%Rec	1	7/18/2018 3:39:13 PM	39114
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	2400	19	99		mg/Kg	10	7/9/2018 11:13:51 PM	39058
Motor Oil Range Organics (MRO)	1700	490	490		mg/Kg	10	7/9/2018 11:13:51 PM	39058
Surr: DNOP	0	0	70-130	S	%Rec	10	7/9/2018 11:13:51 PM	39058
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.9		mg/Kg	1	7/5/2018 9:13:29 PM	39039
Surr: BFB	84.1	0	15-316		%Rec	1	7/5/2018 9:13:29 PM	39039
EPA METHOD 300.0: ANIONS								Analyst: MRA
Fluoride	13	0.15	1.5		mg/Kg	5	7/13/2018 10:41:30 AM	39148
Chloride	850	8.2	30		mg/Kg	20	7/11/2018 7:10:07 PM	39148
Nitrogen, Nitrate (As N)	47	0.83	1.5		mg/Kg	5	7/11/2018 6:57:42 PM	39148
Sulfate	5000	42	75		mg/Kg	50	7/13/2018 10:53:54 AM	39148
EPA METHOD 7471: MERCURY								Analyst: rde
Mercury	0.41	0.033	0.16		mg/Kg	5	7/6/2018 5:38:16 PM	39078
EPA METHOD 6010B: SOIL METALS								Analyst: ELS
Arsenic	ND	8.9	25		mg/Kg	10	7/10/2018 10:09:32 AM	39100
Barium	370	0.22	1.0		mg/Kg	10	7/10/2018 10:09:32 AM	39100
Cadmium	ND	0.31	1.0		mg/Kg	10	7/10/2018 10:09:32 AM	39100
Chromium	26	0.41	3.0		mg/Kg	10	7/10/2018 10:09:32 AM	39100
Copper	8.5	3.0	3.0		mg/Kg	10	7/10/2018 10:09:32 AM	39100
Iron	19000	250	250		mg/Kg	100	7/10/2018 9:59:56 AM	39100
Lead	160	2.4	2.5		mg/Kg	10	7/10/2018 10:09:32 AM	39100
Manganese	410	1.0	1.0		mg/Kg	10	7/10/2018 10:09:32 AM	39100
Selenium	ND	10	25		mg/Kg	10	7/10/2018 10:09:32 AM	39100
Silver	ND	0.33	2.5		mg/Kg	10	7/10/2018 10:09:32 AM	39100
Uranium	ND	25	25		mg/Kg	5	7/10/2018 11:40:55 AM	39100
Zinc	130	12	12		mg/Kg	5	7/10/2018 11:05:58 AM	39100

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 32 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ04

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 12:00:00 PM

Lab ID: 1807001-008

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Acenaphthylene	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Aniline	ND	0.96	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Anthracene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Azobenzene	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Benz(a)anthracene	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Benzo(a)pyrene	ND	1.5	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Benzo(b)fluoranthene	ND	1.5	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Benzo(g,h,i)perylene	ND	1.6	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Benzo(k)fluoranthene	ND	1.6	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Benzoic acid	ND	1.4	5.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Benzyl alcohol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Bis(2-chloroethoxy)methane	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Bis(2-chloroethyl)ether	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Bis(2-chloroisopropyl)ether	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Bis(2-ethylhexyl)phthalate	ND	2.7	5.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
4-Bromophenyl phenyl ether	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Butyl benzyl phthalate	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Carbazole	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
4-Chloro-3-methylphenol	ND	1.3	5.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
4-Chloroaniline	ND	1.1	5.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
2-Chloronaphthalene	ND	1.1	2.5	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
2-Chlorophenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
4-Chlorophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Chrysene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Di-n-butyl phthalate	ND	2.7	4.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Di-n-octyl phthalate	ND	1.2	4.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Dibenz(a,h)anthracene	ND	1.6	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Dibenzofuran	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
1,2-Dichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
1,3-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
1,4-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
3,3'-Dichlorobenzidine	ND	0.98	2.5	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Diethyl phthalate	ND	1.5	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Dimethyl phthalate	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
2,4-Dichlorophenol	ND	1.2	4.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
2,4-Dimethylphenol	ND	0.93	3.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
4,6-Dinitro-2-methylphenol	ND	0.91	4.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
2,4-Dinitrophenol	ND	0.63	5.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 33 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ04

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 12:00:00 PM

Lab ID: 1807001-008

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 8270C: SEMIVOLATILES

Analyst: **DAM**

2,4-Dinitrotoluene	ND	1.0	5.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
2,6-Dinitrotoluene	ND	1.2	5.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Fluoranthene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Fluorene	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Hexachlorobenzene	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Hexachlorobutadiene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Hexachlorocyclopentadiene	ND	0.98	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Hexachloroethane	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Indeno(1,2,3-cd)pyrene	ND	1.4	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Isophorone	ND	1.3	4.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
1-Methylnaphthalene	ND	1.4	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
2-Methylnaphthalene	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
2-Methylphenol	ND	1.4	4.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
3+4-Methylphenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
N-Nitrosodi-n-propylamine	ND	1.5	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Naphthalene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
2-Nitroaniline	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
3-Nitroaniline	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
4-Nitroaniline	ND	0.95	4.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Nitrobenzene	ND	1.1	4.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
2-Nitrophenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
4-Nitrophenol	ND	1.5	2.5	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Pentachlorophenol	ND	1.0	4.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Phenanthrene	2.3	1.0	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Phenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Pyrene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Pyridine	ND	1.2	4.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
1,2,4-Trichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
2,4,5-Trichlorophenol	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
2,4,6-Trichlorophenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:13:31 PM	39166
Surr: 2-Fluorophenol	0		41.1-115	SD	%Rec	1	7/23/2018 8:13:31 PM	39166
Surr: Phenol-d5	0		46.8-124	SD	%Rec	1	7/23/2018 8:13:31 PM	39166
Surr: 2,4,6-Tribromophenol	0		49.3-130	SD	%Rec	1	7/23/2018 8:13:31 PM	39166
Surr: Nitrobenzene-d5	0		44.6-124	SD	%Rec	1	7/23/2018 8:13:31 PM	39166
Surr: 2-Fluorobiphenyl	0		46.1-123	SD	%Rec	1	7/23/2018 8:13:31 PM	39166
Surr: 4-Terphenyl-d14	0		29.8-107	SD	%Rec	1	7/23/2018 8:13:31 PM	39166

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0048	0.024		mg/Kg	1	7/5/2018 5:35:18 PM	39039
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 34 of 71
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ04

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 12:00:00 PM

Lab ID: 1807001-008

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0039	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Ethylbenzene	ND	0.0034	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Methyl tert-butyl ether (MTBE)	ND	0.0075	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,2,4-Trimethylbenzene	ND	0.0042	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,3,5-Trimethylbenzene	ND	0.0031	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,2-Dichloroethane (EDC)	ND	0.0051	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,2-Dibromoethane (EDB)	ND	0.0062	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Naphthalene	ND	0.0049	0.098		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1-Methylnaphthalene	0.081	0.0035	0.20	J	mg/Kg	1	7/5/2018 5:35:18 PM	39039
2-Methylnaphthalene	0.034	0.0040	0.20	J	mg/Kg	1	7/5/2018 5:35:18 PM	39039
Acetone	ND	0.053	0.73		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Bromobenzene	ND	0.0036	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Bromodichloromethane	ND	0.0063	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Bromoform	ND	0.012	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Bromomethane	ND	0.0084	0.15		mg/Kg	1	7/5/2018 5:35:18 PM	39039
2-Butanone	0.064	0.029	0.49	J	mg/Kg	1	7/5/2018 5:35:18 PM	39039
Carbon disulfide	ND	0.0058	0.49		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Carbon tetrachloride	ND	0.0048	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Chlorobenzene	ND	0.0029	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Chloroethane	ND	0.016	0.098		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Chloroform	ND	0.0029	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Chloromethane	ND	0.010	0.15		mg/Kg	1	7/5/2018 5:35:18 PM	39039
2-Chlorotoluene	ND	0.0038	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
4-Chlorotoluene	ND	0.0044	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
cis-1,2-DCE	ND	0.0062	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
cis-1,3-Dichloropropene	ND	0.0037	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,2-Dibromo-3-chloropropane	ND	0.0067	0.098		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Dibromochloromethane	ND	0.0041	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Dibromomethane	ND	0.0024	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,2-Dichlorobenzene	ND	0.0025	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,3-Dichlorobenzene	ND	0.0043	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,4-Dichlorobenzene	ND	0.0054	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Dichlorodifluoromethane	ND	0.020	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,1-Dichloroethane	ND	0.020	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,1-Dichloroethene	ND	0.020	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,2-Dichloropropane	ND	0.0030	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,3-Dichloropropane	ND	0.012	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
2,2-Dichloropropane	ND	0.0055	0.098		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,1-Dichloropropene	ND	0.0055	0.098		mg/Kg	1	7/5/2018 5:35:18 PM	39039

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 35 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF TZ04

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 12:00:00 PM

Lab ID: 1807001-008

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.012	0.098		mg/Kg	1	7/5/2018 5:35:18 PM	39039
2-Hexanone	ND	0.0095	0.49		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Isopropylbenzene	ND	0.0033	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
4-Isopropyltoluene	ND	0.0037	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
4-Methyl-2-pentanone	ND	0.010	0.49		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Methylene chloride	ND	0.020	0.15		mg/Kg	1	7/5/2018 5:35:18 PM	39039
n-Butylbenzene	ND	0.0044	0.15		mg/Kg	1	7/5/2018 5:35:18 PM	39039
n-Propylbenzene	ND	0.0030	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
sec-Butylbenzene	ND	0.0050	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Styrene	ND	0.0085	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
tert-Butylbenzene	ND	0.0039	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,1,1,2-Tetrachloroethane	ND	0.0055	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,1,2,2-Tetrachloroethane	ND	0.014	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Tetrachloroethene (PCE)	ND	0.0039	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
trans-1,2-DCE	ND	0.020	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
trans-1,3-Dichloropropene	ND	0.0058	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,2,3-Trichlorobenzene	ND	0.0045	0.098		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,2,4-Trichlorobenzene	ND	0.0049	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,1,1-Trichloroethane	ND	0.0063	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,1,2-Trichloroethane	ND	0.0052	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Trichloroethene (TCE)	ND	0.0059	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Trichlorofluoromethane	ND	0.0073	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
1,2,3-Trichloropropane	ND	0.024	0.098		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Vinyl chloride	ND	0.0041	0.049		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Xylenes, Total	ND	0.015	0.098		mg/Kg	1	7/5/2018 5:35:18 PM	39039
Surr: Dibromofluoromethane	102		70-130		%Rec	1	7/5/2018 5:35:18 PM	39039
Surr: 1,2-Dichloroethane-d4	113		70-130		%Rec	1	7/5/2018 5:35:18 PM	39039
Surr: Toluene-d8	96.8		70-130		%Rec	1	7/5/2018 5:35:18 PM	39039
Surr: 4-Bromofluorobenzene	111		70-130		%Rec	1	7/5/2018 5:35:18 PM	39039

EPA METHOD 418.1: TPH

Analyst: **CLP**

Petroleum Hydrocarbons, TR	2700	37	200	mg/Kg	10	7/12/2018	39126
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CYANIDE-TOTAL

Analyst: **SUB**

Cyanide	0.71	0.25	0.25	mg/Kg	1	7/10/2018	R53202
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EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED

Analyst: **SUB**

Radium-226	1.226	0.192	0.192	pCi/L	1	8/1/2018	R53202
Radium-226 ±	0.247	0.192	0.192	pCi/L	1	8/1/2018	R53202
Radium-228	1.65	0.307	0.307	pCi/L	1	8/1/2018	R53202
Radium-228 ±	0.364	0.307	0.307	pCi/L	1	8/1/2018	R53202

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 36 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ04

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 12:10:00 PM

Lab ID: 1807001-009

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								Analyst: TOM
Aroclor 1016	ND	0.011	0.019		mg/Kg	1	7/18/2018 11:05:43 AM	39114
Aroclor 1221	ND	0.019	0.019		mg/Kg	1	7/18/2018 11:05:43 AM	39114
Aroclor 1232	ND	0.019	0.019		mg/Kg	1	7/18/2018 11:05:43 AM	39114
Aroclor 1242	ND	0.019	0.019		mg/Kg	1	7/18/2018 11:05:43 AM	39114
Aroclor 1248	ND	0.019	0.019		mg/Kg	1	7/18/2018 11:05:43 AM	39114
Aroclor 1254	ND	0.019	0.019		mg/Kg	1	7/18/2018 11:05:43 AM	39114
Aroclor 1260	ND	0.0091	0.019		mg/Kg	1	7/18/2018 11:05:43 AM	39114
Surr: Decachlorobiphenyl	92.0	0	26.3-128		%Rec	1	7/18/2018 11:05:43 AM	39114
Surr: Tetrachloro-m-xylene	77.6	0	20.7-151		%Rec	1	7/18/2018 11:05:43 AM	39114
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	4.9	1.9	9.9	J	mg/Kg	1	7/6/2018 7:41:53 PM	39058
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	7/6/2018 7:41:53 PM	39058
Surr: DNOP	107	0	70-130		%Rec	1	7/6/2018 7:41:53 PM	39058
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.3	4.6		mg/Kg	1	7/5/2018 9:36:40 PM	39039
Surr: BFB	88.6	0	15-316		%Rec	1	7/5/2018 9:36:40 PM	39039
EPA METHOD 300.0: ANIONS								Analyst: MRA
Fluoride	2.4	0.030	0.30		mg/Kg	1	7/13/2018 11:06:19 AM	39148
Chloride	180	8.2	30		mg/Kg	20	7/11/2018 7:34:56 PM	39148
Nitrogen, Nitrate (As N)	12	0.17	0.30		mg/Kg	1	7/11/2018 7:22:31 PM	39148
Sulfate	480	17	30		mg/Kg	20	7/11/2018 7:34:56 PM	39148
EPA METHOD 7471: MERCURY								Analyst: rde
Mercury	ND	0.0067	0.033		mg/Kg	1	7/6/2018 5:32:57 PM	39078
EPA METHOD 6010B: SOIL METALS								Analyst: ELS
Arsenic	ND	4.5	12		mg/Kg	5	7/10/2018 10:01:54 AM	39100
Barium	250	0.11	0.50		mg/Kg	5	7/10/2018 10:01:54 AM	39100
Cadmium	ND	0.16	0.50		mg/Kg	5	7/10/2018 10:01:54 AM	39100
Chromium	14	0.20	1.5		mg/Kg	5	7/10/2018 10:01:54 AM	39100
Copper	1.9	1.5	1.5		mg/Kg	5	7/10/2018 10:01:54 AM	39100
Iron	18000	250	250		mg/Kg	100	7/10/2018 10:03:54 AM	39100
Lead	ND	1.2	1.2		mg/Kg	5	7/10/2018 10:01:54 AM	39100
Manganese	410	0.50	0.50		mg/Kg	5	7/10/2018 10:01:54 AM	39100
Selenium	ND	5.0	12		mg/Kg	5	7/10/2018 10:01:54 AM	39100
Silver	ND	0.16	1.2		mg/Kg	5	7/10/2018 10:01:54 AM	39100
Uranium	ND	25	25		mg/Kg	5	7/10/2018 11:42:11 AM	39100
Zinc	20	12	12		mg/Kg	5	7/10/2018 11:07:20 AM	39100

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ04

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 12:10:00 PM

Lab ID: 1807001-009

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.11	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Acenaphthylene	ND	0.099	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Aniline	ND	0.095	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Anthracene	ND	0.11	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Azobenzene	ND	0.13	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Benz(a)anthracene	ND	0.13	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Benzo(a)pyrene	ND	0.15	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Benzo(b)fluoranthene	ND	0.15	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Benzo(g,h,i)perylene	ND	0.16	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Benzo(k)fluoranthene	ND	0.16	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Benzoic acid	ND	0.14	0.49		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Benzyl alcohol	ND	0.13	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Bis(2-chloroethoxy)methane	ND	0.11	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Bis(2-chloroisopropyl)ether	ND	0.12	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Bis(2-ethylhexyl)phthalate	ND	0.27	0.49		mg/Kg	1	7/16/2018 9:49:25 PM	39166
4-Bromophenyl phenyl ether	ND	0.13	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Butyl benzyl phthalate	ND	0.13	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Carbazole	ND	0.12	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
4-Chloro-3-methylphenol	ND	0.13	0.49		mg/Kg	1	7/16/2018 9:49:25 PM	39166
4-Chloroaniline	ND	0.11	0.49		mg/Kg	1	7/16/2018 9:49:25 PM	39166
2-Chloronaphthalene	ND	0.11	0.25		mg/Kg	1	7/16/2018 9:49:25 PM	39166
2-Chlorophenol	ND	0.13	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
4-Chlorophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Chrysene	ND	0.11	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Di-n-butyl phthalate	0.43	0.27	0.39		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Di-n-octyl phthalate	ND	0.11	0.39		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Dibenz(a,h)anthracene	ND	0.16	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Dibenzofuran	ND	0.11	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
1,3-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
3,3'-Dichlorobenzidine	ND	0.097	0.25		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Diethyl phthalate	0.18	0.15	0.20	J	mg/Kg	1	7/16/2018 9:49:25 PM	39166
Dimethyl phthalate	ND	0.10	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
2,4-Dichlorophenol	ND	0.12	0.39		mg/Kg	1	7/16/2018 9:49:25 PM	39166
2,4-Dimethylphenol	ND	0.093	0.30		mg/Kg	1	7/16/2018 9:49:25 PM	39166
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	7/16/2018 9:49:25 PM	39166
2,4-Dinitrophenol	ND	0.063	0.49		mg/Kg	1	7/16/2018 9:49:25 PM	39166

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 38 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ04

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 12:10:00 PM

Lab ID: 1807001-009

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.10	0.49		mg/Kg	1	7/16/2018 9:49:25 PM	39166
2,6-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Fluoranthene	ND	0.11	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Fluorene	ND	0.10	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Hexachlorobutadiene	ND	0.10	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Hexachlorocyclopentadiene	ND	0.097	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Hexachloroethane	ND	0.12	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Indeno(1,2,3-cd)pyrene	ND	0.14	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Isophorone	ND	0.13	0.39		mg/Kg	1	7/16/2018 9:49:25 PM	39166
1-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
2-Methylnaphthalene	ND	0.12	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
2-Methylphenol	ND	0.14	0.39		mg/Kg	1	7/16/2018 9:49:25 PM	39166
3+4-Methylphenol	ND	0.13	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
N-Nitrosodi-n-propylamine	ND	0.15	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Naphthalene	ND	0.11	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
2-Nitroaniline	ND	0.13	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
4-Nitroaniline	ND	0.095	0.39		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Nitrobenzene	ND	0.11	0.39		mg/Kg	1	7/16/2018 9:49:25 PM	39166
2-Nitrophenol	ND	0.12	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
4-Nitrophenol	ND	0.15	0.25		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Pentachlorophenol	ND	0.099	0.39		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Phenanthrene	ND	0.10	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Phenol	ND	0.13	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Pyrene	ND	0.11	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Pyridine	ND	0.12	0.39		mg/Kg	1	7/16/2018 9:49:25 PM	39166
1,2,4-Trichlorobenzene	ND	0.12	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
2,4,5-Trichlorophenol	ND	0.11	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
2,4,6-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	7/16/2018 9:49:25 PM	39166
Surr: 2-Fluorophenol	37.9		41.1-115	S	%Rec	1	7/16/2018 9:49:25 PM	39166
Surr: Phenol-d5	53.7		46.8-124		%Rec	1	7/16/2018 9:49:25 PM	39166
Surr: 2,4,6-Tribromophenol	65.3		49.3-130		%Rec	1	7/16/2018 9:49:25 PM	39166
Surr: Nitrobenzene-d5	52.5		44.6-124		%Rec	1	7/16/2018 9:49:25 PM	39166
Surr: 2-Fluorobiphenyl	60.3		46.1-123		%Rec	1	7/16/2018 9:49:25 PM	39166
Surr: 4-Terphenyl-d14	80.5		29.8-107		%Rec	1	7/16/2018 9:49:25 PM	39166

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0046	0.023		mg/Kg	1	7/5/2018 6:04:47 PM	39039
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 39 of 71
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ04

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 12:10:00 PM

Lab ID: 1807001-009

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0038	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Ethylbenzene	ND	0.0033	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Methyl tert-butyl ether (MTBE)	ND	0.0071	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,2,4-Trimethylbenzene	ND	0.0040	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,3,5-Trimethylbenzene	ND	0.0029	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,2-Dichloroethane (EDC)	ND	0.0048	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,2-Dibromoethane (EDB)	ND	0.0059	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Naphthalene	ND	0.0047	0.093		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1-Methylnaphthalene	ND	0.0033	0.19		mg/Kg	1	7/5/2018 6:04:47 PM	39039
2-Methylnaphthalene	ND	0.0038	0.19		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Acetone	ND	0.050	0.70		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Bromobenzene	ND	0.0034	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Bromodichloromethane	ND	0.0060	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Bromoform	ND	0.011	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Bromomethane	ND	0.0080	0.14		mg/Kg	1	7/5/2018 6:04:47 PM	39039
2-Butanone	0.052	0.027	0.46	J	mg/Kg	1	7/5/2018 6:04:47 PM	39039
Carbon disulfide	ND	0.0055	0.46		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Carbon tetrachloride	ND	0.0046	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Chlorobenzene	ND	0.0028	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Chloroethane	ND	0.015	0.093		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Chloroform	ND	0.0028	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Chloromethane	ND	0.0097	0.14		mg/Kg	1	7/5/2018 6:04:47 PM	39039
2-Chlorotoluene	ND	0.0036	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
4-Chlorotoluene	ND	0.0042	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
cis-1,2-DCE	ND	0.0059	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
cis-1,3-Dichloropropene	ND	0.0035	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,2-Dibromo-3-chloropropane	ND	0.0064	0.093		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Dibromochloromethane	ND	0.0039	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Dibromomethane	ND	0.0023	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,2-Dichlorobenzene	ND	0.0023	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,3-Dichlorobenzene	ND	0.0041	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,4-Dichlorobenzene	ND	0.0052	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Dichlorodifluoromethane	ND	0.019	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,1-Dichloroethane	ND	0.019	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,1-Dichloroethene	ND	0.019	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,2-Dichloropropane	ND	0.0029	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,3-Dichloropropane	ND	0.011	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
2,2-Dichloropropane	ND	0.0053	0.093		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,1-Dichloropropene	ND	0.0052	0.093		mg/Kg	1	7/5/2018 6:04:47 PM	39039

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 40 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF VZ04

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 12:10:00 PM

Lab ID: 1807001-009

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.012	0.093		mg/Kg	1	7/5/2018 6:04:47 PM	39039
2-Hexanone	ND	0.0091	0.46		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Isopropylbenzene	ND	0.0031	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
4-Isopropyltoluene	ND	0.0035	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
4-Methyl-2-pentanone	ND	0.0099	0.46		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Methylene chloride	ND	0.019	0.14		mg/Kg	1	7/5/2018 6:04:47 PM	39039
n-Butylbenzene	ND	0.0041	0.14		mg/Kg	1	7/5/2018 6:04:47 PM	39039
n-Propylbenzene	ND	0.0029	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
sec-Butylbenzene	ND	0.0048	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Styrene	ND	0.0081	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
tert-Butylbenzene	ND	0.0038	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,1,1,2-Tetrachloroethane	ND	0.0052	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,1,2,2-Tetrachloroethane	ND	0.013	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Tetrachloroethene (PCE)	ND	0.0037	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
trans-1,2-DCE	ND	0.019	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
trans-1,3-Dichloropropene	ND	0.0055	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,2,3-Trichlorobenzene	ND	0.0042	0.093		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,2,4-Trichlorobenzene	ND	0.0047	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,1,1-Trichloroethane	ND	0.0060	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,1,2-Trichloroethane	ND	0.0049	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Trichloroethene (TCE)	ND	0.0056	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Trichlorofluoromethane	ND	0.0070	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
1,2,3-Trichloropropane	ND	0.023	0.093		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Vinyl chloride	ND	0.0039	0.046		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Xylenes, Total	ND	0.014	0.093		mg/Kg	1	7/5/2018 6:04:47 PM	39039
Surr: Dibromofluoromethane	105		70-130		%Rec	1	7/5/2018 6:04:47 PM	39039
Surr: 1,2-Dichloroethane-d4	112		70-130		%Rec	1	7/5/2018 6:04:47 PM	39039
Surr: Toluene-d8	98.2		70-130		%Rec	1	7/5/2018 6:04:47 PM	39039
Surr: 4-Bromofluorobenzene	109		70-130		%Rec	1	7/5/2018 6:04:47 PM	39039
EPA METHOD 418.1: TPH							Analyst: CLP	
Petroleum Hydrocarbons, TR	ND	3.6	19		mg/Kg	1	7/12/2018	39126
CYANIDE-TOTAL							Analyst: SUB	
Cyanide	ND	0.25	0.25		mg/Kg	1	7/10/2018	R53202
EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED							Analyst: SUB	
Radium-226	1.327	0.171	0.171		pCi/L	1	8/1/2018	R53202
Radium-226 ±	0.317	0.171	0.171		pCi/L	1	8/1/2018	R53202
Radium-228	1.433	0.375	0.375		pCi/L	1	8/1/2018	R53202
Radium-228 ±	0.51	0.375	0.375		pCi/L	1	8/1/2018	R53202

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 41 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF DUP 01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018

Lab ID: 1807001-010

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								
						Analyst: TOM		
Aroclor 1016	ND	0.021	0.039		mg/Kg	1	7/18/2018 4:45:16 PM	39114
Aroclor 1221	ND	0.039	0.039		mg/Kg	1	7/18/2018 4:45:16 PM	39114
Aroclor 1232	ND	0.039	0.039		mg/Kg	1	7/18/2018 4:45:16 PM	39114
Aroclor 1242	ND	0.039	0.039		mg/Kg	1	7/18/2018 4:45:16 PM	39114
Aroclor 1248	ND	0.039	0.039		mg/Kg	1	7/18/2018 4:45:16 PM	39114
Aroclor 1254	ND	0.039	0.039		mg/Kg	1	7/18/2018 4:45:16 PM	39114
Aroclor 1260	ND	0.018	0.039		mg/Kg	1	7/18/2018 4:45:16 PM	39114
Surr: Decachlorobiphenyl	96.8	0	26.3-128		%Rec	1	7/18/2018 4:45:16 PM	39114
Surr: Tetrachloro-m-xylene	113	0	20.7-151		%Rec	1	7/18/2018 4:45:16 PM	39114
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
						Analyst: Irm		
Diesel Range Organics (DRO)	380	1.9	10		mg/Kg	1	7/10/2018 12:34:52 PM	39058
Motor Oil Range Organics (MRO)	450	50	50		mg/Kg	1	7/10/2018 12:34:52 PM	39058
Surr: DNOP	118	0	70-130		%Rec	1	7/10/2018 12:34:52 PM	39058
EPA METHOD 8015D: GASOLINE RANGE								
						Analyst: NSB		
Gasoline Range Organics (GRO)	ND	1.4	5.0		mg/Kg	1	7/5/2018 9:59:49 PM	39039
Surr: BFB	85.2	0	15-316		%Rec	1	7/5/2018 9:59:49 PM	39039
EPA METHOD 300.0: ANIONS								
						Analyst: CJS		
Fluoride	7.1	0.030	0.30		mg/Kg	1	7/12/2018 10:46:44 AM	39174
Chloride	220	8.2	30		mg/Kg	20	7/12/2018 11:23:58 AM	39174
Nitrogen, Nitrate (As N)	1.4	0.17	0.30		mg/Kg	1	7/12/2018 10:46:44 AM	39174
Sulfate	270	17	30		mg/Kg	20	7/12/2018 11:23:58 AM	39174
EPA METHOD 7471: MERCURY								
						Analyst: rde		
Mercury	0.0068	0.0065	0.032	J	mg/Kg	1	7/6/2018 5:34:43 PM	39078
EPA METHOD 6010B: SOIL METALS								
						Analyst: ELS		
Arsenic	ND	4.4	12		mg/Kg	5	7/10/2018 10:05:35 AM	39100
Barium	240	0.11	0.49		mg/Kg	5	7/10/2018 10:05:35 AM	39100
Cadmium	ND	0.15	0.49		mg/Kg	5	7/10/2018 10:05:35 AM	39100
Chromium	12	0.20	1.5		mg/Kg	5	7/10/2018 10:05:35 AM	39100
Copper	ND	1.5	1.5		mg/Kg	5	7/10/2018 10:05:35 AM	39100
Iron	16000	240	240		mg/Kg	100	7/10/2018 10:07:34 AM	39100
Lead	ND	1.2	1.2		mg/Kg	5	7/10/2018 10:05:35 AM	39100
Manganese	320	0.49	0.49		mg/Kg	5	7/10/2018 10:05:35 AM	39100
Selenium	ND	4.9	12		mg/Kg	5	7/10/2018 10:05:35 AM	39100
Silver	ND	0.16	1.2		mg/Kg	5	7/10/2018 10:05:35 AM	39100
Uranium	ND	24	24		mg/Kg	5	7/10/2018 11:43:27 AM	39100
Zinc	18	12	12		mg/Kg	5	7/10/2018 11:08:54 AM	39100

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 42 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF DUP 01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018

Lab ID: 1807001-010

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Acenaphthylene	ND	0.99	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Aniline	ND	0.95	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Anthracene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Azobenzene	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Benz(a)anthracene	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Benzo(a)pyrene	ND	1.5	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Benzo(b)fluoranthene	ND	1.5	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Benzo(g,h,i)perylene	ND	1.6	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Benzo(k)fluoranthene	ND	1.6	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Benzoic acid	ND	1.4	4.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Benzyl alcohol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Bis(2-chloroethoxy)methane	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Bis(2-chloroethyl)ether	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Bis(2-chloroisopropyl)ether	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Bis(2-ethylhexyl)phthalate	ND	2.7	4.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
4-Bromophenyl phenyl ether	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Butyl benzyl phthalate	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Carbazole	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
4-Chloro-3-methylphenol	ND	1.3	4.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
4-Chloroaniline	ND	1.1	4.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
2-Chloronaphthalene	ND	1.1	2.5	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
2-Chlorophenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
4-Chlorophenyl phenyl ether	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Chrysene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Di-n-octyl phthalate	ND	1.1	3.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Dibenz(a,h)anthracene	ND	1.6	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Dibenzofuran	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
1,2-Dichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
1,3-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
1,4-Dichlorobenzene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
3,3'-Dichlorobenzidine	ND	0.97	2.5	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Diethyl phthalate	ND	1.5	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Dimethyl phthalate	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
2,4-Dichlorophenol	ND	1.2	3.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
2,4-Dimethylphenol	ND	0.92	2.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
4,6-Dinitro-2-methylphenol	ND	0.90	3.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
2,4-Dinitrophenol	ND	0.63	4.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 43 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF DUP 01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018

Lab ID: 1807001-010

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	1.0	4.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
2,6-Dinitrotoluene	ND	1.2	4.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Fluoranthene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Fluorene	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Hexachlorobenzene	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Hexachlorobutadiene	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Hexachlorocyclopentadiene	ND	0.97	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Hexachloroethane	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Indeno(1,2,3-cd)pyrene	ND	1.4	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Isophorone	ND	1.3	3.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
1-Methylnaphthalene	ND	1.4	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
2-Methylnaphthalene	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
2-Methylphenol	ND	1.4	3.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
3+4-Methylphenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
N-Nitrosodi-n-propylamine	ND	1.5	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
N-Nitrosodiphenylamine	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Naphthalene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
2-Nitroaniline	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
3-Nitroaniline	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
4-Nitroaniline	ND	0.94	3.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Nitrobenzene	ND	1.1	3.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
2-Nitrophenol	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
4-Nitrophenol	ND	1.5	2.5	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Pentachlorophenol	ND	0.99	3.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Phenanthrene	ND	1.0	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Phenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Pyrene	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Pyridine	ND	1.2	3.9	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
1,2,4-Trichlorobenzene	ND	1.2	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
2,4,5-Trichlorophenol	ND	1.1	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
2,4,6-Trichlorophenol	ND	1.3	2.0	D	mg/Kg	1	7/23/2018 8:43:29 PM	39166
Surr: 2-Fluorophenol	0		41.1-115	SD	%Rec	1	7/23/2018 8:43:29 PM	39166
Surr: Phenol-d5	0		46.8-124	SD	%Rec	1	7/23/2018 8:43:29 PM	39166
Surr: 2,4,6-Tribromophenol	0		49.3-130	SD	%Rec	1	7/23/2018 8:43:29 PM	39166
Surr: Nitrobenzene-d5	0		44.6-124	SD	%Rec	1	7/23/2018 8:43:29 PM	39166
Surr: 2-Fluorobiphenyl	0		46.1-123	SD	%Rec	1	7/23/2018 8:43:29 PM	39166
Surr: 4-Terphenyl-d14	0		29.8-107	SD	%Rec	1	7/23/2018 8:43:29 PM	39166

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0049	0.025		mg/Kg	1	7/5/2018 6:34:10 PM	39039
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 44 of 71
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF DUP 01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018

Lab ID: 1807001-010

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0040	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Ethylbenzene	ND	0.0035	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Methyl tert-butyl ether (MTBE)	ND	0.0076	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,2,4-Trimethylbenzene	ND	0.0043	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,3,5-Trimethylbenzene	ND	0.0031	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,2-Dichloroethane (EDC)	ND	0.0052	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,2-Dibromoethane (EDB)	ND	0.0063	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Naphthalene	ND	0.0050	0.099		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1-Methylnaphthalene	0.030	0.0035	0.20	J	mg/Kg	1	7/5/2018 6:34:10 PM	39039
2-Methylnaphthalene	ND	0.0040	0.20		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Acetone	ND	0.054	0.74		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Bromobenzene	ND	0.0036	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Bromodichloromethane	ND	0.0064	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Bromoform	ND	0.012	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Bromomethane	ND	0.0086	0.15		mg/Kg	1	7/5/2018 6:34:10 PM	39039
2-Butanone	0.068	0.029	0.50	J	mg/Kg	1	7/5/2018 6:34:10 PM	39039
Carbon disulfide	ND	0.0059	0.50		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Carbon tetrachloride	ND	0.0049	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Chlorobenzene	ND	0.0030	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Chloroethane	ND	0.016	0.099		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Chloroform	ND	0.0030	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Chloromethane	ND	0.010	0.15		mg/Kg	1	7/5/2018 6:34:10 PM	39039
2-Chlorotoluene	ND	0.0039	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
4-Chlorotoluene	ND	0.0045	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
cis-1,2-DCE	ND	0.0063	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
cis-1,3-Dichloropropene	ND	0.0038	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,2-Dibromo-3-chloropropane	ND	0.0068	0.099		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Dibromochloromethane	ND	0.0042	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Dibromomethane	ND	0.0024	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,2-Dichlorobenzene	ND	0.0025	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,3-Dichlorobenzene	ND	0.0044	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,4-Dichlorobenzene	ND	0.0055	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Dichlorodifluoromethane	ND	0.020	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,1-Dichloroethane	ND	0.020	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,2-Dichloropropane	ND	0.0031	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,3-Dichloropropane	ND	0.012	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
2,2-Dichloropropane	ND	0.0056	0.099		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,1-Dichloropropene	ND	0.0056	0.099		mg/Kg	1	7/5/2018 6:34:10 PM	39039

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 45 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF DUP 01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018

Lab ID: 1807001-010

Matrix: SOIL

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Hexachlorobutadiene	ND	0.012	0.099		mg/Kg	1	7/5/2018 6:34:10 PM	39039
2-Hexanone	ND	0.0097	0.50		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Isopropylbenzene	ND	0.0033	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
4-Isopropyltoluene	ND	0.0038	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
4-Methyl-2-pentanone	ND	0.011	0.50		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Methylene chloride	ND	0.020	0.15		mg/Kg	1	7/5/2018 6:34:10 PM	39039
n-Butylbenzene	ND	0.0044	0.15		mg/Kg	1	7/5/2018 6:34:10 PM	39039
n-Propylbenzene	ND	0.0031	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
sec-Butylbenzene	ND	0.0051	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Styrene	ND	0.0086	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
tert-Butylbenzene	ND	0.0040	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,1,1,2-Tetrachloroethane	ND	0.0056	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,1,2,2-Tetrachloroethane	ND	0.014	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
trans-1,2-DCE	ND	0.020	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
trans-1,3-Dichloropropene	ND	0.0059	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,2,3-Trichlorobenzene	ND	0.0045	0.099		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,2,4-Trichlorobenzene	ND	0.0050	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,1,1-Trichloroethane	ND	0.0064	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,1,2-Trichloroethane	ND	0.0053	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Trichloroethene (TCE)	ND	0.0060	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Trichlorofluoromethane	ND	0.0074	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
1,2,3-Trichloropropane	ND	0.025	0.099		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Vinyl chloride	ND	0.0041	0.050		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Xylenes, Total	ND	0.015	0.099		mg/Kg	1	7/5/2018 6:34:10 PM	39039
Surr: Dibromofluoromethane	104		70-130		%Rec	1	7/5/2018 6:34:10 PM	39039
Surr: 1,2-Dichloroethane-d4	114		70-130		%Rec	1	7/5/2018 6:34:10 PM	39039
Surr: Toluene-d8	97.8		70-130		%Rec	1	7/5/2018 6:34:10 PM	39039
Surr: 4-Bromofluorobenzene	112		70-130		%Rec	1	7/5/2018 6:34:10 PM	39039

EPA METHOD 418.1: TPH

Analyst: **CLP**

Petroleum Hydrocarbons, TR	500	38	200	mg/Kg	10	7/12/2018	39126
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CYANIDE-TOTAL

Analyst: **SUB**

Cyanide	ND	0.25	0.25	mg/Kg	1	7/10/2018	R53202
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EPA 903.1: RA 226 AND EPA 904.0: RA 228-SUBBED

Analyst: **SUB**

Radium-226	1.209	0.223	0.223	pCi/L	1	8/1/2018	R53202
Radium-226 ±	0.285	0.223	0.223	pCi/L	1	8/1/2018	R53202
Radium-228	1.761	0.174	0.174	pCi/L	1	8/1/2018	R53202
Radium-228 ±	0.398	0.174	0.174	pCi/L	1	8/1/2018	R53202

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 46 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF FB01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 12:15:00 PM

Lab ID: 1807001-011

Matrix: AQUEOUS

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: AG	
Benzene	ND	0.062	1.0		µg/L	1	7/6/2018 5:51:44 PM	C52504
Toluene	ND	0.064	1.0		µg/L	1	7/6/2018 5:51:44 PM	C52504
Ethylbenzene	ND	0.093	1.0		µg/L	1	7/6/2018 5:51:44 PM	C52504
Xylenes, Total	ND	0.32	1.5		µg/L	1	7/6/2018 5:51:44 PM	C52504
Surr: 4-Bromofluorobenzene	110	0	70-130		%Rec	1	7/6/2018 5:51:44 PM	C52504
Surr: Toluene-d8	101	0	70-130		%Rec	1	7/6/2018 5:51:44 PM	C52504

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 47 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: CENTRAL OCD LF EB01

Project: Central OCD Landfarm Semiannual Sam

Collection Date: 6/29/2018 12:20:00 PM

Lab ID: 1807001-012

Matrix: AQUEOUS

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: AG	
Benzene	ND	0.062	1.0		µg/L	1	7/6/2018 7:01:31 PM	C52504
Toluene	0.11	0.064	1.0	J	µg/L	1	7/6/2018 7:01:31 PM	C52504
Ethylbenzene	ND	0.093	1.0		µg/L	1	7/6/2018 7:01:31 PM	C52504
Xylenes, Total	ND	0.32	1.5		µg/L	1	7/6/2018 7:01:31 PM	C52504
Surr: 4-Bromofluorobenzene	111	0	70-130		%Rec	1	7/6/2018 7:01:31 PM	C52504
Surr: Toluene-d8	99.4	0	70-130		%Rec	1	7/6/2018 7:01:31 PM	C52504

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 48 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1807001**

Date Reported: **8/6/2018**

CLIENT: Western Refining Southwest, Gallup

Client Sample ID: Trip Blank

Project: Central OCD Landfarm Semiannual Sam

Collection Date:

Lab ID: 1807001-013

Matrix: AQUEOUS

Received Date: 6/29/2018 3:25:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: AG	
Benzene	ND	0.062	1.0		µg/L	1	7/6/2018 7:24:43 PM	C52504
Toluene	ND	0.064	1.0		µg/L	1	7/6/2018 7:24:43 PM	C52504
Ethylbenzene	ND	0.093	1.0		µg/L	1	7/6/2018 7:24:43 PM	C52504
Xylenes, Total	ND	0.32	1.5		µg/L	1	7/6/2018 7:24:43 PM	C52504
Surr: 4-Bromofluorobenzene	114	0	70-130		%Rec	1	7/6/2018 7:24:43 PM	C52504
Surr: Toluene-d8	102	0	70-130		%Rec	1	7/6/2018 7:24:43 PM	C52504

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 49 of 71
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Collected date/time: 06/29/18 09:20

L1006594

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	07/10/2018 12:49	<u>WG1135522</u>

Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc

ACCOUNT:

Hall Environmental Analysis Laboratory

PROJECT:

SDG:

L1006594

DATE/TIME:

08/03/18 17:11



Collected date/time: 06/29/18 09:50

L1006594

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch	
	mg/kg		mg/kg		date / time		¹ Cp
Cyanide	ND		0.250	1	07/11/2018 06:16	<u>WG1135485</u>	² Tc
							³ Ss
							⁴ Cn
							⁵ Sr
							⁶ Qc
							⁷ Gl
							⁸ Al
							⁹ Sc



Collected date/time: 06/29/18 10:35

L1006594

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	07/10/2018 12:50	WG1135522

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc



Collected date/time: 06/29/18 10:45

L1006594

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	07/10/2018 12:38	WG1135522



ACCOUNT:

Hall Environmental Analysis Laboratory

PROJECT:

SDG:

L1006594

DATE/TIME:

08/03/18 17:11



Collected date/time: 06/29/18 11:20

L1006594

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
Cyanide	mg/kg		mg/kg		date / time	
	ND		0.250	1	07/10/2018 12:52	<u>WG135522</u>

1
Cd2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc



Collected date/time: 06/29/18 11:30

L1006594

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	07/10/2018 12:53	WG1135522





Collected date/time: 06/29/18 12:00

L1006594

Wet Chemistry by Method 9012B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Cyanide	0.709		0.250	1	07/10/2018 12:54	WG135522

1
Co2
Tc3
Ss4
Cn5
Si6
Qc7
Gl8
Al9
Sc



Collected date/time: 06/29/18 12:10

L1006594

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Cyanide	mg/kg		mg/kg		date / time		¹ Cp
	ND		0.250	1	07/10/2018 12:55	<u>WG1135522</u>	² Tc
							³ Ss
							⁴ Cn
							⁵ Sr
							⁶ Qc
							⁷ Gl
							⁸ Al
							⁹ Sc

Collected date/time: 06/29/18 00:00

L1006594

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	07/10/2018 12:56	<u>WG1135522</u>

1
Cd2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc

ACCOUNT:

Hall Environmental Analysis Laboratory

PROJECT:

SDG:

L1006594

DATE/TIME:

08/03/18 17:11

WG1135485

Wet Chemistry by Method 9012B

QUALITY CONTROL SUMMARY

L1006594-02

ONE LAB NATIONWIDE

Method Blank (MB)

(MB) R3324594-1 07/11/18 06:04				
MB Result		MB Qualifier	MB MDL	MB RDL
mg/kg			mg/kg	
Analyte				
Cyanide	U	0.0390	0.0390	0.250

L1006696-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1006696-01 07/11/18 06:22 • (DUP) R3324594-6 07/11/18 06:23				
Original Result		DUP Result	Dilution	DUP RPD
mg/kg			%	
Analyte				
Cyanide	ND	0.0487	1	0.000
				DUP RPD Limits
				%
				20

L1007051-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1007051-02 07/11/18 06:29 • (DUP) R3324594-7 07/11/18 06:30				
Original Result		DUP Result	Dilution	DUP RPD
mg/kg			%	
Analyte				
Cyanide	0.525	0.403	1	26.3
				P1
				DUP RPD Limits
				%
				20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3324594-2 07/11/18 06:05 • (LCSD) R3324594-3 07/11/18 06:06				
Spike Amount		LCS Result	LCSD Result	LCS Rec.
mg/kg		mg/kg	mg/kg	%
Analyte				
Cyanide	2.50	2.53	2.52	101
				101
				Rec. Limits
				%
				50.0-150
				LCSD Rec.
				%
				101
				LCS Qualifier
				%
				0.333
				RPD
				%
				20

L1006594-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1006594-02 07/11/18 06:16 • (MS) R3324594-4 07/11/18 06:17 • (MSD) R3324594-5 07/11/18 06:18				
Spike Amount		Original Result	MS Result	MSD Result
mg/kg		mg/kg	mg/kg	mg/kg
Analyte				
Cyanide	1.67	ND	1.62	1.72
				89.1
				95.1
				Rec. Limits
				%
				75.0-125
				Dilution
				1
				MSD Rec.
				%
				95.1
				MS Qualifier
				%
				5.96
				RPD
				%
				20

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1006594

DATE/TIME: 08/03/18 17:11

WG1135522

Wet Chemistry by Method 9012 B

QUALITY CONTROL SUMMARY

ONE LAB NATIONWIDE

L1006594-01.03.04.05.06.07.08.09

Method Blank (MB)

(MB) R3324393-1 07/10/18 12:24

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Cyanide	U		0.0390	0.250

L1006594-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1006594-04 07/10/18 12:38 • (DUP) R3324393-6 07/10/18 12:39

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.0728	1	0.000		20

L1006594-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1006594-03 07/10/18 12:50 • (DUP) R3324393-7 07/10/18 12:51

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	ND	0.0479	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3324393-2 07/10/18 12:25 • (LCSD) R3324393-3 07/10/18 12:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Cyanide	2.50	2.45	2.38	98.0	95.3	50.0-150			2.76	20

L1005872-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1005872-04 07/10/18 12:32 • (MS) R3324393-4 07/10/18 12:33 • (MSD) R3324393-5 07/10/18 12:36

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Cyanide	1.80	U	1.57	1.48	87.5	82.4	1	75.0-125			5.99	20

ACCOUNT:
Hall Environmental Analysis Laboratory

PROJECT:

SDG:
L1006594

DATE/TIME:
08/03/18 17:11

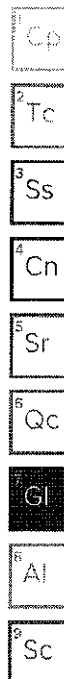


Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1807001
Pace Project No.: 30258133

Sample: 1807001-001Central OCD Lab ID: 30258133001 Collected: 06/29/18 09:20 Received: 07/03/18 10:30 Matrix: Solid
LF TZ01

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Potassium-40	EPA 901.1	13.022 ± 2.368 (0.613) C:NA T:NA	pCi/g	08/01/18 08:52	13966-00-2	
Radium-226	EPA 901.1	0.956 ± 0.240 (0.173) C:NA T:NA	pCi/g	08/01/18 08:52	13982-63-3	Ra
Radium-228	EPA 901.1	1.502 ± 0.432 (0.372) C:NA T:NA	pCi/g	08/01/18 08:52	15262-20-1	

Sample: 1807001-002Central OCD Lab ID: 30258133002 Collected: 06/29/18 09:50 Received: 07/03/18 10:30 Matrix: Solid
LF VZ01

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Potassium-40	EPA 901.1	14.118 ± 2.570 (0.667) C:NA T:NA	pCi/g	08/01/18 09:09	13966-00-2	
Radium-226	EPA 901.1	1.104 ± 0.249 (0.246) C:NA T:NA	pCi/g	08/01/18 09:09	13982-63-3	Ra
Radium-228	EPA 901.1	1.770 ± 0.431 (0.264) C:NA T:NA	pCi/g	08/01/18 09:09	15262-20-1	

Sample: 1807001-003Central OCD Lab ID: 30258133003 Collected: 06/29/18 10:35 Received: 07/03/18 10:30 Matrix: Solid
LF TZ02

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Potassium-40	EPA 901.1	9.845 ± 2.406 (1.151) C:NA T:NA	pCi/g	08/01/18 09:10	13966-00-2	
Radium-226	EPA 901.1	1.129 ± 0.328 (0.203) C:NA T:NA	pCi/g	08/01/18 09:10	13982-63-3	Ra
Radium-228	EPA 901.1	1.321 ± 0.524 (0.589) C:NA T:NA	pCi/g	08/01/18 09:10	15262-20-1	

Sample: 1807001-004Central OCD Lab ID: 30258133004 Collected: 06/29/18 10:45 Received: 07/03/18 10:30 Matrix: Solid
LF VZ02

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Potassium-40	EPA 901.1	13.139 ± 2.559 (0.801) C:NA T:NA	pCi/g	08/01/18 09:27	13966-00-2	
Radium-226	EPA 901.1	1.311 ± 0.374 (0.262) C:NA T:NA	pCi/g	08/01/18 09:27	13982-63-3	Ra
Radium-228	EPA 901.1	1.877 ± 0.447 (0.216) C:NA T:NA	pCi/g	08/01/18 09:27	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1807001
Pace Project No.: 30258133

Sample: 1807001-006Central OCD Lab ID: 30258133005 Collected: 06/29/18 11:20 Received: 07/03/18 10:30 Matrix: Solid
LF TZ03

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Potassium-40	EPA 901.1	11.273 ± 2.132 (0.617) C:NA T:NA	pCi/g	08/01/18 10:01	13966-00-2	
Radium-226	EPA 901.1	1.249 ± 0.264 (0.152) C:NA T:NA	pCi/g	08/01/18 10:01	13982-63-3	Ra
Radium-228	EPA 901.1	1.027 ± 0.336 (0.262) C:NA T:NA	pCi/g	08/01/18 10:01	15262-20-1	

Sample: 1807001-007Central OCD Lab ID: 30258133006 Collected: 06/29/18 11:30 Received: 07/03/18 10:30 Matrix: Solid
LF VZ03

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Potassium-40	EPA 901.1	11.014 ± 2.574 (1.142) C:NA T:NA	pCi/g	08/01/18 10:01	13966-00-2	
Radium-226	EPA 901.1	1.324 ± 0.327 (0.165) C:NA T:NA	pCi/g	08/01/18 10:01	13982-63-3	Ra
Radium-228	EPA 901.1	1.185 ± 0.427 (0.348) C:NA T:NA	pCi/g	08/01/18 10:01	15262-20-1	

Sample: 1807001-008Central OCD Lab ID: 30258133007 Collected: 06/29/18 12:00 Received: 07/03/18 10:30 Matrix: Solid
LF TZ04

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Potassium-40	EPA 901.1	9.368 ± 2.220 (1.402) C:NA T:NA	pCi/g	08/01/18 10:17	13966-00-2	
Radium-226	EPA 901.1	1.226 ± 0.247 (0.192) C:NA T:NA	pCi/g	08/01/18 10:17	13982-63-3	Ra
Radium-228	EPA 901.1	1.650 ± 0.364 (0.307) C:NA T:NA	pCi/g	08/01/18 10:17	15262-20-1	

Sample: 1807001-009Central OCD Lab ID: 30258133008 Collected: 06/29/18 12:10 Received: 07/03/18 10:30 Matrix: Solid
LF VZ04

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Potassium-40	EPA 901.1	9.910 ± 2.440 (1.182) C:NA T:NA	pCi/g	08/01/18 10:18	13966-00-2	
Radium-226	EPA 901.1	1.327 ± 0.317 (0.171) C:NA T:NA	pCi/g	08/01/18 10:18	13982-63-3	Ra
Radium-228	EPA 901.1	1.433 ± 0.510 (0.375) C:NA T:NA	pCi/g	08/01/18 10:18	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1807001

Pace Project No.: 30258133

Sample: 1807001-010Central OCD **Lab ID:** 30258133009 **Collected:** 06/29/18 00:01 **Received:** 07/03/18 10:30 **Matrix:** Solid
LFDUP01

PWS: **Site ID:** **Sample Type:**

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Potassium-40	EPA 901.1	11.075 ± 2.397 (1.179) C:NA T:NA	pCi/g	08/01/18 10:34	13966-00-2	
Radium-226	EPA 901.1	1.209 ± 0.285 (0.223) C:NA T:NA	pCi/g	08/01/18 10:34	13982-63-3	Ra
Radium-228	EPA 901.1	1.761 ± 0.398 (0.174) C:NA T:NA	pCi/g	08/01/18 10:34	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1807001

Pace Project No.: 30258133

QC Batch: 307153

Analysis Method: EPA 901.1

QC Batch Method: EPA 901.1

Analysis Description: 901.1 Gamma Spec Ingrowth

Associated Lab Samples: 30258133005, 30258133006, 30258133007, 30258133008, 30258133009

METHOD BLANK: 1501380

Matrix: Solid

Associated Lab Samples: 30258133005, 30258133006, 30258133007, 30258133008, 30258133009

Parameter	Act ± Unc (MDC) Corr Trac	Units	Analyzed	Qualifiers
Potassium-40	0.102 ± 0.570 (1.124) C:NA T:NA	pCi/g	08/01/18 09:45	
Radium-226	0.000 ± 0.113 (0.332) C:NA T:NA	pCi/g	08/01/18 09:45	Rs
Radium-228	0.000 ± 0.077 (0.569) C:NA T:NA	pCi/g	08/01/18 09:45	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1807001
Pace Project No.: 30258133

QC Batch: 305906 Analysis Method: EPA 901.1
QC Batch Method: EPA 901.1 Analysis Description: 901.1 Gamma Spec Ingrowth
Associated Lab Samples: 30258133001, 30258133002, 30258133003, 30258133004

METHOD BLANK: 1496090 Matrix: Solid
Associated Lab Samples: 30258133001, 30258133002, 30258133003, 30258133004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Potassium-40	0.620 ± 0.701 (1.066) C:NA T:NA	pCi/g	07/19/18 12:46	
Radium-226	0.065 ± 0.091 (0.196) C:NA T:NA	pCi/g	07/19/18 12:46	Ra
Radium-228	0.000 ± 0.077 (0.391) C:NA T:NA	pCi/g	07/19/18 12:46	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1807001
Pace Project No.: 30250133

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
 ND - Not Detected at or above adjusted reporting limit.
 TNTC - Too Numerous To Count
 J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
 MDL - Adjusted Method Detection Limit.
 PQL - Practical Quantitation Limit.
 RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.
 S - Surrogate
 1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
 Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
 LCS(D) - Laboratory Control Sample (Duplicate)
 MS(D) - Matrix Spike (Duplicate)
 DUP - Sample Duplicate
 RPD - Relative Percent Difference
 NC - Not Calculable.
 SG - Silica Gel - Clean-Up
 U - Indicates the compound was analyzed for, but not detected.
 N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
 Act - Activity
 Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).
 Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)
 (MDC) - Minimum Detectable Concentration
 Trac - Tracer Recovery (%)
 Carr - Carrier Recovery (%)
 Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
 TNI - The NELAC Institute.

ANALYTE QUALIFIERS

Ra The reported Ra-226 results were determined by hermetically sealing the dried, processed sample in an appropriate sized can. Each sample was stored for a minimum of 21 days to ensure that equilibrium between Ra-226 and daughters Bi-214 and Pb-214 was achieved. Reported Ra-226 results were inferred from gamma peaks attributable to Bi-214 and Pb-214.

REPORT OF LABORATORY ANALYSIS

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	MB-39148		SampType:	mblk		TestCode:	EPA Method 300.0: Anions			
Client ID:	PBS		Batch ID:	39148		RunNo:	52622			
Prep Date:	7/11/2018		Analysis Date:	7/11/2018		SeqNo:	1727842	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.30								
Chloride	ND	1.5								
Nitrogen, Nitrate (As N)	ND	0.30								
Sulfate	ND	1.5								

Sample ID	LCS-39148		SampType:	lcs		TestCode:	EPA Method 300.0: Anions			
Client ID:	LCSS		Batch ID:	39148		RunNo:	52622			
Prep Date:	7/11/2018		Analysis Date:	7/11/2018		SeqNo:	1727843	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.6	0.30	1.500	0	107	90	110			
Chloride	14	1.5	15.00	0	96.5	90	110			
Nitrogen, Nitrate (As N)	7.6	0.30	7.500	0	101	90	110			
Sulfate	29	1.5	30.00	0	95.5	90	110			

Sample ID	1807001-002AMS		SampType:	ms		TestCode:	EPA Method 300.0: Anions			
Client ID:	CENTRAL OCD LF V		Batch ID:	39148		RunNo:	52622			
Prep Date:	7/11/2018		Analysis Date:	7/11/2018		SeqNo:	1727866	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.9	0.30	1.500	3.887	2.53	15	119			S
Nitrogen, Nitrate (As N)	10	0.30	7.500	2.913	99.0	61.8	142			

Sample ID	1807001-002AMSD		SampType:	msd		TestCode:	EPA Method 300.0: Anions			
Client ID:	CENTRAL OCD LF V		Batch ID:	39148		RunNo:	52622			
Prep Date:	7/11/2018		Analysis Date:	7/11/2018		SeqNo:	1727867	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.2	0.30	1.500	3.887	22.6	15	119	7.40	20	
Nitrogen, Nitrate (As N)	11	0.30	7.500	2.913	106	61.8	142	5.02	20	

Sample ID	MB-39174		SampType:	mblk		TestCode:	EPA Method 300.0: Anions			
Client ID:	PBS		Batch ID:	39174		RunNo:	52645			
Prep Date:	7/12/2018		Analysis Date:	7/12/2018		SeqNo:	1729031	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.30								
Chloride	ND	1.5								
Nitrogen, Nitrate (As N)	ND	0.30								
Sulfate	ND	1.5								

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	LCS-39174		SampType: lcs		TestCode: EPA Method 300.0: Anions					
Client ID:	LCSS		Batch ID: 39174		RunNo: 52645					
Prep Date:	7/12/2018		Analysis Date: 7/12/2018		SeqNo: 1729032		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.6	0.30	1.500	0	110	90	110			
Chloride	14	1.5	15.00	0	96.5	90	110			
Nitrogen, Nitrate (As N)	7.6	0.30	7.500	0	101	90	110			
Sulfate	29	1.5	30.00	0	95.0	90	110			

Sample ID	1807001-010AMS		SampType: ms		TestCode: EPA Method 300.0: Anions					
Client ID:	CENTRAL OCD LF		Batch ID: 39174		RunNo: 52645					
Prep Date:	7/12/2018		Analysis Date: 7/12/2018		SeqNo: 1729035		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	6.9	0.30	1.500	7.092	-9.73	15	119			S
Nitrogen, Nitrate (As N)	8.8	0.30	7.500	1.426	98.2	61.8	142			

Sample ID	1807001-010AMSD		SampType: msd		TestCode: EPA Method 300.0: Anions					
Client ID:	CENTRAL OCD LF		Batch ID: 39174		RunNo: 52645					
Prep Date:	7/12/2018		Analysis Date: 7/12/2018		SeqNo: 1729036		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	8.1	0.30	1.500	7.092	66.8	15	119	15.3	20	
Nitrogen, Nitrate (As N)	8.9	0.30	7.500	1.426	99.5	61.8	142	1.13	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	MB-39126		SampType:	MBLK		TestCode:	EPA Method 418.1: TPH				
Client ID:	PBS		Batch ID:	39126		RunNo:	52654				
Prep Date:	7/10/2018		Analysis Date:	7/12/2018		SeqNo:	1728581		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Petroleum Hydrocarbons, TR	ND	20									

Sample ID	LCS-39126		SampType: LCS		TestCode: EPA Method 418.1: TPH					
Client ID:	LCSS		Batch ID: 39126		RunNo: 52654					
Prep Date:	7/10/2018		Analysis Date: 7/12/2018		SeqNo: 1728582		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	120	20	100.0	0	119	64.3	122			

Sample ID	1807001-002AMS		SampType:	MS		TestCode:	EPA Method 418.1: TPH				
Client ID:	CENTRAL OCD LF V		Batch ID:	39126		RunNo:	52654				
Prep Date:	7/10/2018		Analysis Date:	7/12/2018		SeqNo:	1728585		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Petroleum Hydrocarbons, TR	120	20	98.52	7.112	116	80	120				

Sample ID	1807001-002AMSD		SampType:	MSD		TestCode:	EPA Method 418.1: TPH				
Client ID:	CENTRAL OCD LF V		Batch ID:	39126		RunNo:	52654				
Prep Date:	7/10/2018		Analysis Date:	7/12/2018		SeqNo:	1728586		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Petroleum Hydrocarbons, TR	120	20	99.21	7.112	115	80	120	0.361	20		

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	MB-39058		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS		Batch ID: 39058		RunNo: 52498					
Prep Date:	7/5/2018		Analysis Date: 7/6/2018		SeqNo: 1721687		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	2.4	10								J
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.9		10.00		99.1	70	130			

Sample ID	LCS-39058		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 39058		RunNo: 52498					
Prep Date:	7/5/2018		Analysis Date: 7/6/2018		SeqNo: 1722611		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	102	70	130			
Surr: DNOP	4.7		5.000		94.7	70	130			

Sample ID	1807001-002AMS		SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	CENTRAL OCD LF V		Batch ID: 39058		RunNo: 52529					
Prep Date:	7/5/2018		Analysis Date: 7/9/2018		SeqNo: 1723647		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	63	10	49.80	19.22	87.2	62	120			
Surr: DNOP	5.3		4.980		106	70	130			

Sample ID	1807001-002AMSD		SampType: MSD		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	CENTRAL OCD LF V		Batch ID: 39058		RunNo: 52529					
Prep Date:	7/5/2018		Analysis Date: 7/9/2018		SeqNo: 1723648		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	49.85	19.22	64.4	62	120	19.9	20	
Surr: DNOP	5.0		4.985		99.7	70	130	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	MB-39039		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBS		Batch ID: 39039		RunNo: 52486					
Prep Date:	7/3/2018		Analysis Date: 7/5/2018		SeqNo: 1721054		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	940		1000		94.5	15	316			

Sample ID	LCS-39039		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: 39039		RunNo: 52486					
Prep Date:	7/3/2018		Analysis Date: 7/5/2018		SeqNo: 1721055		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	106	75.9	131			
Surr: BFB	1000		1000		102	15	316			

Sample ID	1807001-002AMS		SampType:	MS		TestCode:	EPA Method 8015D: Gasoline Range				
Client ID:	CENTRAL OCD LF V		Batch ID:	39039		RunNo:	52486				
Prep Date:	7/3/2018		Analysis Date:	7/5/2018		SeqNo:	1721063		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	25	4.7	23.67	0	107	77.8	128				
Surr: BFB	990		947.0		104	15	316				

Sample ID	1807001-002AMSD		SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	CENTRAL OCD LF V		Batch ID: 39039		RunNo: 52486					
Prep Date:	7/3/2018		Analysis Date: 7/5/2018		SeqNo: 1721064		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	4.9	24.49	0	106	77.8	128	2.81	20	
Surr: BFB	1000		979.4		103	15	316	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	MB-39114		SampType:	MBLK		TestCode:	EPA Method 8082A: PCB's			
Client ID:	PBS		Batch ID:	39114		RunNo:	52768			
Prep Date:	7/10/2018		Analysis Date:	7/18/2018		SeqNo:	1733268	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.020								
Aroclor 1221	ND	0.020								
Aroclor 1232	ND	0.020								
Aroclor 1242	ND	0.020								
Aroclor 1248	ND	0.020								
Aroclor 1254	ND	0.020								
Aroclor 1260	ND	0.020								
Surr: Decachlorobiphenyl	0.041		0.06250		66.0	26.3	128			
Surr: Tetrachloro-m-xylene	0.043		0.06250		68.8	20.7	151			

Sample ID	LCS-39114		SampType:	LCS		TestCode:	EPA Method 8082A: PCB's			
Client ID:	LCSS		Batch ID:	39114		RunNo:	52768			
Prep Date:	7/10/2018		Analysis Date:	7/18/2018		SeqNo:	1733269	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	0.12	0.020	0.1250	0	92.9	15	195			
Aroclor 1260	0.10	0.020	0.1250	0	83.2	24	140			
Surr: Decachlorobiphenyl	0.048		0.06250		76.4	26.3	128			
Surr: Tetrachloro-m-xylene	0.040		0.06250		64.8	20.7	151			

Sample ID	1807001-002AMS		SampType:	MS		TestCode:	EPA Method 8082A: PCB's			
Client ID:	CENTRAL OCD LF V		Batch ID:	39114		RunNo:	52768			
Prep Date:	7/10/2018		Analysis Date:	7/18/2018		SeqNo:	1733275	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	0.084	0.020	0.1254	0	66.7	15	153			
Aroclor 1260	0.092	0.020	0.1254	0	73.0	15	180			
Surr: Decachlorobiphenyl	0.044		0.06269		70.0	26.3	128			
Surr: Tetrachloro-m-xylene	0.044		0.06269		70.4	20.7	151			

Sample ID	1807001-002AMSD		SampType:	MSD		TestCode:	EPA Method 8082A: PCB's			
Client ID:	CENTRAL OCD LF V		Batch ID:	39114		RunNo:	52768			
Prep Date:	7/10/2018		Analysis Date:	7/18/2018		SeqNo:	1733276	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.020	0.1242	0	0	15	153	200	32.9	RS
Aroclor 1260	ND	0.020	0.1242	0	0	15	180	200	31.1	RS
Surr: Decachlorobiphenyl	0.040		0.06210		64.4	26.3	128	0	0	
Surr: Tetrachloro-m-xylene	0.042		0.06210		67.6	20.7	151	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	mb-39039	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	39039	RunNo:	52493					
Prep Date:	7/3/2018	Analysis Date:	7/5/2018	SeqNo:	1721480	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	0.070	0.50								J
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	mb-39039		SampType:	MBLK		TestCode:	EPA Method 8260B: Volatiles			
Client ID:	PBS		Batch ID:	39039		RunNo:	52493			
Prep Date:	7/3/2018		Analysis Date:	7/5/2018		SeqNo:	1721480		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.50		0.5000		99.8	70	130			
Surr: 1,2-Dichloroethane-d4	0.53		0.5000		106	70	130			
Surr: Toluene-d8	0.49		0.5000		98.2	70	130			
Surr: 4-Bromofluorobenzene	0.57		0.5000		114	70	130			

Sample ID	lcs-39039		SampType:	LCS		TestCode:	EPA Method 8260B: Volatiles			
Client ID:	LCSS		Batch ID:	39039		RunNo:	52493			
Prep Date:	7/3/2018		Analysis Date:	7/5/2018		SeqNo:	1721481		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.2	0.025	1.000	0	118	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Chlorobenzene	1.1	0.050	1.000	0	106	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	ics-39039		SampType: LCS		TestCode: EPA Method 8260B: Volatiles					
Client ID:	LCSS		Batch ID: 39039		RunNo: 52493					
Prep Date:	7/3/2018		Analysis Date: 7/5/2018		SeqNo: 1721481		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	1.3	0.050	1.000	0	133	70	130			S
Trichloroethene (TCE)	1.1	0.050	1.000	0	109	70	130			
Surr: Dibromofluoromethane	0.53		0.5000		106	70	130			
Surr: 1,2-Dichloroethane-d4	0.54		0.5000		107	70	130			
Surr: Toluene-d8	0.49		0.5000		97.8	70	130			
Surr: 4-Bromofluorobenzene	0.56		0.5000		111	70	130			

Sample ID	1807001-002ams		SampType: MS		TestCode: EPA Method 8260B: Volatiles					
Client ID:	CENTRAL OCD LF V		Batch ID: 39039		RunNo: 52493					
Prep Date:	7/3/2018		Analysis Date: 7/5/2018		SeqNo: 1721484		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.024	0.9470	0	104	51.9	158			
Toluene	0.89	0.047	0.9470	0	94.0	64.6	132			
Chlorobenzene	0.90	0.047	0.9470	0	94.9	62.8	136			
1,1-Dichloroethene	1.1	0.047	0.9470	0	112	42.4	170			
Trichloroethene (TCE)	0.89	0.047	0.9470	0	93.6	70	130			
Surr: Dibromofluoromethane	0.48		0.4735		102	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.4735		106	70	130			
Surr: Toluene-d8	0.47		0.4735		99.1	70	130			
Surr: 4-Bromofluorobenzene	0.54		0.4735		114	70	130			

Sample ID	1807001-002amsd		SampType: MSD		TestCode: EPA Method 8260B: Volatiles					
Client ID:	CENTRAL OCD LF V		Batch ID: 39039		RunNo: 52493					
Prep Date:	7/3/2018		Analysis Date: 7/5/2018		SeqNo: 1721485		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.024	0.9794	0	111	51.9	158	10.2	20	
Toluene	0.94	0.049	0.9794	0	95.5	64.6	132	5.00	20	
Chlorobenzene	0.97	0.049	0.9794	0	98.6	62.8	136	7.15	20	
1,1-Dichloroethene	1.2	0.049	0.9794	0	119	42.4	170	8.99	20	
Trichloroethene (TCE)	0.99	0.049	0.9794	0	101	70	130	10.8	20	
Surr: Dibromofluoromethane	0.52		0.4897		106	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.54		0.4897		110	70	130	0	0	
Surr: Toluene-d8	0.49		0.4897		99.2	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.56		0.4897		115	70	130	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	100ng btex lcs	SampType:	LCS4	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	BatchQC	Batch ID:	C52504	RunNo:	52504					
Prep Date:		Analysis Date:	7/6/2018	SeqNo:	1722635	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.1	80	120			
Toluene	21	1.0	20.00	0	104	80	120			
Ethylbenzene	21	1.0	20.00	0	103	80	120			
Xylenes, Total	59	1.5	60.00	0	98.3	80	120			
Surr: 4-Bromofluorobenzene	9.7		10.00		97.0	70	130			
Surr: Toluene-d8	9.8		10.00		98.3	70	130			

Sample ID	1807001-011ams		SampType: MS4		TestCode: EPA Method 8260: Volatiles Short List					
Client ID:	CENTRAL OCD LF F		Batch ID: C52504		RunNo: 52504					
Prep Date:			Analysis Date: 7/6/2018		SeqNo: 1722638		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	98.5	80	120			
Toluene	20	1.0	20.00	0	101	80	120			
Ethylbenzene	20	1.0	20.00	0	100	80	120			
Xylenes, Total	59	1.5	60.00	0	98.8	80	120			
Surr: 4-Bromofluorobenzene	9.7		10.00		97.3	70	130			
Surr: Toluene-d8	9.7		10.00		96.6	70	130			

Sample ID	1807001-011amsd		SampType: MSD4		TestCode: EPA Method 8260: Volatiles Short List					
Client ID:	CENTRAL OCD LF F		Batch ID: C52504		RunNo: 52504					
Prep Date:			Analysis Date: 7/6/2018		SeqNo: 1722639		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	98.4	80	120	0.138	20	
Toluene	20	1.0	20.00	0	102	80	120	1.56	20	
Ethylbenzene	20	1.0	20.00	0	102	80	120	1.05	20	
Xylenes, Total	55	1.5	60.00	0	92.2	80	120	6.95	20	
Surr: 4-Bromofluorobenzene	9.4		10.00		94.2	70	130	0	0	
Surr: Toluene-d8	9.8		10.00		98.0	70	130	0	0	

Sample ID	rb	SampType: MBLK			TestCode: EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID: C52504			RunNo: 52504					
Prep Date:		Analysis Date: 7/6/2018			SeqNo: 1722652		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	0.14	1.0								J
Ethylbenzene	0.18	1.0								J
Xylenes, Total	0.66	1.5								J

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID:	C52504	RunNo:	52504					
Prep Date:		Analysis Date:	7/6/2018	SeqNo:	1722652	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	11		10.00		109	70	130			
Surr: Toluene-d8	9.8		10.00		97.9	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	1807001-002ams		SampType: MS		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	CENTRAL OCD LF V		Batch ID: 39166		RunNo: 52733					
Prep Date:	7/12/2018		Analysis Date: 7/16/2018		SeqNo: 1731977		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.96	0.20	1.668	0	57.8	23.7	110			
4-Chloro-3-methylphenol	2.0	0.50	3.326	0	59.7	23.5	109			
2-Chlorophenol	1.8	0.20	3.326	0	54.8	15	106			
1,4-Dichlorobenzene	0.65	0.20	1.668	0	39.1	16	98.5			
2,4-Dinitrotoluene	0.92	0.50	1.668	0	55.1	23.3	92.8			
N-Nitrosodi-n-propylamine	0.99	0.20	1.668	0	59.6	17	111			
4-Nitrophenol	2.3	0.25	3.326	0	70.6	30.9	103			
Pentachlorophenol	2.0	0.40	3.326	0	58.9	20.8	92.7			
Phenol	1.9	0.20	3.326	0	56.3	17	107			
Pyrene	0.90	0.20	1.668	0	53.9	27.9	111			
1,2,4-Trichlorobenzene	0.92	0.20	1.668	0	55.1	19.5	118			
Surr: 2-Fluorophenol	1.6		3.326		49.4	41.1	115			
Surr: Phenol-d5	2.0		3.326		58.9	46.8	124			
Surr: 2,4,6-Tribromophenol	2.0		3.326		58.8	49.3	130			
Surr: Nitrobenzene-d5	1.0		1.668		60.4	44.6	124			
Surr: 2-Fluorobiphenyl	0.94		1.668		56.4	46.1	123			
Surr: 4-Terphenyl-d14	1.1		1.668		65.0	29.8	107			

Sample ID	1807001-002amsd		SampType: MSD		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	CENTRAL OCD LF V		Batch ID: 39166		RunNo: 52733					
Prep Date:	7/12/2018		Analysis Date: 7/16/2018		SeqNo: 1731978		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.19	1.616	0	68.9	23.7	110	14.4	43.1	
4-Chloro-3-methylphenol	2.1	0.48	3.223	0	66.6	23.5	109	7.81	52.2	
2-Chlorophenol	1.7	0.19	3.223	0	52.9	15	106	6.69	42.5	
1,4-Dichlorobenzene	0.55	0.19	1.616	0	34.2	16	98.5	16.4	50.4	
2,4-Dinitrotoluene	1.1	0.48	1.616	0	69.2	23.3	92.8	19.7	24.2	
N-Nitrosodi-n-propylamine	0.92	0.19	1.616	0	56.9	17	111	7.70	39.7	
4-Nitrophenol	2.8	0.24	3.223	0	88.0	30.9	103	18.8	59.4	
Pentachlorophenol	2.3	0.39	3.223	0	72.6	20.8	92.7	17.8	32.7	
Phenol	1.8	0.19	3.223	0	54.4	17	107	6.49	41.2	
Pyrene	1.2	0.19	1.616	0	73.2	27.9	111	27.3	34	
1,2,4-Trichlorobenzene	0.86	0.19	1.616	0	52.9	19.5	118	7.24	35.8	
Surr: 2-Fluorophenol	1.3		3.223		41.9	41.1	115	0	0	
Surr: Phenol-d5	1.8		3.223		56.1	46.8	124	0	0	
Surr: 2,4,6-Tribromophenol	2.2		3.223		69.8	49.3	130	0	0	
Surr: Nitrobenzene-d5	0.83		1.616		51.6	44.6	124	0	0	
Surr: 2-Fluorobiphenyl	1.0		1.616		62.3	46.1	123	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	1807001-002amsd		SampType:	MSD		TestCode:	EPA Method 8270C: Semivolatiles				
Client ID:	CENTRAL OCD LF V		Batch ID:	39166		RunNo:	52733				
Prep Date:	7/12/2018		Analysis Date:	7/16/2018		SeqNo:	1731978		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Surr: 4-Terphenyl-d14	1.3		1.616		79.0	29.8	107	0	0		

Sample ID	lcs-39166		SampType: LCS		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS		Batch ID: 39166		RunNo: 52733					
Prep Date:	7/12/2018		Analysis Date: 7/16/2018		SeqNo: 1731984		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.2	0.20	1.670	0	70.4	39.4	110			
4-Chloro-3-methylphenol	2.2	0.50	3.330	0	64.7	41.6	108			
2-Chlorophenol	1.9	0.20	3.330	0	57.2	35	107			
1,4-Dichlorobenzene	0.90	0.20	1.670	0	53.7	31	105			
2,4-Dinitrotoluene	1.1	0.50	1.670	0	63.1	35.6	101			
N-Nitrosodi-n-propylamine	1.1	0.20	1.670	0	65.6	26	100			
4-Nitrophenol	3.0	0.25	3.330	0	88.9	34.1	106			
Pentachlorophenol	2.5	0.40	3.330	0	75.5	35.3	95.4			
Phenol	1.9	0.20	3.330	0	56.9	39.3	96.5			
Pyrene	1.4	0.20	1.670	0	83.6	47.8	95.7			
1,2,4-Trichlorobenzene	1.0	0.20	1.670	0	62.4	36.6	117			
Surr: 2-Fluorophenol	1.7		3.330		50.5	41.1	115			
Surr: Phenol-d5	1.9		3.330		57.9	46.8	124			
Surr: 2,4,6-Tribromophenol	2.5		3.330		74.0	49.3	130			
Surr: Nitrobenzene-d5	1.0		1.670		60.4	44.6	124			
Surr: 2-Fluorobiphenyl	1.1		1.670		66.8	46.1	123			
Surr: 4-Terphenyl-d14	1.5		1.670		88.8	29.8	107			

Sample ID	mb-39166		SampType: MBLK		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	PBS		Batch ID: 39166		RunNo: 52733					
Prep Date:	7/12/2018		Analysis Date: 7/16/2018		SeqNo: 1731985		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	mb-39166	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	39166	RunNo:	52733					
Prep Date:	7/12/2018	Analysis Date:	7/16/2018	SeqNo:	1731985	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	0.36	0.50								J
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.37	0.40								J
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	0.15	0.20								J
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	mb-39166		SampType:	MBLK		TestCode:	EPA Method 8270C: Semivolatiles			
Client ID:	PBS		Batch ID:	39166		RunNo:	52733			
Prep Date:	7/12/2018		Analysis Date:	7/16/2018		SeqNo:	1731985		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.2		3.330		64.6	41.1	115			
Surr: Phenol-d5	2.4		3.330		73.3	46.8	124			
Surr: 2,4,6-Tribromophenol	2.5		3.330		74.8	49.3	130			
Surr: Nitrobenzene-d5	1.1		1.670		68.5	44.6	124			
Surr: 2-Fluorobiphenyl	1.2		1.670		70.3	46.1	123			
Surr: 4-Terphenyl-d14	1.5		1.670		90.2	29.8	107			

Sample ID	mb-39389		SampType:	MBLK		TestCode:	EPA Method 8270C: Semivolatiles			
Client ID:	PBS		Batch ID:	39389		RunNo:	53012			
Prep Date:	7/25/2018		Analysis Date:	7/26/2018		SeqNo:	1742602		Units: %Rec	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	2.0		3.330		60.4	41.1	115			
Surr: Phenol-d5	2.2		3.330		66.8	46.8	124			
Surr: 2,4,6-Tribromophenol	2.4		3.330		73.0	49.3	130			
Surr: Nitrobenzene-d5	1.1		1.670		66.2	44.6	124			
Surr: 2-Fluorobiphenyl	1.2		1.670		74.1	46.1	123			
Surr: 4-Terphenyl-d14	1.6		1.670		94.4	29.8	107			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	lcs-39389		SampType: LCS		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS		Batch ID: 39389		RunNo: 53012					
Prep Date:	7/25/2018		Analysis Date: 7/26/2018		SeqNo: 1742603		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	1.9		3.330		57.7	41.1	115			
Surr: Phenol-d5	2.2		3.330		65.1	46.8	124			
Surr: 2,4,6-Tribromophenol	2.3		3.330		67.9	49.3	130			
Surr: Nitrobenzene-d5	1.0		1.670		61.2	44.6	124			
Surr: 2-Fluorobiphenyl	1.0		1.670		61.5	46.1	123			
Surr: 4-Terphenyl-d14	1.4		1.670		83.1	29.8	107			

Sample ID	lcsd-39389		SampType: LCSD		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS02		Batch ID: 39389		RunNo: 53012					
Prep Date:	7/25/2018		Analysis Date: 7/26/2018		SeqNo: 1742604		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	1.8		3.330		53.6	41.1	115	0	0	
Surr: Phenol-d5	2.1		3.330		61.7	46.8	124	0	0	
Surr: 2,4,6-Tribromophenol	2.2		3.330		65.1	49.3	130	0	0	
Surr: Nitrobenzene-d5	1.0		1.670		60.6	44.6	124	0	0	
Surr: 2-Fluorobiphenyl	1.1		1.670		67.0	46.1	123	0	0	
Surr: 4-Terphenyl-d14	1.4		1.670		84.3	29.8	107	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	MB-R53202		SampType:	MBLK		TestCode:	CYANIDE-TOTAL			
Client ID:	PBS		Batch ID:	R53202		RunNo:	53202			
Prep Date:			Analysis Date:	7/10/2018		SeqNo:	1750659	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	ND	0.25								

Sample ID	LCS-R53202		SampType:	LCS		TestCode:	CYANIDE-TOTAL			
Client ID:	LCSS		Batch ID:	R53202		RunNo:	53202			
Prep Date:			Analysis Date:	7/10/2018		SeqNo:	1750660	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide	2.5		2.500	0	101	50	150			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	MB-39078		SampType: MBLK		TestCode: EPA Method 7471: Mercury					
Client ID:	PBS		Batch ID: 39078		RunNo: 52511					
Prep Date:	7/6/2018		Analysis Date: 7/6/2018		SeqNo: 1722083		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercurv	ND	0.033								

Sample ID	LCS-39078			SampType:	LCS		TestCode:	EPA Method 7471: Mercury			
Client ID:	LCSS			Batch ID:	39078		RunNo:	52511			
Prep Date:	7/6/2018			Analysis Date:	7/6/2018		SeqNo:	1722084		Units:	mg/Kg
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.16	0.033	0.1667	0	96.5	80	120				

Sample ID	LLLCS-39078		SampType: LCSLL		TestCode: EPA Method 7471: Mercury					
Client ID:	BatchQC		Batch ID: 39078		RunNo: 52511					
Prep Date:	7/6/2018		Analysis Date: 7/6/2018		SeqNo: 1722085		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0056	0.033	0.006660	0	84.2	70	130			J

Sample ID	1807001-002BMS		SampType:	MS		TestCode:	EPA Method 7471: Mercury				
Client ID:	CENTRAL OCD LF V		Batch ID:	39078		RunNo:	52511				
Prep Date:	7/6/2018		Analysis Date:	7/6/2018		SeqNo:	1722088		Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.17	0.033	0.1651	0	102	80	120				

Sample ID	1807001-002BMSD			SampType:	MSD		TestCode:	EPA Method 7471: Mercury			
Client ID:	CENTRAL OCD LF V			Batch ID:	39078		RunNo:	52511			
Prep Date:	7/6/2018		Analysis Date:	7/6/2018		SeqNo:	1722089		Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.17	0.033	0.1660	0	99.6	80	120	2.31	20		

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	MB-39100		SampType:	MBLK		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	PBS		Batch ID:	39100		RunNo:	52556			
Prep Date:	7/9/2018		Analysis Date:	7/10/2018		SeqNo:	1723910	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	2.5								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	0.068	0.30								J
Iron	ND	2.5								
Lead	ND	0.25								
Manganese	ND	0.10								
Selenium	ND	2.5								
Silver	ND	0.25								

Sample ID	LCS-39100		SampType:	LCS		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	LCSS		Batch ID:	39100		RunNo:	52556			
Prep Date:	7/9/2018		Analysis Date:	7/10/2018		SeqNo:	1723911	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	24	2.5	25.00	0	95.4	80	120			
Barium	26	0.10	25.00	0	104	80	120			
Cadmium	26	0.10	25.00	0	102	80	120			
Chromium	26	0.30	25.00	0	104	80	120			
Copper	26	0.30	25.00	0	104	80	120			
Iron	25	2.5	25.00	0	101	80	120			
Lead	24	0.25	25.00	0	96.0	80	120			
Manganese	24	0.10	25.00	0	97.5	80	120			
Selenium	23	2.5	25.00	0	92.9	80	120			
Silver	5.2	0.25	5.000	0	104	80	120			

Sample ID	MB-39100		SampType:	MBLK		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	PBS		Batch ID:	39100		RunNo:	52556			
Prep Date:	7/9/2018		Analysis Date:	7/10/2018		SeqNo:	1725118	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	ND	0.30								

Sample ID	1807001-002BMS		SampType:	MS		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	CENTRAL OCD LF V		Batch ID:	39100		RunNo:	52556			
Prep Date:	7/9/2018		Analysis Date:	7/10/2018		SeqNo:	1725143	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	22	12	24.24	0	90.9	75	125			
Barium	300	0.48	24.24	267.3	135	75	125			S

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	1807001-002BMS		SampType: MS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	CENTRAL OCD LF V		Batch ID: 39100		RunNo: 52556					
Prep Date:	7/9/2018		Analysis Date: 7/10/2018		SeqNo: 1725143		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	21	0.48	24.24	0	87.0	75	125			
Chromium	39	1.5	24.24	15.14	97.0	75	125			
Copper	24	1.5	24.24	2.079	89.6	75	125			
Lead	23	1.2	24.24	1.990	84.8	75	125			
Manganese	410	0.48	24.24	418.6	-36.2	75	125			S
Selenium	12	12	24.24	0	48.5	75	125			JS
Silver	3.2	1.2	4.849	0	65.2	75	125			S

Sample ID	1807001-002BMSD		SampType: MSD		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	CENTRAL OCD LF V		Batch ID: 39100		RunNo: 52556					
Prep Date:	7/9/2018		Analysis Date: 7/10/2018		SeqNo: 1725144		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	21	12	24.20	0	86.6	75	125	4.99	20	
Barium	290	0.48	24.20	267.3	73.9	75	125	5.11	20	S
Cadmium	21	0.48	24.20	0	87.7	75	125	0.562	20	
Chromium	41	1.5	24.20	15.14	108	75	125	6.37	20	
Copper	24	1.5	24.20	2.079	91.8	75	125	2.06	20	
Lead	22	1.2	24.20	1.990	80.8	75	125	4.54	20	
Manganese	460	0.48	24.20	418.6	161	75	125	11.0	20	S
Selenium	19	12	24.20	0	77.1	75	125	45.3	20	R
Silver	3.2	1.2	4.839	0	66.6	75	125	1.85	20	S

Sample ID	MB-39100		SampType:	MBLK		TestCode:	EPA Method 6010B: Soil Metals				
Client ID:	PBS		Batch ID:	39100		RunNo:	52556				
Prep Date:	7/9/2018		Analysis Date:	7/10/2018		SeqNo:	1725171		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Uranium	ND	5.0									
Zinc	ND	2.5									

Sample ID	LCS-39100			SampType:	LCS		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	LCSS			Batch ID:	39100		RunNo:	52556			
Prep Date:	7/9/2018			Analysis Date:	7/10/2018		SeqNo:	1725172		Units:	mg/Kg
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Uranium	22	5.0	25.00	0	86.3	80	120				
Zinc	23	2.5	25.00	0	91.3	80	120				

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	1807001-002BMS	SampType:	MS	TestCode:	EPA Method 6010B: Soil Metals						
Client ID:	CENTRAL OCD LF V	Batch ID:	39100	RunNo:	52556						
Prep Date:	7/9/2018	Analysis Date:	7/10/2018	SeqNo:	1725178	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Uranium	ND	24	24.24	0	0	75	125			S	
Zinc	44	12	24.24	20.61	95.7	75	125				

Sample ID	1807001-002BMSD	SampType:	MSD	TestCode:	EPA Method 6010B: Soil Metals						
Client ID:	CENTRAL OCD LF V	Batch ID:	39100	RunNo:	52556						
Prep Date:	7/9/2018	Analysis Date:	7/10/2018	SeqNo:	1725179	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Uranium	ND	24	24.20	0	0	75	125	0	20	S	
Zinc	50	12	24.20	20.61	121	75	125	12.8	20		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807001

06-Aug-18

Client: Western Refining Southwest, Gallup
Project: Central OCD Landfarm Semiannual Sampling

Sample ID	MB-R53202		SampType:	MBLK		TestCode:	EPA 903.1: Ra 226 and EPA 904.0: Ra 228-Subbed			
Client ID:	PBW		Batch ID:	R53202		RunNo:	53202			
Prep Date:			Analysis Date:	8/1/2018		SeqNo:	1750670	Units:	pCi/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Radium-226	0	0.332								
Radium-226 ±	0.113	0.332								
Radium-228	0	0.569								
Radium-228 ±	0.077	0.569								

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Sample Log-In Check List

Client Name: Western Refining Gallup

Work Order Number: 1807001

RcptNo: 1

Received By: Andy Freeman

6/29/2018 3:25:00 PM

Completed By: Anne Thorne

7/2/2018 8:59:07 AM

Reviewed By:

507.2.16
Labeled by: 07/02/18

Andy Freeman

Anne Thorne

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐

2. How was the sample delivered? Client

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐

4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐

5. Sample(s) in proper container(s)? Yes ☒ No ☐

6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐

7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐

8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐

9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒

10. Were any sample containers received broken? Yes ☐ No ☒

11. Does paperwork match bottle labels? Yes ☒ No ☐

(Note discrepancies on chain of custody)

12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐

13. Is it clear what analyses were requested? Yes ☒ No ☐

14. Were all holding times able to be met? Yes ☒ No ☐

(If no, notify customer for authorization.)

of preserved
bottles checked
for pH: _____
(<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

CUSTODY SEALS INTACT ON ALL SAMPLE BOTTLES/at 7/1/18

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.0	Good	Yes			
2	3.3	Good	Yes			


**HALL ENVIRONMENTAL
ANALYSIS LABORATORY**



4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

email or Fax#: Brian.Moore@Andeavor.com	Project Manager: Brian Moore
QA/QC Package:	
<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Level 4 (Full Validation)
<input type="checkbox"/> Other _____	
<input checked="" type="checkbox"/> EDD (Type) EXCEL	
Sampler: Tracy Payne - 919-561-7055	
On Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Temperature: _____	

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
9/29/18	0920	SOIL	CENTRAL OCD LF TZ01	8oz jar- 3 4oz jar - 1	None	1807001
	0950		CENTRAL OCD LF VZ01	8oz jar- 3 4oz jar - 1	None	202
			CENTRAL OCD LF VZ01MS	8oz jar- 3 4oz jar - 1	None	20101119 203
			CENTRAL OCD LF VZ01MSD	8oz jar- 3 4oz jar - 1	None	202
	1635		CENTRAL OCD LF TZ02	8oz jar- 3 4oz jar - 1	None	203
	1045		CENTRAL OCD LF VZ02	8oz jar- 3 4oz jar - 1	None	204
	---	WATER	TRIP BLANK	40ml voa-3	HCl	205

Date: 6/29/18	Time: 1525	Relinquished by: 	Received by: 	Date: 6/29/18	Time: 1525
Date:	Time:	Relinquished by:	Received by:	Date:	Time:

cooler 1 temp $6.0 - 1.0 = 5.0^{\circ}\text{C}$
cooler 2 temp $4.3 - 1 = 3.3^{\circ}\text{C}$

Chain-of-Custody Record

Client: **Andeavor**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

email or Fax#: **Brian.Moore@Andeavor.com**

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

☐ Other

☒ EDD (Type) **EXCEL**

Turn-Around Time:

☒ Standard ☐ Rush

Project Name: **CENTRAL OCD LANDFARM**

SEMIANNUAL SAMPLING

Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne - 919-561-7055**

On Ice: ☒ Yes ☐ No

Sample Temperature:

Date Time Matrix Sample Request ID

6/29/18 1120

SOIL

CENTRAL OCD LF TZ03

1130

CENTRAL OCD LF VZ03

1200

CENTRAL OCD LF TZ04

1210

CENTRAL OCD LF VZ04

--

CENTRAL OCD LF DUP01

1215

WATER

CENTRAL OCD LF FB01

1220

WATER

CENTRAL OCD LF EB01

--

WATER

TRIP BLANK

Date: 6/29/18 1525

Relinquished by: *[Signature]*

Date: 6/29/18 1525

Relinquished by: *[Signature]*

Received by: *[Signature]*

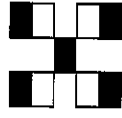
Date: 6/29/18 1525

Received by: *[Signature]*

Date: 6/29/18 1525

Remarks:

Cooler 1 temp 6.0 - 1 = 5.0 °C
Cooler 2 temp 4.3 - 1 = 3.3 °C



**HALL ENVIRONMENTAL
ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

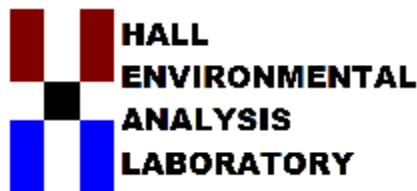
BTEX+MTBE+TMBs(8021)	BTEX+MTBE+TPH(Gas only)	TPH 8015 (GRO/DRO/MRO)	TPH (Method 418.1)	EDB (Method 8011)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F, Cl, NO ₃ , NO ₂ , PO ₄ , SO ₄)	8081 Pesticides / 8082 PCB's	8260B	8270 (Semi-VOA)	VADOSE ZONE LIST	NMAC LIST	BTEX
		X									X	X	
											X	X	
		X									X	X	
											X	X	
											X	X	
													X
													X
													X

NMAC LIST ANALYTES AND REPORTING LIMITS, CONSTITUENTS LISTED IN SUBSECTIONS A AND B OF 20.6.2.3103 NMAC, CENTRAL OIL CONSERVATION DIVISION LANDFARM
WESTERN REFINING SOUTHWEST, GALLUP REFINERY, GALLUP, NEW MEXICO

Analyte	Analytical Method	Reporting Units	Requested Reporting Limit
Fluoride	E300	mg/kg	0.3000
Nitrogen, Nitrate (As N)	E300	mg/kg	2.2000
Sulfate	E300	mg/kg	21.6000
*Radium-226	E901.1	pCi/g	1.3650
*Radium-228	E901.1	pCi/g	1.2500
*Radium-226+Radium-228	E901.1	pCi/g	2.6150
Arsenic	SW8010A	mg/kg	2.5000
Barium	SW8010A	mg/kg	1.0000
Cadmium	SW8010A	mg/kg	0.1000
Chromium	SW8010A	mg/kg	0.3000
Copper	SW8010A	mg/kg	0.8000
Iron	SW8010A	mg/kg	600.0000
Lead	SW8010A	mg/kg	0.2000
Manganese	SW8010A	mg/kg	1.0000
Selenium	SW8010A	mg/kg	2.5000
Silver	SW8010A	mg/kg	0.2000
Uranium	SW8010A	mg/kg	5.0000
Zinc	SW8010A	mg/kg	2.5000
Mercury	SW7471	mg/kg	0.0320
Aroclor 1016	SW8082	mg/kg	0.0200
Aroclor 1221	SW8082	mg/kg	0.0200
Aroclor 1232	SW8082	mg/kg	0.0200
Aroclor 1242	SW8082	mg/kg	0.0200
Aroclor 1248	SW8082	mg/kg	0.0200
Aroclor 1254	SW8082	mg/kg	0.0200
Aroclor 1260	SW8082	mg/kg	0.0200
1,1,1-Trichloroethane	SW8260B	mg/kg	0.0480
1,1,2-Trichloroethane	SW8260B	mg/kg	0.0480
1,1-Dichloroethane	SW8260B	mg/kg	0.0870
1,1-Dichloroethene	SW8260B	mg/kg	0.0480
1,2-Dichloroethane	SW8260B	mg/kg	0.0480
Carbon tetrachloride	SW8260B	mg/kg	0.0870
Chloroform	SW8260B	mg/kg	0.0480
Dibromomethane	SW8260B	mg/kg	0.1000
Methylene chloride	SW8260B	mg/kg	0.1500
Tetrachloroethene	SW8260B	mg/kg	0.0480
Trichloroethene	SW8260B	mg/kg	0.0480
Vinyl chloride	SW8260B	mg/kg	0.0480
2,4,5-Trichlorophenol	SW8270C	mg/kg	0.2000
2,4,6-Trichlorophenol	SW8270C	mg/kg	0.2000
2,4-Dichlorophenol	SW8270C	mg/kg	0.4000
2,4-Dimethylphenol	SW8270C	mg/kg	0.3000
2,4-Dinitrophenol	SW8270C	mg/kg	0.4000
2-Chlorophenol	SW8270C	mg/kg	0.2000
2-Methylphenol	SW8270C	mg/kg	0.1000
2-Nitrophenol	SW8270C	mg/kg	0.1000
3,4-Methylenedianiline	SW8270C	mg/kg	0.1000
4,6-Dinitro-2-methylphenol	SW8270C	mg/kg	0.6000
4-Chloro-3-methylphenol	SW8270C	mg/kg	0.1000
4-Nitrophenol	SW8270C	mg/kg	0.1000
Pentachlorophenol	SW8270C	mg/kg	0.4000
Phenol	SW8270C	mg/kg	0.2000
1-Methylnaphthalene	SW8270C	mg/kg	0.2000
2-Methylnaphthalene	SW8270C	mg/kg	0.2000
Acenaphthene	SW8270C	mg/kg	0.2000
Acenaphthylene	SW8270C	mg/kg	0.2000
Anthracene	SW8270C	mg/kg	0.2000
Benzo(a)anthracene	SW8270C	mg/kg	0.2000
Benzo(a)pyrene	SW8270C	mg/kg	0.2000
Benzo(b)fluoranthene	SW8270C	mg/kg	0.2000
Benzo(g,h,i)perylene	SW8270C	mg/kg	0.2000
Benzo(k)fluoranthene	SW8270C	mg/kg	0.2000
Chrysene	SW8270C	mg/kg	0.2000
Dibenz(a,h)anthracene	SW8270C	mg/kg	0.2000
Fluoranthene	SW8270C	mg/kg	0.2000
Indeno(1,2,3-c,d)pyrene	SW8270C	mg/kg	0.2000
Naphthalene	SW8270C	mg/kg	0.2000
Phenanthrene	SW8270C	mg/kg	0.2000
Pyrene	SW8270C	mg/kg	0.2000
Cyanide	EPA 336.4	mg/kg	0.3000
Diesel Range Organics (DRO)	SW8016	mg/kg	12
Gasoline Range Organics (GRO)	SW8016	mg/kg	1.0

VADOSE ZONE ANALYTES AND REPORTING LIMITS, CENTRAL OIL CONSERVATION DIVISION LANDFARM
WESTERN REFINING SOUTHWEST, GALLUP REFINERY, GALLUP, NEW MEXICO

Analyte	Analytical Method	Reporting Units	Requested Reporting Limit
Chloride	E900	mg/kg	50
Benzene	SW8260B	mg/kg	0.050
Ethylbenzene	SW8260B	mg/kg	0.050
Toluene	SW8260B	mg/kg	0.050
Xylenes, Total	SW8260B	mg/kg	0.100
Petroleum Hydrocarbons, TR	E418.1	mg/kg	20



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 09, 2019

Brian Moore
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: OCD Central Landfarm Semiannual Sampling

OrderNo.: 1812713

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 13 sample(s) on 12/12/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 2:15:00 PM

Lab ID: 1812713-001

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								Analyst: TOM
Aroclor 1016	ND	0.020	0.047		mg/Kg	1	1/4/2019 2:24:02 PM	42179
Aroclor 1221	ND	0.037	0.047		mg/Kg	1	1/4/2019 2:24:02 PM	42179
Aroclor 1232	ND	0.046	0.047		mg/Kg	1	1/4/2019 2:24:02 PM	42179
Aroclor 1242	ND	0.025	0.047		mg/Kg	1	1/4/2019 2:24:02 PM	42179
Aroclor 1248	ND	0.037	0.047		mg/Kg	1	1/4/2019 2:24:02 PM	42179
Aroclor 1254	ND	0.037	0.047		mg/Kg	1	1/4/2019 2:24:02 PM	42179
Aroclor 1260	ND	0.018	0.047		mg/Kg	1	1/4/2019 2:24:02 PM	42179
Surr: Decachlorobiphenyl	86.4	0	31.9-130		%Rec	1	1/4/2019 2:24:02 PM	42179
Surr: Tetrachloro-m-xylene	92.0	0	21.2-142		%Rec	1	1/4/2019 2:24:02 PM	42179
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	120	2.0	9.8		mg/Kg	1	12/17/2018 3:16:44 PM	42113
Motor Oil Range Organics (MRO)	160	49	49		mg/Kg	1	12/17/2018 3:16:44 PM	42113
Surr: DNOP	95.1	0	50.6-138		%Rec	1	12/17/2018 3:16:44 PM	42113
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.8		mg/Kg	1	12/14/2018 4:21:22 PM	42099
Surr: BFB	97.6	0	73.8-119		%Rec	1	12/14/2018 4:21:22 PM	42099
EPA METHOD 300.0: ANIONS								Analyst: MRA
Fluoride	9.9	1.0	1.5		mg/Kg	5	12/27/2018 1:30:11 PM	42333
Chloride	170	7.5	7.5		mg/Kg	5	12/27/2018 1:30:11 PM	42333
Nitrogen, Nitrate (As N)	2.4	0.28	1.5		mg/Kg	5	12/27/2018 1:30:11 PM	42333
Sulfate	3400	13	75		mg/Kg	50	12/31/2018 5:47:33 PM	42333
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	0.30	0.0069	0.034		mg/Kg	1	12/18/2018 10:07:36 A	42145
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Arsenic	ND	2.8	5.0		mg/Kg	2	12/20/2018 1:25:29 PM	42118
Barium	310	0.046	0.20		mg/Kg	2	12/20/2018 1:25:29 PM	42118
Cadmium	ND	0.048	0.20		mg/Kg	2	12/20/2018 1:25:29 PM	42118
Chromium	15	0.16	0.60		mg/Kg	2	12/20/2018 1:25:29 PM	42118
Copper	12	0.22	0.60		mg/Kg	2	12/20/2018 1:25:29 PM	42118
Iron	19000	72	250		mg/Kg	100	12/19/2018 8:11:39 AM	42118
Lead	4.7	0.48	0.50		mg/Kg	2	12/20/2018 1:25:29 PM	42118
Manganese	390	0.041	0.20		mg/Kg	2	12/20/2018 1:25:29 PM	42118
Selenium	ND	2.5	5.0		mg/Kg	2	12/20/2018 1:25:29 PM	42118
Silver	ND	0.064	0.50		mg/Kg	2	12/20/2018 1:25:29 PM	42118
Uranium	ND	2.2	5.0		mg/Kg	1	12/18/2018 4:38:25 PM	42118
Zinc	41	0.39	2.5		mg/Kg	1	12/18/2018 4:38:25 PM	42118

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 1 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 2:15:00 PM

Lab ID: 1812713-001

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Acenaphthylene	ND	0.98	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Aniline	ND	0.94	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Anthracene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Azobenzene	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Benz(a)anthracene	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Benzo(a)pyrene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Benzo(b)fluoranthene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Benzo(g,h,i)perylene	ND	1.6	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Benzo(k)fluoranthene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Benzoic acid	ND	1.4	4.8	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Benzyl alcohol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Bis(2-chloroethoxy)methane	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Bis(2-chloroethyl)ether	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Bis(2-chloroisopropyl)ether	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Bis(2-ethylhexyl)phthalate	ND	2.7	4.8	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
4-Bromophenyl phenyl ether	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Butyl benzyl phthalate	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Carbazole	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
4-Chloro-3-methylphenol	ND	1.3	4.8	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
4-Chloroaniline	ND	1.1	4.8	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
2-Chloronaphthalene	ND	1.1	2.4	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
2-Chlorophenol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
4-Chlorophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Chrysene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Di-n-butyl phthalate	ND	2.7	3.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Di-n-octyl phthalate	ND	1.1	3.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Dibenz(a,h)anthracene	ND	1.6	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Dibenzofuran	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
1,2-Dichlorobenzene	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
1,3-Dichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
1,4-Dichlorobenzene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
3,3'-Dichlorobenzidine	ND	0.96	2.4	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Diethyl phthalate	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Dimethyl phthalate	ND	0.98	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
2,4-Dichlorophenol	ND	1.2	3.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
2,4-Dimethylphenol	ND	0.91	2.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
4,6-Dinitro-2-methylphenol	ND	0.89	3.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
2,4-Dinitrophenol	ND	0.62	4.8	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 2 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 2:15:00 PM

Lab ID: 1812713-001

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.99	4.8	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
2,6-Dinitrotoluene	ND	1.2	4.8	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Fluoranthene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Fluorene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Hexachlorobenzene	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Hexachlorobutadiene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Hexachlorocyclopentadiene	ND	0.96	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Hexachloroethane	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Indeno(1,2,3-cd)pyrene	ND	1.4	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Isophorone	ND	1.2	3.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
1-Methylnaphthalene	ND	1.4	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
2-Methylnaphthalene	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
2-Methylphenol	ND	1.3	3.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
3+4-Methylphenol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
N-Nitrosodi-n-propylamine	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
N-Nitrosodiphenylamine	ND	0.99	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Naphthalene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
2-Nitroaniline	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
3-Nitroaniline	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
4-Nitroaniline	ND	0.93	3.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Nitrobenzene	ND	1.1	3.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
2-Nitrophenol	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
4-Nitrophenol	ND	1.5	2.4	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Pentachlorophenol	ND	0.98	3.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Phenanthrene	ND	0.98	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Phenol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Pyrene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Pyridine	ND	1.2	3.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
1,2,4-Trichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
2,4,5-Trichlorophenol	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
2,4,6-Trichlorophenol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 1:55:52 PM	42141
Surr: 2-Fluorophenol	0		21.7-87.9	SD	%Rec	1	12/31/2018 1:55:52 PM	42141
Surr: Phenol-d5	0		30.2-92.2	SD	%Rec	1	12/31/2018 1:55:52 PM	42141
Surr: 2,4,6-Tribromophenol	0		47.1-103	SD	%Rec	1	12/31/2018 1:55:52 PM	42141
Surr: Nitrobenzene-d5	0		23.9-102	SD	%Rec	1	12/31/2018 1:55:52 PM	42141
Surr: 2-Fluorobiphenyl	0		32.6-101	SD	%Rec	1	12/31/2018 1:55:52 PM	42141
Surr: 4-Terphenyl-d14	0		37.2-117	SD	%Rec	1	12/31/2018 1:55:52 PM	42141

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0039	0.024		mg/Kg	1	12/18/2018 4:37:22 AM	42099
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 3 of 72
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 2:15:00 PM

Lab ID: 1812713-001

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0046	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Ethylbenzene	ND	0.0028	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Methyl tert-butyl ether (MTBE)	ND	0.011	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,2,4-Trimethylbenzene	ND	0.0044	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,3,5-Trimethylbenzene	ND	0.0046	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,2-Dichloroethane (EDC)	ND	0.0049	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,2-Dibromoethane (EDB)	ND	0.0044	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Naphthalene	ND	0.0096	0.096		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1-Methylnaphthalene	ND	0.028	0.19		mg/Kg	1	12/18/2018 4:37:22 AM	42099
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Acetone	ND	0.040	0.72		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Bromobenzene	ND	0.0046	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Bromodichloromethane	ND	0.0044	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Bromoform	ND	0.0043	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Bromomethane	ND	0.012	0.14		mg/Kg	1	12/18/2018 4:37:22 AM	42099
2-Butanone	ND	0.056	0.48		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Carbon disulfide	ND	0.016	0.48		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Carbon tetrachloride	ND	0.0045	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Chlorobenzene	ND	0.0061	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Chloroethane	ND	0.0071	0.096		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Chloroform	ND	0.0039	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Chloromethane	ND	0.0046	0.14		mg/Kg	1	12/18/2018 4:37:22 AM	42099
2-Chlorotoluene	ND	0.0042	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
4-Chlorotoluene	ND	0.0039	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
cis-1,2-DCE	ND	0.0066	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
cis-1,3-Dichloropropene	ND	0.0040	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,2-Dibromo-3-chloropropane	ND	0.0049	0.096		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Dibromochloromethane	ND	0.0034	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Dibromomethane	ND	0.0052	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,2-Dichlorobenzene	ND	0.0039	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,3-Dichlorobenzene	ND	0.0042	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,4-Dichlorobenzene	ND	0.0040	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Dichlorodifluoromethane	ND	0.011	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,1-Dichloroethane	ND	0.0031	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,1-Dichloroethene	ND	0.019	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,2-Dichloropropane	ND	0.0035	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,3-Dichloropropane	ND	0.0052	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
2,2-Dichloropropane	ND	0.016	0.096		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,1-Dichloropropene	ND	0.0044	0.096		mg/Kg	1	12/18/2018 4:37:22 AM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 4 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 2:15:00 PM

Lab ID: 1812713-001

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.0049	0.096		mg/Kg	1	12/18/2018 4:37:22 AM	42099
2-Hexanone	ND	0.0080	0.48		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Isopropylbenzene	ND	0.0035	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
4-Isopropyltoluene	ND	0.0040	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
4-Methyl-2-pentanone	ND	0.0091	0.48		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Methylene chloride	ND	0.0085	0.14		mg/Kg	1	12/18/2018 4:37:22 AM	42099
n-Butylbenzene	ND	0.0045	0.14		mg/Kg	1	12/18/2018 4:37:22 AM	42099
n-Propylbenzene	ND	0.0038	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
sec-Butylbenzene	ND	0.0054	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Styrene	ND	0.0038	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
tert-Butylbenzene	ND	0.0045	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,1,1,2-Tetrachloroethane	ND	0.0032	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,1,2,2-Tetrachloroethane	ND	0.0049	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Tetrachloroethene (PCE)	ND	0.0038	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
trans-1,2-DCE	ND	0.0044	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
trans-1,3-Dichloropropene	ND	0.0051	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,2,3-Trichlorobenzene	ND	0.0042	0.096		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,2,4-Trichlorobenzene	ND	0.0048	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,1,1-Trichloroethane	ND	0.0043	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,1,2-Trichloroethane	ND	0.0034	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Trichloroethene (TCE)	ND	0.0056	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Trichlorofluoromethane	ND	0.016	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
1,2,3-Trichloropropane	ND	0.0078	0.096		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Vinyl chloride	ND	0.0031	0.048		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Xylenes, Total	ND	0.012	0.096		mg/Kg	1	12/18/2018 4:37:22 AM	42099
Surr: Dibromofluoromethane	115		70-130		%Rec	1	12/18/2018 4:37:22 AM	42099
Surr: 1,2-Dichloroethane-d4	114		70-130		%Rec	1	12/18/2018 4:37:22 AM	42099
Surr: Toluene-d8	111		70-130		%Rec	1	12/18/2018 4:37:22 AM	42099
Surr: 4-Bromofluorobenzene	103		70-130		%Rec	1	12/18/2018 4:37:22 AM	42099
EPA METHOD 418.1: TPH							Analyst: CLP	
Petroleum Hydrocarbons, TR	280	2.7	20		mg/Kg	1	12/17/2018	42110

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 5 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 2:25:00 PM

Lab ID: 1812713-002

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								Analyst: TOM
Aroclor 1016	ND	0.010	0.024		mg/Kg	1	1/4/2019 3:15:17 PM	42179
Aroclor 1221	ND	0.019	0.024		mg/Kg	1	1/4/2019 3:15:17 PM	42179
Aroclor 1232	ND	0.023	0.024		mg/Kg	1	1/4/2019 3:15:17 PM	42179
Aroclor 1242	ND	0.012	0.024		mg/Kg	1	1/4/2019 3:15:17 PM	42179
Aroclor 1248	ND	0.019	0.024		mg/Kg	1	1/4/2019 3:15:17 PM	42179
Aroclor 1254	ND	0.019	0.024		mg/Kg	1	1/4/2019 3:15:17 PM	42179
Aroclor 1260	ND	0.0089	0.024		mg/Kg	1	1/4/2019 3:15:17 PM	42179
Surr: Decachlorobiphenyl	69.6	0	31.9-130		%Rec	1	1/4/2019 3:15:17 PM	42179
Surr: Tetrachloro-m-xylene	70.8	0	21.2-142		%Rec	1	1/4/2019 3:15:17 PM	42179
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	11	1.9	9.6		mg/Kg	1	12/17/2018 4:05:37 PM	42113
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	12/17/2018 4:05:37 PM	42113
Surr: DNOP	93.7	0	50.6-138		%Rec	1	12/17/2018 4:05:37 PM	42113
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.7		mg/Kg	1	12/14/2018 4:44:51 PM	42099
Surr: BFB	94.0	0	73.8-119		%Rec	1	12/14/2018 4:44:51 PM	42099
EPA METHOD 300.0: ANIONS								Analyst: MRA
Fluoride	3.7	1.0	1.5		mg/Kg	5	12/27/2018 1:55:00 PM	42333
Chloride	330	30	30		mg/Kg	20	12/27/2018 2:32:14 PM	42333
Nitrogen, Nitrate (As N)	1.6	0.28	1.5		mg/Kg	5	12/27/2018 1:55:00 PM	42333
Sulfate	910	5.2	30		mg/Kg	20	12/27/2018 2:32:14 PM	42333
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	ND	0.0068	0.034		mg/Kg	1	12/18/2018 10:09:34 A	42145
EPA METHOD 6010B: SOIL METALS								Analyst: JLF
Arsenic	ND	7.0	12		mg/Kg	5	12/22/2018 2:53:18 PM	42118
Barium	270	0.11	0.49		mg/Kg	5	12/22/2018 2:53:18 PM	42118
Cadmium	ND	0.12	0.49		mg/Kg	5	12/22/2018 2:53:18 PM	42118
Chromium	16	0.39	1.5		mg/Kg	5	12/22/2018 2:53:18 PM	42118
Copper	3.5	0.55	1.5		mg/Kg	5	12/22/2018 2:53:18 PM	42118
Iron	20000	72	250		mg/Kg	100	12/19/2018 8:13:41 AM	42118
Lead	4.3	1.2	1.2		mg/Kg	5	12/22/2018 2:53:18 PM	42118
Manganese	350	0.10	0.49		mg/Kg	5	12/22/2018 2:53:18 PM	42118
Selenium	ND	6.2	12		mg/Kg	5	12/22/2018 2:53:18 PM	42118
Silver	ND	0.16	1.2		mg/Kg	5	12/22/2018 2:53:18 PM	42118
Uranium	ND	11	25		mg/Kg	5	12/22/2018 2:53:18 PM	42118
Zinc	23	1.9	12		mg/Kg	5	12/22/2018 2:53:18 PM	42118

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 6 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 2:25:00 PM

Lab ID: 1812713-002

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Acenaphthylene	ND	0.20	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Aniline	ND	0.19	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Anthracene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Azobenzene	ND	0.27	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Benz(a)anthracene	ND	0.27	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Benzo(a)pyrene	ND	0.31	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Benzo(b)fluoranthene	ND	0.31	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Benzo(g,h,i)perylene	ND	0.32	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Benzo(k)fluoranthene	ND	0.32	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Benzoic acid	ND	0.29	1.0	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Benzyl alcohol	ND	0.27	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Bis(2-chloroethoxy)methane	ND	0.23	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Bis(2-chloroethyl)ether	ND	0.24	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Bis(2-chloroisopropyl)ether	ND	0.24	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Bis(2-ethylhexyl)phthalate	ND	0.55	1.0	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
4-Bromophenyl phenyl ether	ND	0.27	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Butyl benzyl phthalate	ND	0.26	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Carbazole	ND	0.24	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
4-Chloro-3-methylphenol	ND	0.27	1.0	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
4-Chloroaniline	ND	0.22	1.0	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
2-Chloronaphthalene	ND	0.22	0.50	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
2-Chlorophenol	ND	0.26	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
4-Chlorophenyl phenyl ether	ND	0.21	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Chrysene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Di-n-butyl phthalate	ND	0.55	0.80	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Di-n-octyl phthalate	ND	0.23	0.80	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Dibenz(a,h)anthracene	ND	0.32	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Dibenzofuran	ND	0.23	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
1,2-Dichlorobenzene	ND	0.25	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
1,3-Dichlorobenzene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
1,4-Dichlorobenzene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
3,3'-Dichlorobenzidine	ND	0.20	0.50	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Diethyl phthalate	ND	0.30	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Dimethyl phthalate	ND	0.20	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
2,4-Dichlorophenol	ND	0.25	0.80	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
2,4-Dimethylphenol	ND	0.19	0.60	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
4,6-Dinitro-2-methylphenol	ND	0.18	0.80	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
2,4-Dinitrophenol	ND	0.13	1.0	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 7 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 2:25:00 PM

Lab ID: 1812713-002

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.20	1.0	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
2,6-Dinitrotoluene	ND	0.25	1.0	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Fluoranthene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Fluorene	ND	0.21	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Hexachlorobenzene	ND	0.25	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Hexachlorobutadiene	ND	0.21	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Hexachlorocyclopentadiene	ND	0.20	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Hexachloroethane	ND	0.25	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Indeno(1,2,3-cd)pyrene	ND	0.29	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Isophorone	ND	0.26	0.80	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
1-Methylnaphthalene	ND	0.29	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
2-Methylnaphthalene	ND	0.25	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
2-Methylphenol	ND	0.28	0.80	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
3+4-Methylphenol	ND	0.26	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
N-Nitrosodi-n-propylamine	ND	0.31	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
N-Nitrosodiphenylamine	ND	0.20	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Naphthalene	ND	0.23	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
2-Nitroaniline	ND	0.26	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
3-Nitroaniline	ND	0.21	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
4-Nitroaniline	ND	0.19	0.80	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Nitrobenzene	ND	0.23	0.80	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
2-Nitrophenol	ND	0.25	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
4-Nitrophenol	ND	0.31	0.50	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Pentachlorophenol	ND	0.20	0.80	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Phenanthrene	ND	0.20	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Phenol	ND	0.27	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Pyrene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Pyridine	ND	0.24	0.80	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
1,2,4-Trichlorobenzene	ND	0.24	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
2,4,5-Trichlorophenol	ND	0.23	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
2,4,6-Trichlorophenol	ND	0.26	0.40	D	mg/Kg	1	12/31/2018 2:25:08 PM	42141
Surr: 2-Fluorophenol	118		21.7-87.9	SD	%Rec	1	12/31/2018 2:25:08 PM	42141
Surr: Phenol-d5	125		30.2-92.2	SD	%Rec	1	12/31/2018 2:25:08 PM	42141
Surr: 2,4,6-Tribromophenol	149		47.1-103	SD	%Rec	1	12/31/2018 2:25:08 PM	42141
Surr: Nitrobenzene-d5	133		23.9-102	SD	%Rec	1	12/31/2018 2:25:08 PM	42141
Surr: 2-Fluorobiphenyl	139		32.6-101	SD	%Rec	1	12/31/2018 2:25:08 PM	42141
Surr: 4-Terphenyl-d14	113		37.2-117	D	%Rec	1	12/31/2018 2:25:08 PM	42141

EPA METHOD 8260B: VOLATILES

Analyst: DJF

Benzene	ND	0.0038	0.023		mg/Kg	1	12/18/2018 5:06:33 AM	42099
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 8 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 2:25:00 PM

Lab ID: 1812713-002

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0045	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Ethylbenzene	ND	0.0027	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Methyl tert-butyl ether (MTBE)	ND	0.011	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,2,4-Trimethylbenzene	ND	0.0043	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,3,5-Trimethylbenzene	ND	0.0045	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,2-Dichloroethane (EDC)	ND	0.0048	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,2-Dibromoethane (EDB)	ND	0.0043	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Naphthalene	ND	0.0094	0.094		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1-Methylnaphthalene	ND	0.027	0.19		mg/Kg	1	12/18/2018 5:06:33 AM	42099
2-Methylnaphthalene	ND	0.020	0.19		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Acetone	ND	0.039	0.70		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Bromobenzene	ND	0.0045	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Bromodichloromethane	ND	0.0043	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Bromoform	ND	0.0042	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Bromomethane	ND	0.011	0.14		mg/Kg	1	12/18/2018 5:06:33 AM	42099
2-Butanone	ND	0.054	0.47		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Carbon disulfide	ND	0.015	0.47		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Carbon tetrachloride	ND	0.0044	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Chlorobenzene	ND	0.0060	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Chloroethane	ND	0.0069	0.094		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Chloroform	ND	0.0038	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Chloromethane	ND	0.0045	0.14		mg/Kg	1	12/18/2018 5:06:33 AM	42099
2-Chlorotoluene	ND	0.0041	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
4-Chlorotoluene	ND	0.0038	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
cis-1,2-DCE	ND	0.0064	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
cis-1,3-Dichloropropene	ND	0.0040	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,2-Dibromo-3-chloropropane	ND	0.0048	0.094		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Dibromochloromethane	ND	0.0033	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Dibromomethane	ND	0.0050	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,2-Dichlorobenzene	ND	0.0038	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,3-Dichlorobenzene	ND	0.0041	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,4-Dichlorobenzene	ND	0.0039	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Dichlorodifluoromethane	ND	0.011	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,1-Dichloroethane	ND	0.0030	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,1-Dichloroethene	ND	0.019	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,2-Dichloropropane	ND	0.0034	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,3-Dichloropropane	ND	0.0051	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
2,2-Dichloropropane	ND	0.015	0.094		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,1-Dichloropropene	ND	0.0043	0.094		mg/Kg	1	12/18/2018 5:06:33 AM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 2:25:00 PM

Lab ID: 1812713-002

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.0048	0.094		mg/Kg	1	12/18/2018 5:06:33 AM	42099
2-Hexanone	ND	0.0078	0.47		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Isopropylbenzene	ND	0.0034	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
4-Isopropyltoluene	ND	0.0039	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
4-Methyl-2-pentanone	ND	0.0089	0.47		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Methylene chloride	ND	0.0083	0.14		mg/Kg	1	12/18/2018 5:06:33 AM	42099
n-Butylbenzene	ND	0.0044	0.14		mg/Kg	1	12/18/2018 5:06:33 AM	42099
n-Propylbenzene	ND	0.0037	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
sec-Butylbenzene	ND	0.0053	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Styrene	ND	0.0037	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
tert-Butylbenzene	ND	0.0044	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,1,1,2-Tetrachloroethane	ND	0.0032	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,1,2,2-Tetrachloroethane	ND	0.0048	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Tetrachloroethene (PCE)	ND	0.0037	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
trans-1,2-DCE	ND	0.0043	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
trans-1,3-Dichloropropene	ND	0.0050	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,2,3-Trichlorobenzene	ND	0.0041	0.094		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,2,4-Trichlorobenzene	ND	0.0047	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,1,1-Trichloroethane	ND	0.0042	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,1,2-Trichloroethane	ND	0.0033	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Trichloroethene (TCE)	ND	0.0054	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Trichlorofluoromethane	ND	0.016	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
1,2,3-Trichloropropane	ND	0.0076	0.094		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Vinyl chloride	ND	0.0031	0.047		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Xylenes, Total	ND	0.012	0.094		mg/Kg	1	12/18/2018 5:06:33 AM	42099
Surr: Dibromofluoromethane	112		70-130		%Rec	1	12/18/2018 5:06:33 AM	42099
Surr: 1,2-Dichloroethane-d4	109		70-130		%Rec	1	12/18/2018 5:06:33 AM	42099
Surr: Toluene-d8	109		70-130		%Rec	1	12/18/2018 5:06:33 AM	42099
Surr: 4-Bromofluorobenzene	101		70-130		%Rec	1	12/18/2018 5:06:33 AM	42099
EPA METHOD 418.1: TPH							Analyst: CLP	
Petroleum Hydrocarbons, TR	51	2.7	20		mg/Kg	1	12/17/2018	42110

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 10 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ02

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 3:20:00 PM

Lab ID: 1812713-003

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								Analyst: TOM
Aroclor 1016	ND	0.011	0.024		mg/Kg	1	1/4/2019 5:27:08 PM	42179
Aroclor 1221	ND	0.019	0.024		mg/Kg	1	1/4/2019 5:27:08 PM	42179
Aroclor 1232	ND	0.024	0.024		mg/Kg	1	1/4/2019 5:27:08 PM	42179
Aroclor 1242	ND	0.013	0.024		mg/Kg	1	1/4/2019 5:27:08 PM	42179
Aroclor 1248	ND	0.019	0.024		mg/Kg	1	1/4/2019 5:27:08 PM	42179
Aroclor 1254	ND	0.019	0.024		mg/Kg	1	1/4/2019 5:27:08 PM	42179
Aroclor 1260	ND	0.0091	0.024		mg/Kg	1	1/4/2019 5:27:08 PM	42179
Surr: Decachlorobiphenyl	88.8	0	31.9-130		%Rec	1	1/4/2019 5:27:08 PM	42179
Surr: Tetrachloro-m-xylene	90.0	0	21.2-142		%Rec	1	1/4/2019 5:27:08 PM	42179
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	ND	1.9	9.6		mg/Kg	1	12/17/2018 5:42:59 PM	42113
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	12/17/2018 5:42:59 PM	42113
Surr: DNOP	93.4	0	50.6-138		%Rec	1	12/17/2018 5:42:59 PM	42113
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.9		mg/Kg	1	12/14/2018 5:55:30 PM	42099
Surr: BFB	98.9	0	73.8-119		%Rec	1	12/14/2018 5:55:30 PM	42099
EPA METHOD 300.0: ANIONS								Analyst: MRA
Fluoride	10	1.0	1.5		mg/Kg	5	12/27/2018 2:44:38 PM	42333
Chloride	140	7.5	7.5		mg/Kg	5	12/27/2018 2:44:38 PM	42333
Nitrogen, Nitrate (As N)	5.4	0.28	1.5		mg/Kg	5	12/27/2018 2:44:38 PM	42333
Sulfate	510	1.3	7.5		mg/Kg	5	12/27/2018 2:44:38 PM	42333
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	0.14	0.0070	0.035		mg/Kg	1	12/18/2018 10:15:30 A	42145
EPA METHOD 6010B: SOIL METALS								Analyst: JLF
Arsenic	ND	7.0	12		mg/Kg	5	12/22/2018 3:05:19 PM	42118
Barium	270	0.11	0.49		mg/Kg	5	12/22/2018 3:05:19 PM	42118
Cadmium	ND	0.12	0.49		mg/Kg	5	12/22/2018 3:05:19 PM	42118
Chromium	12	0.39	1.5		mg/Kg	5	12/22/2018 3:05:19 PM	42118
Copper	3.4	0.55	1.5		mg/Kg	5	12/22/2018 3:05:19 PM	42118
Iron	17000	71	240		mg/Kg	100	12/19/2018 8:15:41 AM	42118
Lead	4.2	1.2	1.2		mg/Kg	5	12/22/2018 3:05:19 PM	42118
Manganese	350	0.10	0.49		mg/Kg	5	12/22/2018 3:05:19 PM	42118
Selenium	ND	6.1	12		mg/Kg	5	12/22/2018 3:05:19 PM	42118
Silver	ND	0.16	1.2		mg/Kg	5	12/22/2018 3:05:19 PM	42118
Uranium	ND	11	24		mg/Kg	5	12/22/2018 3:05:19 PM	42118
Zinc	19	1.9	12		mg/Kg	5	12/22/2018 3:05:19 PM	42118

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 11 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ02

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 3:20:00 PM

Lab ID: 1812713-003

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Acenaphthylene	ND	0.10	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Aniline	ND	0.097	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Anthracene	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Azobenzene	ND	0.13	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Benz(a)anthracene	ND	0.14	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Benzo(a)pyrene	ND	0.15	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Benzo(b)fluoranthene	ND	0.15	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Benzo(g,h,i)perylene	ND	0.16	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Benzo(k)fluoranthene	ND	0.16	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Benzoic acid	ND	0.15	0.50		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Benzyl alcohol	ND	0.14	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Bis(2-chloroethoxy)methane	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Bis(2-chloroisopropyl)ether	ND	0.12	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Bis(2-ethylhexyl)phthalate	ND	0.28	0.50		mg/Kg	1	12/31/2018 3:53:07 PM	42141
4-Bromophenyl phenyl ether	ND	0.13	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Butyl benzyl phthalate	ND	0.13	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Carbazole	ND	0.12	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
4-Chloro-3-methylphenol	ND	0.14	0.50		mg/Kg	1	12/31/2018 3:53:07 PM	42141
4-Chloroaniline	ND	0.11	0.50		mg/Kg	1	12/31/2018 3:53:07 PM	42141
2-Chloronaphthalene	ND	0.11	0.25		mg/Kg	1	12/31/2018 3:53:07 PM	42141
2-Chlorophenol	ND	0.13	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
4-Chlorophenyl phenyl ether	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Chrysene	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Di-n-butyl phthalate	ND	0.28	0.40		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Di-n-octyl phthalate	ND	0.12	0.40		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Dibenz(a,h)anthracene	ND	0.16	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Dibenzofuran	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
1,3-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
3,3'-Dichlorobenzidine	ND	0.10	0.25		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Diethyl phthalate	ND	0.15	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Dimethyl phthalate	ND	0.10	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
2,4-Dichlorophenol	ND	0.13	0.40		mg/Kg	1	12/31/2018 3:53:07 PM	42141
2,4-Dimethylphenol	ND	0.095	0.30		mg/Kg	1	12/31/2018 3:53:07 PM	42141
4,6-Dinitro-2-methylphenol	ND	0.092	0.40		mg/Kg	1	12/31/2018 3:53:07 PM	42141
2,4-Dinitrophenol	ND	0.064	0.50		mg/Kg	1	12/31/2018 3:53:07 PM	42141

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 12 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ02

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 3:20:00 PM

Lab ID: 1812713-003

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.10	0.50		mg/Kg	1	12/31/2018 3:53:07 PM	42141
2,6-Dinitrotoluene	ND	0.13	0.50		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Fluoranthene	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Fluorene	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Hexachlorobutadiene	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Hexachlorocyclopentadiene	ND	0.10	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Hexachloroethane	ND	0.12	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Indeno(1,2,3-cd)pyrene	ND	0.15	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Isophorone	ND	0.13	0.40		mg/Kg	1	12/31/2018 3:53:07 PM	42141
1-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
2-Methylnaphthalene	ND	0.13	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
2-Methylphenol	ND	0.14	0.40		mg/Kg	1	12/31/2018 3:53:07 PM	42141
3+4-Methylphenol	ND	0.13	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
N-Nitrosodi-n-propylamine	ND	0.15	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
N-Nitrosodiphenylamine	ND	0.10	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Naphthalene	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
2-Nitroaniline	ND	0.13	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
3-Nitroaniline	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
4-Nitroaniline	ND	0.097	0.40		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Nitrobenzene	ND	0.12	0.40		mg/Kg	1	12/31/2018 3:53:07 PM	42141
2-Nitrophenol	ND	0.13	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
4-Nitrophenol	ND	0.15	0.25		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Pentachlorophenol	ND	0.10	0.40		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Phenanthrene	ND	0.10	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Phenol	ND	0.14	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Pyrene	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Pyridine	ND	0.12	0.40		mg/Kg	1	12/31/2018 3:53:07 PM	42141
1,2,4-Trichlorobenzene	ND	0.12	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
2,4,5-Trichlorophenol	ND	0.11	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
2,4,6-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	12/31/2018 3:53:07 PM	42141
Surr: 2-Fluorophenol	69.2		21.7-87.9		%Rec	1	12/31/2018 3:53:07 PM	42141
Surr: Phenol-d5	70.6		30.2-92.2		%Rec	1	12/31/2018 3:53:07 PM	42141
Surr: 2,4,6-Tribromophenol	72.0		47.1-103		%Rec	1	12/31/2018 3:53:07 PM	42141
Surr: Nitrobenzene-d5	80.5		23.9-102		%Rec	1	12/31/2018 3:53:07 PM	42141
Surr: 2-Fluorobiphenyl	77.1		32.6-101		%Rec	1	12/31/2018 3:53:07 PM	42141
Surr: 4-Terphenyl-d14	78.6		37.2-117		%Rec	1	12/31/2018 3:53:07 PM	42141

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0040	0.024		mg/Kg	1	12/18/2018 5:35:43 AM	42099
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 13 of 72
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ02

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 3:20:00 PM

Lab ID: 1812713-003

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0047	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Ethylbenzene	ND	0.0028	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Methyl tert-butyl ether (MTBE)	ND	0.012	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,2,4-Trimethylbenzene	ND	0.0045	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,3,5-Trimethylbenzene	ND	0.0047	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,2-Dichloroethane (EDC)	ND	0.0050	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,2-Dibromoethane (EDB)	ND	0.0044	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Naphthalene	ND	0.0097	0.097		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1-Methylnaphthalene	ND	0.028	0.19		mg/Kg	1	12/18/2018 5:35:43 AM	42099
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Acetone	ND	0.040	0.73		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Bromobenzene	ND	0.0047	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Bromodichloromethane	ND	0.0044	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Bromoform	ND	0.0044	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Bromomethane	ND	0.012	0.15		mg/Kg	1	12/18/2018 5:35:43 AM	42099
2-Butanone	ND	0.056	0.49		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Carbon disulfide	ND	0.016	0.49		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Carbon tetrachloride	ND	0.0046	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Chlorobenzene	ND	0.0062	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Chloroethane	ND	0.0072	0.097		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Chloroform	ND	0.0039	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Chloromethane	ND	0.0047	0.15		mg/Kg	1	12/18/2018 5:35:43 AM	42099
2-Chlorotoluene	ND	0.0042	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
4-Chlorotoluene	ND	0.0040	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
cis-1,2-DCE	ND	0.0067	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
cis-1,3-Dichloropropene	ND	0.0041	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,2-Dibromo-3-chloropropane	ND	0.0050	0.097		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Dibromochloromethane	ND	0.0035	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Dibromomethane	ND	0.0052	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,2-Dichlorobenzene	ND	0.0040	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,3-Dichlorobenzene	ND	0.0042	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,4-Dichlorobenzene	ND	0.0041	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Dichlorodifluoromethane	ND	0.011	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,1-Dichloroethane	ND	0.0031	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,1-Dichloroethene	ND	0.019	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,2-Dichloropropane	ND	0.0035	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,3-Dichloropropane	ND	0.0053	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
2,2-Dichloropropane	ND	0.016	0.097		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,1-Dichloropropene	ND	0.0044	0.097		mg/Kg	1	12/18/2018 5:35:43 AM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 14 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ02

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 3:20:00 PM

Lab ID: 1812713-003

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.0050	0.097		mg/Kg	1	12/18/2018 5:35:43 AM	42099
2-Hexanone	ND	0.0081	0.49		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Isopropylbenzene	ND	0.0035	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
4-Isopropyltoluene	ND	0.0040	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
4-Methyl-2-pentanone	ND	0.0092	0.49		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Methylene chloride	ND	0.0086	0.15		mg/Kg	1	12/18/2018 5:35:43 AM	42099
n-Butylbenzene	ND	0.0045	0.15		mg/Kg	1	12/18/2018 5:35:43 AM	42099
n-Propylbenzene	ND	0.0039	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
sec-Butylbenzene	ND	0.0055	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Styrene	ND	0.0038	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
tert-Butylbenzene	ND	0.0046	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,1,1,2-Tetrachloroethane	ND	0.0033	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,1,2,2-Tetrachloroethane	ND	0.0049	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Tetrachloroethene (PCE)	ND	0.0039	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
trans-1,2-DCE	ND	0.0045	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
trans-1,3-Dichloropropene	ND	0.0052	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,2,3-Trichlorobenzene	ND	0.0043	0.097		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,2,4-Trichlorobenzene	ND	0.0049	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,1,1-Trichloroethane	ND	0.0044	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,1,2-Trichloroethane	ND	0.0034	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Trichloroethene (TCE)	ND	0.0056	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Trichlorofluoromethane	ND	0.017	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
1,2,3-Trichloropropane	ND	0.0079	0.097		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Vinyl chloride	ND	0.0032	0.049		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Xylenes, Total	ND	0.012	0.097		mg/Kg	1	12/18/2018 5:35:43 AM	42099
Surr: Dibromofluoromethane	112		70-130		%Rec	1	12/18/2018 5:35:43 AM	42099
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	1	12/18/2018 5:35:43 AM	42099
Surr: Toluene-d8	111		70-130		%Rec	1	12/18/2018 5:35:43 AM	42099
Surr: 4-Bromofluorobenzene	106		70-130		%Rec	1	12/18/2018 5:35:43 AM	42099
EPA METHOD 418.1: TPH							Analyst: CLP	
Petroleum Hydrocarbons, TR	ND	2.7	20		mg/Kg	1	12/17/2018	42110

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 15 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ02

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 3:35:00 PM

Lab ID: 1812713-004

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								Analyst: TOM
Aroclor 1016	ND	0.010	0.024		mg/Kg	1	1/4/2019 6:00:05 PM	42179
Aroclor 1221	ND	0.019	0.024		mg/Kg	1	1/4/2019 6:00:05 PM	42179
Aroclor 1232	ND	0.023	0.024		mg/Kg	1	1/4/2019 6:00:05 PM	42179
Aroclor 1242	ND	0.012	0.024		mg/Kg	1	1/4/2019 6:00:05 PM	42179
Aroclor 1248	ND	0.019	0.024		mg/Kg	1	1/4/2019 6:00:05 PM	42179
Aroclor 1254	ND	0.019	0.024		mg/Kg	1	1/4/2019 6:00:05 PM	42179
Aroclor 1260	ND	0.0089	0.024		mg/Kg	1	1/4/2019 6:00:05 PM	42179
Surr: Decachlorobiphenyl	69.6	0	31.9-130		%Rec	1	1/4/2019 6:00:05 PM	42179
Surr: Tetrachloro-m-xylene	69.6	0	21.2-142		%Rec	1	1/4/2019 6:00:05 PM	42179
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	ND	1.9	9.6		mg/Kg	1	12/17/2018 6:07:28 PM	42113
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	12/17/2018 6:07:28 PM	42113
Surr: DNOP	92.8	0	50.6-138		%Rec	1	12/17/2018 6:07:28 PM	42113
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.9		mg/Kg	1	12/14/2018 6:19:04 PM	42099
Surr: BFB	97.4	0	73.8-119		%Rec	1	12/14/2018 6:19:04 PM	42099
EPA METHOD 300.0: ANIONS								Analyst: MRA
Fluoride	2.8	1.0	1.5		mg/Kg	5	12/27/2018 3:09:28 PM	42333
Chloride	220	7.5	7.5		mg/Kg	5	12/27/2018 3:09:28 PM	42333
Nitrogen, Nitrate (As N)	2.5	0.28	1.5		mg/Kg	5	12/27/2018 3:09:28 PM	42333
Sulfate	270	1.3	7.5		mg/Kg	5	12/27/2018 3:09:28 PM	42333
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	ND	0.0067	0.033		mg/Kg	1	12/18/2018 10:21:32 A	42145
EPA METHOD 6010B: SOIL METALS								Analyst: JLF
Arsenic	ND	7.0	12		mg/Kg	5	12/22/2018 3:06:57 PM	42118
Barium	250	0.11	0.49		mg/Kg	5	12/22/2018 3:06:57 PM	42118
Cadmium	ND	0.12	0.49		mg/Kg	5	12/22/2018 3:06:57 PM	42118
Chromium	16	0.39	1.5		mg/Kg	5	12/22/2018 3:06:57 PM	42118
Copper	3.3	0.55	1.5		mg/Kg	5	12/22/2018 3:06:57 PM	42118
Iron	20000	71	240		mg/Kg	100	12/19/2018 8:17:42 AM	42118
Lead	2.0	1.2	1.2		mg/Kg	5	12/22/2018 3:06:57 PM	42118
Manganese	320	0.10	0.49		mg/Kg	5	12/22/2018 3:06:57 PM	42118
Selenium	ND	6.1	12		mg/Kg	5	12/22/2018 3:06:57 PM	42118
Silver	ND	0.16	1.2		mg/Kg	5	12/22/2018 3:06:57 PM	42118
Uranium	ND	2.1	4.9		mg/Kg	1	12/18/2018 4:56:49 PM	42118
Zinc	17	0.39	2.4		mg/Kg	1	12/18/2018 4:56:49 PM	42118

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 16 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ02

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 3:35:00 PM

Lab ID: 1812713-004

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.11	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Acenaphthylene	ND	0.099	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Aniline	ND	0.094	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Anthracene	ND	0.10	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Azobenzene	ND	0.13	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Benz(a)anthracene	ND	0.13	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Benzo(a)pyrene	ND	0.15	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Benzo(b)fluoranthene	ND	0.15	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Benzo(g,h,i)perylene	ND	0.16	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Benzo(k)fluoranthene	ND	0.16	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Benzoic acid	ND	0.14	0.49		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Benzyl alcohol	ND	0.13	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Bis(2-chloroethoxy)methane	ND	0.11	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Bis(2-chloroethyl)ether	ND	0.12	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Bis(2-chloroisopropyl)ether	ND	0.12	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Bis(2-ethylhexyl)phthalate	ND	0.27	0.49		mg/Kg	1	12/31/2018 4:22:29 PM	42141
4-Bromophenyl phenyl ether	ND	0.13	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Butyl benzyl phthalate	ND	0.13	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Carbazole	ND	0.12	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
4-Chloro-3-methylphenol	ND	0.13	0.49		mg/Kg	1	12/31/2018 4:22:29 PM	42141
4-Chloroaniline	ND	0.11	0.49		mg/Kg	1	12/31/2018 4:22:29 PM	42141
2-Chloronaphthalene	ND	0.11	0.24		mg/Kg	1	12/31/2018 4:22:29 PM	42141
2-Chlorophenol	ND	0.13	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
4-Chlorophenyl phenyl ether	ND	0.10	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Chrysene	ND	0.10	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Di-n-butyl phthalate	ND	0.27	0.39		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Di-n-octyl phthalate	ND	0.11	0.39		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Dibenz(a,h)anthracene	ND	0.16	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Dibenzofuran	ND	0.11	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
1,2-Dichlorobenzene	ND	0.12	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
1,3-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
1,4-Dichlorobenzene	ND	0.11	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
3,3'-Dichlorobenzidine	ND	0.097	0.24		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Diethyl phthalate	ND	0.15	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Dimethyl phthalate	ND	0.099	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
2,4-Dichlorophenol	ND	0.12	0.39		mg/Kg	1	12/31/2018 4:22:29 PM	42141
2,4-Dimethylphenol	ND	0.092	0.29		mg/Kg	1	12/31/2018 4:22:29 PM	42141
4,6-Dinitro-2-methylphenol	ND	0.090	0.39		mg/Kg	1	12/31/2018 4:22:29 PM	42141
2,4-Dinitrophenol	ND	0.062	0.49		mg/Kg	1	12/31/2018 4:22:29 PM	42141

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 17 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ02

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 3:35:00 PM

Lab ID: 1812713-004

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.099	0.49		mg/Kg	1	12/31/2018 4:22:29 PM	42141
2,6-Dinitrotoluene	ND	0.12	0.49		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Fluoranthene	ND	0.11	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Fluorene	ND	0.10	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Hexachlorobenzene	ND	0.12	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Hexachlorobutadiene	ND	0.10	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Hexachlorocyclopentadiene	ND	0.097	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Hexachloroethane	ND	0.12	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Indeno(1,2,3-cd)pyrene	ND	0.14	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Isophorone	ND	0.12	0.39		mg/Kg	1	12/31/2018 4:22:29 PM	42141
1-Methylnaphthalene	ND	0.14	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
2-Methylnaphthalene	ND	0.12	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
2-Methylphenol	ND	0.14	0.39		mg/Kg	1	12/31/2018 4:22:29 PM	42141
3+4-Methylphenol	ND	0.13	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
N-Nitrosodi-n-propylamine	ND	0.15	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
N-Nitrosodiphenylamine	ND	0.099	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Naphthalene	ND	0.11	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
2-Nitroaniline	ND	0.13	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
3-Nitroaniline	ND	0.10	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
4-Nitroaniline	ND	0.094	0.39		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Nitrobenzene	ND	0.11	0.39		mg/Kg	1	12/31/2018 4:22:29 PM	42141
2-Nitrophenol	ND	0.12	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
4-Nitrophenol	ND	0.15	0.24		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Pentachlorophenol	ND	0.098	0.39		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Phenanthrene	ND	0.099	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Phenol	ND	0.13	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Pyrene	ND	0.11	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Pyridine	ND	0.12	0.39		mg/Kg	1	12/31/2018 4:22:29 PM	42141
1,2,4-Trichlorobenzene	ND	0.11	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
2,4,5-Trichlorophenol	ND	0.11	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
2,4,6-Trichlorophenol	ND	0.13	0.20		mg/Kg	1	12/31/2018 4:22:29 PM	42141
Surr: 2-Fluorophenol	44.3		21.7-87.9		%Rec	1	12/31/2018 4:22:29 PM	42141
Surr: Phenol-d5	47.6		30.2-92.2		%Rec	1	12/31/2018 4:22:29 PM	42141
Surr: 2,4,6-Tribromophenol	65.2		47.1-103		%Rec	1	12/31/2018 4:22:29 PM	42141
Surr: Nitrobenzene-d5	52.8		23.9-102		%Rec	1	12/31/2018 4:22:29 PM	42141
Surr: 2-Fluorobiphenyl	58.7		32.6-101		%Rec	1	12/31/2018 4:22:29 PM	42141
Surr: 4-Terphenyl-d14	55.1		37.2-117		%Rec	1	12/31/2018 4:22:29 PM	42141

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0040	0.024		mg/Kg	1	12/18/2018 6:04:49 AM	42099
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 18 of 72
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ02

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 3:35:00 PM

Lab ID: 1812713-004

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0047	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Ethylbenzene	ND	0.0028	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Methyl tert-butyl ether (MTBE)	ND	0.012	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,2,4-Trimethylbenzene	ND	0.0045	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,3,5-Trimethylbenzene	ND	0.0047	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,2-Dichloroethane (EDC)	ND	0.0050	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,2-Dibromoethane (EDB)	ND	0.0045	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Naphthalene	ND	0.0098	0.098		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1-Methylnaphthalene	ND	0.028	0.20		mg/Kg	1	12/18/2018 6:04:49 AM	42099
2-Methylnaphthalene	ND	0.021	0.20		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Acetone	ND	0.040	0.73		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Bromobenzene	ND	0.0047	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Bromodichloromethane	ND	0.0045	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Bromoform	ND	0.0044	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Bromomethane	ND	0.012	0.15		mg/Kg	1	12/18/2018 6:04:49 AM	42099
2-Butanone	ND	0.056	0.49		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Carbon disulfide	ND	0.016	0.49		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Carbon tetrachloride	ND	0.0046	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Chlorobenzene	ND	0.0063	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Chloroethane	ND	0.0072	0.098		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Chloroform	ND	0.0039	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Chloromethane	ND	0.0047	0.15		mg/Kg	1	12/18/2018 6:04:49 AM	42099
2-Chlorotoluene	ND	0.0043	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
4-Chlorotoluene	ND	0.0040	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
cis-1,2-DCE	ND	0.0067	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
cis-1,3-Dichloropropene	ND	0.0041	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,2-Dibromo-3-chloropropane	ND	0.0050	0.098		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Dibromochloromethane	ND	0.0035	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Dibromomethane	ND	0.0053	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,2-Dichlorobenzene	ND	0.0040	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,3-Dichlorobenzene	ND	0.0042	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,4-Dichlorobenzene	ND	0.0041	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Dichlorodifluoromethane	ND	0.011	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,1-Dichloroethane	ND	0.0031	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,1-Dichloroethene	ND	0.020	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,2-Dichloropropane	ND	0.0036	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,3-Dichloropropane	ND	0.0053	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
2,2-Dichloropropane	ND	0.016	0.098		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,1-Dichloropropene	ND	0.0044	0.098		mg/Kg	1	12/18/2018 6:04:49 AM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 19 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ02

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 3:35:00 PM

Lab ID: 1812713-004

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.0050	0.098		mg/Kg	1	12/18/2018 6:04:49 AM	42099
2-Hexanone	ND	0.0081	0.49		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Isopropylbenzene	ND	0.0035	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
4-Isopropyltoluene	ND	0.0040	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
4-Methyl-2-pentanone	ND	0.0092	0.49		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Methylene chloride	ND	0.0086	0.15		mg/Kg	1	12/18/2018 6:04:49 AM	42099
n-Butylbenzene	ND	0.0046	0.15		mg/Kg	1	12/18/2018 6:04:49 AM	42099
n-Propylbenzene	ND	0.0039	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
sec-Butylbenzene	ND	0.0055	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Styrene	ND	0.0038	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
tert-Butylbenzene	ND	0.0046	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,1,1,2-Tetrachloroethane	ND	0.0033	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,1,2,2-Tetrachloroethane	ND	0.0050	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Tetrachloroethene (PCE)	ND	0.0039	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
trans-1,2-DCE	ND	0.0045	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
trans-1,3-Dichloropropene	ND	0.0052	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,2,3-Trichlorobenzene	ND	0.0043	0.098		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,2,4-Trichlorobenzene	ND	0.0049	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,1,1-Trichloroethane	ND	0.0044	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,1,2-Trichloroethane	ND	0.0034	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Trichloroethene (TCE)	ND	0.0057	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Trichlorofluoromethane	ND	0.017	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
1,2,3-Trichloropropane	ND	0.0079	0.098		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Vinyl chloride	ND	0.0032	0.049		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Xylenes, Total	ND	0.012	0.098		mg/Kg	1	12/18/2018 6:04:49 AM	42099
Surr: Dibromofluoromethane	111		70-130		%Rec	1	12/18/2018 6:04:49 AM	42099
Surr: 1,2-Dichloroethane-d4	108		70-130		%Rec	1	12/18/2018 6:04:49 AM	42099
Surr: Toluene-d8	109		70-130		%Rec	1	12/18/2018 6:04:49 AM	42099
Surr: 4-Bromofluorobenzene	102		70-130		%Rec	1	12/18/2018 6:04:49 AM	42099
EPA METHOD 418.1: TPH							Analyst: CLP	
Petroleum Hydrocarbons, TR	ND	2.7	20		mg/Kg	1	12/17/2018	42110

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 20 of 72
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical ReportLab Order **1812713**Date Reported: **1/9/2019****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Marathon**Client Sample ID:** Trip Blank**Project:** OCD Central Landfarm Semiannual Sam**Collection Date:****Lab ID:** 1812713-005**Matrix:** AQUEOUS**Received Date:** 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: AG	
Benzene	ND	0.17	1.0		µg/L	1	12/14/2018 12:15:42 P	A5637C
Toluene	ND	0.17	1.0		µg/L	1	12/14/2018 12:15:42 P	A5637C
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/14/2018 12:15:42 P	A5637C
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/14/2018 12:15:42 P	A5637C
Surr: 1,2-Dichloroethane-d4	99.0	0	70-130		%Rec	1	12/14/2018 12:15:42 P	A5637C
Surr: 4-Bromofluorobenzene	100	0	70-130		%Rec	1	12/14/2018 12:15:42 P	A5637C
Surr: Dibromofluoromethane	96.8	0	70-130		%Rec	1	12/14/2018 12:15:42 P	A5637C
Surr: Toluene-d8	101	0	70-130		%Rec	1	12/14/2018 12:15:42 P	A5637C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 21 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ03

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:00:00 PM

Lab ID: 1812713-006

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								Analyst: TOM
Aroclor 1016	ND	0.020	0.047		mg/Kg	1	1/4/2019 6:33:03 PM	42179
Aroclor 1221	ND	0.037	0.047		mg/Kg	1	1/4/2019 6:33:03 PM	42179
Aroclor 1232	ND	0.046	0.047		mg/Kg	1	1/4/2019 6:33:03 PM	42179
Aroclor 1242	ND	0.025	0.047		mg/Kg	1	1/4/2019 6:33:03 PM	42179
Aroclor 1248	ND	0.037	0.047		mg/Kg	1	1/4/2019 6:33:03 PM	42179
Aroclor 1254	ND	0.037	0.047		mg/Kg	1	1/4/2019 6:33:03 PM	42179
Aroclor 1260	ND	0.018	0.047		mg/Kg	1	1/4/2019 6:33:03 PM	42179
Surr: Decachlorobiphenyl	130	0	31.9-130	S	%Rec	1	1/4/2019 6:33:03 PM	42179
Surr: Tetrachloro-m-xylene	130	0	21.2-142		%Rec	1	1/4/2019 6:33:03 PM	42179
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	200	1.9	9.7		mg/Kg	1	12/18/2018 7:02:44 PM	42113
Motor Oil Range Organics (MRO)	150	48	48		mg/Kg	1	12/18/2018 7:02:44 PM	42113
Surr: DNOP	97.9	0	50.6-138		%Rec	1	12/18/2018 7:02:44 PM	42113
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.8		mg/Kg	1	12/14/2018 8:16:58 PM	42099
Surr: BFB	98.4	0	73.8-119		%Rec	1	12/14/2018 8:16:58 PM	42099
EPA METHOD 300.0: ANIONS								Analyst: MRA
Fluoride	8.7	1.0	1.5		mg/Kg	5	12/27/2018 3:59:07 PM	42333
Chloride	110	7.5	7.5		mg/Kg	5	12/27/2018 3:59:07 PM	42333
Nitrogen, Nitrate (As N)	4.1	0.28	1.5		mg/Kg	5	12/27/2018 3:59:07 PM	42333
Sulfate	430	1.3	7.5		mg/Kg	5	12/27/2018 3:59:07 PM	42333
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	0.065	0.0070	0.035		mg/Kg	1	12/18/2018 10:23:33 A	42145
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Arsenic	ND	7.1	12		mg/Kg	5	12/20/2018 1:49:43 PM	42118
Barium	320	0.12	0.50		mg/Kg	5	12/20/2018 1:49:43 PM	42118
Cadmium	ND	0.12	0.50		mg/Kg	5	12/20/2018 1:49:43 PM	42118
Chromium	16	0.40	1.5		mg/Kg	5	12/20/2018 1:49:43 PM	42118
Copper	2.9	0.56	1.5		mg/Kg	5	12/20/2018 1:49:43 PM	42118
Iron	19000	73	250		mg/Kg	100	12/19/2018 8:21:56 AM	42118
Lead	4.0	1.2	1.2		mg/Kg	5	12/20/2018 1:49:43 PM	42118
Manganese	820	0.10	0.50		mg/Kg	5	12/20/2018 1:49:43 PM	42118
Selenium	ND	6.3	12		mg/Kg	5	12/20/2018 1:49:43 PM	42118
Silver	ND	0.16	1.2		mg/Kg	5	12/20/2018 1:49:43 PM	42118
Uranium	ND	2.2	5.0		mg/Kg	1	12/18/2018 4:58:55 PM	42118
Zinc	16	0.40	2.5		mg/Kg	1	12/18/2018 4:58:55 PM	42118

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ03

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:00:00 PM

Lab ID: 1812713-006

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Acenaphthylene	ND	0.97	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Aniline	ND	0.93	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Anthracene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Azobenzene	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Benz(a)anthracene	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Benzo(a)pyrene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Benzo(b)fluoranthene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Benzo(g,h,i)perylene	ND	1.6	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Benzo(k)fluoranthene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Benzoic acid	ND	1.4	4.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Benzyl alcohol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Bis(2-chloroethoxy)methane	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Bis(2-chloroethyl)ether	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Bis(2-chloroisopropyl)ether	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Bis(2-ethylhexyl)phthalate	ND	2.7	4.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
4-Bromophenyl phenyl ether	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Butyl benzyl phthalate	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Carbazole	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
4-Chloro-3-methylphenol	ND	1.3	4.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
4-Chloroaniline	ND	1.1	4.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
2-Chloronaphthalene	ND	1.0	2.4	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
2-Chlorophenol	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
4-Chlorophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Chrysene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Di-n-butyl phthalate	ND	2.6	3.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Di-n-octyl phthalate	ND	1.1	3.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Dibenz(a,h)anthracene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Dibenzofuran	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
1,2-Dichlorobenzene	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
1,3-Dichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
1,4-Dichlorobenzene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
3,3'-Dichlorobenzidine	ND	0.95	2.4	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Diethyl phthalate	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Dimethyl phthalate	ND	0.97	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
2,4-Dichlorophenol	ND	1.2	3.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
2,4-Dimethylphenol	ND	0.91	2.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
4,6-Dinitro-2-methylphenol	ND	0.88	3.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
2,4-Dinitrophenol	ND	0.61	4.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 23 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ03

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:00:00 PM

Lab ID: 1812713-006

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.98	4.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
2,6-Dinitrotoluene	ND	1.2	4.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Fluoranthene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Fluorene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Hexachlorobenzene	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Hexachlorobutadiene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Hexachlorocyclopentadiene	ND	0.95	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Hexachloroethane	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Indeno(1,2,3-cd)pyrene	ND	1.4	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Isophorone	ND	1.2	3.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
1-Methylnaphthalene	ND	1.4	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
2-Methylnaphthalene	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
2-Methylphenol	ND	1.3	3.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
3+4-Methylphenol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
N-Nitrosodi-n-propylamine	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
N-Nitrosodiphenylamine	ND	0.98	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Naphthalene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
2-Nitroaniline	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
3-Nitroaniline	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
4-Nitroaniline	ND	0.92	3.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Nitrobenzene	ND	1.1	3.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
2-Nitrophenol	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
4-Nitrophenol	ND	1.5	2.4	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Pentachlorophenol	ND	0.97	3.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Phenanthrene	ND	0.98	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Phenol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Pyrene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Pyridine	ND	1.1	3.8	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
1,2,4-Trichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
2,4,5-Trichlorophenol	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
2,4,6-Trichlorophenol	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 4:51:51 PM	42141
Surr: 2-Fluorophenol	0		21.7-87.9	SD	%Rec	1	12/31/2018 4:51:51 PM	42141
Surr: Phenol-d5	0		30.2-92.2	SD	%Rec	1	12/31/2018 4:51:51 PM	42141
Surr: 2,4,6-Tribromophenol	0		47.1-103	SD	%Rec	1	12/31/2018 4:51:51 PM	42141
Surr: Nitrobenzene-d5	0		23.9-102	SD	%Rec	1	12/31/2018 4:51:51 PM	42141
Surr: 2-Fluorobiphenyl	0		32.6-101	SD	%Rec	1	12/31/2018 4:51:51 PM	42141
Surr: 4-Terphenyl-d14	0		37.2-117	SD	%Rec	1	12/31/2018 4:51:51 PM	42141

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0039	0.024		mg/Kg	1	12/18/2018 6:33:50 AM	42099
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 24 of 72
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ03

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:00:00 PM

Lab ID: 1812713-006

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0045	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Ethylbenzene	ND	0.0028	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Methyl tert-butyl ether (MTBE)	ND	0.011	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,2,4-Trimethylbenzene	ND	0.0043	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,3,5-Trimethylbenzene	ND	0.0046	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,2-Dichloroethane (EDC)	ND	0.0048	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,2-Dibromoethane (EDB)	ND	0.0043	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Naphthalene	ND	0.0095	0.095		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1-Methylnaphthalene	ND	0.027	0.19		mg/Kg	1	12/18/2018 6:33:50 AM	42099
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Acetone	ND	0.039	0.71		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Bromobenzene	ND	0.0046	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Bromodichloromethane	ND	0.0043	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Bromoform	ND	0.0043	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Bromomethane	ND	0.011	0.14		mg/Kg	1	12/18/2018 6:33:50 AM	42099
2-Butanone	ND	0.055	0.48		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Carbon disulfide	ND	0.016	0.48		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Carbon tetrachloride	ND	0.0045	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Chlorobenzene	ND	0.0061	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Chloroethane	ND	0.0070	0.095		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Chloroform	ND	0.0038	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Chloromethane	ND	0.0045	0.14		mg/Kg	1	12/18/2018 6:33:50 AM	42099
2-Chlorotoluene	ND	0.0041	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
4-Chlorotoluene	ND	0.0039	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
cis-1,2-DCE	ND	0.0065	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
cis-1,3-Dichloropropene	ND	0.0040	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,2-Dibromo-3-chloropropane	ND	0.0049	0.095		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Dibromochloromethane	ND	0.0034	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Dibromomethane	ND	0.0051	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,2-Dichlorobenzene	ND	0.0039	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,3-Dichlorobenzene	ND	0.0041	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,4-Dichlorobenzene	ND	0.0040	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Dichlorodifluoromethane	ND	0.011	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,1-Dichloroethane	ND	0.0030	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,1-Dichloroethene	ND	0.019	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,2-Dichloropropane	ND	0.0035	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,3-Dichloropropane	ND	0.0051	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
2,2-Dichloropropane	ND	0.015	0.095		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,1-Dichloropropene	ND	0.0043	0.095		mg/Kg	1	12/18/2018 6:33:50 AM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 25 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ03

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:00:00 PM

Lab ID: 1812713-006

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.0048	0.095		mg/Kg	1	12/18/2018 6:33:50 AM	42099
2-Hexanone	ND	0.0079	0.48		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Isopropylbenzene	ND	0.0034	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
4-Isopropyltoluene	ND	0.0039	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
4-Methyl-2-pentanone	ND	0.0090	0.48		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Methylene chloride	ND	0.0084	0.14		mg/Kg	1	12/18/2018 6:33:50 AM	42099
n-Butylbenzene	ND	0.0044	0.14		mg/Kg	1	12/18/2018 6:33:50 AM	42099
n-Propylbenzene	ND	0.0038	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
sec-Butylbenzene	ND	0.0054	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Styrene	ND	0.0037	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
tert-Butylbenzene	ND	0.0045	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,1,1,2-Tetrachloroethane	ND	0.0032	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,1,2,2-Tetrachloroethane	ND	0.0048	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Tetrachloroethene (PCE)	ND	0.0038	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
trans-1,2-DCE	ND	0.0043	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
trans-1,3-Dichloropropene	ND	0.0050	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,2,3-Trichlorobenzene	ND	0.0042	0.095		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,2,4-Trichlorobenzene	ND	0.0048	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,1,1-Trichloroethane	ND	0.0043	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,1,2-Trichloroethane	ND	0.0034	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Trichloroethene (TCE)	ND	0.0055	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Trichlorofluoromethane	ND	0.016	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
1,2,3-Trichloropropane	ND	0.0077	0.095		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Vinyl chloride	ND	0.0031	0.048		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Xylenes, Total	ND	0.012	0.095		mg/Kg	1	12/18/2018 6:33:50 AM	42099
Surr: Dibromofluoromethane	110		70-130		%Rec	1	12/18/2018 6:33:50 AM	42099
Surr: 1,2-Dichloroethane-d4	102		70-130		%Rec	1	12/18/2018 6:33:50 AM	42099
Surr: Toluene-d8	108		70-130		%Rec	1	12/18/2018 6:33:50 AM	42099
Surr: 4-Bromofluorobenzene	101		70-130		%Rec	1	12/18/2018 6:33:50 AM	42099
EPA METHOD 418.1: TPH							Analyst: CLP	
Petroleum Hydrocarbons, TR	100	2.7	20		mg/Kg	1	12/17/2018	42110

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 26 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ03

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:15:00 PM

Lab ID: 1812713-007

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								Analyst: TOM
Aroclor 1016	ND	0.0096	0.022		mg/Kg	1	1/4/2019 7:05:59 PM	42179
Aroclor 1221	ND	0.018	0.022		mg/Kg	1	1/4/2019 7:05:59 PM	42179
Aroclor 1232	ND	0.022	0.022		mg/Kg	1	1/4/2019 7:05:59 PM	42179
Aroclor 1242	ND	0.012	0.022		mg/Kg	1	1/4/2019 7:05:59 PM	42179
Aroclor 1248	ND	0.018	0.022		mg/Kg	1	1/4/2019 7:05:59 PM	42179
Aroclor 1254	ND	0.018	0.022		mg/Kg	1	1/4/2019 7:05:59 PM	42179
Aroclor 1260	ND	0.0083	0.022		mg/Kg	1	1/4/2019 7:05:59 PM	42179
Surr: Decachlorobiphenyl	98.4	0	31.9-130		%Rec	1	1/4/2019 7:05:59 PM	42179
Surr: Tetrachloro-m-xylene	95.6	0	21.2-142		%Rec	1	1/4/2019 7:05:59 PM	42179
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	ND	2.0	9.8		mg/Kg	1	12/17/2018 6:55:57 PM	42113
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	12/17/2018 6:55:57 PM	42113
Surr: DNOP	95.8	0	50.6-138		%Rec	1	12/17/2018 6:55:57 PM	42113
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.9		mg/Kg	1	12/14/2018 8:40:34 PM	42099
Surr: BFB	98.0	0	73.8-119		%Rec	1	12/14/2018 8:40:34 PM	42099
EPA METHOD 300.0: ANIONS								Analyst: MRA
Fluoride	3.7	1.0	1.5		mg/Kg	5	12/27/2018 4:23:56 PM	42333
Chloride	140	7.5	7.5		mg/Kg	5	12/27/2018 4:23:56 PM	42333
Nitrogen, Nitrate (As N)	4.8	0.28	1.5		mg/Kg	5	12/27/2018 4:23:56 PM	42333
Sulfate	460	1.3	7.5		mg/Kg	5	12/27/2018 4:23:56 PM	42333
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	ND	0.0071	0.035		mg/Kg	1	12/18/2018 10:25:34 A	42145
EPA METHOD 6010B: SOIL METALS								Analyst: JLF
Arsenic	ND	7.0	12		mg/Kg	5	12/22/2018 3:08:37 PM	42118
Barium	310	0.11	0.49		mg/Kg	5	12/22/2018 3:08:37 PM	42118
Cadmium	ND	0.12	0.49		mg/Kg	5	12/22/2018 3:08:37 PM	42118
Chromium	13	0.39	1.5		mg/Kg	5	12/22/2018 3:08:37 PM	42118
Copper	3.6	0.55	1.5		mg/Kg	5	12/22/2018 3:08:37 PM	42118
Iron	17000	71	240		mg/Kg	100	12/19/2018 8:25:47 AM	42118
Lead	5.2	1.2	1.2		mg/Kg	5	12/22/2018 3:08:37 PM	42118
Manganese	380	0.10	0.49		mg/Kg	5	12/22/2018 3:08:37 PM	42118
Selenium	ND	6.1	12		mg/Kg	5	12/22/2018 3:08:37 PM	42118
Silver	ND	0.16	1.2		mg/Kg	5	12/22/2018 3:08:37 PM	42118
Uranium	ND	2.1	4.9		mg/Kg	1	12/18/2018 5:00:59 PM	42118
Zinc	17	0.39	2.4		mg/Kg	1	12/18/2018 5:00:59 PM	42118

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 27 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ03

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:15:00 PM

Lab ID: 1812713-007

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.21	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Acenaphthylene	ND	0.19	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Aniline	ND	0.19	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Anthracene	ND	0.21	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Azobenzene	ND	0.26	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Benz(a)anthracene	ND	0.26	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Benzo(a)pyrene	ND	0.29	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Benzo(b)fluoranthene	ND	0.29	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Benzo(g,h,i)perylene	ND	0.31	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Benzo(k)fluoranthene	ND	0.31	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Benzoic acid	ND	0.28	0.96	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Benzyl alcohol	ND	0.26	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Bis(2-chloroethoxy)methane	ND	0.22	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Bis(2-chloroethyl)ether	ND	0.23	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Bis(2-chloroisopropyl)ether	ND	0.23	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Bis(2-ethylhexyl)phthalate	ND	0.53	0.96	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
4-Bromophenyl phenyl ether	ND	0.25	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Butyl benzyl phthalate	ND	0.25	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Carbazole	ND	0.23	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
4-Chloro-3-methylphenol	ND	0.26	0.96	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
4-Chloroaniline	ND	0.21	0.96	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
2-Chloronaphthalene	ND	0.21	0.48	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
2-Chlorophenol	ND	0.25	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
4-Chlorophenyl phenyl ether	ND	0.20	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Chrysene	ND	0.21	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Di-n-butyl phthalate	ND	0.53	0.77	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Di-n-octyl phthalate	ND	0.22	0.77	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Dibenz(a,h)anthracene	ND	0.31	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Dibenzofuran	ND	0.22	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
1,2-Dichlorobenzene	ND	0.24	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
1,3-Dichlorobenzene	ND	0.21	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
1,4-Dichlorobenzene	ND	0.21	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
3,3'-Dichlorobenzidine	ND	0.19	0.48	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Diethyl phthalate	ND	0.29	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Dimethyl phthalate	ND	0.20	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
2,4-Dichlorophenol	ND	0.24	0.77	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
2,4-Dimethylphenol	ND	0.18	0.58	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
4,6-Dinitro-2-methylphenol	ND	0.18	0.77	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
2,4-Dinitrophenol	ND	0.12	0.96	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 28 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ03

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:15:00 PM

Lab ID: 1812713-007

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.20	0.96	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
2,6-Dinitrotoluene	ND	0.24	0.96	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Fluoranthene	ND	0.21	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Fluorene	ND	0.20	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Hexachlorobenzene	ND	0.24	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Hexachlorobutadiene	ND	0.20	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Hexachlorocyclopentadiene	ND	0.19	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Hexachloroethane	ND	0.24	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Indeno(1,2,3-cd)pyrene	ND	0.28	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Isophorone	ND	0.25	0.77	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
1-Methylnaphthalene	ND	0.27	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
2-Methylnaphthalene	ND	0.24	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
2-Methylphenol	ND	0.27	0.77	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
3+4-Methylphenol	ND	0.25	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
N-Nitrosodi-n-propylamine	ND	0.29	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
N-Nitrosodiphenylamine	ND	0.20	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Naphthalene	ND	0.22	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
2-Nitroaniline	ND	0.25	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
3-Nitroaniline	ND	0.21	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
4-Nitroaniline	ND	0.18	0.77	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Nitrobenzene	ND	0.22	0.77	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
2-Nitrophenol	ND	0.24	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
4-Nitrophenol	ND	0.29	0.48	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Pentachlorophenol	ND	0.19	0.77	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Phenanthrene	ND	0.20	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Phenol	ND	0.26	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Pyrene	ND	0.21	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Pyridine	ND	0.23	0.77	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
1,2,4-Trichlorobenzene	ND	0.23	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
2,4,5-Trichlorophenol	ND	0.22	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
2,4,6-Trichlorophenol	ND	0.25	0.38	D	mg/Kg	1	12/31/2018 5:20:54 PM	42141
Surr: 2-Fluorophenol	144		21.7-87.9	SD	%Rec	1	12/31/2018 5:20:54 PM	42141
Surr: Phenol-d5	150		30.2-92.2	SD	%Rec	1	12/31/2018 5:20:54 PM	42141
Surr: 2,4,6-Tribromophenol	157		47.1-103	SD	%Rec	1	12/31/2018 5:20:54 PM	42141
Surr: Nitrobenzene-d5	166		23.9-102	SD	%Rec	1	12/31/2018 5:20:54 PM	42141
Surr: 2-Fluorobiphenyl	164		32.6-101	SD	%Rec	1	12/31/2018 5:20:54 PM	42141
Surr: 4-Terphenyl-d14	127		37.2-117	SD	%Rec	1	12/31/2018 5:20:54 PM	42141

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0040	0.024		mg/Kg	1	12/18/2018 7:02:55 AM	42099
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 29 of 72
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ03

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:15:00 PM

Lab ID: 1812713-007

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0047	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Ethylbenzene	ND	0.0028	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Methyl tert-butyl ether (MTBE)	ND	0.012	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,2,4-Trimethylbenzene	ND	0.0045	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,3,5-Trimethylbenzene	ND	0.0047	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,2-Dichloroethane (EDC)	ND	0.0050	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,2-Dibromoethane (EDB)	ND	0.0045	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Naphthalene	ND	0.0098	0.098		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1-Methylnaphthalene	ND	0.028	0.20		mg/Kg	1	12/18/2018 7:02:55 AM	42099
2-Methylnaphthalene	ND	0.021	0.20		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Acetone	ND	0.041	0.73		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Bromobenzene	ND	0.0047	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Bromodichloromethane	ND	0.0045	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Bromoform	ND	0.0044	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Bromomethane	ND	0.012	0.15		mg/Kg	1	12/18/2018 7:02:55 AM	42099
2-Butanone	ND	0.057	0.49		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Carbon disulfide	ND	0.016	0.49		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Carbon tetrachloride	ND	0.0046	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Chlorobenzene	ND	0.0063	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Chloroethane	ND	0.0072	0.098		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Chloroform	ND	0.0039	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Chloromethane	ND	0.0047	0.15		mg/Kg	1	12/18/2018 7:02:55 AM	42099
2-Chlorotoluene	ND	0.0043	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
4-Chlorotoluene	ND	0.0040	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
cis-1,2-DCE	ND	0.0067	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
cis-1,3-Dichloropropene	ND	0.0041	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,2-Dibromo-3-chloropropane	ND	0.0050	0.098		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Dibromochloromethane	ND	0.0035	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Dibromomethane	ND	0.0053	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,2-Dichlorobenzene	ND	0.0040	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,3-Dichlorobenzene	ND	0.0042	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,4-Dichlorobenzene	ND	0.0041	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Dichlorodifluoromethane	ND	0.011	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,1-Dichloroethane	ND	0.0031	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,1-Dichloroethene	ND	0.020	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,2-Dichloropropane	ND	0.0036	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,3-Dichloropropane	ND	0.0053	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
2,2-Dichloropropane	ND	0.016	0.098		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,1-Dichloropropene	ND	0.0045	0.098		mg/Kg	1	12/18/2018 7:02:55 AM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 30 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ03

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:15:00 PM

Lab ID: 1812713-007

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.0050	0.098		mg/Kg	1	12/18/2018 7:02:55 AM	42099
2-Hexanone	ND	0.0081	0.49		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Isopropylbenzene	ND	0.0035	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
4-Isopropyltoluene	ND	0.0040	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
4-Methyl-2-pentanone	ND	0.0092	0.49		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Methylene chloride	ND	0.0086	0.15		mg/Kg	1	12/18/2018 7:02:55 AM	42099
n-Butylbenzene	ND	0.0046	0.15		mg/Kg	1	12/18/2018 7:02:55 AM	42099
n-Propylbenzene	ND	0.0039	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
sec-Butylbenzene	ND	0.0055	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Styrene	ND	0.0038	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
tert-Butylbenzene	ND	0.0046	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,1,1,2-Tetrachloroethane	ND	0.0033	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,1,2,2-Tetrachloroethane	ND	0.0050	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Tetrachloroethene (PCE)	ND	0.0039	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
trans-1,2-DCE	ND	0.0045	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
trans-1,3-Dichloropropene	ND	0.0052	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,2,3-Trichlorobenzene	ND	0.0043	0.098		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,2,4-Trichlorobenzene	ND	0.0049	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,1,1-Trichloroethane	ND	0.0044	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,1,2-Trichloroethane	ND	0.0034	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Trichloroethene (TCE)	ND	0.0057	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Trichlorofluoromethane	ND	0.017	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
1,2,3-Trichloropropane	ND	0.0079	0.098		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Vinyl chloride	ND	0.0032	0.049		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Xylenes, Total	ND	0.012	0.098		mg/Kg	1	12/18/2018 7:02:55 AM	42099
Surr: Dibromofluoromethane	109		70-130		%Rec	1	12/18/2018 7:02:55 AM	42099
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	1	12/18/2018 7:02:55 AM	42099
Surr: Toluene-d8	106		70-130		%Rec	1	12/18/2018 7:02:55 AM	42099
Surr: 4-Bromofluorobenzene	95.0		70-130		%Rec	1	12/18/2018 7:02:55 AM	42099
EPA METHOD 418.1: TPH							Analyst: CLP	
Petroleum Hydrocarbons, TR	ND	2.7	20		mg/Kg	1	12/17/2018	42110

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 31 of 72
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ04

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:40:00 PM

Lab ID: 1812713-008

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								Analyst: TOM
Aroclor 1016	ND	0.020	0.047		mg/Kg	1	1/4/2019 7:38:53 PM	42179
Aroclor 1221	ND	0.037	0.047		mg/Kg	1	1/4/2019 7:38:53 PM	42179
Aroclor 1232	ND	0.046	0.047		mg/Kg	1	1/4/2019 7:38:53 PM	42179
Aroclor 1242	ND	0.025	0.047		mg/Kg	1	1/4/2019 7:38:53 PM	42179
Aroclor 1248	ND	0.037	0.047		mg/Kg	1	1/4/2019 7:38:53 PM	42179
Aroclor 1254	ND	0.037	0.047		mg/Kg	1	1/4/2019 7:38:53 PM	42179
Aroclor 1260	ND	0.018	0.047		mg/Kg	1	1/4/2019 7:38:53 PM	42179
Surr: Decachlorobiphenyl	120	0	31.9-130		%Rec	1	1/4/2019 7:38:53 PM	42179
Surr: Tetrachloro-m-xylene	121	0	21.2-142		%Rec	1	1/4/2019 7:38:53 PM	42179
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	530	20	99		mg/Kg	10	12/18/2018 7:51:04 PM	42113
Motor Oil Range Organics (MRO)	620	490	490		mg/Kg	10	12/18/2018 7:51:04 PM	42113
Surr: DNOP	0	0	50.6-138	S	%Rec	10	12/18/2018 7:51:04 PM	42113
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.3	4.6		mg/Kg	1	12/14/2018 9:04:07 PM	42099
Surr: BFB	97.8	0	73.8-119		%Rec	1	12/14/2018 9:04:07 PM	42099
EPA METHOD 300.0: ANIONS								Analyst: MRA
Fluoride	4.8	1.0	1.5		mg/Kg	5	12/27/2018 4:48:44 PM	42333
Chloride	320	30	30		mg/Kg	20	12/27/2018 5:01:08 PM	42333
Nitrogen, Nitrate (As N)	2.1	0.28	1.5		mg/Kg	5	12/27/2018 4:48:44 PM	42333
Sulfate	1500	5.2	30		mg/Kg	20	12/27/2018 5:01:08 PM	42333
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	ND	0.0069	0.034		mg/Kg	1	12/18/2018 10:27:28 A	42145
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Arsenic	ND	2.8	4.9		mg/Kg	2	12/20/2018 2:05:12 PM	42118
Barium	250	0.045	0.19		mg/Kg	2	12/20/2018 2:05:12 PM	42118
Cadmium	ND	0.047	0.19		mg/Kg	2	12/20/2018 2:05:12 PM	42118
Chromium	6.6	0.15	0.58		mg/Kg	2	12/20/2018 2:05:12 PM	42118
Copper	2.3	0.22	0.58		mg/Kg	2	12/20/2018 2:05:12 PM	42118
Iron	10000	71	240		mg/Kg	100	12/19/2018 8:36:29 AM	42118
Lead	5.1	0.47	0.49		mg/Kg	2	12/20/2018 2:05:12 PM	42118
Manganese	390	0.040	0.19		mg/Kg	2	12/20/2018 2:05:12 PM	42118
Selenium	ND	2.4	4.9		mg/Kg	2	12/20/2018 2:05:12 PM	42118
Silver	ND	0.062	0.49		mg/Kg	2	12/20/2018 2:05:12 PM	42118
Uranium	ND	2.1	4.9		mg/Kg	1	12/18/2018 5:03:04 PM	42118
Zinc	13	0.38	2.4		mg/Kg	1	12/18/2018 5:03:04 PM	42118

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ04

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:40:00 PM

Lab ID: 1812713-008

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Acenaphthylene	ND	0.97	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Aniline	ND	0.93	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Anthracene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Azobenzene	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Benz(a)anthracene	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Benzo(a)pyrene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Benzo(b)fluoranthene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Benzo(g,h,i)perylene	ND	1.6	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Benzo(k)fluoranthene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Benzoic acid	ND	1.4	4.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Benzyl alcohol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Bis(2-chloroethoxy)methane	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Bis(2-chloroethyl)ether	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Bis(2-chloroisopropyl)ether	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Bis(2-ethylhexyl)phthalate	ND	2.7	4.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
4-Bromophenyl phenyl ether	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Butyl benzyl phthalate	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Carbazole	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
4-Chloro-3-methylphenol	ND	1.3	4.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
4-Chloroaniline	ND	1.1	4.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
2-Chloronaphthalene	ND	1.0	2.4	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
2-Chlorophenol	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
4-Chlorophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Chrysene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Di-n-butyl phthalate	ND	2.6	3.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Di-n-octyl phthalate	ND	1.1	3.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Dibenz(a,h)anthracene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Dibenzofuran	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
1,2-Dichlorobenzene	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
1,3-Dichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
1,4-Dichlorobenzene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
3,3'-Dichlorobenzidine	ND	0.95	2.4	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Diethyl phthalate	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Dimethyl phthalate	ND	0.98	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
2,4-Dichlorophenol	ND	1.2	3.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
2,4-Dimethylphenol	ND	0.91	2.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
4,6-Dinitro-2-methylphenol	ND	0.88	3.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
2,4-Dinitrophenol	ND	0.61	4.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 33 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ04

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:40:00 PM

Lab ID: 1812713-008

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.98	4.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
2,6-Dinitrotoluene	ND	1.2	4.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Fluoranthene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Fluorene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Hexachlorobenzene	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Hexachlorobutadiene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Hexachlorocyclopentadiene	ND	0.95	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Hexachloroethane	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Indeno(1,2,3-cd)pyrene	ND	1.4	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Isophorone	ND	1.2	3.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
1-Methylnaphthalene	ND	1.4	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
2-Methylnaphthalene	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
2-Methylphenol	ND	1.3	3.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
3+4-Methylphenol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
N-Nitrosodi-n-propylamine	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
N-Nitrosodiphenylamine	ND	0.98	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Naphthalene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
2-Nitroaniline	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
3-Nitroaniline	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
4-Nitroaniline	ND	0.92	3.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Nitrobenzene	ND	1.1	3.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
2-Nitrophenol	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
4-Nitrophenol	ND	1.5	2.4	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Pentachlorophenol	ND	0.97	3.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Phenanthrene	ND	0.98	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Phenol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Pyrene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Pyridine	ND	1.1	3.8	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
1,2,4-Trichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
2,4,5-Trichlorophenol	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
2,4,6-Trichlorophenol	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 5:49:52 PM	42141
Surr: 2-Fluorophenol	0		21.7-87.9	SD	%Rec	1	12/31/2018 5:49:52 PM	42141
Surr: Phenol-d5	0		30.2-92.2	SD	%Rec	1	12/31/2018 5:49:52 PM	42141
Surr: 2,4,6-Tribromophenol	0		47.1-103	SD	%Rec	1	12/31/2018 5:49:52 PM	42141
Surr: Nitrobenzene-d5	0		23.9-102	SD	%Rec	1	12/31/2018 5:49:52 PM	42141
Surr: 2-Fluorobiphenyl	0		32.6-101	SD	%Rec	1	12/31/2018 5:49:52 PM	42141
Surr: 4-Terphenyl-d14	0		37.2-117	SD	%Rec	1	12/31/2018 5:49:52 PM	42141

EPA METHOD 8260B: VOLATILES

Analyst: **DJF**

Benzene	ND	0.0037	0.023		mg/Kg	1	12/18/2018 7:32:00 AM	42099
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 34 of 72
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ04

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:40:00 PM

Lab ID: 1812713-008

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Toluene	ND	0.0044	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Ethylbenzene	ND	0.0027	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Methyl tert-butyl ether (MTBE)	ND	0.011	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,2,4-Trimethylbenzene	ND	0.0042	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,3,5-Trimethylbenzene	ND	0.0044	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,2-Dichloroethane (EDC)	ND	0.0047	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,2-Dibromoethane (EDB)	ND	0.0042	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Naphthalene	ND	0.0092	0.092		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1-Methylnaphthalene	ND	0.026	0.18		mg/Kg	1	12/18/2018 7:32:00 AM	42099
2-Methylnaphthalene	ND	0.020	0.18		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Acetone	ND	0.038	0.69		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Bromobenzene	ND	0.0044	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Bromodichloromethane	ND	0.0042	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Bromoform	ND	0.0041	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Bromomethane	ND	0.011	0.14		mg/Kg	1	12/18/2018 7:32:00 AM	42099
2-Butanone	ND	0.053	0.46		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Carbon disulfide	ND	0.015	0.46		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Carbon tetrachloride	ND	0.0043	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Chlorobenzene	ND	0.0059	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Chloroethane	ND	0.0067	0.092		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Chloroform	ND	0.0037	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Chloromethane	ND	0.0044	0.14		mg/Kg	1	12/18/2018 7:32:00 AM	42099
2-Chlorotoluene	ND	0.0040	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
4-Chlorotoluene	ND	0.0038	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
cis-1,2-DCE	ND	0.0063	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
cis-1,3-Dichloropropene	ND	0.0039	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,2-Dibromo-3-chloropropane	ND	0.0047	0.092		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Dibromochloromethane	ND	0.0033	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Dibromomethane	ND	0.0049	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,2-Dichlorobenzene	ND	0.0038	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,3-Dichlorobenzene	ND	0.0040	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,4-Dichlorobenzene	ND	0.0038	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Dichlorodifluoromethane	ND	0.011	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,1-Dichloroethane	ND	0.0029	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,1-Dichloroethene	ND	0.018	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,2-Dichloropropane	ND	0.0033	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,3-Dichloropropane	ND	0.0050	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
2,2-Dichloropropane	ND	0.015	0.092		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,1-Dichloropropene	ND	0.0042	0.092		mg/Kg	1	12/18/2018 7:32:00 AM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 35 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF TZ04

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:40:00 PM

Lab ID: 1812713-008

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Hexachlorobutadiene	ND	0.0047	0.092		mg/Kg	1	12/18/2018 7:32:00 AM	42099
2-Hexanone	ND	0.0076	0.46		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Isopropylbenzene	ND	0.0033	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
4-Isopropyltoluene	ND	0.0038	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
4-Methyl-2-pentanone	ND	0.0087	0.46		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Methylene chloride	ND	0.0081	0.14		mg/Kg	1	12/18/2018 7:32:00 AM	42099
n-Butylbenzene	ND	0.0043	0.14		mg/Kg	1	12/18/2018 7:32:00 AM	42099
n-Propylbenzene	ND	0.0037	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
sec-Butylbenzene	ND	0.0052	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Styrene	ND	0.0036	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
tert-Butylbenzene	ND	0.0043	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,1,1,2-Tetrachloroethane	ND	0.0031	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,1,2,2-Tetrachloroethane	ND	0.0046	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Tetrachloroethene (PCE)	ND	0.0037	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
trans-1,2-DCE	ND	0.0042	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
trans-1,3-Dichloropropene	ND	0.0048	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,2,3-Trichlorobenzene	ND	0.0040	0.092		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,2,4-Trichlorobenzene	ND	0.0046	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,1,1-Trichloroethane	ND	0.0041	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,1,2-Trichloroethane	ND	0.0032	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Trichloroethene (TCE)	ND	0.0053	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Trichlorofluoromethane	ND	0.016	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
1,2,3-Trichloropropane	ND	0.0074	0.092		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Vinyl chloride	ND	0.0030	0.046		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Xylenes, Total	ND	0.012	0.092		mg/Kg	1	12/18/2018 7:32:00 AM	42099
Surr: Dibromofluoromethane	107		70-130		%Rec	1	12/18/2018 7:32:00 AM	42099
Surr: 1,2-Dichloroethane-d4	102		70-130		%Rec	1	12/18/2018 7:32:00 AM	42099
Surr: Toluene-d8	108		70-130		%Rec	1	12/18/2018 7:32:00 AM	42099
Surr: 4-Bromofluorobenzene	98.4		70-130		%Rec	1	12/18/2018 7:32:00 AM	42099
EPA METHOD 418.1: TPH							Analyst: CLP	
Petroleum Hydrocarbons, TR	750	14	99		mg/Kg	5	12/17/2018	42110

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 36 of 72
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ04

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:55:00 PM

Lab ID: 1812713-009

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								Analyst: TOM
Aroclor 1016	ND	0.011	0.024		mg/Kg	1	1/4/2019 8:11:52 PM	42179
Aroclor 1221	ND	0.019	0.024		mg/Kg	1	1/4/2019 8:11:52 PM	42179
Aroclor 1232	ND	0.024	0.024		mg/Kg	1	1/4/2019 8:11:52 PM	42179
Aroclor 1242	ND	0.013	0.024		mg/Kg	1	1/4/2019 8:11:52 PM	42179
Aroclor 1248	ND	0.019	0.024		mg/Kg	1	1/4/2019 8:11:52 PM	42179
Aroclor 1254	ND	0.019	0.024		mg/Kg	1	1/4/2019 8:11:52 PM	42179
Aroclor 1260	ND	0.0091	0.024		mg/Kg	1	1/4/2019 8:11:52 PM	42179
Surr: Decachlorobiphenyl	92.4	0	31.9-130		%Rec	1	1/4/2019 8:11:52 PM	42179
Surr: Tetrachloro-m-xylene	97.2	0	21.2-142		%Rec	1	1/4/2019 8:11:52 PM	42179
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	31	1.9	9.7		mg/Kg	1	12/18/2018 8:39:11 PM	42113
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	12/18/2018 8:39:11 PM	42113
Surr: DNOP	98.5	0	50.6-138		%Rec	1	12/18/2018 8:39:11 PM	42113
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	5.0		mg/Kg	1	12/14/2018 10:28:33 A	42100
Surr: BFB	92.9	0	73.8-119		%Rec	1	12/14/2018 10:28:33 A	42100
EPA METHOD 300.0: ANIONS								Analyst: MRA
Fluoride	3.6	1.0	1.5		mg/Kg	5	12/27/2018 5:13:32 PM	42333
Chloride	300	30	30		mg/Kg	20	12/27/2018 5:25:56 PM	42333
Nitrogen, Nitrate (As N)	7.2	0.28	1.5		mg/Kg	5	12/27/2018 5:13:32 PM	42333
Sulfate	410	1.3	7.5		mg/Kg	5	12/27/2018 5:13:32 PM	42333
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	ND	0.0071	0.035		mg/Kg	1	12/18/2018 10:29:22 A	42145
EPA METHOD 6010B: SOIL METALS								Analyst: JLF
Arsenic	ND	7.0	12		mg/Kg	5	12/22/2018 3:10:16 PM	42118
Barium	210	0.11	0.49		mg/Kg	5	12/22/2018 3:10:16 PM	42118
Cadmium	ND	0.12	0.49		mg/Kg	5	12/22/2018 3:10:16 PM	42118
Chromium	11	0.39	1.5		mg/Kg	5	12/22/2018 3:10:16 PM	42118
Copper	2.5	0.55	1.5		mg/Kg	5	12/22/2018 3:10:16 PM	42118
Iron	15000	71	250		mg/Kg	100	12/19/2018 8:38:31 AM	42118
Lead	5.5	1.2	1.2		mg/Kg	5	12/22/2018 3:10:16 PM	42118
Manganese	390	0.10	0.49		mg/Kg	5	12/22/2018 3:10:16 PM	42118
Selenium	ND	6.2	12		mg/Kg	5	12/22/2018 3:10:16 PM	42118
Silver	ND	0.16	1.2		mg/Kg	5	12/22/2018 3:10:16 PM	42118
Uranium	ND	2.1	4.9		mg/Kg	1	12/18/2018 5:05:08 PM	42118
Zinc	14	0.39	2.5		mg/Kg	1	12/18/2018 5:05:08 PM	42118

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 37 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ04

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:55:00 PM

Lab ID: 1812713-009

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Acenaphthylene	ND	0.20	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Aniline	ND	0.20	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Anthracene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Azobenzene	ND	0.27	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Benz(a)anthracene	ND	0.27	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Benzo(a)pyrene	ND	0.31	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Benzo(b)fluoranthene	ND	0.31	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Benzo(g,h,i)perylene	ND	0.33	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Benzo(k)fluoranthene	ND	0.32	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Benzoic acid	ND	0.29	1.0	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Benzyl alcohol	ND	0.27	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Bis(2-chloroethoxy)methane	ND	0.23	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Bis(2-chloroethyl)ether	ND	0.24	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Bis(2-chloroisopropyl)ether	ND	0.24	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Bis(2-ethylhexyl)phthalate	ND	0.56	1.0	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
4-Bromophenyl phenyl ether	ND	0.27	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Butyl benzyl phthalate	ND	0.27	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Carbazole	ND	0.24	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
4-Chloro-3-methylphenol	ND	0.27	1.0	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
4-Chloroaniline	ND	0.22	1.0	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
2-Chloronaphthalene	ND	0.22	0.51	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
2-Chlorophenol	ND	0.26	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
4-Chlorophenyl phenyl ether	ND	0.21	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Chrysene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Di-n-butyl phthalate	ND	0.55	0.81	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Di-n-octyl phthalate	ND	0.24	0.81	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Dibenz(a,h)anthracene	ND	0.32	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Dibenzofuran	ND	0.23	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
1,2-Dichlorobenzene	ND	0.25	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
1,3-Dichlorobenzene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
1,4-Dichlorobenzene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
3,3'-Dichlorobenzidine	ND	0.20	0.51	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Diethyl phthalate	ND	0.31	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Dimethyl phthalate	ND	0.21	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
2,4-Dichlorophenol	ND	0.25	0.81	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
2,4-Dimethylphenol	ND	0.19	0.61	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
4,6-Dinitro-2-methylphenol	ND	0.19	0.81	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
2,4-Dinitrophenol	ND	0.13	1.0	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 38 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ04

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:55:00 PM

Lab ID: 1812713-009

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.21	1.0	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
2,6-Dinitrotoluene	ND	0.25	1.0	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Fluoranthene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Fluorene	ND	0.21	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Hexachlorobenzene	ND	0.25	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Hexachlorobutadiene	ND	0.21	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Hexachlorocyclopentadiene	ND	0.20	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Hexachloroethane	ND	0.25	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Indeno(1,2,3-cd)pyrene	ND	0.29	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Isophorone	ND	0.26	0.81	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
1-Methylnaphthalene	ND	0.29	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
2-Methylnaphthalene	ND	0.26	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
2-Methylphenol	ND	0.28	0.81	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
3+4-Methylphenol	ND	0.27	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
N-Nitrosodi-n-propylamine	ND	0.31	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
N-Nitrosodiphenylamine	ND	0.21	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Naphthalene	ND	0.23	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
2-Nitroaniline	ND	0.26	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
3-Nitroaniline	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
4-Nitroaniline	ND	0.19	0.81	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Nitrobenzene	ND	0.23	0.81	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
2-Nitrophenol	ND	0.26	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
4-Nitrophenol	ND	0.31	0.51	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Pentachlorophenol	ND	0.20	0.81	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Phenanthrene	ND	0.21	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Phenol	ND	0.27	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Pyrene	ND	0.22	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Pyridine	ND	0.24	0.81	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
1,2,4-Trichlorobenzene	ND	0.24	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
2,4,5-Trichlorophenol	ND	0.23	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
2,4,6-Trichlorophenol	ND	0.26	0.40	D	mg/Kg	1	12/31/2018 6:18:44 PM	42141
Surr: 2-Fluorophenol	81.2		21.7-87.9	D	%Rec	1	12/31/2018 6:18:44 PM	42141
Surr: Phenol-d5	85.2		30.2-92.2	D	%Rec	1	12/31/2018 6:18:44 PM	42141
Surr: 2,4,6-Tribromophenol	89.3		47.1-103	D	%Rec	1	12/31/2018 6:18:44 PM	42141
Surr: Nitrobenzene-d5	93.8		23.9-102	D	%Rec	1	12/31/2018 6:18:44 PM	42141
Surr: 2-Fluorobiphenyl	98.2		32.6-101	D	%Rec	1	12/31/2018 6:18:44 PM	42141
Surr: 4-Terphenyl-d14	103		37.2-117	D	%Rec	1	12/31/2018 6:18:44 PM	42141

EPA METHOD 8260B: VOLATILES

Analyst: AG

Benzene	ND	0.0041	0.025		mg/Kg	1	12/19/2018 4:04:45 PM	42100
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 39 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ04

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:55:00 PM

Lab ID: 1812713-009

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Toluene	ND	0.0048	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Ethylbenzene	ND	0.0029	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Methyl tert-butyl ether (MTBE)	ND	0.012	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,2,4-Trimethylbenzene	ND	0.0046	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,3,5-Trimethylbenzene	ND	0.0048	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,2-Dichloroethane (EDC)	ND	0.0051	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,2-Dibromoethane (EDB)	ND	0.0046	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Naphthalene	ND	0.010	0.10		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1-Methylnaphthalene	ND	0.029	0.20		mg/Kg	1	12/19/2018 4:04:45 PM	42100
2-Methylnaphthalene	ND	0.022	0.20		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Acetone	ND	0.041	0.75		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Bromobenzene	ND	0.0048	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Bromodichloromethane	ND	0.0046	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Bromoform	ND	0.0045	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Bromomethane	ND	0.012	0.15		mg/Kg	1	12/19/2018 4:04:45 PM	42100
2-Butanone	ND	0.058	0.50		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Carbon disulfide	ND	0.017	0.50		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Carbon tetrachloride	ND	0.0047	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Chlorobenzene	ND	0.0064	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Chloroethane	ND	0.0074	0.10		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Chloroform	ND	0.0040	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Chloromethane	ND	0.0048	0.15		mg/Kg	1	12/19/2018 4:04:45 PM	42100
2-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
4-Chlorotoluene	ND	0.0041	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
cis-1,2-DCE	ND	0.0068	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
cis-1,3-Dichloropropene	ND	0.0042	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,2-Dibromo-3-chloropropane	ND	0.0051	0.10		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Dibromochloromethane	ND	0.0035	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Dibromomethane	ND	0.0054	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,2-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,3-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,4-Dichlorobenzene	ND	0.0042	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Dichlorodifluoromethane	ND	0.012	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,1-Dichloroethane	ND	0.0032	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,2-Dichloropropane	ND	0.0036	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,3-Dichloropropane	ND	0.0054	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
2,2-Dichloropropane	ND	0.016	0.10		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,1-Dichloropropene	ND	0.0046	0.10		mg/Kg	1	12/19/2018 4:04:45 PM	42100

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 40 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF VZ04

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018 4:55:00 PM

Lab ID: 1812713-009

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Hexachlorobutadiene	ND	0.0051	0.10		mg/Kg	1	12/19/2018 4:04:45 PM	42100
2-Hexanone	ND	0.0083	0.50		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Isopropylbenzene	ND	0.0036	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
4-Isopropyltoluene	ND	0.0041	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
4-Methyl-2-pentanone	ND	0.0094	0.50		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Methylene chloride	ND	0.0088	0.15		mg/Kg	1	12/19/2018 4:04:45 PM	42100
n-Butylbenzene	ND	0.0047	0.15		mg/Kg	1	12/19/2018 4:04:45 PM	42100
n-Propylbenzene	ND	0.0040	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
sec-Butylbenzene	ND	0.0056	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Styrene	ND	0.0039	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
tert-Butylbenzene	ND	0.0047	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,1,1,2-Tetrachloroethane	ND	0.0034	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,1,2,2-Tetrachloroethane	ND	0.0051	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
trans-1,2-DCE	ND	0.0046	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
trans-1,3-Dichloropropene	ND	0.0053	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,2,3-Trichlorobenzene	ND	0.0044	0.10		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,2,4-Trichlorobenzene	ND	0.0051	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,1,1-Trichloroethane	ND	0.0045	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,1,2-Trichloroethane	ND	0.0035	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Trichloroethene (TCE)	ND	0.0058	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Trichlorofluoromethane	ND	0.017	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
1,2,3-Trichloropropane	ND	0.0081	0.10		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Vinyl chloride	ND	0.0033	0.050		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Xylenes, Total	ND	0.013	0.10		mg/Kg	1	12/19/2018 4:04:45 PM	42100
Surr: Dibromofluoromethane	101		70-130		%Rec	1	12/19/2018 4:04:45 PM	42100
Surr: 1,2-Dichloroethane-d4	98.6		70-130		%Rec	1	12/19/2018 4:04:45 PM	42100
Surr: Toluene-d8	98.5		70-130		%Rec	1	12/19/2018 4:04:45 PM	42100
Surr: 4-Bromofluorobenzene	99.4		70-130		%Rec	1	12/19/2018 4:04:45 PM	42100
EPA METHOD 418.1: TPH							Analyst: CLP	
Petroleum Hydrocarbons, TR	26	2.7	20		mg/Kg	1	12/17/2018	42110

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 41 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF DUP01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018

Lab ID: 1812713-010

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8082A: PCB'S								
						Analyst: TOM		
Aroclor 1016	ND	0.050	0.12		mg/Kg	1	1/4/2019 8:44:48 PM	42179
Aroclor 1221	ND	0.093	0.12		mg/Kg	1	1/4/2019 8:44:48 PM	42179
Aroclor 1232	ND	0.11	0.12		mg/Kg	1	1/4/2019 8:44:48 PM	42179
Aroclor 1242	ND	0.061	0.12		mg/Kg	1	1/4/2019 8:44:48 PM	42179
Aroclor 1248	ND	0.093	0.12		mg/Kg	1	1/4/2019 8:44:48 PM	42179
Aroclor 1254	ND	0.093	0.12		mg/Kg	1	1/4/2019 8:44:48 PM	42179
Aroclor 1260	ND	0.044	0.12		mg/Kg	1	1/4/2019 8:44:48 PM	42179
Surr: Decachlorobiphenyl	120	0	31.9-130		%Rec	1	1/4/2019 8:44:48 PM	42179
Surr: Tetrachloro-m-xylene	124	0	21.2-142		%Rec	1	1/4/2019 8:44:48 PM	42179
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								
						Analyst: TOM		
Diesel Range Organics (DRO)	570	19	96		mg/Kg	10	12/18/2018 9:27:19 PM	42113
Motor Oil Range Organics (MRO)	610	480	480		mg/Kg	10	12/18/2018 9:27:19 PM	42113
Surr: DNOP	0	0	50.6-138	S	%Rec	10	12/18/2018 9:27:19 PM	42113
EPA METHOD 8015D: GASOLINE RANGE								
						Analyst: NSB		
Gasoline Range Organics (GRO)	ND	1.4	5.0		mg/Kg	1	12/14/2018 11:38:58 A	42100
Surr: BFB	96.3	0	73.8-119		%Rec	1	12/14/2018 11:38:58 A	42100
EPA METHOD 300.0: ANIONS								
						Analyst: MRA		
Fluoride	4.5	1.0	1.5		mg/Kg	5	12/27/2018 5:38:20 PM	42333
Chloride	270	30	30		mg/Kg	20	12/27/2018 5:50:45 PM	42333
Nitrogen, Nitrate (As N)	3.1	0.28	1.5		mg/Kg	5	12/27/2018 5:38:20 PM	42333
Sulfate	690	1.3	7.5		mg/Kg	5	12/27/2018 5:38:20 PM	42333
EPA METHOD 7471: MERCURY								
						Analyst: pmf		
Mercury	ND	0.0064	0.032		mg/Kg	1	12/18/2018 10:31:17 A	42145
EPA METHOD 6010B: SOIL METALS								
						Analyst: JLF		
Arsenic	ND	6.9	12		mg/Kg	5	12/22/2018 3:11:53 PM	42118
Barium	250	0.11	0.48		mg/Kg	5	12/22/2018 3:11:53 PM	42118
Cadmium	ND	0.12	0.48		mg/Kg	5	12/22/2018 3:11:53 PM	42118
Chromium	11	0.39	1.5		mg/Kg	5	12/22/2018 3:11:53 PM	42118
Copper	2.3	0.55	1.5		mg/Kg	5	12/22/2018 3:11:53 PM	42118
Iron	15000	71	240		mg/Kg	100	12/19/2018 8:40:31 AM	42118
Lead	5.2	1.2	1.2		mg/Kg	5	12/22/2018 3:11:53 PM	42118
Manganese	410	0.10	0.48		mg/Kg	5	12/22/2018 3:11:53 PM	42118
Selenium	ND	6.1	12		mg/Kg	5	12/22/2018 3:11:53 PM	42118
Silver	ND	0.16	1.2		mg/Kg	5	12/22/2018 3:11:53 PM	42118
Uranium	ND	2.1	4.8		mg/Kg	1	12/18/2018 5:07:12 PM	42118
Zinc	14	0.38	2.4		mg/Kg	1	12/18/2018 5:07:12 PM	42118

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Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 42 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF DUP01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018

Lab ID: 1812713-010

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
Acenaphthene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Acenaphthylene	ND	0.98	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Aniline	ND	0.93	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Anthracene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Azobenzene	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Benz(a)anthracene	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Benzo(a)pyrene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Benzo(b)fluoranthene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Benzo(g,h,i)perylene	ND	1.6	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Benzo(k)fluoranthene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Benzoic acid	ND	1.4	4.8	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Benzyl alcohol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Bis(2-chloroethoxy)methane	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Bis(2-chloroethyl)ether	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Bis(2-chloroisopropyl)ether	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Bis(2-ethylhexyl)phthalate	ND	2.7	4.8	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
4-Bromophenyl phenyl ether	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Butyl benzyl phthalate	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Carbazole	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
4-Chloro-3-methylphenol	ND	1.3	4.8	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
4-Chloroaniline	ND	1.1	4.8	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
2-Chloronaphthalene	ND	1.0	2.4	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
2-Chlorophenol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
4-Chlorophenyl phenyl ether	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Chrysene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Di-n-butyl phthalate	ND	2.6	3.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Di-n-octyl phthalate	ND	1.1	3.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Dibenz(a,h)anthracene	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Dibenzofuran	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
1,2-Dichlorobenzene	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
1,3-Dichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
1,4-Dichlorobenzene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
3,3'-Dichlorobenzidine	ND	0.96	2.4	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Diethyl phthalate	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Dimethyl phthalate	ND	0.98	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
2,4-Dichlorophenol	ND	1.2	3.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
2,4-Dimethylphenol	ND	0.91	2.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
4,6-Dinitro-2-methylphenol	ND	0.88	3.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
2,4-Dinitrophenol	ND	0.62	4.8	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 43 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF DUP01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018

Lab ID: 1812713-010

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8270C: SEMIVOLATILES							Analyst: DAM	
2,4-Dinitrotoluene	ND	0.98	4.8	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
2,6-Dinitrotoluene	ND	1.2	4.8	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Fluoranthene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Fluorene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Hexachlorobenzene	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Hexachlorobutadiene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Hexachlorocyclopentadiene	ND	0.96	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Hexachloroethane	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Indeno(1,2,3-cd)pyrene	ND	1.4	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Isophorone	ND	1.2	3.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
1-Methylnaphthalene	ND	1.4	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
2-Methylnaphthalene	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
2-Methylphenol	ND	1.3	3.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
3+4-Methylphenol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
N-Nitrosodi-n-propylamine	ND	1.5	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
N-Nitrosodiphenylamine	ND	0.98	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Naphthalene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
2-Nitroaniline	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
3-Nitroaniline	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
4-Nitroaniline	ND	0.93	3.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Nitrobenzene	ND	1.1	3.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
2-Nitrophenol	ND	1.2	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
4-Nitrophenol	ND	1.5	2.4	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Pentachlorophenol	ND	0.97	3.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Phenanthrene	ND	0.98	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Phenol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Pyrene	ND	1.0	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Pyridine	ND	1.1	3.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
1,2,4-Trichlorobenzene	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
2,4,5-Trichlorophenol	ND	1.1	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
2,4,6-Trichlorophenol	ND	1.3	1.9	D	mg/Kg	1	12/31/2018 6:47:47 PM	42141
Surr: 2-Fluorophenol	0		21.7-87.9	SD	%Rec	1	12/31/2018 6:47:47 PM	42141
Surr: Phenol-d5	0		30.2-92.2	SD	%Rec	1	12/31/2018 6:47:47 PM	42141
Surr: 2,4,6-Tribromophenol	0		47.1-103	SD	%Rec	1	12/31/2018 6:47:47 PM	42141
Surr: Nitrobenzene-d5	0		23.9-102	SD	%Rec	1	12/31/2018 6:47:47 PM	42141
Surr: 2-Fluorobiphenyl	0		32.6-101	SD	%Rec	1	12/31/2018 6:47:47 PM	42141
Surr: 4-Terphenyl-d14	0		37.2-117	SD	%Rec	1	12/31/2018 6:47:47 PM	42141

EPA METHOD 8260B: VOLATILES

Analyst: **AG**

Benzene	ND	0.0041	0.025		mg/Kg	1	12/19/2018 4:33:19 PM	42100
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 44 of 72
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF DUP01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018

Lab ID: 1812713-010

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Toluene	ND	0.0048	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Ethylbenzene	ND	0.0029	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Methyl tert-butyl ether (MTBE)	ND	0.012	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,2,4-Trimethylbenzene	ND	0.0046	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,3,5-Trimethylbenzene	ND	0.0048	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,2-Dichloroethane (EDC)	ND	0.0051	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,2-Dibromoethane (EDB)	ND	0.0046	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Naphthalene	ND	0.010	0.10		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1-Methylnaphthalene	ND	0.029	0.20		mg/Kg	1	12/19/2018 4:33:19 PM	42100
2-Methylnaphthalene	ND	0.022	0.20		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Acetone	ND	0.041	0.75		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Bromobenzene	ND	0.0048	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Bromodichloromethane	ND	0.0046	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Bromoform	ND	0.0045	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Bromomethane	ND	0.012	0.15		mg/Kg	1	12/19/2018 4:33:19 PM	42100
2-Butanone	ND	0.058	0.50		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Carbon disulfide	ND	0.017	0.50		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Carbon tetrachloride	ND	0.0047	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Chlorobenzene	ND	0.0064	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Chloroethane	ND	0.0074	0.10		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Chloroform	ND	0.0040	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Chloromethane	ND	0.0048	0.15		mg/Kg	1	12/19/2018 4:33:19 PM	42100
2-Chlorotoluene	ND	0.0044	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
4-Chlorotoluene	ND	0.0041	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
cis-1,2-DCE	ND	0.0068	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
cis-1,3-Dichloropropene	ND	0.0042	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,2-Dibromo-3-chloropropane	ND	0.0051	0.10		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Dibromochloromethane	ND	0.0035	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Dibromomethane	ND	0.0054	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,2-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,3-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,4-Dichlorobenzene	ND	0.0042	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Dichlorodifluoromethane	ND	0.012	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,1-Dichloroethane	ND	0.0032	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,2-Dichloropropane	ND	0.0036	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,3-Dichloropropane	ND	0.0054	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
2,2-Dichloropropane	ND	0.016	0.10		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,1-Dichloropropene	ND	0.0046	0.10		mg/Kg	1	12/19/2018 4:33:19 PM	42100

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 45 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812713

Date Reported: 1/9/2019

CLIENT: Marathon

Client Sample ID: CENTRAL OCD LF DUP01

Project: OCD Central Landfarm Semiannual Sam

Collection Date: 12/10/2018

Lab ID: 1812713-010

Matrix: SOIL

Received Date: 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Hexachlorobutadiene	ND	0.0051	0.10		mg/Kg	1	12/19/2018 4:33:19 PM	42100
2-Hexanone	ND	0.0083	0.50		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Isopropylbenzene	ND	0.0036	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
4-Isopropyltoluene	ND	0.0041	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
4-Methyl-2-pentanone	ND	0.0094	0.50		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Methylene chloride	ND	0.0088	0.15		mg/Kg	1	12/19/2018 4:33:19 PM	42100
n-Butylbenzene	ND	0.0047	0.15		mg/Kg	1	12/19/2018 4:33:19 PM	42100
n-Propylbenzene	ND	0.0040	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
sec-Butylbenzene	ND	0.0056	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Styrene	ND	0.0039	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
tert-Butylbenzene	ND	0.0047	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,1,1,2-Tetrachloroethane	ND	0.0034	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,1,2,2-Tetrachloroethane	ND	0.0051	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
trans-1,2-DCE	ND	0.0046	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
trans-1,3-Dichloropropene	ND	0.0053	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,2,3-Trichlorobenzene	ND	0.0044	0.10		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,2,4-Trichlorobenzene	ND	0.0051	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,1,1-Trichloroethane	ND	0.0045	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,1,2-Trichloroethane	ND	0.0035	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Trichloroethene (TCE)	ND	0.0058	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Trichlorofluoromethane	ND	0.017	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
1,2,3-Trichloropropane	ND	0.0081	0.10		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Vinyl chloride	ND	0.0033	0.050		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Xylenes, Total	ND	0.013	0.10		mg/Kg	1	12/19/2018 4:33:19 PM	42100
Surr: Dibromofluoromethane	104		70-130		%Rec	1	12/19/2018 4:33:19 PM	42100
Surr: 1,2-Dichloroethane-d4	99.5		70-130		%Rec	1	12/19/2018 4:33:19 PM	42100
Surr: Toluene-d8	100		70-130		%Rec	1	12/19/2018 4:33:19 PM	42100
Surr: 4-Bromofluorobenzene	98.3		70-130		%Rec	1	12/19/2018 4:33:19 PM	42100
EPA METHOD 418.1: TPH							Analyst: CLP	
Petroleum Hydrocarbons, TR	760	14	99		mg/Kg	5	12/17/2018	42110

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 46 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical ReportLab Order **1812713**Date Reported: **1/9/2019****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Marathon**Client Sample ID:** CENTRAL OCD LF FB01**Project:** OCD Central Landfarm Semiannual Sam**Collection Date:** 12/10/2018 5:05:00 PM**Lab ID:** 1812713-011**Matrix:** AQUEOUS**Received Date:** 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: AG	
Benzene	ND	0.17	1.0		µg/L	1	12/17/2018 12:07:44 P	A56399
Toluene	ND	0.17	1.0		µg/L	1	12/17/2018 12:07:44 P	A56399
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/17/2018 12:07:44 P	A56399
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/17/2018 12:07:44 P	A56399
Surr: 1,2-Dichloroethane-d4	100	0	70-130		%Rec	1	12/17/2018 12:07:44 P	A56399
Surr: 4-Bromofluorobenzene	97.0	0	70-130		%Rec	1	12/17/2018 12:07:44 P	A56399
Surr: Dibromofluoromethane	103	0	70-130		%Rec	1	12/17/2018 12:07:44 P	A56399
Surr: Toluene-d8	105	0	70-130		%Rec	1	12/17/2018 12:07:44 P	A56399

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 47 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical ReportLab Order **1812713**Date Reported: **1/9/2019****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Marathon**Client Sample ID:** CENTRAL OCD LF EB01**Project:** OCD Central Landfarm Semiannual Sam**Collection Date:** 12/10/2018 5:10:00 PM**Lab ID:** 1812713-012**Matrix:** AQUEOUS**Received Date:** 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: AG	
Benzene	ND	0.17	1.0		µg/L	1	12/17/2018 12:36:29 P	A56399
Toluene	ND	0.17	1.0		µg/L	1	12/17/2018 12:36:29 P	A56399
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/17/2018 12:36:29 P	A56399
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/17/2018 12:36:29 P	A56399
Surr: 1,2-Dichloroethane-d4	102	0	70-130		%Rec	1	12/17/2018 12:36:29 P	A56399
Surr: 4-Bromofluorobenzene	98.8	0	70-130		%Rec	1	12/17/2018 12:36:29 P	A56399
Surr: Dibromofluoromethane	105	0	70-130		%Rec	1	12/17/2018 12:36:29 P	A56399
Surr: Toluene-d8	103	0	70-130		%Rec	1	12/17/2018 12:36:29 P	A56399

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical ReportLab Order **1812713**Date Reported: **1/9/2019****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Marathon**Client Sample ID:** Trip Blank**Project:** OCD Central Landfarm Semiannual Sam**Collection Date:****Lab ID:** 1812713-013**Matrix:** AQUEOUS**Received Date:** 12/12/2018 8:40:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: AG	
Benzene	ND	0.17	1.0		µg/L	1	12/14/2018 12:44:18 P	A5637C
Toluene	ND	0.17	1.0		µg/L	1	12/14/2018 12:44:18 P	A5637C
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/14/2018 12:44:18 P	A5637C
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/14/2018 12:44:18 P	A5637C
Surr: 1,2-Dichloroethane-d4	104	0	70-130		%Rec	1	12/14/2018 12:44:18 P	A5637C
Surr: 4-Bromofluorobenzene	102	0	70-130		%Rec	1	12/14/2018 12:44:18 P	A5637C
Surr: Dibromofluoromethane	102	0	70-130		%Rec	1	12/14/2018 12:44:18 P	A5637C
Surr: Toluene-d8	103	0	70-130		%Rec	1	12/14/2018 12:44:18 P	A5637C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 49 of 72
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

1812713-001C CENTRAL OCD LF TZ01

SAMPLE RESULTS - 01

DHE LAB: NATIONWIDE



Collected date/time: 12/10/18 14:35

L1053194

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250 mg/kg	1	12/20/2018 17:02	WG-213499

Ti

Ss

Cn

Sr

QC

Gl

Al

Sc

ACCOUNT:
Hall Environmental Analysis Laboratory

PROJECT:

SDG
L1053194DATE/TIME:
12/21/18 08:05

1812713-002C CENTRAL OCD LF VZ01

Collected date/time: 12/10/18 14:25

SAMPLE RESULTS - 02

L1053194

ONE LAB NATIONWIDE



Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		Date / Time	
Cyanide	ND		0.250	1	12/20/2018 12:04	WG1211498

Tr

Ss

Cn

St

Qc

Gl

Al

Sc

ACCOUNT:
Hall Environmental Analysis Laboratory

PROJECT:

SDG:
L1053194DATE/TIME:
12/21/18 08:05

1812713-003C CENTRAL OCD LF TZ02

Collected date/time: 12/10/18 15:20

SAMPLE RESULTS - 03

L1053194

QNE LAB - NATIONWIDE



Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	12/20/2018 17:07	W5021491

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

ACCOUNT:
Hall Environmental Analysis Laboratory

PROJECT:

SDG:
L1053194DATE/TIME:
12/21/18 08:05

1812713-004C CENTRAL OCD LF VZ02

Collected date/time: 12/10/18 15:35

SAMPLE RESULTS - 04

L1053194

ONE LAB. NATIONWIDE



Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250 mg/kg	1	12/20/2018 17:10	WG1213403

1
Ti2
Si3
Ca4
Sr5
QC6
GI7
Al8
ScACCOUNT:
Hall Environmental Analysis Laboratory

PROJECT:

SDG:
L1053194DATE/TIME:
12/21/18 08:05

1812713-006C CENTRAL OCD LF TZ03

Collected date/time: 12/10/18 16:00

SAMPLE RESULTS - 05

L1053194

ONE LAB. NATIONWIDE



Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	ND		0.250	1	12/20/2018 17:11	WG1218432

1
Tl2
Sb3
Cd4
Pb5
Qc6
Cr7
Al8
ScACCOUNT:
Hall Environmental Analysis Laboratory

PROJECT:

SDG:
L1053194DATE/TIME:
12/21/18 08:05

1812713-007C CENTRAL OGD LF V203

Collected date/time: 12/10/18 15:15

SAMPLE RESULTS - 06

L1053194

ONE LAB / NATIONWIDE



Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	12/20/2018 17:12	WG-213435

Tr

Sr

Cn

Sr

Qc

Gl

Al

Sc

ACCOUNT:
Hill Environmental Analysis Laboratory

PROJECT:

SDG:
L1053194DATE/TIME:
12/21/18 08:05

1812713-008C CENTRAL OCD LF TZ04

Collected date/time: 12/10/18 16:40

SAMPLE RESULTS - 07

L1053194

ONE LAB NATIONWIDE



Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Cyanide	0.789		0.250	1	12/20/2018 17:13	WS121218

Tf

3 Ss

1 Cn

5 Sr

1 Qc

7 Gl

1 Al

9 Sc

ACCOUNT:
Hall Environmental Analysis Laboratory

PROJECT:

SDG:
L1053194DATE/TIME:
12/21/18 08:05

1812713-009C CENTRAL OCD LF VZ04

Collected date/time: 12/10/18 16:55

SAMPLE RESULTS - 08

L1053194

ONE LAB. NATIONWIDE



Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	12/20/2018 17:14	W61214433

1
Ti3
Ss5
Cn6
Sr6
Qc7
Gl8
Al9
ScACCOUNT:
Hall Environmental Analysis Laboratory

PROJECT:

SDG:
L1053194DATE/TIME:
12/21/18 08:05

1812713-010C-CENTRAL OGD LF DUP01

Collected date/time: 12/10/18 00:00

SAMPLE RESULTS - 09

L1053194

ONE LAB, NATIONWIDE



Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Cyanide	ND		0.250	1	12/20/2018 17:15	W18123001

ACCOUNT:
Hall Environmental Analysis Laboratory

PROJECT:

SDG:
L1053194DATE/TIME:
12/21/18 08:05

WG1213499

Wat Chemistry by Method 9012B

QUALITY CONTROL SUMMARY

L1053194-01,02,03,04,05,06,07,08,09

DNE LAB. NATIONWIDE



Method Blank (MB)

(MB) R3370176-1 12/20/18 16:55

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Cyanide	mg/kg U		mg/kg 0.0390	mg/kg 0.250

L1053194-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1053194-01 12/20/18 17:02 • (DUP) R3370176-3 12/20/18 17:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RPD Limits
Cyanide	mg/kg ND	mg/kg 0.0669	% 1	% 0.000	% 20

L1054765-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1054765-02 12/20/18 18:10 • (DUP) R3370176-6 12/20/18 18:11

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RPD Limits
Cyanide	mg/kg ND	mg/kg 0.117	% 1	% 0.314	% 20

Laboratory Control Sample (LCS)

(LCS) R3370176-2 12/20/18 16:59

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Cyanide	mg/kg 2.50	mg/kg 2.64	% 106	% 50.0-150	

L1053194-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1053194-02 12/20/18 17:04 • (MS) R3370176-4 12/20/18 17:05 • (MSD) R3370176-5 12/20/18 17:05

Analyte	Spike Amount	Original Result	MS Result	MSD Result	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Cyanide	mg/kg 1.67	mg/kg ND	mg/kg 1.48	mg/kg 1.51	% 1	% 75.0-125	% 34.5	% 75.0-125	% 2.47	% 20

L1054592-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1054592-03 12/20/18 18:06 • (MS) R3370176-6 12/20/18 18:07 • (MSD) R3370176-7 12/20/18 18:08

Analyte	Spike Amount	Original Result	MS Result	MSD Result	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Cyanide	mg/kg 1.67	mg/kg ND	mg/kg 1.50	mg/kg 1.68	% 1	% 75.0-125	% 75.9	% 10	% 1.32	% 20

ACCOUNT:
Hill Environmental Analysis Laboratory

PROJECT:

SDS:
L1053194DATE/TIME:
12/21/18 08:05



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample-specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

¹Tb

³Ss

³Cn

⁵Sr

⁶Qc

³Gl

¹Al

⁵Sc

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1812713
Pace Project No.: 30274468

Sample: 1812713-001D CENTRAL Lab ID: 30274468001 Collected: 12/10/18 14:15 Received: 12/14/18 10:40 Matrix: Solid
OCDFTZ01

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1	1.635 ± 0.376 (0.247) C:NA T:NA	pCi/g	01/09/19 08:41	13982-63-3	Ra
Radium-228	EPA 901.1	2.134 ± 0.546 (0.272) C:NA T:NA	pCi/g	01/09/19 08:41	15262-26-1	

Sample: 1812713-002D CENTRAL Lab ID: 30274468002 Collected: 12/10/18 14:25 Received: 12/14/18 10:40 Matrix: Solid
OCDFVZ01

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1	1.519 ± 0.341 (0.181) C:NA T:NA	pCi/g	01/09/19 09:12	13982-63-3	Ra
Radium-228	EPA 901.1	2.099 ± 0.477 (0.454) C:NA T:NA	pCi/g	01/09/19 09:12	15262-26-1	

Sample: 1812713-003D CENTRAL Lab ID: 30274468003 Collected: 12/10/18 15:20 Received: 12/14/18 10:40 Matrix: Solid
OCDFTZ02

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1	1.716 ± 0.408 (0.205) C:NA T:NA	pCi/g	01/09/19 09:13	13982-63-3	Ra
Radium-228	EPA 901.1	2.090 ± 0.575 (0.339) C:NA T:NA	pCi/g	01/09/19 09:13	15262-26-1	

Sample: 1812713-004D CENTRAL Lab ID: 30274468004 Collected: 12/10/18 15:35 Received: 12/14/18 10:40 Matrix: Solid
OCDFVZ02

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1	1.320 ± 0.338 (0.216) C:NA T:NA	pCi/g	01/09/19 09:29	13982-63-3	Ra
Radium-228	EPA 901.1	1.988 ± 0.490 (0.428) C:NA T:NA	pCi/g	01/09/19 09:29	15262-26-1	

Sample: 1812713-006D CENTRAL Lab ID: 30274468005 Collected: 12/10/18 16:00 Received: 12/14/18 10:40 Matrix: Solid
OCDFTZ03

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1	1.249 ± 0.350 (0.217) C:NA T:NA	pCi/g	01/09/19 09:30	13982-63-3	Ra

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1812713
Pace Project No.: 30274468

Sample: 1812713-006D CENTRAL Lab ID: 30274468005 Collected: 12/10/18 16:00 Received: 12/14/18 10:40 Matrix: Solid
OCDLFT203

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1	1.066 ± 0.443 (0.561) C:NA T:NA	pCi/g	01/09/19 09:30	15262-20-1	

Sample: 1812713-007D CENTRAL Lab ID: 30274468006 Collected: 12/10/18 16:15 Received: 12/14/18 10:40 Matrix: Solid
OCDLFT203

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1	1.785 ± 0.384 (0.226) C:NA T:NA	pCi/g	01/09/19 09:46	13982-63-3	Ra
Radium-228	EPA 901.1	1.339 ± 0.511 (0.588) C:NA T:NA	pCi/g	01/09/19 09:46	15262-20-1	

Sample: 1812713-008D CENTRAL Lab ID: 30274468007 Collected: 12/10/18 16:15 Received: 12/14/18 10:40 Matrix: Solid
OCDLFT204

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1	1.344 ± 0.369 (0.279) C:NA T:NA	pCi/g	01/09/19 09:47	13982-63-3	Ra
Radium-228	EPA 901.1	1.315 ± 0.509 (0.299) C:NA T:NA	pCi/g	01/09/19 09:47	15262-20-1	

Sample: 1812713-009D CENTRAL Lab ID: 30274468008 Collected: 12/10/18 16:55 Received: 12/14/18 10:40 Matrix: Solid
OCDLFT204

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1	1.279 ± 0.308 (0.191) C:NA T:NA	pCi/g	01/09/19 10:03	13982-63-3	Ra
Radium-228	EPA 901.1	1.520 ± 0.440 (0.388) C:NA T:NA	pCi/g	01/09/19 10:03	15262-20-1	

Sample: 1812713-010 CENTRAL Lab ID: 30274468009 Collected: 12/10/18 00:01 Received: 12/14/18 10:40 Matrix: Solid
OCDLFDUP01

PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1	1.345 ± 0.348 (0.232) C:NA T:NA	pCi/g	01/09/19 10:04	13982-63-3	Ra
Radium-228	EPA 901.1	1.920 ± 0.459 (0.311) C:NA T:NA	pCi/g	01/09/19 10:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1636 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)650-6900

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1812713
Pace Project No.: 30274468

QC Batch: 324910 Analysis Method: EPA 901.1
QC Batch Method: EPA 901.1 Analysis Description: 901.1 Gamma Spec Ingrowth
Associated Lab Samples: 30274468001, 30274468002, 30274468003, 30274468004, 30274468005, 30274468006, 30274468007,
30274468008, 30274468009

METHOD BLANK: 1583636 Matrix: Solid
Associated Lab Samples: 30274468001, 30274468002, 30274468003, 30274468004, 30274468005, 30274468006, 30274468007,
30274468008, 30274468009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.083 ± 0.059 (0.123) C:NA T:NA	pCi/g	01/02/19 14:51	Ra
Radium-228	0.000 ± 0.077 (0.491) C:NA T:NA	pCi/g	01/02/19 14:51	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1812713
Pace Project No.: 30274468

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
TNTC - Too Numerous To Count.
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Act - Activity
Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.
Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.
(MDC) - Minimum Detectable Concentration
Trac - Tracer Recovery (%)
Carri - Carrier Recovery (%)
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAP Institute.

ANALYTE QUALIFIERS

Ra - The reported Ra-226 results were determined by hermetically sealing the dried, processed sample in an appropriate-sized can. Each sample was stored for a minimum of 21 days to ensure that equilibrium between Ra-226 and daughters Bi-214 and Pb-214 was achieved. Reported Ra-226 results were inferred from gamma peaks attributable to Bi-214 and Pb-214.

REPORT OF LABORATORY ANALYSIS

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Date: 01/06/2019 02:45 PM

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	MB-42333		SampType:	mblk		TestCode:	EPA Method 300.0: Anions			
Client ID:	PBS		Batch ID:	42333		RunNo:	56621			
Prep Date:	12/27/2018		Analysis Date:	12/27/2018		SeqNo:	1895320		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.30								
Chloride	ND	1.5								
Nitrogen, Nitrate (As N)	ND	0.30								
Sulfate	ND	1.5								

Sample ID	LCS-42333		SampType:	lcs		TestCode:	EPA Method 300.0: Anions			
Client ID:	LCSS		Batch ID:	42333		RunNo:	56621			
Prep Date:	12/27/2018		Analysis Date:	12/27/2018		SeqNo:	1895321		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	0.30	1.500	0	98.9	90	110			
Chloride	14	1.5	15.00	0	93.4	90	110			
Nitrogen, Nitrate (As N)	7.4	0.30	7.500	0	98.7	90	110			
Sulfate	29	1.5	30.00	0	95.5	90	110			

Sample ID	1812713-002AMS		SampType:	ms		TestCode:	EPA Method 300.0: Anions			
Client ID:	CENTRAL OCD LF V		Batch ID:	42333		RunNo:	56621			
Prep Date:	12/27/2018		Analysis Date:	12/27/2018		SeqNo:	1895335		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.3	1.5	1.500	3.660	44.9	15	119			
Nitrogen, Nitrate (As N)	7.9	1.5	7.500	1.636	84.1	61.8	142			
Sulfate	360	7.5	30.00	1092	-2440	71.9	115			S

Sample ID	1812713-002AMSD		SampType:	msd		TestCode:	EPA Method 300.0: Anions			
Client ID:	CENTRAL OCD LF V		Batch ID:	42333		RunNo:	56621			
Prep Date:	12/27/2018		Analysis Date:	12/27/2018		SeqNo:	1895336		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrate (As N)	7.5	1.5	7.500	1.636	77.5	61.8	142	6.41	20	
Sulfate	320	7.5	30.00	1092	-2580	71.9	115	12.6	20	S

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	MB-42110		SampType: MBLK		TestCode: EPA Method 418.1: TPH					
Client ID:	PBS		Batch ID: 42110		RunNo: 56388					
Prep Date:	12/14/2018		Analysis Date: 12/17/2018		SeqNo: 1885105		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	ND	20								

Sample ID	LCS-42110		SampType: LCS		TestCode: EPA Method 418.1: TPH					
Client ID:	LCSS		Batch ID: 42110		RunNo: 56388					
Prep Date:	12/14/2018		Analysis Date: 12/17/2018		SeqNo: 1885106		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	92	20	100.0	0	92.5	84.7	129			

Sample ID	1812713-002AMS		SampType: MS		TestCode: EPA Method 418.1: TPH					
Client ID:	CENTRAL OCD LF V		Batch ID: 42110		RunNo: 56388					
Prep Date:	12/14/2018		Analysis Date: 12/17/2018		SeqNo: 1885110		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	110	20	99.50	51.40	61.8	80	120			S

Sample ID	1812713-002AMSD		SampType:	MSD		TestCode:	EPA Method 418.1: TPH				
Client ID:	CENTRAL OCD LF V		Batch ID:	42110		RunNo:	56388				
Prep Date:	12/14/2018		Analysis Date:	12/17/2018		SeqNo:	1885111		Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Petroleum Hydrocarbons, TR	130	20	97.66	51.40	77.3	80	120	11.7	20	S	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	LCS-42113		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 42113		RunNo: 56382					
Prep Date:	12/14/2018		Analysis Date: 12/17/2018		SeqNo: 1885014		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	92.2	70	130			
Surr: DNOP	4.6		5.000		92.8	50.6	138			

Sample ID	MB-42113	SampType: MBLK			TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID: 42113			RunNo: 56382					
Prep Date:	12/14/2018	Analysis Date: 12/17/2018			SeqNo: 1885015		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.6		10.00		95.5	50.6	138			

Sample ID	1812713-002AMS		SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	CENTRAL OCD LF V		Batch ID: 42113		RunNo: 56382					
Prep Date:	12/14/2018		Analysis Date: 12/17/2018		SeqNo: 1885909		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	82	10	49.90	11.09	142	53.5	126			S
Surr: DNOP	4.8		4.990		96.5	50.6	138			

Sample ID	1812713-002AMSD		SampType:	MSD		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	CENTRAL OCD LF V		Batch ID:	42113		RunNo:	56382				
Prep Date:	12/14/2018		Analysis Date:	12/17/2018		SeqNo:	1885910		Units:		mg/Kg
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	80	9.5	47.57	11.09	145	53.5	126	2.16	21.7	S	
Surr: DNOP	4.8		4.757		101	50.6	138	0	0		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	MB-42100		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBS		Batch ID: 42100		RunNo: 56353					
Prep Date:	12/13/2018		Analysis Date: 12/14/2018		SeqNo: 1884432		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	920		1000		92.0	73.8	119			

Sample ID	LCS-42100		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: 42100		RunNo: 56353					
Prep Date:	12/13/2018		Analysis Date: 12/14/2018		SeqNo: 1884434		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	98.2	80.1	123			
Surr: BFB	1100		1000		106	73.8	119			

Sample ID	1812713-009AMS		SampType: MS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	CENTRAL OCD LF V		Batch ID: 42100		RunNo: 56353					
Prep Date:	12/13/2018		Analysis Date: 12/14/2018		SeqNo: 1884440		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	4.7	23.72	0	113	77.8	128			
Surr: BFB	1000		948.8		106	73.8	119			

Sample ID	1812713-009AMSD		SampType:	MSD		TestCode:	EPA Method 8015D: Gasoline Range				
Client ID:	CENTRAL OCD LF V		Batch ID:	42100		RunNo:	56353				
Prep Date:	12/13/2018		Analysis Date:	12/14/2018		SeqNo:	1884442		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	26	4.7	23.65	0	112	77.8	128	0.855	20		
Surr: BFB	1000		946.1		108	73.8	119	0	0		

Sample ID	MB-42099		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBS		Batch ID: 42099		RunNo: 56353					
Prep Date:	12/13/2018		Analysis Date: 12/14/2018		SeqNo: 1884458		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		95.2	73.8	119			

Sample ID	LCS-42099		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: 42099		RunNo: 56353					
Prep Date:	12/13/2018		Analysis Date: 12/14/2018		SeqNo: 1884460		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	LCS-42099		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: 42099		RunNo: 56353					
Prep Date:	12/13/2018		Analysis Date: 12/14/2018		SeqNo: 1884460		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	104	80.1	123			
Surr: BFB	1100		1000		107	73.8	119			

Sample ID	1812713-002AMS		SampType: MS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	CENTRAL OCD LF V		Batch ID: 42099		RunNo: 56353					
Prep Date:	12/13/2018		Analysis Date: 12/14/2018		SeqNo: 1884464		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	4.9	24.30	0	104	77.8	128			
Surr: BFB	1100		971.8		113	73.8	119			

Sample ID	1812713-002AMSD		SampType:	MSD		TestCode:	EPA Method 8015D: Gasoline Range				
Client ID:	CENTRAL OCD LF V		Batch ID:	42099		RunNo:	56353				
Prep Date:	12/13/2018		Analysis Date:	12/14/2018		SeqNo:	1884465		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	24	4.7	23.74	0	102	77.8	128	4.39	20		
Surr: BFB	1000		949.7		109	73.8	119	0	0		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	MB-42179		SampType:	MBLK		TestCode:	EPA Method 8082A: PCB's			
Client ID:	PBS		Batch ID:	42179		RunNo:	56755			
Prep Date:	12/19/2018		Analysis Date:	1/4/2019		SeqNo:	1899675		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.025								
Aroclor 1221	ND	0.025								
Aroclor 1232	ND	0.025								
Aroclor 1242	ND	0.025								
Aroclor 1248	ND	0.025								
Aroclor 1254	ND	0.025								
Aroclor 1260	ND	0.025								
Surr: Decachlorobiphenyl	0.049		0.06250		78.4	31.9	130			
Surr: Tetrachloro-m-xylene	0.048		0.06250		77.2	21.2	142			

Sample ID	LCS-42179		SampType:	LCS		TestCode:	EPA Method 8082A: PCB's			
Client ID:	LCSS		Batch ID:	42179		RunNo:	56755			
Prep Date:	12/19/2018		Analysis Date:	1/4/2019		SeqNo:	1899676		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	0.17	0.025	0.1250	0	133	35.9	162			
Aroclor 1260	0.12	0.025	0.1250	0	92.2	37.9	147			
Surr: Decachlorobiphenyl	0.058		0.06250		92.0	31.9	130			
Surr: Tetrachloro-m-xylene	0.058		0.06250		93.2	21.2	142			

Sample ID	1812713-002AMS		SampType:	MS		TestCode:	EPA Method 8082A: PCB's			
Client ID:	CENTRAL OCD LF V		Batch ID:	42179		RunNo:	56755			
Prep Date:	12/19/2018		Analysis Date:	1/4/2019		SeqNo:	1900305		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	0.10	0.025	0.1263	0	79.8	15	153			
Aroclor 1260	0.098	0.025	0.1263	0	77.6	15	180			
Surr: Decachlorobiphenyl	0.050		0.06316		78.8	31.9	130			
Surr: Tetrachloro-m-xylene	0.052		0.06316		82.4	21.2	142			

Sample ID	1812713-002AMSD		SampType:	MSD		TestCode:	EPA Method 8082A: PCB's			
Client ID:	CENTRAL OCD LF V		Batch ID:	42179		RunNo:	56755			
Prep Date:	12/19/2018		Analysis Date:	1/4/2019		SeqNo:	1900306		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aroclor 1016	0.089	0.022	0.1097	0	81.1	15	153	12.5	32.9	
Aroclor 1260	0.090	0.022	0.1097	0	82.4	15	180	8.02	31.1	
Surr: Decachlorobiphenyl	0.046		0.05487		84.0	31.9	130	0	0	
Surr: Tetrachloro-m-xylene	0.047		0.05487		86.0	21.2	142	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	MB-42384		SampType: MBLK		TestCode: EPA Method 8082A: PCB's					
Client ID:	PBS		Batch ID: 42384		RunNo: 56755					
Prep Date:	12/31/2018		Analysis Date: 1/4/2019		SeqNo: 1900316		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.045		0.06250		72.0	31.9	130			
Surr: Tetrachloro-m-xylene	0.048		0.06250		76.0	21.2	142			

Sample ID	LCS-42384		SampType: LCS		TestCode: EPA Method 8082A: PCB's					
Client ID:	LCSS		Batch ID: 42384		RunNo: 56755					
Prep Date:	12/31/2018		Analysis Date: 1/4/2019		SeqNo: 1900317		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.062		0.06250		98.4	31.9	130			
Surr: Tetrachloro-m-xylene	0.062		0.06250		98.4	21.2	142			

Sample ID	LCSD-42384		SampType: LCSD		TestCode: EPA Method 8082A: PCB's					
Client ID:	LCSS02		Batch ID: 42384		RunNo: 56755					
Prep Date:	12/31/2018		Analysis Date: 1/4/2019		SeqNo: 1900318		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.058		0.06250		93.2	31.9	130	0	0	
Surr: Tetrachloro-m-xylene	0.052		0.06250		82.8	21.2	142	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	mb-42099		SampType:	MBLK		TestCode:	EPA Method 8260B: Volatiles			
Client ID:	PBS		Batch ID:	42099		RunNo:	56400			
Prep Date:	12/13/2018		Analysis Date:	12/18/2018		SeqNo:	1885587		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	mb-42099		SampType:	MBLK		TestCode:	EPA Method 8260B: Volatiles			
Client ID:	PBS		Batch ID:	42099		RunNo:	56400			
Prep Date:	12/13/2018		Analysis Date:	12/18/2018		SeqNo:	1885587		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.56		0.5000		112	70	130			
Surr: 1,2-Dichloroethane-d4	0.53		0.5000		107	70	130			
Surr: Toluene-d8	0.56		0.5000		111	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		105	70	130			

Sample ID	lcs-42099		SampType:	LCS		TestCode:	EPA Method 8260B: Volatiles			
Client ID:	LCSS		Batch ID:	42099		RunNo:	56400			
Prep Date:	12/13/2018		Analysis Date:	12/18/2018		SeqNo:	1885588		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.025	1.000	0	94.6	70	130			
Toluene	1.0	0.050	1.000	0	100	70	130			
Chlorobenzene	1.0	0.050	1.000	0	101	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	ics-42099		SampType: LCS			TestCode: EPA Method 8260B: Volatiles				
Client ID:	LCSS		Batch ID: 42099			RunNo: 56400				
Prep Date:	12/13/2018		Analysis Date: 12/18/2018			SeqNo: 1885588		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	1.0	0.050	1.000	0	104	50.8	164			
Trichloroethene (TCE)	0.98	0.050	1.000	0	98.3	70	130			
Surr: Dibromofluoromethane	0.58		0.5000		115	70	130			
Surr: 1,2-Dichloroethane-d4	0.53		0.5000		107	70	130			
Surr: Toluene-d8	0.57		0.5000		113	70	130			
Surr: 4-Bromofluorobenzene	0.53		0.5000		106	70	130			

Sample ID	ics-42100		SampType: LCS			TestCode: EPA Method 8260B: Volatiles				
Client ID:	LCSS		Batch ID: 42100			RunNo: 56477				
Prep Date:	12/13/2018		Analysis Date: 12/19/2018			SeqNo: 1888583		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0	90.3	70	130			
Toluene	0.89	0.050	1.000	0	88.9	70	130			
Chlorobenzene	0.94	0.050	1.000	0	94.3	70	130			
1,1-Dichloroethene	0.88	0.050	1.000	0	88.1	50.8	164			
Trichloroethene (TCE)	0.85	0.050	1.000	0	85.5	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		103	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		101	70	130			
Surr: Toluene-d8	0.48		0.5000		96.4	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		99.7	70	130			

Sample ID	mb-42100		SampType: MBLK			TestCode: EPA Method 8260B: Volatiles				
Client ID:	PBS		Batch ID: 42100			RunNo: 56477				
Prep Date:	12/13/2018		Analysis Date: 12/19/2018			SeqNo: 1888584		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	mb-42100	SampType: MBLK		TestCode: EPA Method 8260B: Volatiles						
Client ID:	PBS	Batch ID: 42100		RunNo: 56477						
Prep Date:	12/13/2018	Analysis Date: 12/19/2018		SeqNo: 1888584		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	mb-42100		SampType:	MBLK		TestCode:	EPA Method 8260B: Volatiles			
Client ID:	PBS		Batch ID:	42100		RunNo:	56477			
Prep Date:	12/13/2018		Analysis Date:	12/19/2018		SeqNo:	1888584		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.52		0.5000		104	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		100	70	130			
Surr: Toluene-d8	0.51		0.5000		101	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		99.8	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	100ng lcs	SampType:	LCS	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	LCSW	Batch ID:	A56370	RunNo:	56370					
Prep Date:		Analysis Date:	12/14/2018	SeqNo:	1884632	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	97.7	70	130			
Toluene	19	1.0	20.00	0	93.8	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.7	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.5	70	130			
Surr: Toluene-d8	9.6		10.00		96.0	70	130			

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID:	A56370	RunNo:	56370					
Prep Date:		Analysis Date:	12/14/2018	SeqNo:	1884635	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		96.2	70	130			
Surr: Dibromofluoromethane	9.6		10.00		95.8	70	130			
Surr: Toluene-d8	10		10.00		99.8	70	130			

Sample ID	100ng lcs	SampType:	LCS	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	LCSW	Batch ID:	A56399	RunNo:	56399					
Prep Date:		Analysis Date:	12/17/2018	SeqNo:	1885667	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	17	1.0	20.00	0	87.4	70	130			
Toluene	18	1.0	20.00	0	91.1	70	130			
Surr: 1,2-Dichloroethane-d4	9.6		10.00		96.1	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.6	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID:	A56399	RunNo:	56399					
Prep Date:		Analysis Date:	12/17/2018	SeqNo:	1885678	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID:	A56399	RunNo:	56399					
Prep Date:		Analysis Date:	12/17/2018	SeqNo:	1885678	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.0	70	130			
Surr: Dibromofluoromethane	10		10.00		99.6	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	1812713-002ams	SampType: MS			TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	CENTRAL OCD LF V	Batch ID: 42141			RunNo: 56691					
Prep Date:	12/17/2018	Analysis Date: 12/31/2018			SeqNo: 1897150		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.2	0.40	1.670	0	73.0	23.7	110			D
4-Chloro-3-methylphenol	2.4	1.0	3.330	0	71.4	23.5	109			D
2-Chlorophenol	2.5	0.40	3.330	0	74.3	15	106			D
1,4-Dichlorobenzene	1.2	0.40	1.670	0	69.2	16	98.5			D
2,4-Dinitrotoluene	1.0	1.0	1.670	0	61.0	23.3	92.8			D
N-Nitrosodi-n-propylamine	1.2	0.40	1.670	0	73.4	17	111			D
4-Nitrophenol	2.4	0.50	3.330	0	73.0	30.9	103			D
Pentachlorophenol	2.0	0.80	3.330	0	59.6	20.8	92.7			D
Phenol	2.5	0.40	3.330	0	73.7	17	107			D
Pyrene	1.3	0.40	1.670	0	75.2	27.9	111			D
1,2,4-Trichlorobenzene	1.4	0.40	1.670	0	82.8	19.5	118			D
Surr: 2-Fluorophenol	2.5		3.330		76.0	21.7	87.9			D
Surr: Phenol-d5	2.6		3.330		77.9	30.2	92.2			D
Surr: 2,4,6-Tribromophenol	2.8		3.330		83.7	47.1	103			D
Surr: Nitrobenzene-d5	1.5		1.670		88.3	23.9	102			D
Surr: 2-Fluorobiphenyl	1.4		1.670		86.7	32.6	101			D
Surr: 4-Terphenyl-d14	1.8		1.670		108	37.2	117			D

Sample ID	1812713-002amsd		SampType: MSD		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	CENTRAL OCD LF V		Batch ID: 42141		RunNo: 56691					
Prep Date:	12/17/2018		Analysis Date: 12/31/2018		SeqNo: 1897151		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.4	0.38	1.583	0	85.9	23.7	110	10.9	43.1	D
4-Chloro-3-methylphenol	2.7	0.95	3.156	0	84.5	23.5	109	11.5	52.2	D
2-Chlorophenol	2.6	0.38	3.156	0	83.9	15	106	6.78	42.5	D
1,4-Dichlorobenzene	1.3	0.38	1.583	0	82.2	16	98.5	11.9	50.4	D
2,4-Dinitrotoluene	1.2	0.95	1.583	0	74.8	23.3	92.8	15.0	24.2	D
N-Nitrosodi-n-propylamine	1.4	0.38	1.583	0	86.9	17	111	11.6	39.7	D
4-Nitrophenol	2.8	0.47	3.156	0	89.4	30.9	103	14.8	59.4	D
Pentachlorophenol	2.1	0.76	3.156	0	67.3	20.8	92.7	6.81	32.7	D
Phenol	2.6	0.38	3.156	0	83.7	17	107	7.39	41.2	D
Pyrene	1.4	0.38	1.583	0	86.0	27.9	111	8.09	34	D
1,2,4-Trichlorobenzene	1.5	0.38	1.583	0	96.8	19.5	118	10.3	35.8	D
Surr: 2-Fluorophenol	2.7		3.156		85.1	21.7	87.9	0	0	D
Surr: Phenol-d5	2.7		3.156		85.3	30.2	92.2	0	0	D
Surr: 2,4,6-Tribromophenol	3.0		3.156		94.8	47.1	103	0	0	D
Surr: Nitrobenzene-d5	1.5		1.583		95.1	23.9	102	0	0	D
Surr: 2-Fluorobiphenyl	1.5		1.583		95.6	32.6	101	0	0	D

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	1812713-002amsd		SampType:	MSD		TestCode:	EPA Method 8270C: Semivolatiles				
Client ID:	CENTRAL OCD LF V		Batch ID:	42141		RunNo:	56691				
Prep Date:	12/17/2018		Analysis Date:	12/31/2018		SeqNo:	1897151		Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Surr: 4-Terphenyl-d14	2.0		1.583		126	37.2	117	0	0	SD	

Sample ID	lcs-42141		SampType: LCS		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS		Batch ID: 42141		RunNo: 56691					
Prep Date:	12/17/2018		Analysis Date: 12/31/2018		SeqNo: 1897163		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.4	0.20	1.670	0	84.4	42	110			
4-Chloro-3-methylphenol	2.6	0.50	3.330	0	78.1	42.3	117			
2-Chlorophenol	2.3	0.20	3.330	0	70.5	27.6	117			
1,4-Dichlorobenzene	1.2	0.20	1.670	0	73.5	28.8	105			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	71.0	42	98.7			
N-Nitrosodi-n-propylamine	1.4	0.20	1.670	0	80.9	41.8	112			
4-Nitrophenol	2.9	0.25	3.330	0	86.1	54	113			
Pentachlorophenol	2.4	0.40	3.330	0	72.2	41.5	101			
Phenol	2.5	0.20	3.330	0	74.1	32.2	115			
Pyrene	1.4	0.20	1.670	0	85.5	48.5	121			
1,2,4-Trichlorobenzene	1.5	0.20	1.670	0	90.2	39.9	112			
Surr: 2-Fluorophenol	2.3		3.330		68.3	21.7	87.9			
Surr: Phenol-d5	2.5		3.330		76.5	30.2	92.2			
Surr: 2,4,6-Tribromophenol	3.0		3.330		89.5	47.1	103			
Surr: Nitrobenzene-d5	1.4		1.670		86.7	23.9	102			
Surr: 2-Fluorobiphenyl	1.6		1.670		93.7	32.6	101			
Surr: 4-Terphenyl-d14	1.8		1.670		108	37.2	117			

Sample ID	mb-42141		SampType: MBLK		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	PBS		Batch ID: 42141		RunNo: 56691					
Prep Date:	12/17/2018		Analysis Date: 12/31/2018		SeqNo: 1897165		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	mb-42141		SampType: MBLK		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	PBS		Batch ID: 42141		RunNo: 56691					
Prep Date:	12/17/2018		Analysis Date: 12/31/2018		SeqNo: 1897165		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	ND	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	mb-42141	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	42141	RunNo:	56691					
Prep Date:	12/17/2018	Analysis Date:	12/31/2018	SeqNo:	1897165	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.2		3.330		66.6	21.7	87.9			
Surr: Phenol-d5	2.4		3.330		72.2	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.4		3.330		72.8	47.1	103			
Surr: Nitrobenzene-d5	1.3		1.670		80.1	23.9	102			
Surr: 2-Fluorobiphenyl	1.3		1.670		76.9	32.6	101			
Surr: 4-Terphenyl-d14	1.6		1.670		94.4	37.2	117			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	MB-42145		SampType: MBLK		TestCode: EPA Method 7471: Mercury					
Client ID:	PBS		Batch ID: 42145		RunNo: 56412					
Prep Date:	12/17/2018		Analysis Date: 12/18/2018		SeqNo: 1886129		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercurv	ND	0.033								

Sample ID	LLLCS-42145		SampType: LCSLL		TestCode: EPA Method 7471: Mercury					
Client ID:	BatchQC		Batch ID: 42145		RunNo: 56412					
Prep Date:	12/17/2018		Analysis Date: 12/18/2018		SeqNo: 1886130		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercurv	ND	0.033	0.006660	0	119	70	130			

Sample ID	LCS-42145			SampType:	LCS		TestCode:	EPA Method 7471: Mercury			
Client ID:	LCSS			Batch ID:	42145		RunNo:	56412			
Prep Date:	12/17/2018			Analysis Date:	12/18/2018		SeqNo:	1886131		Units:	mg/Kg
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.14	0.033	0.1667	0	86.4	80	120				

Sample ID	1812713-002BMS		SampType:	MS		TestCode:	EPA Method 7471: Mercury				
Client ID:	CENTRAL OCD LF V		Batch ID:	42145		RunNo:	56412				
Prep Date:	12/17/2018		Analysis Date:	12/18/2018		SeqNo:	1886136		Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.15	0.034	0.1732	0	88.9	80	120				

Sample ID	1812713-002BMSD		SampType:	MSD		TestCode:	EPA Method 7471: Mercury				
Client ID:	CENTRAL OCD LF V		Batch ID:	42145		RunNo:	56412				
Prep Date:	12/17/2018		Analysis Date:	12/18/2018		SeqNo:	1886137		Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.16	0.035	0.1777	0	89.9	80	120	3.69	20		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	MB-42118		SampType:	MBLK		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	PBS		Batch ID:	42118		RunNo:	56432			
Prep Date:	12/14/2018		Analysis Date:	12/18/2018		SeqNo:	1886934	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	0.10								
Manganese	ND	0.10								
Uranium	ND	5.0								

Sample ID	LCS-42118		SampType:	LCS		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	LCSS		Batch ID:	42118		RunNo:	56432			
Prep Date:	12/14/2018		Analysis Date:	12/18/2018		SeqNo:	1886936	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	25	0.10	25.00	0	101	80	120			
Manganese	25	0.10	25.00	0	101	80	120			
Uranium	22	5.0	25.00	0	89.8	80	120			

Sample ID	MB-42118		SampType:	MBLK		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	PBS		Batch ID:	42118		RunNo:	56432			
Prep Date:	12/14/2018		Analysis Date:	12/18/2018		SeqNo:	1886941	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Uranium	ND	5.0								
Zinc	ND	2.5								

Sample ID	MB-42118		SampType:	MBLK		TestCode:	EPA Method 6010B: Soil Metals			
Client ID:	PBS		Batch ID:	42118		RunNo:	56472			
Prep Date:	12/14/2018		Analysis Date:	12/19/2018		SeqNo:	1888298	Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	2.5								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Lead	ND	0.25								
Manganese	ND	0.10								
Selenium	ND	2.5								
Silver	ND	0.25								
Uranium	ND	5.0								
Zinc	ND	2.5								

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	LCS-42118		SampType: LCS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	LCSS		Batch ID: 42118		RunNo: 56472					
Prep Date:	12/14/2018		Analysis Date: 12/19/2018		SeqNo: 1888299		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	26	2.5	25.00	0	105	80	120			
Barium	26	0.10	25.00	0	103	80	120			
Cadmium	26	0.10	25.00	0	103	80	120			
Chromium	26	0.30	25.00	0	103	80	120			
Iron	28	2.5	25.00	0	111	80	120			
Lead	25	0.25	25.00	0	101	80	120			
Manganese	25	0.10	25.00	0	100	80	120			
Selenium	24	2.5	25.00	0	95.7	80	120			
Silver	5.2	0.25	5.000	0	104	80	120			
Uranium	25	5.0	25.00	0	99.8	80	120			
Zinc	25	2.5	25.00	0	101	80	120			

Sample ID	MB-42118		SampType: MBLK		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	PBS		Batch ID: 42118		RunNo: 56472					
Prep Date:	12/14/2018		Analysis Date: 12/19/2018		SeqNo: 1888301		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Iron	ND	2.5								
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Sample ID	MB-42118		SampType: MBLK		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	PBS		Batch ID: 42118		RunNo: 56498					
Prep Date:	12/14/2018		Analysis Date: 12/20/2018		SeqNo: 1889591		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	ND	2.5								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Copper	ND	0.30								
Lead	ND	0.25								
Manganese	ND	0.10								
Selenium	ND	2.5								
Silver	ND	0.25								
Zinc	ND	2.5								

Sample ID	LCS-42118		SampType:	LCS		TestCode:	EPA Method 6010B: Soil Metals				
Client ID:	LCSS		Batch ID:	42118		RunNo:	56498				
Prep Date:	12/14/2018		Analysis Date:	12/20/2018		SeqNo:	1889594		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	LCS-42118		SampType: LCS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	LCSS		Batch ID: 42118		RunNo: 56498					
Prep Date:	12/14/2018		Analysis Date: 12/20/2018		SeqNo: 1889594		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	27	2.5	25.00	0	109	80	120			
Barium	26	0.10	25.00	0	103	80	120			
Cadmium	26	0.10	25.00	0	105	80	120			
Chromium	27	0.30	25.00	0	107	80	120			
Copper	26	0.30	25.00	0	104	80	120			
Lead	26	0.25	25.00	0	105	80	120			
Manganese	26	0.10	25.00	0	103	80	120			
Selenium	27	2.5	25.00	0	107	80	120			
Silver	5.1	0.25	5.000	0	102	80	120			
Zinc	27	2.5	25.00	0	109	80	120			

Sample ID	1812713-002BMS		SampType: MS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	CENTRAL OCD LF V		Batch ID: 42118		RunNo: 56598					
Prep Date:	12/14/2018		Analysis Date: 12/22/2018		SeqNo: 1893451		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	27	12	24.65	0	108	75	125			
Barium	360	0.49	24.65	265.4	380	75	125			S
Cadmium	23	0.49	24.65	0	92.1	75	125			
Chromium	41	1.5	24.65	15.91	103	75	125			
Copper	27	1.5	24.65	3.454	95.2	75	125			
Lead	25	1.2	24.65	4.310	84.0	75	125			
Manganese	320	0.49	24.65	352.7	-114	75	125			S
Selenium	21	12	24.65	0	87.0	75	125			
Silver	2.8	1.2	4.930	0	57.1	75	125			S
Uranium	ND	25	24.65	0	0	75	125			S
Zinc	49	12	24.65	22.67	106	75	125			

Sample ID	1812713-002BMSD		SampType: MSD		TestCode: EPA Method 6010B: Soil Metals						
Client ID:	CENTRAL OCD LF V		Batch ID: 42118		RunNo: 56598						
Prep Date:	12/14/2018		Analysis Date: 12/22/2018		SeqNo: 1893452		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic	28	12	24.68	0	112	75	125	3.70	20	RS	
Barium	260	0.49	24.68	265.4	-11.5	75	125	31.1	20		
Cadmium	23	0.49	24.68	0	93.5	75	125	1.61	20		
Chromium	37	1.5	24.68	15.91	87.2	75	125	9.83	20		
Copper	27	1.5	24.68	3.454	94.0	75	125	0.970	20		
Lead	28	1.2	24.68	4.310	97.9	75	125	12.9	20	RS	
Manganese	430	0.49	24.68	352.7	314	75	125	28.0	20		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812713

09-Jan-19

Client: Marathon

Project: OCD Central Landfarm Semiannual Sampling

Sample ID	1812713-002BMSD		SampType:	MSD		TestCode:	EPA Method 6010B: Soil Metals				
Client ID:	CENTRAL OCD LF V		Batch ID:	42118		RunNo:	56598				
Prep Date:	12/14/2018		Analysis Date:	12/22/2018		SeqNo:	1893452		Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Selenium	18	12	24.68	0	72.5	75	125	18.0	20	S	
Silver	3.3	1.2	4.935	0	66.2	75	125	14.8	20	S	
Uranium	ND	25	24.68	0	0	75	125	0	20	S	
Zinc	45	12	24.68	22.67	90.9	75	125	7.62	20		

Sample ID	1812713-002BPS		SampType: PS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	CENTRAL OCD LF V		Batch ID: 42118		RunNo: 56598					
Prep Date:			Analysis Date: 12/22/2018		SeqNo: 1893453		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	380	0.49	123.0	265.4	89.3	80	120			
Manganese	460	0.49	123.0	352.7	86.0	80	120			
Selenium	120	12	123.0	0	97.5	80	120			
Silver	21	1.2	24.60	0	83.7	80	120			
Uranium	83	25	123.0	0	67.4	80	120			S

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: MARATHON GALLUP

Work Order Number: 1812713

RcptNo: 1

Received By: Victoria Zellar

12/12/2018 8:40:00 AM

Victoria Zellar

Completed By: Anne Thorne

12/13/2018 8:48:44 AM

Anne Thorne

Reviewed By:

Labeled by: AT 12/13/18

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved
bottles checked
for pH: _____
(<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.1	Good	Yes			

VADOSE ZONE ANALYTES AND REPORTING LIMITS, CENTRAL OIL CONSERVATION DIVISION LANDFARM
 WESTERN REFINING SOUTHWEST, GALLUP REFINERY, GALLUP, NEW MEXICO

Analyte	Analysis Method	Reporting Units	Requested Reporting Limit
Chloride	8000	mg/L	30
Sulfate	8000/800	mg/L	0.050
Fluoride	8000/800	mg/L	0.050
Cadmium	8000/800	mg/L	0.050
Xylenes, Total	8000/800	mg/L	0.050
Petroleum Hydrocarbons, TR	8000/800	mg/L	20

WESTERN MINING SOUTHWEST, GALLUP REFINERY, GALLUP, NEW MEXICO

Analyte	Analytical Method	Reporting Units	Requested Reporting Limit
Fluoride	8360	mg/kg	0.5000
Nitrogen, Nitrate (As N)	8360	mg/kg	2.0000
Sulfate	8360	mg/kg	21.0000
Radon-220	8361.1	pc/kg	1.0000
Radon-222	8361.1	pc/kg	1.0000
Radon-220/Radon-222	8361.1	pc/kg	2.0000
Antimony	SW8370A	mg/kg	0.1000
Barium	SW8370A	mg/kg	1.0000
Cadmium	SW8370A	mg/kg	0.1000
Chromium	SW8370A	mg/kg	0.0500
Copper	SW8370A	mg/kg	0.0010
Iron	SW8370A	mg/kg	500.0000
Lead	SW8370A	mg/kg	0.0050
Manganese	SW8370A	mg/kg	1.0000
Mercury	SW8370A	mg/kg	2.0000
Silver	SW8370A	mg/kg	0.0050
Vanadium	SW8370A	mg/kg	0.0050
Zinc	SW8370A	mg/kg	0.0050
Mercury	SW8471	mg/kg	0.0050
Arsenic 1016	SW8482	mg/kg	0.0200
Arsenic 1321	SW8482	mg/kg	0.0200
Arsenic 1245	SW8482	mg/kg	0.0200
Arsenic 1242	SW8482	mg/kg	0.0200
Arsenic 1249	SW8482	mg/kg	0.0200
Arsenic 1254	SW8482	mg/kg	0.0200
Arsenic 1260	SW8482	mg/kg	0.0200
Arsenic 1280	SW8482	mg/kg	0.0200
1,1,1-Trichloroethane	SW8505	mg/kg	0.0400
1,2-Dichloroethane	SW8505	mg/kg	0.0400
1,1,2-Trichloroethane	SW8505	mg/kg	0.0400
1,1-Dichloroethane	SW8505	mg/kg	0.0400
1,2-Dichloroethane	SW8505	mg/kg	0.0400
Carbon tetrachloride	SW8505	mg/kg	0.0400
Chloroform	SW8505	mg/kg	0.0400
Chloroethane	SW8505	mg/kg	0.0400
Methylene chloride	SW8505	mg/kg	0.0400
Trichloroethane	SW8505	mg/kg	0.0400
Vinyl chloride	SW8505	mg/kg	0.0400
2,4,5-Trichlorophenol	SW8570C	mg/kg	0.0050
2,4,6-Trichlorophenol	SW8570C	mg/kg	0.0050
2,4-Dichlorophenol	SW8570C	mg/kg	0.0050
2,4-Dinitrophenol	SW8570C	mg/kg	0.0050
2,4-Chlorophenol	SW8570C	mg/kg	0.0050
2-Chlorophenol	SW8570C	mg/kg	0.0050
2-Nitrophenol	SW8570C	mg/kg	0.0050
2-Methoxyphenol	SW8570C	mg/kg	0.0050
3-Methoxyphenol	SW8570C	mg/kg	0.0050
3,4-Methoxyphenol	SW8570C	mg/kg	0.0050
4-Methoxyphenol	SW8570C	mg/kg	0.0050
2-Methoxy-2-methylphenol	SW8570C	mg/kg	0.0050
2-Methoxy-3-methylphenol	SW8570C	mg/kg	0.0050
4-Nitrophenol	SW8570C	mg/kg	0.0050
4-Methoxyphenol	SW8570C	mg/kg	0.0050
Phenol	SW8570C	mg/kg	0.0050
1-Methoxy-2-chlorophenol	SW8570C	mg/kg	0.0050
2-Methoxy-2-chlorophenol	SW8570C	mg/kg	0.0050
Acenaphthene	SW8570C	mg/kg	0.0050
Acenaphthylene	SW8570C	mg/kg	0.0050
Anthracene	SW8570C	mg/kg	0.0050
Benzo[a]anthracene	SW8570C	mg/kg	0.0050
Benzo[b]fluoranthene	SW8570C	mg/kg	0.0050
Benzo[k]fluoranthene	SW8570C	mg/kg	0.0050
Chrysene	SW8570C	mg/kg	0.0050
Dibenz[a,h]anthracene	SW8570C	mg/kg	0.0050
Fluoranthene	SW8570C	mg/kg	0.0050
Fluorene	SW8570C	mg/kg	0.0050
Indeno[1,2,3-cd]pyrene	SW8570C	mg/kg	0.0050
Naphthalene	SW8570C	mg/kg	0.0050
Phenanthrene	SW8570C	mg/kg	0.0050
Pyrene	SW8570C	mg/kg	0.0050
Quinoline	EPA 338.1	mg/kg	0.0050
Diesel Range Organics (DRO)	SW8518	mg/kg	12
Semivolatile Range Organics (SRO)	SW8518	mg/kg	1.0

APPENDIX G
LAND TREATMENT UNIT – SOIL AND GROUNDWATER ANALYTICAL DATA
(ON ATTACHED CD)



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 04, 2019

Brian Moore
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: 2018 Post Closure Sampling LTU

OrderNo.: 1812373

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 8 sample(s) on 12/6/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: Field Blank

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 7:00:00 AM

Lab ID: 1812373-001

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Benzene	0.21	0.17	1.0	J	µg/L	1	12/11/2018 6:26:34 PM	D5625C
Toluene	0.29	0.17	1.0	J	µg/L	1	12/11/2018 6:26:34 PM	D5625C
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,2,4-Trimethylbenzene	ND	0.25	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,3,5-Trimethylbenzene	ND	0.23	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Naphthalene	ND	0.29	2.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1-Methylnaphthalene	ND	0.34	4.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Acetone	3.8	0.76	10	J	µg/L	1	12/11/2018 6:26:34 PM	D5625C
Bromobenzene	ND	0.32	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Bromodichloromethane	ND	0.28	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Bromoform	ND	0.32	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Bromomethane	ND	0.27	3.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
2-Butanone	ND	1.4	10		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Carbon disulfide	ND	0.39	10		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Chlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Chloroethane	ND	0.16	2.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Chloroform	ND	0.24	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Chloromethane	ND	0.32	3.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
4-Chlorotoluene	ND	0.28	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Dibromochloromethane	ND	0.24	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Dibromomethane	ND	0.32	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,1-Dichloroethane	ND	0.18	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,2-Dichloropropane	ND	0.17	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 1 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: Field Blank

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 7:00:00 AM

Lab ID: 1812373-001

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Hexachlorobutadiene	ND	0.39	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
2-Hexanone	ND	0.91	10		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Isopropylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
4-Methyl-2-pentanone	ND	0.45	10		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Methylene Chloride	ND	0.21	3.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
n-Propylbenzene	ND	0.24	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
sec-Butylbenzene	ND	0.20	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Styrene	ND	0.25	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,1,1-Trichloroethane	ND	0.16	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Trichlorofluoromethane	ND	0.14	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Vinyl chloride	ND	0.12	1.0		µg/L	1	12/11/2018 6:26:34 PM	D5625C
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/11/2018 6:26:34 PM	D5625C
1,4-Dioxane	ND	2.3	10		µg/L	1	12/13/2018 6:13:28 PM	A56304
Surr: 1,2-Dichloroethane-d4	101	0	70-130		%Rec	1	12/11/2018 6:26:34 PM	D5625C
Surr: 4-Bromofluorobenzene	96.6	0	70-130		%Rec	1	12/11/2018 6:26:34 PM	D5625C
Surr: Dibromofluoromethane	101	0	70-130		%Rec	1	12/11/2018 6:26:34 PM	D5625C
Surr: Toluene-d8	102	0	70-130		%Rec	1	12/11/2018 6:26:34 PM	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 2 of 38
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

CLIENT: Marathon

Client Sample ID: Trip Blank

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 7:00:00 AM

Lab ID: 1812373-002

Matrix: TRIP BLANK

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Benzene	ND	0.17	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Toluene	ND	0.17	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,2,4-Trimethylbenzene	ND	0.25	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,3,5-Trimethylbenzene	ND	0.23	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Naphthalene	ND	0.29	2.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1-Methylnaphthalene	ND	0.34	4.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Acetone	3.3	0.76	10	J	µg/L	1	12/11/2018 7:52:23 PM	D5625C
Bromobenzene	ND	0.32	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Bromodichloromethane	ND	0.28	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Bromoform	ND	0.32	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Bromomethane	ND	0.27	3.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
2-Butanone	ND	1.4	10		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Carbon disulfide	ND	0.39	10		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Chlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Chloroethane	ND	0.16	2.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Chloroform	ND	0.24	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Chloromethane	ND	0.32	3.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
4-Chlorotoluene	ND	0.28	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Dibromochloromethane	ND	0.24	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Dibromomethane	ND	0.32	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,1-Dichloroethane	ND	0.18	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,2-Dichloropropane	ND	0.17	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 3 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: Trip Blank

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 7:00:00 AM

Lab ID: 1812373-002

Matrix: TRIP BLANK

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Hexachlorobutadiene	ND	0.39	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
2-Hexanone	ND	0.91	10		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Isopropylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
4-Methyl-2-pentanone	ND	0.45	10		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Methylene Chloride	ND	0.21	3.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
n-Propylbenzene	ND	0.24	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
sec-Butylbenzene	ND	0.20	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Styrene	ND	0.25	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,1,1-Trichloroethane	ND	0.16	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Trichlorofluoromethane	ND	0.14	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Vinyl chloride	ND	0.12	1.0		µg/L	1	12/11/2018 7:52:23 PM	D5625C
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/11/2018 7:52:23 PM	D5625C
1,4-Dioxane	25	2.3	10		µg/L	1	12/13/2018 6:42:39 PM	A56304
Surr: 1,2-Dichloroethane-d4	99.8	0	70-130		%Rec	1	12/11/2018 7:52:23 PM	D5625C
Surr: 4-Bromofluorobenzene	95.4	0	70-130		%Rec	1	12/11/2018 7:52:23 PM	D5625C
Surr: Dibromofluoromethane	99.0	0	70-130		%Rec	1	12/11/2018 7:52:23 PM	D5625C
Surr: Toluene-d8	102	0	70-130		%Rec	1	12/11/2018 7:52:23 PM	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 4 of 38
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

CLIENT: Marathon

Client Sample ID: MW-1

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 8:10:00 AM

Lab ID: 1812373-003

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB								
							Analyst: JME	
1,2-Dibromoethane	ND	0.0049	0.0096		µg/L	1	12/17/2018 11:08:28 P	42092
EPA METHOD 8015M/D: DIESEL RANGE								
							Analyst: Irm	
Diesel Range Organics (DRO)	ND	0.63	1.0		mg/L	1	12/12/2018 8:44:47 PM	42033
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	12/12/2018 8:44:47 PM	42033
Surr: DNOP	109	0	76.7-135		%Rec	1	12/12/2018 8:44:47 PM	42033
EPA METHOD 8015D: GASOLINE RANGE								
							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.024	0.050		mg/L	1	12/11/2018 11:47:13 A	G56246
Surr: BFB	82.8	0	72.8-125		%Rec	1	12/11/2018 11:47:13 A	G56246
EPA METHOD 6020: TOTAL METALS								
							Analyst: DBK	
Antimony	ND	0.00050	0.0010		mg/L	1	12/17/2018 3:52:47 PM	42079
Arsenic	0.0011	0.00050	0.0010		mg/L	1	12/17/2018 3:52:47 PM	42079
Lead	ND	0.00050	0.0010		mg/L	1	12/17/2018 3:52:47 PM	42079
Selenium	ND	0.00050	0.0010		mg/L	1	12/17/2018 3:52:47 PM	42079
EPA METHOD 7470: MERCURY								
							Analyst: pmf	
Mercury	0.000096	0.000038	0.00020	J	mg/L	1	12/11/2018 5:51:48 PM	42021
EPA 6010B: TOTAL RECOVERABLE METALS								
							Analyst: rde	
Barium	ND	0.020	0.020		mg/L	1	12/14/2018 9:44:53 AM	41991
Beryllium	ND	0.00044	0.0030		mg/L	1	12/14/2018 9:44:53 AM	41991
Cadmium	ND	0.00099	0.0020		mg/L	1	12/14/2018 9:44:53 AM	41991
Chromium	ND	0.0011	0.0060		mg/L	1	12/14/2018 9:44:53 AM	41991
Cobalt	ND	0.00098	0.0060		mg/L	1	12/14/2018 9:44:53 AM	41991
Nickel	ND	0.0027	0.010		mg/L	1	12/14/2018 9:44:53 AM	41991
Silver	ND	0.0018	0.0050		mg/L	1	12/14/2018 9:44:53 AM	41991
Vanadium	ND	0.0023	0.050		mg/L	1	12/14/2018 9:44:53 AM	41991
Zinc	ND	0.0033	0.020		mg/L	1	12/14/2018 9:44:53 AM	41991
EPA METHOD 8260B: VOLATILES								
							Analyst: AG	
Benzene	ND	0.17	1.0		µg/L	1	12/11/2018 8:20:57 PM	D56250
Toluene	ND	0.17	1.0		µg/L	1	12/11/2018 8:20:57 PM	D56250
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 8:20:57 PM	D56250
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	12/11/2018 8:20:57 PM	D56250
1,2,4-Trimethylbenzene	ND	0.25	1.0		µg/L	1	12/11/2018 8:20:57 PM	D56250
1,3,5-Trimethylbenzene	ND	0.23	1.0		µg/L	1	12/11/2018 8:20:57 PM	D56250
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	12/11/2018 8:20:57 PM	D56250
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	12/11/2018 8:20:57 PM	D56250
Naphthalene	ND	0.29	2.0		µg/L	1	12/11/2018 8:20:57 PM	D56250
1-Methylnaphthalene	ND	0.34	4.0		µg/L	1	12/11/2018 8:20:57 PM	D56250

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 5 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

CLIENT: Marathon

Client Sample ID: MW-1

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 8:10:00 AM

Lab ID: 1812373-003

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Acetone	3.6	0.76	10	J	µg/L	1	12/11/2018 8:20:57 PM	D5625C
Bromobenzene	ND	0.32	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Bromodichloromethane	ND	0.28	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Bromoform	ND	0.32	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Bromomethane	ND	0.27	3.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
2-Butanone	ND	1.4	10		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Carbon disulfide	ND	0.39	10		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Chlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Chloroethane	ND	0.16	2.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Chloroform	ND	0.24	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Chloromethane	ND	0.32	3.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
4-Chlorotoluene	ND	0.28	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Dibromochloromethane	ND	0.24	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Dibromomethane	ND	0.32	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,1-Dichloroethane	ND	0.18	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,2-Dichloropropane	ND	0.17	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Hexachlorobutadiene	ND	0.39	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
2-Hexanone	ND	0.91	10		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Isopropylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
4-Methyl-2-pentanone	ND	0.45	10		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Methylene Chloride	ND	0.21	3.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
n-Propylbenzene	ND	0.24	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
sec-Butylbenzene	ND	0.20	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 6 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MW-1

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 8:10:00 AM

Lab ID: 1812373-003

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Styrene	ND	0.25	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,1,1-Trichloroethane	ND	0.16	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Trichlorofluoromethane	ND	0.14	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Vinyl chloride	ND	0.12	1.0		µg/L	1	12/11/2018 8:20:57 PM	D5625C
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/11/2018 8:20:57 PM	D5625C
1,4-Dioxane	32	2.3	10		µg/L	1	12/13/2018 7:11:55 PM	A56304
Surr: 1,2-Dichloroethane-d4	103	0	70-130		%Rec	1	12/11/2018 8:20:57 PM	D5625C
Surr: 4-Bromofluorobenzene	95.8	0	70-130		%Rec	1	12/11/2018 8:20:57 PM	D5625C
Surr: Dibromofluoromethane	99.8	0	70-130		%Rec	1	12/11/2018 8:20:57 PM	D5625C
Surr: Toluene-d8	101	0	70-130		%Rec	1	12/11/2018 8:20:57 PM	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 7 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

CLIENT: Marathon

Client Sample ID: MW-2

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 8:37:00 AM

Lab ID: 1812373-004

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB								Analyst: JME
1,2-Dibromoethane	ND	0.0049	0.0095		µg/L	1	12/17/2018 11:23:15 P	42092
EPA METHOD 8015M/D: DIESEL RANGE								Analyst: Irm
Diesel Range Organics (DRO)	ND	0.63	1.0		mg/L	1	12/12/2018 9:06:43 PM	42033
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	12/12/2018 9:06:43 PM	42033
Surr: DNOP	108	0	76.7-135		%Rec	1	12/12/2018 9:06:43 PM	42033
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.024	0.050		mg/L	1	12/11/2018 12:09:55 P	G56246
Surr: BFB	87.9	0	72.8-125		%Rec	1	12/11/2018 12:09:55 P	G56246
EPA METHOD 6020: TOTAL METALS								Analyst: DBK
Antimony	ND	0.00050	0.0010		mg/L	1	12/17/2018 3:57:08 PM	42079
Arsenic	0.0011	0.00050	0.0010		mg/L	1	12/17/2018 3:57:08 PM	42079
Lead	ND	0.00050	0.0010		mg/L	1	12/17/2018 3:57:08 PM	42079
Selenium	ND	0.00050	0.0010		mg/L	1	12/17/2018 3:57:08 PM	42079
EPA METHOD 7470: MERCURY								Analyst: pmf
Mercury	0.000091	0.000038	0.00020	J	mg/L	1	12/11/2018 6:00:52 PM	42021
EPA 6010B: TOTAL RECOVERABLE METALS								Analyst: rde
Barium	ND	0.020	0.020		mg/L	1	12/14/2018 9:50:37 AM	41991
Beryllium	ND	0.00044	0.0030		mg/L	1	12/14/2018 9:50:37 AM	41991
Cadmium	ND	0.00099	0.0020		mg/L	1	12/14/2018 9:50:37 AM	41991
Chromium	ND	0.0011	0.0060		mg/L	1	12/14/2018 9:50:37 AM	41991
Cobalt	ND	0.00098	0.0060		mg/L	1	12/14/2018 9:50:37 AM	41991
Nickel	ND	0.0027	0.010		mg/L	1	12/14/2018 9:50:37 AM	41991
Silver	ND	0.0018	0.0050		mg/L	1	12/14/2018 9:50:37 AM	41991
Vanadium	ND	0.0023	0.050		mg/L	1	12/14/2018 9:50:37 AM	41991
Zinc	ND	0.0033	0.020		mg/L	1	12/14/2018 9:50:37 AM	41991
EPA METHOD 8260B: VOLATILES								Analyst: AG
Benzene	ND	0.17	1.0		µg/L	1	12/11/2018 8:49:32 PM	D56250
Toluene	ND	0.17	1.0		µg/L	1	12/11/2018 8:49:32 PM	D56250
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 8:49:32 PM	D56250
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	12/11/2018 8:49:32 PM	D56250
1,2,4-Trimethylbenzene	ND	0.25	1.0		µg/L	1	12/11/2018 8:49:32 PM	D56250
1,3,5-Trimethylbenzene	ND	0.23	1.0		µg/L	1	12/11/2018 8:49:32 PM	D56250
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	12/11/2018 8:49:32 PM	D56250
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	12/11/2018 8:49:32 PM	D56250
Naphthalene	ND	0.29	2.0		µg/L	1	12/11/2018 8:49:32 PM	D56250
1-Methylnaphthalene	ND	0.34	4.0		µg/L	1	12/11/2018 8:49:32 PM	D56250

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 8 of 38
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MW-2

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 8:37:00 AM

Lab ID: 1812373-004

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Acetone	9.2	0.76	10	J	µg/L	1	12/11/2018 8:49:32 PM	D5625C
Bromobenzene	ND	0.32	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Bromodichloromethane	ND	0.28	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Bromoform	ND	0.32	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Bromomethane	ND	0.27	3.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
2-Butanone	ND	1.4	10		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Carbon disulfide	ND	0.39	10		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Chlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Chloroethane	ND	0.16	2.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Chloroform	ND	0.24	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Chloromethane	ND	0.32	3.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
4-Chlorotoluene	ND	0.28	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Dibromochloromethane	ND	0.24	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Dibromomethane	ND	0.32	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,1-Dichloroethane	ND	0.18	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,2-Dichloropropane	ND	0.17	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Hexachlorobutadiene	ND	0.39	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
2-Hexanone	ND	0.91	10		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Isopropylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
4-Methyl-2-pentanone	ND	0.45	10		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Methylene Chloride	ND	0.21	3.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
n-Propylbenzene	ND	0.24	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
sec-Butylbenzene	ND	0.20	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 9 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MW-2

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 8:37:00 AM

Lab ID: 1812373-004

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Styrene	ND	0.25	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,1,1-Trichloroethane	ND	0.16	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Trichlorofluoromethane	ND	0.14	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Vinyl chloride	ND	0.12	1.0		µg/L	1	12/11/2018 8:49:32 PM	D5625C
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/11/2018 8:49:32 PM	D5625C
1,4-Dioxane	11	2.3	10		µg/L	1	12/13/2018 7:41:06 PM	A56304
Surr: 1,2-Dichloroethane-d4	99.3	0	70-130		%Rec	1	12/11/2018 8:49:32 PM	D5625C
Surr: 4-Bromofluorobenzene	100	0	70-130		%Rec	1	12/11/2018 8:49:32 PM	D5625C
Surr: Dibromofluoromethane	98.9	0	70-130		%Rec	1	12/11/2018 8:49:32 PM	D5625C
Surr: Toluene-d8	101	0	70-130		%Rec	1	12/11/2018 8:49:32 PM	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 10 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

CLIENT: Marathon

Client Sample ID: MW-5

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 9:18:00 AM

Lab ID: 1812373-005

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB								Analyst: JME
1,2-Dibromoethane	ND	0.0049	0.0095		µg/L	1	12/17/2018 11:38:02 P	42092
EPA METHOD 8015M/D: DIESEL RANGE								Analyst: Irm
Diesel Range Organics (DRO)	ND	0.63	1.0		mg/L	1	12/12/2018 9:28:29 PM	42033
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	12/12/2018 9:28:29 PM	42033
Surr: DNOP	111	0	76.7-135		%Rec	1	12/12/2018 9:28:29 PM	42033
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.024	0.050		mg/L	1	12/11/2018 12:32:40 P	G56246
Surr: BFB	85.5	0	72.8-125		%Rec	1	12/11/2018 12:32:40 P	G56246
EPA METHOD 6020: TOTAL METALS								Analyst: DBK
Antimony	ND	0.00050	0.0010		mg/L	1	12/17/2018 4:01:29 PM	42079
Arsenic	0.0010	0.00050	0.0010		mg/L	1	12/17/2018 4:01:29 PM	42079
Lead	ND	0.00050	0.0010		mg/L	1	12/17/2018 4:01:29 PM	42079
Selenium	ND	0.00050	0.0010		mg/L	1	12/17/2018 4:01:29 PM	42079
EPA METHOD 7470: MERCURY								Analyst: pmf
Mercury	0.000089	0.000038	0.00020	J	mg/L	1	12/11/2018 6:04:18 PM	42021
EPA 6010B: TOTAL RECOVERABLE METALS								Analyst: rde
Barium	ND	0.020	0.020		mg/L	1	12/14/2018 9:52:35 AM	41991
Beryllium	ND	0.00044	0.0030		mg/L	1	12/14/2018 9:52:35 AM	41991
Cadmium	ND	0.00099	0.0020		mg/L	1	12/14/2018 9:52:35 AM	41991
Chromium	ND	0.0011	0.0060		mg/L	1	12/14/2018 9:52:35 AM	41991
Cobalt	ND	0.00098	0.0060		mg/L	1	12/14/2018 9:52:35 AM	41991
Nickel	ND	0.0027	0.010		mg/L	1	12/14/2018 9:52:35 AM	41991
Silver	ND	0.0018	0.0050		mg/L	1	12/14/2018 9:52:35 AM	41991
Vanadium	ND	0.0023	0.050		mg/L	1	12/14/2018 9:52:35 AM	41991
Zinc	ND	0.0033	0.020		mg/L	1	12/14/2018 9:52:35 AM	41991
EPA METHOD 8260B: VOLATILES								Analyst: AG
Benzene	ND	0.17	1.0		µg/L	1	12/11/2018 9:18:10 PM	D56250
Toluene	ND	0.17	1.0		µg/L	1	12/11/2018 9:18:10 PM	D56250
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 9:18:10 PM	D56250
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	12/11/2018 9:18:10 PM	D56250
1,2,4-Trimethylbenzene	ND	0.25	1.0		µg/L	1	12/11/2018 9:18:10 PM	D56250
1,3,5-Trimethylbenzene	ND	0.23	1.0		µg/L	1	12/11/2018 9:18:10 PM	D56250
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	12/11/2018 9:18:10 PM	D56250
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	12/11/2018 9:18:10 PM	D56250
Naphthalene	ND	0.29	2.0		µg/L	1	12/11/2018 9:18:10 PM	D56250
1-Methylnaphthalene	ND	0.34	4.0		µg/L	1	12/11/2018 9:18:10 PM	D56250

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 11 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MW-5

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 9:18:00 AM

Lab ID: 1812373-005

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Acetone	ND	0.76	10		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Bromobenzene	ND	0.32	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Bromodichloromethane	ND	0.28	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Bromoform	ND	0.32	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Bromomethane	ND	0.27	3.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
2-Butanone	ND	1.4	10		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Carbon disulfide	ND	0.39	10		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Chlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Chloroethane	ND	0.16	2.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Chloroform	ND	0.24	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Chloromethane	ND	0.32	3.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
4-Chlorotoluene	ND	0.28	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Dibromochloromethane	ND	0.24	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Dibromomethane	ND	0.32	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,1-Dichloroethane	ND	0.18	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,2-Dichloropropane	ND	0.17	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Hexachlorobutadiene	ND	0.39	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
2-Hexanone	ND	0.91	10		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Isopropylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
4-Methyl-2-pentanone	ND	0.45	10		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Methylene Chloride	ND	0.21	3.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
n-Propylbenzene	ND	0.24	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
sec-Butylbenzene	ND	0.20	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 12 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MW-5

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 9:18:00 AM

Lab ID: 1812373-005

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Styrene	ND	0.25	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,1,1-Trichloroethane	ND	0.16	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Trichlorofluoromethane	ND	0.14	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Vinyl chloride	ND	0.12	1.0		µg/L	1	12/11/2018 9:18:10 PM	D5625C
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/11/2018 9:18:10 PM	D5625C
1,4-Dioxane	12	2.3	10		µg/L	1	12/13/2018 8:10:17 PM	A56304
Surr: 1,2-Dichloroethane-d4	102	0	70-130		%Rec	1	12/11/2018 9:18:10 PM	D5625C
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	1	12/11/2018 9:18:10 PM	D5625C
Surr: Dibromofluoromethane	97.7	0	70-130		%Rec	1	12/11/2018 9:18:10 PM	D5625C
Surr: Toluene-d8	103	0	70-130		%Rec	1	12/11/2018 9:18:10 PM	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 13 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

CLIENT: Marathon

Client Sample ID: SMW-4

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 1:45:00 PM

Lab ID: 1812373-006

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB								Analyst: JME
1,2-Dibromoethane	ND	0.0049	0.0095		µg/L	1	12/17/2018 11:52:50 P	42092
EPA METHOD 8015M/D: DIESEL RANGE								Analyst: Irm
Diesel Range Organics (DRO)	ND	0.63	1.0		mg/L	1	12/12/2018 9:50:14 PM	42033
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	12/12/2018 9:50:14 PM	42033
Surr: DNOP	115	0	76.7-135		%Rec	1	12/12/2018 9:50:14 PM	42033
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.024	0.050		mg/L	1	12/11/2018 12:55:14 P	G56246
Surr: BFB	91.5	0	72.8-125		%Rec	1	12/11/2018 12:55:14 P	G56246
EPA METHOD 6020: TOTAL METALS								Analyst: DBK
Antimony	ND	0.00050	0.0010		mg/L	1	12/17/2018 4:05:50 PM	42079
Arsenic	0.0029	0.00050	0.0010		mg/L	1	12/17/2018 4:05:50 PM	42079
Lead	0.0010	0.00050	0.0010		mg/L	1	12/17/2018 4:05:50 PM	42079
Selenium	0.00053	0.00050	0.0010	J	mg/L	1	12/17/2018 4:05:50 PM	42079
EPA METHOD 7470: MERCURY								Analyst: pmf
Mercury	0.000091	0.000038	0.00020	J	mg/L	1	12/11/2018 6:07:45 PM	42021
EPA 6010B: TOTAL RECOVERABLE METALS								Analyst: rde
Barium	0.032	0.020	0.020		mg/L	1	12/14/2018 9:54:32 AM	41991
Beryllium	ND	0.00044	0.0030		mg/L	1	12/14/2018 9:54:32 AM	41991
Cadmium	ND	0.00099	0.0020		mg/L	1	12/14/2018 9:54:32 AM	41991
Chromium	0.011	0.0011	0.0060		mg/L	1	12/14/2018 9:54:32 AM	41991
Cobalt	0.019	0.00098	0.0060		mg/L	1	12/14/2018 9:54:32 AM	41991
Nickel	0.0095	0.0027	0.010	J	mg/L	1	12/14/2018 9:54:32 AM	41991
Silver	ND	0.0018	0.0050		mg/L	1	12/14/2018 9:54:32 AM	41991
Vanadium	0.050	0.0023	0.050		mg/L	1	12/14/2018 9:54:32 AM	41991
Zinc	0.0072	0.0033	0.020	J	mg/L	1	12/14/2018 9:54:32 AM	41991
EPA METHOD 8260B: VOLATILES								Analyst: AG
Benzene	ND	0.17	1.0		µg/L	1	12/11/2018 9:46:47 PM	D56250
Toluene	ND	0.17	1.0		µg/L	1	12/11/2018 9:46:47 PM	D56250
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 9:46:47 PM	D56250
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	12/11/2018 9:46:47 PM	D56250
1,2,4-Trimethylbenzene	ND	0.25	1.0		µg/L	1	12/11/2018 9:46:47 PM	D56250
1,3,5-Trimethylbenzene	ND	0.23	1.0		µg/L	1	12/11/2018 9:46:47 PM	D56250
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	12/11/2018 9:46:47 PM	D56250
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	12/11/2018 9:46:47 PM	D56250
Naphthalene	ND	0.29	2.0		µg/L	1	12/11/2018 9:46:47 PM	D56250
1-Methylnaphthalene	ND	0.34	4.0		µg/L	1	12/11/2018 9:46:47 PM	D56250

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 14 of 38
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

CLIENT: Marathon

Client Sample ID: SMW-4

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 1:45:00 PM

Lab ID: 1812373-006

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Acetone	2.9	0.76	10	J	µg/L	1	12/11/2018 9:46:47 PM	D5625C
Bromobenzene	ND	0.32	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Bromodichloromethane	ND	0.28	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Bromoform	ND	0.32	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Bromomethane	ND	0.27	3.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
2-Butanone	ND	1.4	10		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Carbon disulfide	ND	0.39	10		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Chlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Chloroethane	ND	0.16	2.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Chloroform	ND	0.24	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Chloromethane	ND	0.32	3.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
4-Chlorotoluene	ND	0.28	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Dibromochloromethane	ND	0.24	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Dibromomethane	ND	0.32	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,1-Dichloroethane	ND	0.18	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,2-Dichloropropane	ND	0.17	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Hexachlorobutadiene	ND	0.39	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
2-Hexanone	ND	0.91	10		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Isopropylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
4-Methyl-2-pentanone	ND	0.45	10		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Methylene Chloride	ND	0.21	3.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
n-Propylbenzene	ND	0.24	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
sec-Butylbenzene	ND	0.20	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 15 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: SMW-4

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 1:45:00 PM

Lab ID: 1812373-006

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Styrene	ND	0.25	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,1,1-Trichloroethane	ND	0.16	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Trichlorofluoromethane	ND	0.14	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Vinyl chloride	ND	0.12	1.0		µg/L	1	12/11/2018 9:46:47 PM	D5625C
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/11/2018 9:46:47 PM	D5625C
1,4-Dioxane	8.6	2.3	10	J	µg/L	1	12/13/2018 8:39:22 PM	A56304
Surr: 1,2-Dichloroethane-d4	97.9	0	70-130		%Rec	1	12/11/2018 9:46:47 PM	D5625C
Surr: 4-Bromofluorobenzene	96.4	0	70-130		%Rec	1	12/11/2018 9:46:47 PM	D5625C
Surr: Dibromofluoromethane	96.4	0	70-130		%Rec	1	12/11/2018 9:46:47 PM	D5625C
Surr: Toluene-d8	104	0	70-130		%Rec	1	12/11/2018 9:46:47 PM	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 16 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

CLIENT: Marathon

Client Sample ID: MW-4

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 1:00:00 PM

Lab ID: 1812373-007

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB								
							Analyst: JME	
1,2-Dibromoethane	ND	0.0049	0.0096		µg/L	1	12/18/2018 12:07:39 A	42092
EPA METHOD 8015M/D: DIESEL RANGE								
							Analyst: Irm	
Diesel Range Organics (DRO)	ND	0.63	1.0		mg/L	1	12/12/2018 10:12:04 P	42033
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	12/12/2018 10:12:04 P	42033
Surr: DNOP	114	0	76.7-135		%Rec	1	12/12/2018 10:12:04 P	42033
EPA METHOD 8015D: GASOLINE RANGE								
							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	0.024	0.050		mg/L	1	12/11/2018 1:18:03 PM	G56246
Surr: BFB	87.9	0	72.8-125		%Rec	1	12/11/2018 1:18:03 PM	G56246
EPA METHOD 6020: TOTAL METALS								
							Analyst: DBK	
Antimony	ND	0.00050	0.0010		mg/L	1	12/17/2018 4:10:11 PM	42079
Arsenic	0.00075	0.00050	0.0010	J	mg/L	1	12/17/2018 4:10:11 PM	42079
Lead	ND	0.00050	0.0010		mg/L	1	12/17/2018 4:10:11 PM	42079
Selenium	ND	0.00050	0.0010		mg/L	1	12/17/2018 4:10:11 PM	42079
EPA METHOD 7470: MERCURY								
							Analyst: pmf	
Mercury	0.000087	0.000038	0.00020	J	mg/L	1	12/11/2018 6:11:10 PM	42021
EPA 6010B: TOTAL RECOVERABLE METALS								
							Analyst: rde	
Barium	0.021	0.020	0.020		mg/L	1	12/14/2018 9:56:17 AM	41991
Beryllium	ND	0.00044	0.0030		mg/L	1	12/14/2018 9:56:17 AM	41991
Cadmium	ND	0.00099	0.0020		mg/L	1	12/14/2018 9:56:17 AM	41991
Chromium	ND	0.0011	0.0060		mg/L	1	12/14/2018 9:56:17 AM	41991
Cobalt	ND	0.00098	0.0060		mg/L	1	12/14/2018 9:56:17 AM	41991
Nickel	ND	0.0027	0.010		mg/L	1	12/14/2018 9:56:17 AM	41991
Silver	ND	0.0018	0.0050		mg/L	1	12/14/2018 9:56:17 AM	41991
Vanadium	ND	0.0023	0.050		mg/L	1	12/14/2018 9:56:17 AM	41991
Zinc	ND	0.0033	0.020		mg/L	1	12/14/2018 9:56:17 AM	41991
EPA METHOD 8260B: VOLATILES								
							Analyst: AG	
Benzene	ND	0.17	1.0		µg/L	1	12/11/2018 10:15:21 P	D56250
Toluene	ND	0.17	1.0		µg/L	1	12/11/2018 10:15:21 P	D56250
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 10:15:21 P	D56250
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	12/11/2018 10:15:21 P	D56250
1,2,4-Trimethylbenzene	ND	0.25	1.0		µg/L	1	12/11/2018 10:15:21 P	D56250
1,3,5-Trimethylbenzene	ND	0.23	1.0		µg/L	1	12/11/2018 10:15:21 P	D56250
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	12/11/2018 10:15:21 P	D56250
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	12/11/2018 10:15:21 P	D56250
Naphthalene	ND	0.29	2.0		µg/L	1	12/11/2018 10:15:21 P	D56250
1-Methylnaphthalene	ND	0.34	4.0		µg/L	1	12/11/2018 10:15:21 P	D56250

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 17 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MW-4

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 1:00:00 PM

Lab ID: 1812373-007

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Acetone	3.7	0.76	10	J	µg/L	1	12/11/2018 10:15:21 P	D5625C
Bromobenzene	ND	0.32	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Bromodichloromethane	ND	0.28	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Bromoform	ND	0.32	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Bromomethane	ND	0.27	3.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
2-Butanone	ND	1.4	10		µg/L	1	12/11/2018 10:15:21 P	D5625C
Carbon disulfide	ND	0.39	10		µg/L	1	12/11/2018 10:15:21 P	D5625C
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Chlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Chloroethane	ND	0.16	2.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Chloroform	ND	0.24	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Chloromethane	ND	0.32	3.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
4-Chlorotoluene	ND	0.28	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Dibromochloromethane	ND	0.24	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Dibromomethane	ND	0.32	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,1-Dichloroethane	ND	0.18	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,2-Dichloropropane	ND	0.17	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Hexachlorobutadiene	ND	0.39	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
2-Hexanone	ND	0.91	10		µg/L	1	12/11/2018 10:15:21 P	D5625C
Isopropylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
4-Methyl-2-pentanone	ND	0.45	10		µg/L	1	12/11/2018 10:15:21 P	D5625C
Methylene Chloride	ND	0.21	3.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
n-Propylbenzene	ND	0.24	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
sec-Butylbenzene	ND	0.20	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 18 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: MW-4

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 1:00:00 PM

Lab ID: 1812373-007

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Styrene	ND	0.25	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,1,1-Trichloroethane	ND	0.16	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Trichlorofluoromethane	ND	0.14	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Vinyl chloride	ND	0.12	1.0		µg/L	1	12/11/2018 10:15:21 P	D5625C
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/11/2018 10:15:21 P	D5625C
1,4-Dioxane	ND	2.3	10		µg/L	1	12/13/2018 9:08:28 PM	A56304
Surr: 1,2-Dichloroethane-d4	103	0	70-130		%Rec	1	12/11/2018 10:15:21 P	D5625C
Surr: 4-Bromofluorobenzene	97.7	0	70-130		%Rec	1	12/11/2018 10:15:21 P	D5625C
Surr: Dibromofluoromethane	99.8	0	70-130		%Rec	1	12/11/2018 10:15:21 P	D5625C
Surr: Toluene-d8	104	0	70-130		%Rec	1	12/11/2018 10:15:21 P	D5625C

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 19 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

CLIENT: Marathon

Client Sample ID: DUPLICATE

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 1:10:00 PM

Lab ID: 1812373-008

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8011/504.1: EDB								Analyst: JME
1,2-Dibromoethane	ND	0.0050	0.0096		µg/L	1	12/18/2018 12:22:30 A	42092
EPA METHOD 8015M/D: DIESEL RANGE								Analyst: Irm
Diesel Range Organics (DRO)	ND	0.63	1.0		mg/L	1	12/12/2018 10:34:01 P	42033
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	12/12/2018 10:34:01 P	42033
Surr: DNOP	112	0	76.7-135		%Rec	1	12/12/2018 10:34:01 P	42033
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.024	0.050		mg/L	1	12/11/2018 1:40:50 PM	G56246
Surr: BFB	87.4	0	72.8-125		%Rec	1	12/11/2018 1:40:50 PM	G56246
EPA METHOD 6020: TOTAL METALS								Analyst: DBK
Antimony	ND	0.00050	0.0010		mg/L	1	12/17/2018 4:14:32 PM	42079
Arsenic	0.00078	0.00050	0.0010	J	mg/L	1	12/17/2018 4:14:32 PM	42079
Lead	ND	0.00050	0.0010		mg/L	1	12/17/2018 4:14:32 PM	42079
Selenium	ND	0.00050	0.0010		mg/L	1	12/17/2018 4:14:32 PM	42079
EPA METHOD 7470: MERCURY								Analyst: pmf
Mercury	0.000090	0.000038	0.00020	J	mg/L	1	12/11/2018 6:27:18 PM	42021
EPA 6010B: TOTAL RECOVERABLE METALS								Analyst: rde
Barium	0.021	0.020	0.020		mg/L	1	12/14/2018 9:58:15 AM	41991
Beryllium	ND	0.00044	0.0030		mg/L	1	12/14/2018 9:58:15 AM	41991
Cadmium	ND	0.00099	0.0020		mg/L	1	12/14/2018 9:58:15 AM	41991
Chromium	ND	0.0011	0.0060		mg/L	1	12/14/2018 9:58:15 AM	41991
Cobalt	ND	0.00098	0.0060		mg/L	1	12/14/2018 9:58:15 AM	41991
Nickel	ND	0.0027	0.010		mg/L	1	12/14/2018 9:58:15 AM	41991
Silver	ND	0.0018	0.0050		mg/L	1	12/14/2018 9:58:15 AM	41991
Vanadium	ND	0.0023	0.050		mg/L	1	12/14/2018 9:58:15 AM	41991
Zinc	0.0058	0.0033	0.020	J	mg/L	1	12/14/2018 9:58:15 AM	41991
EPA METHOD 8260B: VOLATILES								Analyst: AG
Benzene	ND	0.17	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Toluene	ND	0.17	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,2,4-Trimethylbenzene	ND	0.25	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,3,5-Trimethylbenzene	ND	0.23	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Naphthalene	ND	0.29	2.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1-Methylnaphthalene	ND	0.34	4.0		µg/L	1	12/12/2018 11:47:56 A	R56282

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 20 of 38
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUPLICATE

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 1:10:00 PM

Lab ID: 1812373-008

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Acetone	8.8	0.76	10	J	µg/L	1	12/12/2018 11:47:56 A	R56282
Bromobenzene	ND	0.32	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Bromodichloromethane	ND	0.28	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Bromoform	ND	0.32	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Bromomethane	ND	0.27	3.0		µg/L	1	12/12/2018 11:47:56 A	R56282
2-Butanone	ND	1.4	10		µg/L	1	12/12/2018 11:47:56 A	R56282
Carbon disulfide	ND	0.39	10		µg/L	1	12/12/2018 11:47:56 A	R56282
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Chlorobenzene	ND	0.29	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Chloroethane	ND	0.16	2.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Chloroform	ND	0.24	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Chloromethane	ND	0.32	3.0		µg/L	1	12/12/2018 11:47:56 A	R56282
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
4-Chlorotoluene	ND	0.28	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Dibromochloromethane	ND	0.24	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Dibromomethane	ND	0.32	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,1-Dichloroethane	ND	0.18	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,2-Dichloropropane	ND	0.17	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Hexachlorobutadiene	ND	0.39	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
2-Hexanone	ND	0.91	10		µg/L	1	12/12/2018 11:47:56 A	R56282
Isopropylbenzene	ND	0.22	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
4-Methyl-2-pentanone	ND	0.45	10		µg/L	1	12/12/2018 11:47:56 A	R56282
Methylene Chloride	ND	0.21	3.0		µg/L	1	12/12/2018 11:47:56 A	R56282
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/12/2018 11:47:56 A	R56282
n-Propylbenzene	ND	0.24	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
sec-Butylbenzene	ND	0.20	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 21 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812373

Date Reported: 1/4/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: DUPLICATE

Project: 2018 Post Closure Sampling LTU

Collection Date: 12/6/2018 1:10:00 PM

Lab ID: 1812373-008

Matrix: AQUEOUS

Received Date: 12/6/2018 5:08:00 PM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: AG	
Styrene	ND	0.25	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,1,1-Trichloroethane	ND	0.16	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Trichlorofluoromethane	ND	0.14	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Vinyl chloride	ND	0.12	1.0		µg/L	1	12/12/2018 11:47:56 A	R56282
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/12/2018 11:47:56 A	R56282
1,4-Dioxane	8.9	2.3	10	J	µg/L	1	12/13/2018 9:37:30 PM	A56304
Surr: 1,2-Dichloroethane-d4	101	0	70-130		%Rec	1	12/12/2018 11:47:56 A	R56282
Surr: 4-Bromofluorobenzene	98.5	0	70-130		%Rec	1	12/12/2018 11:47:56 A	R56282
Surr: Dibromofluoromethane	101	0	70-130		%Rec	1	12/12/2018 11:47:56 A	R56282
Surr: Toluene-d8	105	0	70-130		%Rec	1	12/12/2018 11:47:56 A	R56282

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 22 of 38
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number 181212072-001 **Sampling Date** 12/6/2018 **Date/Time Received** 12/12/2018 12:05 PM
Client Sample ID 1812373-003E/MW-1 **Sampling Time** 8:10 AM **Extraction Date** 12/12/2018
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
1,2-Diphenyl hydrazine	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2,3,4,6-Tetrachlorophenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2,3,5,6-Tetrachlorophenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
4-Chloroaniline	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Acenaphthylene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Aniline	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	

Certifications held by Anatek Labs ID: EPA-ID00013-AZ-0701; FL(NELAP): E57893; ID-ID00013; MT-CERT0026; NM: ID00013; NV-ID00013; OR-ID200001-002; WA-C605
Certifications held by Anatek Labs WA: EPA-WA00169; ID-WA00169; WA-C685; MT-Cert0085; FL(NELAP): E671059

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
 ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-001	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-003E/MW-1	Sampling Time	8:10 AM	Extraction Date	12/12/2018
Matrix:	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Anthracene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Benzo[e]pyrene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Benzofluoranthene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Benzophenanthrene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
bis(2-Chloroethyl)ether	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Butylbenzylphthalate	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Isophorone	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Nitrosodimethylamine	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
n-Nitroso-di-n-propylamine	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	

Certifications held by Anatek Labs: ID: EPA-ID00013, AZ:0701, FL(NELAP):E87693, ID-ID00013, MT-CERT0028, NM: ID00013, NV-ID00013, OR-ID200001-002, WA:C595
 Certifications held by Anatek Labs: WA: EPA-WA00169, ID-WA00169, WA:C585, MT-CertID095, FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-001	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-003E/MW-1	Sampling Time	8:10 AM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Phenanthrene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Phenol	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/14/2018 1:46:00 AM	HSW	EPA 8270D	

Surrogate Data

Sample Number	181212072-001			
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	98.6	43-120	
2-Fluorobiphenyl	EPA 8270D	90.8	55-127	
2-Fluorophenol	EPA 8270D	90.4	41-119	
Nitrobenzene-d5	EPA 8270D	100.8	55-120	
Phenol-c5	EPA 8270D	97.6	52-115	
Terphenyl-d14	EPA 8270D	126.0	22-133	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number 181212072-003 **Sampling Date** 12/6/2018 **Date/Time Received** 12/12/2018 12:05 PM
Client Sample ID 1812373-004E/MW-2 **Sampling Time** 8:37 AM **Extraction Date** 12/12/2018
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
1,2-Diphenyl hydrazine	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2,3,4,6-Tetrachlorophenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2,3,5,6-Tetrachlorophenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
4-Chloroaniline	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Acenaphthylene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Aniline	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	

Certifications held by Anatek Labs ID: EPA ID00013; AZ 0761; FL (NELAP) E87693; ID ID00013; MT CERT0028; NM ID00013; NV ID00013; OR ID20001-002; WA C383
Certifications held by Anatek Labs WA: EPA-WA(0169); ID-WA00169; WA-C585; MT-Cert0085; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-003	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373 004E/MW-2	Sampling Time	8:37 AM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzidine	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
bis(2-Chloroethyl)ether	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Butylbenzylphthalate	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Iscophorone	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Nitrosodimethylamine	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
n-Nitroso-di-n-propylamine	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	

Certifications held by Anatek Labs ID: EPA/ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CE00028; NM:ID00013; NV:ID00013; OR:ID00001-002; WA:CS95
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:CS95; MT:CE00095; FL(NELAP):E871009

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-003	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-004E/MW-2	Sampling Time	8:37 AM	Extraction Date	13/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Phenol	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/14/2018 2:14:00 AM	HSW	EPA 8270D	

Surrogate Data

Sample Number	181212072-003			
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	90.4	43-120	
2-Fluorobiphenyl	EPA 8270D	89.6	55-127	
2-Fluorophenol	EPA 8270D	83.2	41-119	
Nitrobenzene-d5	EPA 8270D	93.6	55-120	
Phenol-d5	EPA 8270D	87.8	52-115	
Terphenyl-d14	EPA 8270D	123.2	22-133	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number 181212072-005 **Sampling Date** 12/6/2018 **Date/Time Received** 12/12/2018 12:05 PM
Client Sample ID 1812373-005F/MW-5 **Sampling Time** 9:18 AM **Extraction Date** 12/12/2018
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
1,2-Diphenyl hydrazine	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2,3,4,6-Tetrachlorophenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2,3,5,6-Tetrachlorophenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
3,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
4-Chloroaniline	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Acenaphthylene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Aniline	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	

Certifications held by Anatek Labs ID: EPA/IG00013; AZ-0731; FL(NELAP) E871083; ID-ID00013; MT-CERT0020; NM-ID00013; NV-0700013; OR-ID200001-002; WA-C595
Certifications held by Anatek Labs WA: EPA-WA00169; ID-WA00169; WA-C595; MT-Cert0005; FL(NELAP) E871083

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number 181212072-005 **Sampling Date** 12/6/2018 **Date/Time Received** 12/12/2018 12:05 PM
Client Sample ID 1812373-005E/MW-5 **Sampling Time** 9:18 AM **Extraction Date** 12/12/2018
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzidine	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Benzo(g,h,i)perylene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
bis(2-Chloroethyl)ether	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
bis(2-Ethylhexyl)phthalate	1.12	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Butylbenzylphthalate	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Isophorone	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Nitrosodimethylamine	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
n-Nitroso-di-n-propylamine	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	

Certifications held by Anatek Labs ID: EPA ID00013; AZ:0731; FL(NELAP):E87893; ID:000013; MT:CEM0085; NM:ID00013; NV:ID00013; OR:ID00013; WA:CE05.
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:CE05; MT:CEM0085; FL(NELAP):E871089

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-005	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-005E/MW-5	Sampling Time	9:18 AM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Phenol	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/14/2018 3:09:00 AM	HSW	EPA 8270D	

Surrogate Data

Sample Number	181212072-005		
Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	80.9	43-120
2-Fluorobiphenyl	EPA 8270D	94.0	55-127
2-Fluorophenol	EPA 8270D	79.4	41-119
Nitrobenzene-d5	EPA 8270D	93.6	55-120
Phenol-d5	EPA 8270D	83.6	52-115
Terphenyl-d14	EPA 8270D	126.8	22-133

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Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-007	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-006E/SMW-4	Sampling Time	1:45 PM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
1,2-Diphenyl hydrazine	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2,3,4,6-Tetrachlorophenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2,3,5,6-Tetrachlorophenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
3,4-Methylphenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
4-Chloroaniline	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Acenaphthylene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Aniline	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	

Certifications held by Anatek Labs ID: EPA-ID00013; AZ-0701; FL-NELAP; E87893; ID-000013; MT-CERT0028; NM-ID00013; NV-ID00013; OR-ID200001-002; WA-C595
Certifications held by Anatek Labs WA: EPA-WA00169; ID-WA00169; WAC585; MT-Cert0028; FL-NELAP; E871699

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Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-007	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-008F/SMW-4	Sampling Time	1:45 PM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzidine	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
bis(2-Chloroethyl)ether	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Butylbenzylphthalate	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Isophorone	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Nitrosodimethylamine	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
n-Nitroso-di-n-propylamine	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	

Certifications held by Anatek Labs: ID: EPA-ID00013; AZ-ID701; FL-NE-LAP; E87893; ID-ID00013; MT-CERT0028; NM-ID00013; NV-ID00013; OR-ID260011-002; WA-C595
Certifications held by Anatek Labs: WA: EPA-WA00169; ID-WA00169; WA-C595; MT-Cert0095; FL-NE-LAP; E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB **Batch #:** 181212072
Address: 4901 HAWKINS NE SUITE D **Project Name:** 1812373
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Analytical Results Report

Sample Number 181212072-007 **Sampling Date** 12/6/2018 **Date/Time Received** 12/12/2018 12:05 PM
Client Sample ID 1812373-006E/SMW-4 **Sampling Time** 1:45 PM **Extraction Date** 12/12/2018
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Phenol	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/14/2018 3:37:00 AM	HSW	EPA 8270D	

Surrogate Data

Sample Number	Surrogate Standard	Method	Percent Recovery	Control Limits
181212072-007	2,4,6-Tribromophenol	EPA 8270D	90.4	43-120
	2-Fluorobiphenyl	EPA 8270D	88.4	55-127
	2-Fluorophenol	EPA 8270D	83.0	41-119
	Nitrobenzene-d5	EPA 8270D	95.2	55-120
	Phenol-d5	EPA 8270D	86.0	52-115
	Terphenyl-d14	EPA 8270D	106.0	22-133

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-009	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-007E/MW-4	Sampling Time	1:00 PM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
1,2-Diphenyl hydrazine	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2,3,4,6-Tetrachlorophenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2,3,5,6-Tetrachlorophenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
4-Chloroaniline	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Acenaphthylene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Aniline	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	

Certifications held by Anatek Labs ID: EPA-ID00013; AZ-0751; FL (NELAP): E87893; ID-ID00013; MT-CERT0029; NM: ID00013; NV-ID00013; OR-ID260001-302; WA-C585
Certifications held by Anatek Labs WA: EPA-WA00169; ID-WA00169; WA-C585; MT-Cert0095; FL-NELAP: E871039

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-009	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-007E/MW-4	Sampling Time	1:00 PM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzidine	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
bis(2-Chloroethyl)ether	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Butylbenzylphthalate	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Isophorone	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Nitrosodimethylamine	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
n-Nitroso-di-n-propylamine	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	

Certifications held by Anatek Labs ID: EPAJ000013; AZJ0701; FL/NFI APY E87893; IDJ000013; MT-CERT0026; NM: IC00013 NVJ000013; ORJ020001002; WA/C905
Certifications held by Anatek Labs WA: EPA-WA00159; ID-WA00159; WA-CS85; MT-Cert0085; FL/NELAPJ: E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-009	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-007E/MW-4	Sampling Time	1:00 PM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Phenol	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/14/2018 4:05:00 AM	HSW	EPA 8270D	

Surrogate Data

Sample Number	181212072-009			
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	87.4	43-120	
2-Fluorobiphenyl	EPA 8270D	89.6	55-127	
2-Fluorophenol	EPA 8270D	84.8	41-119	
Nitrobenzene-d5	EPA 8270D	94.8	55-120	
Phenol-d5	EPA 8270D	88.6	52-115	
Terphenyl-d14	EPA 8270D	117.2	22-133	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812375

Analytical Results Report

Sample Number 181212072-011 **Sampling Date** 12/6/2018 **Date/Time Received** 12/12/2018 12:05 PM
Client Sample ID 1812373-008F/OUPLICATE **Sampling Time** 1:10 PM **Extraction Date** 12/12/2018
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
1,2-Diphenylhydrazine	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
1-Methylnaphthalene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2,3,4,6-Tetrachlorophenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2,3,5,6-Tetrachlorophenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2,4-Dichlorophenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2,4-Dinitrotoluene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2,6-Dinitrotoluene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2-Chloronaphthalene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2-Chlorophenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2-Nitroaniline	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
2-Nitrophenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
3-Nitroaniline	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
4-Chloroaniline	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
4-Nitroaniline	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Acenaphthylene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Aniline	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	

Certifications held by Anatek Labs ID: EPA-ID00013; AZ-D011; FL-INELAP; E87893; ID-ID00013; MT-CERT0028; NV-ID00013; NV-ID00013; OR-ID00013-202; WA-C585
Certifications held by Anatek Labs WA: EPA-WA00159; ID-WA00159; WA-C585; MT-Cert0015; FL-INELAP; E871059

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number 181212072-011 **Sampling Date** 12/6/2018 **Date/Time Received** 12/12/2018 12:05 PM
Client Sample ID 1812373-008E/DUPLICATE **Sampling Time** 1:10 PM **Extraction Date** 12/12/2018
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzidine	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Benzo(g,h,i)perylene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Benzyl alcohol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
bis(2-Chloroethyl)ether	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Butylbenzylphthalate	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Carbazole	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Dibenzofuran	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Di-n-octylphthalate	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Hexachlorobenzene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Hexachlorobutadiene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Hexachloroethane	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Isophorone	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Nitrobenzene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Nitrosodimethylamine	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
n-Nitroso-di-n-propylamine	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Pentachlorophenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	

Certifications held by Anatek Labs: ID: EPA-ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT: CERT0028; NM: ID00013; NV:ID00013; OR:ID230001-302; WA: C585
Certifications held by Anatek Labs: WA: EPA-WA00169; ID:WA00169; WA: C585; MT: Cert0028; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

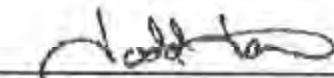
Sample Number	181212072-011	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-008E/DUPLICATE	Sampling Time	1:10 PM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Phenol	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/14/2018 4:33:00 AM	HSW	EPA 8270D	

Surrogate Data

Sample Number	181212072-011			
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	81.6	43-120	
2-Fluorobiphenyl	EPA 8270D	84.0	55-127	
2-Fluorophenol	EPA 8270D	77.4	41-119	
Nitrobenzene-d5	EPA 8270D	90.0	55-120	
Phenol-d5	EPA 8270D	85.0	52-115	
Terphenyl-d14	EPA 8270D	102.8	22-133	

Authorized Signature



Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-001	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-003E/MW-1	Sampling Time	6:10 AM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzenethiols	ND	ug/L	0.5	12/15/2018 12:55:00 AM	HSW	EPA 8270D	
Benzo(j)fluoranthene	ND	ug/L	0.5	12/15/2018 12:55:00 AM	HSW	EPA 8270D	
Dibenz(a,i)acridine	ND	ug/L	0.5	12/15/2018 12:55:00 AM	HSW	EPA 8270D	
Quinoline	ND	ug/L	0.5	12/15/2018 12:55:00 AM	HSW	EPA 8270D	
7,12-Dimethylbenz(a)anthracene	ND	ug/L	0.5	1/2/2019 6:12:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number	181212072-001			
Surrogate Standard		Method	Percent Recovery	Control Limits
Terphenyl-d14		EPA 8270D	97.6	22-133
Terphenyl-d14		EPA 8270D	104.4	20-133

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Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-003	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-004E/MW-2	Sampling Time	8:37 AM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene/thiols	ND	ug/L	0.5	12/15/2018 1:24:00 AM	HSW	EPA 8270D	
Benzo(j)fluoranthene	ND	ug/L	0.5	12/15/2018 1:24:00 AM	HSW	EPA 8270D	
Dibenz(a,j)acridine	ND	ug/L	0.5	12/15/2018 1:24:00 AM	HSW	EPA 8270D	
Quinoline	ND	ug/L	0.5	12/15/2018 1:24:00 AM	HSW	EPA 8270D	
7,12-Dimethylbenz(a)anthracene	ND	ug/L	0.5	1/2/2019 6:39:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number	181212072-003			
Surrogate Standard	Method	Percent Recovery	Control Limits	
Terphenyl-d14	EPA 8270D	110.3	22-133	
Terphenyl-d14	EPA 8270D	117.6	20-133	

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Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-005	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-005E/MW-5	Sampling Time	9:18 AM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzenethiol	ND	ug/L	0.5	12/15/2018 2:21:00 AM	HSW	EPA 8270D	
Benzo(j)fluoranthene	ND	ug/L	0.5	12/15/2018 2:21:00 AM	HSW	EPA 8270D	
Dibenz(a,j)acridine	ND	ug/L	0.5	12/15/2018 2:21:00 AM	HSW	EPA 8270D	
Quinoline	ND	ug/L	0.5	12/15/2018 2:21:00 AM	HSW	EPA 8270D	
7,12-Dimethylbenz(a)anthracene	ND	ug/L	0.5	1/2/2019 7:33:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number	181212072-005			
Surrogate Standard	Method	Percent Recovery	Control Limits	
Terphenyl-d14	EPA 8270D	105.6	22-133	
Terphenyl-d14	EPA 8270D	115.6	20-133	

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Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-007	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 05:05 PM
Client Sample ID	1812373-006E/SMW-4	Sampling Time	1:45 PM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene/ethyle	ND	ug/L	0.5	12/15/2018 2:50:00 AM	HSW	EPA 8270D	
Benzo(i)fluoranthene	ND	ug/L	0.5	12/15/2018 2:50:00 AM	HSW	EPA 8270D	
Dibenz(a,j)acridine	ND	ug/L	0.5	12/15/2018 2:50:00 AM	HSW	EPA 8270D	
Quinoline	ND	ug/L	0.5	12/15/2018 2:50:00 AM	HSW	EPA 8270D	
7,12-Dimethylbenz(a)anthracene	ND	ug/L	0.5	1/2/2019 8:01:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number	181212072-007			
Surrogate Standard	Method	Percent Recovery	Control Limits	
Terphenyl-d14	EPA 8270D	100.2	22-133	
Terphenyl-d14	EPA 8270D	100.8	20-133	

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Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number	181212072-009	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-007E/MW-4	Sampling Time	1:00 PM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzenethiol	ND	ug/L	0.5	12/15/2018 3:18:00 AM	HSW	EPA 8270D	
Benzo(j)fluoranthene	ND	ug/L	0.5	12/15/2018 3:18:00 AM	HSW	EPA 8270D	
Dibenz(a,h)acridine	ND	ug/L	0.5	12/15/2018 3:18:00 AM	HSW	EPA 8270D	
Quinoline	ND	ug/L	0.5	12/15/2018 3:18:00 AM	HSW	EPA 8270D	
7,12-Dimethylbenz(a)anthracene	ND	ug/L	0.5	1/2/2019 5:28:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number	181212072-009			
Surrogate Standard	Method	Percent Recovery	Control Limits	
Terphenyl-d14	EPA 8270D	94.4	22-133	
Terphenyl-d14	EPA 8270D	107.6	20-133	

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Batch #: 181212072
Project Name: 1812373

Analytical Results Report


Sample Number	181212072-011	Sampling Date	12/6/2018	Date/Time Received	12/12/20112:05 PM
Client Sample ID	1812373-008E/DUPLICATE	Sampling Time	1:10 PM	Extraction Date	12/12/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzenethiolo	ND	ug/L	0.5	12/15/2018 3:46:00 AM	HSW	EPA 8270D	
Benzo(j)fluoranthene	ND	ug/L	0.5	12/15/2018 3:46:00 AM	HSW	EPA 8270D	
Dibenz(a,j)acridine	ND	ug/L	0.5	12/15/2018 3:46:00 AM	HSW	EPA 8270D	
Quinoline	ND	ug/L	0.5	12/15/2018 3:46:00 AM	HSW	EPA 8270D	
7,12-Dimethylbenz(a)anthracene	ND	ug/L	0.5	1/2/2019 8:55:00 PM	TGT	EPA 8270D	

Surrogate Data

Sample Number	181212072-011			
Surrogate Standard		Method	Percent Recovery	Control Limits
Terphenyl-d14		EPA 8270D	104.4	22-133
Terphenyl-d14		EPA 8270D	103.2	20-133

Authorized Signature



Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Pyrene	5.12	ug/L	5	102.4	45-139	12/12/2018	12/13/2018
Phenol	4.77	ug/L	5	95.4	45-134	12/12/2018	12/13/2018
Pentachlorophenol	4.89	ug/L	5	97.8	22-138	12/12/2018	12/13/2018
n-Nitroso-di-n-propylamine	4.51	ug/L	5	90.2	46-135	12/12/2018	12/13/2018
bis(2-Ethylhexyl)phthalate	5.43	ug/L	5	108.6	51-149	12/12/2018	12/13/2018
Acenaphthene	4.88	ug/L	5	97.6	45-129	12/12/2018	12/13/2018
4-Nitrophenol	4.28	ug/L	5	85.6	19-141	12/12/2018	12/13/2018
4-Chloro-3-methylphenol	4.84	ug/L	5	96.8	42-139	12/12/2018	12/13/2018
2-Chlorophenol	4.45	ug/L	5	89.0	50-131	12/12/2018	12/13/2018
2,4-Dinitrotoluene	5.04	ug/L	5	100.8	42-143	12/12/2018	12/13/2018
1,4-Dichlorobenzene	3.77	ug/L	5	75.4	28-108	12/12/2018	12/13/2018
1,2,4-Trichlorobenzene	4.06	ug/L	5	81.2	33-109	12/12/2018	12/13/2018

Lab Control Sample Duplicate

Parameter	LCSD Result	Units	LCSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Pyrene	4.99	ug/L	5	99.8	2.0	0-16	12/12/2018	12/13/2018
Phenol	4.85	ug/L	5	97.0	1.7	0-25	12/12/2018	12/13/2018
Pentachlorophenol	5.00	ug/L	5	100.0	2.2	0-39	12/12/2018	12/13/2018
n-Nitroso-di-n-propylamine	4.96	ug/L	5	99.2	9.5	0-25	12/12/2018	12/13/2018
bis(2-Ethylhexyl)phthalate	5.22	ug/L	5	104.4	3.0	0-43	12/12/2018	12/13/2018
Acenaphthene	4.80	ug/L	5	96.0	1.7	0-22	12/12/2018	12/13/2018
4-Nitrophenol	4.81	ug/L	5	96.2	11.7	0-51	12/12/2018	12/13/2018
4-Chloro-3-methylphenol	4.95	ug/L	5	99.0	2.2	0-20	12/12/2018	12/13/2018
2-Chlorophenol	4.48	ug/L	5	89.6	0.7	0-24	12/12/2018	12/13/2018
2,4-Dinitrotoluene	5.18	ug/L	5	103.6	2.7	0-20	12/12/2018	12/13/2018
1,4-Dichlorobenzene	3.50	ug/L	5	70.0	7.4	0-31	12/12/2018	12/13/2018
1,2,4-Trichlorobenzene	3.62	ug/L	5	72.4	11.5	0-33	12/12/2018	12/13/2018

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
1,2,4-Trichlorobenzene	ND	ug/L	0.5	12/12/2018	12/13/2018
1,2-Dichlorobenzene	ND	ug/L	0.5	12/12/2018	12/13/2018

Comments:

Certifications held by Anatek Labs: ID: EPA ID00013; AZ:3701; FL(NELAP):E87893; ID:ID00013; MT:CEMT0028; NM:ID00013; NV:ID00013; OR:ID200001-002; WA:C595
 Certifications held by Anatek Labs: WA: EPA:WA00169, ID:WA00169, WA:C585; MT:CEMT0035; FL(NELAP):E871099

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Analytical Results Report Quality Control Data

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
1,2-Diphenyl hydrazine	ND	ug/L	0.5	12/12/2018	12/13/2018
1,3-Dichlorobenzene	ND	ug/L	0.5	12/12/2018	12/13/2018
1,4-Dichlorobenzene	ND	ug/L	0.5	12/12/2018	12/13/2018
1-Methylnaphthalene	ND	ug/L	0.5	12/12/2018	12/13/2018
2,3,4,6-Tetrachlorophenol	ND	ug/L	0.5	12/12/2018	12/13/2018
2,3,5,6-Tetrachlorophenol	ND	ug/L	0.5	12/12/2018	12/13/2018
2,4,5-Trichlorophenol	ND	ug/L	0.5	12/12/2018	12/13/2018
2,4,6-Trichlorophenol	ND	ug/L	0.5	12/12/2018	12/13/2018
2,4-Dichlorophenol	ND	ug/L	0.5	12/12/2018	12/13/2018
2,4-Dimethylphenol	ND	ug/L	0.5	12/12/2018	12/13/2018
2,4-Dinitrophenol	ND	ug/L	0.5	12/12/2018	12/13/2018
2,4-Dinitrotoluene	ND	ug/L	0.5	12/12/2018	12/13/2018
2,6-Dinitrotoluene	ND	ug/L	0.5	12/12/2018	12/13/2018
2-Chloronaphthalene	ND	ug/L	0.5	12/12/2018	12/13/2018
2-Chlorophenol	ND	ug/L	0.5	12/12/2018	12/13/2018
2-Methylnaphthalene	ND	ug/L	0.5	12/12/2018	12/13/2018
2-Methylphenol	ND	ug/L	0.5	12/12/2018	12/13/2018
2-Nitroaniline	ND	ug/L	0.5	12/12/2018	12/13/2018
2-Nitrophenol	ND	ug/L	0.5	12/12/2018	12/13/2018
3,3'-Dichlorobenzidine	ND	ug/L	0.5	12/12/2018	12/13/2018
3,4-Methylphenol	ND	ug/L	0.5	12/12/2018	12/13/2018
3-Nitroaniline	ND	ug/L	0.5	12/12/2018	12/13/2018
4,6-Dinitro-2-methylphenol	ND	ug/L	0.5	12/12/2018	12/13/2018
4-Bromophenyl-phenylether	ND	ug/L	0.5	12/12/2018	12/13/2018
4-Chloro-3-methylphenol	ND	ug/L	0.5	12/12/2018	12/13/2018
4-Chloroaniline	ND	ug/L	0.5	12/12/2018	12/13/2018
4-Chlorophenyl-phenylether	ND	ug/L	0.5	12/12/2018	12/13/2018
4-Nitroaniline	ND	ug/L	0.5	12/12/2018	12/13/2018
4-Nitrophenol	ND	ug/L	0.5	12/12/2018	12/13/2018
7,12-Dimethylbenz(a)anthracene	ND	ug/L	0.5	12/12/2018	1/2/2019
Acenaphthene	ND	ug/L	0.5	12/12/2018	12/13/2018
Acenaphthylene	ND	ug/L	0.5	12/12/2018	12/13/2018
Aniline	ND	ug/L	0.5	12/12/2018	12/13/2018
Anthracene	ND	ug/L	0.5	12/12/2018	12/13/2018
Benzenethiol	ND	ug/L	0.5	12/12/2018	12/15/2018
Benzidine	ND	ug/L	0.5	12/12/2018	12/13/2018
Benzo(ch)perylene	ND	ug/L	0.5	12/12/2018	12/13/2018

Comments:

Certifications held by Anatek Labs: ID: EPA-ID00013; AZ 0761; FL(NELAP); E67893; ID:ID00013; MT.CERT0026; NM: ID00013; NV:ID00013; OR:ID00001-002; WA:C595
 Certifications held by Anatek Labs: WA: EPA-WA00169; ID:WA00169; WA:C585; MT.Cert0095; FL(NELAP); E671099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report Quality Control Data

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Benzo(j)fluoranthene	ND	ug/L	0.5	12/12/2018	12/15/2018
Benzo[a]anthracene	ND	ug/L	0.5	12/12/2018	12/13/2018
Benzo[a]pyrene	ND	ug/L	0.5	12/12/2018	12/13/2018
Benzo[b]fluoranthene	ND	ug/L	0.5	12/12/2018	12/13/2018
Benzo[k]fluoranthene	ND	ug/L	0.5	12/12/2018	12/13/2018
Benzyl alcohol	ND	ug/L	0.5	12/12/2018	12/13/2018
bis(2-Chloroethoxy)methane	ND	ug/L	0.5	12/12/2018	12/13/2018
bis(2-Chloroethyl)ether	ND	ug/L	0.5	12/12/2018	12/13/2018
bis(2-chloroisopropyl)ether	ND	ug/L	0.5	12/12/2018	12/13/2018
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/12/2018	12/13/2018
Butylbenzylphthalate	ND	ug/L	0.5	12/12/2018	12/13/2018
Carbazole	ND	ug/L	0.5	12/12/2018	12/13/2018
Chrysene	ND	ug/L	0.5	12/12/2018	12/13/2018
Dibenz(a,j)acridine	ND	ug/L	0.5	12/12/2018	12/15/2018
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/12/2018	12/13/2018
Dibenzofuran	ND	ug/L	0.5	12/12/2018	12/13/2018
Diethylphthalate	ND	ug/L	0.5	12/12/2018	12/13/2018
Dimethylphthalate	ND	ug/L	0.5	12/12/2018	12/13/2018
Di-n-butylphthalate	ND	ug/L	0.5	12/12/2018	12/13/2018
Di-n-octylphthalate	ND	ug/L	0.5	12/12/2018	12/13/2018
Fluoranthene	ND	ug/L	0.5	12/12/2018	12/13/2018
Fluorene	ND	ug/L	0.5	12/12/2018	12/13/2018
Hexachlorobenzene	ND	ug/L	0.5	12/12/2018	12/13/2018
Hexachlorobutadiene	ND	ug/L	0.5	12/12/2018	12/13/2018
Hexachlorocyclopentadiene	ND	ug/L	0.5	12/12/2018	12/13/2018
Hexachloroethane	ND	ug/L	0.5	12/12/2018	12/13/2018
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	12/12/2018	12/13/2018
Isophorone	ND	ug/L	0.5	12/12/2018	12/13/2018
Naphthalene	ND	ug/L	0.5	12/12/2018	12/13/2018
Nitrobenzene	ND	ug/L	0.5	12/12/2018	12/13/2018
Nitrosodimethylamine	ND	ug/L	0.5	12/12/2018	12/13/2018
n-Nitroso-di-n-propylamine	ND	ug/L	0.5	12/12/2018	12/13/2018
n-Nitrosodiphenylamine	ND	ug/L	0.5	12/12/2018	12/13/2018
Pentachlorophenol	ND	ug/L	0.5	12/12/2018	12/13/2018
Phenanthrene	ND	ug/L	0.5	12/12/2018	12/13/2018
Phenol	ND	ug/L	0.5	12/12/2018	12/13/2018
Pyrene	ND	ug/L	0.5	12/12/2018	12/13/2018

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB **Batch #:** 181212072
Address: 4901 HAWKINS NE SUITE D **Project Name:** 1812373
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Analytical Results Report Quality Control Data

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Pyridine	ND	ug/L	0.5	12/12/2018	12/13/2018
Quinoline	ND	ug/L	0.5	12/12/2018	12/15/2018

AR Acceptable Range
ND Not Detected
PQL Practical Quantitation Limit
RPD Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA ID00013; AZ 0701; FL(NELAP) E87893; ID ID00013; MT-CERT0028; NM: ID00013; NV ID00013; OR ID200001-002; WA C595
Certifications held by Anatek Labs WA: EPA WA00189; ID WA00189; WA C595; MT-Cert0095; FL(NELAP) E871099

Thursday, January 03, 2019

Page 4 of 4

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report

Sample Number 181212072-002 **Sampling Date** 12/6/2018 **Date/Time Received** 12/12/2018 12:05 PM
Client Sample ID 1812373-003F/MW-1 **Sampling Time** 8:10 AM
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	12/13/2018 2:40:00 PM	BKP	EPA 335.4	

Sample Number 181212072-004 **Sampling Date** 12/6/2018 **Date/Time Received** 12/12/2018 12:05 PM
Client Sample ID 1812373-004F/MW-2 **Sampling Time** 8:37 AM
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	12/13/2018 2:40:00 PM	BKP	EPA 335.4	

Sample Number 181212072-006 **Sampling Date** 12/6/2018 **Date/Time Received** 12/12/2018 12:05 PM
Client Sample ID 1812373-006F/MW-5 **Sampling Time** 9:10 AM
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	12/13/2018 2:40:00 PM	BKP	EPA 335.4	

Sample Number 181212072-008 **Sampling Date** 12/6/2018 **Date/Time Received** 12/12/2018 12:05 PM
Client Sample ID 1812373-008F/SMW-4 **Sampling Time** 1:45 PM
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	12/13/2018 2:40:00 PM	BKP	EPA 335.4	

Certifications held by Anatek Labs ID: EPA-ID00013, AZ-0701, FL(NELAP):E87893, ID-ID00013, MT-CERT0028, NM-ID00013, NV-ID00013, OR-ID200901-002, WA-C509
Certifications held by Anatek Labs WA: EPA-WA00169, ID-WA00169, WA-C585, MT-Cert0095, FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB

Batch #: 181212072

Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109

Project Name: 1812373

Attn: ANDY FREEMAN

Analytical Results Report

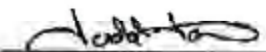
Sample Number	181212072-010	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-007F/MW-4	Sampling Time	1:00 PM		
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	12/13/2018 2:40:00 PM	BKP	EPA 335.4	

Sample Number	181212072-012	Sampling Date	12/6/2018	Date/Time Received	12/12/2018 12:05 PM
Client Sample ID	1812373-008F/DUPLICATE	Sampling Time	1:10 PM		
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	12/13/2018 2:40:00 PM	BKP	EPA 335.4	

Authorized Signature



Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181212072
Project Name: 1812373

Analytical Results Report Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Cyanide	0.504	mg/L	0.5	100.8	90-110	12/13/2018	12/13/2018

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
181212073-001	Cyanide	ND	0.484	mg/L	0.5	96.8	80-120	12/13/2018	12/13/2018

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Cyanide	0.484	mg/L	0.5	96.8	0.0	0-20	12/13/2018	12/13/2018

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide	ND	mg/L	0.01	12/13/2018	12/13/2018

AR Acceptable Range
ND Not Detected
PQL Practical Quantitation Limit
RPD Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA ID00013; AZ 0701; FL(NELAP)E87893; ID ID00013; MT CERT0020; NM ID00013; NY ID00013; OR ID207001-002; WA C055
Certifications held by Anatek Labs WA: EPA-WA00169; ID-WA00169; WA-C055; MT-Cert0055; FL(NELAP): E871098

Thursday, January 03, 2019

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	MB-42092		SampType:	MBLK		TestCode:	EPA Method 8011/504.1: EDB				
Client ID:	PBW		Batch ID:	42092		RunNo:	56419				
Prep Date:	12/17/2018		Analysis Date:	12/17/2018		SeqNo:	1886382		Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
1,2-Dibromoethane	ND	0.010									

Sample ID	LCS-42092		SampType: LCS		TestCode: EPA Method 8011/504.1: EDB					
Client ID:	LCSW		Batch ID: 42092		RunNo: 56419					
Prep Date:	12/17/2018		Analysis Date: 12/17/2018		SeqNo: 1886389		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.10	0.010	0.1000	0	100	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	MB-42079		SampType: MBLK		TestCode: EPA Method 6020: Total Metals					
Client ID:	PBW		Batch ID: 42079		RunNo: 56395					
Prep Date:	12/13/2018		Analysis Date: 12/17/2018		SeqNo: 1885196		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.0010								
Selenium	ND	0.0010								

Sample ID	LLLCS-42079	SampType: LCSLL			TestCode: EPA Method 6020: Total Metals					
Client ID:	BatchQC	Batch ID: 42079			RunNo: 56395					
Prep Date:	12/13/2018	Analysis Date: 12/17/2018			SeqNo: 1885197		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00097	0.0010	0.001000	0	96.5	70	130			J
Arsenic	0.0010	0.0010	0.001000	0	101	70	130			
Lead	0.0011	0.0010	0.001000	0	108	70	130			
Selenium	0.0012	0.0010	0.001000	0	121	70	130			

Sample ID	LCS-42079			SampType:	LCS		TestCode:	EPA Method 6020: Total Metals			
Client ID:	LCSW			Batch ID:	42079		RunNo:	56395			
Prep Date:	12/13/2018			Analysis Date:	12/17/2018		SeqNo:	1885198		Units:	mg/L
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Antimony	0.053	0.0010	0.05000	0	106	80	120				
Arsenic	0.049	0.0010	0.05000	0	98.7	80	120				
Lead	0.050	0.0010	0.05000	0	100	80	120				
Selenium	0.050	0.0010	0.05000	0	100	80	120				

Sample ID	1812373-008DMS		SampType: MS		TestCode: EPA Method 6020: Total Metals					
Client ID:	DUPLICATE		Batch ID: 42079		RunNo: 56395					
Prep Date:	12/13/2018		Analysis Date: 12/17/2018		SeqNo: 1885205		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.055	0.0010	0.05000	0	111	75	125			
Arsenic	0.053	0.0010	0.05000	0.0007786	105	75	125			
Lead	0.050	0.0010	0.05000	0	99.9	75	125			
Selenium	0.050	0.0010	0.05000	0	101	75	125			

Sample ID	1812373-008DMSD		SampType:	MSD		TestCode:	EPA Method 6020: Total Metals				
Client ID:	DUPLICATE		Batch ID:	42079		RunNo:	56395				
Prep Date:	12/13/2018		Analysis Date:	12/17/2018		SeqNo:	1885208		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	1812373-008DMSD	SampType:	MSD	TestCode:	EPA Method 6020: Total Metals					
Client ID:	DUPLICATE	Batch ID:	42079	RunNo:	56395					
Prep Date:	12/13/2018	Analysis Date:	12/17/2018	SeqNo:	1885208	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.056	0.0010	0.05000	0	112	75	125	1.23	20	
Arsenic	0.052	0.0010	0.05000	0.0007786	102	75	125	2.60	20	
Lead	0.050	0.0010	0.05000	0	99.5	75	125	0.345	20	
Selenium	0.051	0.0010	0.05000	0	103	75	125	1.84	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	LCS-42033		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	LCSW		Batch ID: 42033		RunNo: 56237					
Prep Date:	12/11/2018		Analysis Date: 12/12/2018		SeqNo: 1881629		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.8	1.0	5.000	0	116	70	130			
Surr: DNOP	0.55		0.5000		110	76.7	135			

Sample ID	MB-42033		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	PBW		Batch ID: 42033		RunNo: 56237					
Prep Date:	12/11/2018		Analysis Date: 12/12/2018		SeqNo: 1881630		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.0		1.000		101	76.7	135			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	RB	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBW	Batch ID:	G56246	RunNo:	56246					
Prep Date:		Analysis Date:	12/11/2018	SeqNo:	1879269	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		90.1	72.8	125			

Sample ID	2.5UG GRO LCS	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSW	Batch ID:	G56246	RunNo:	56246					
Prep Date:		Analysis Date:	12/11/2018	SeqNo:	1879270	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.46	0.050	0.5000	0	91.9	77.7	130			
Surr: BFB	22		20.00		112	72.8	125			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	100ng lcs		SampType:	LCS		TestCode:	EPA Method 8260B: VOLATILES			
Client ID:	LCSW		Batch ID:	D56250		RunNo:	56250			
Prep Date:			Analysis Date:	12/11/2018		SeqNo:	1879426	Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.0	70	130			
Toluene	19	1.0	20.00	0	96.4	70	130			
Chlorobenzene	20	1.0	20.00	0	101	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	97.3	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	87.0	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		96.4	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.8	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID	1812373-001ams		SampType:	MS		TestCode:	EPA Method 8260B: VOLATILES			
Client ID:	Field Blank		Batch ID:	D56250		RunNo:	56250			
Prep Date:			Analysis Date:	12/11/2018		SeqNo:	1879429	Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0.2096	94.3	70	130			
Toluene	19	1.0	20.00	0.2904	91.7	70	130			
Chlorobenzene	19	1.0	20.00	0	95.2	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	94.0	67.6	130			
Trichloroethene (TCE)	17	1.0	20.00	0	86.8	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.6	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.7		10.00		96.9	70	130			

Sample ID	1812373-001amsd		SampType:	MSD		TestCode:	EPA Method 8260B: VOLATILES			
Client ID:	Field Blank		Batch ID:	D56250		RunNo:	56250			
Prep Date:			Analysis Date:	12/11/2018		SeqNo:	1879430	Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0.2096	90.2	70	130	4.47	20	
Toluene	19	1.0	20.00	0.2904	94.1	70	130	2.52	20	
Chlorobenzene	20	1.0	20.00	0	97.7	70	130	2.52	20	
1,1-Dichloroethene	18	1.0	20.00	0	88.9	67.6	130	5.59	20	
Trichloroethene (TCE)	17	1.0	20.00	0	83.2	70	130	4.21	20	
Surr: 1,2-Dichloroethane-d4	9.7		10.00		97.3	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.4		10.00		94.4	70	130	0	0	
Surr: Dibromofluoromethane	9.7		10.00		97.2	70	130	0	0	
Surr: Toluene-d8	10		10.00		101	70	130	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	D56250	RunNo:	56250					
Prep Date:		Analysis Date:	12/11/2018	SeqNo:	1879451	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: D56250			RunNo: 56250					
Prep Date:		Analysis Date: 12/11/2018			SeqNo: 1879451		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.4	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		95.6	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.1	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID	100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID: R56282			RunNo: 56282					
Prep Date:		Analysis Date: 12/12/2018			SeqNo: 1880658		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	97.9	70	130			
Toluene	19	1.0	20.00	0	93.7	70	130			
Chlorobenzene	20	1.0	20.00	0	102	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID: R56282			RunNo: 56282					
Prep Date:		Analysis Date: 12/12/2018			SeqNo: 1880658		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	20	1.0	20.00	0	97.8	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	93.3	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.8		10.00		98.4	70	130			

Sample ID	rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: R56282			RunNo: 56282					
Prep Date:		Analysis Date: 12/12/2018			SeqNo: 1880668		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	rb	SampType: MBLK				TestCode: EPA Method 8260B: VOLATILES				
Client ID:	PBW	Batch ID: R56282				RunNo: 56282				
Prep Date:		Analysis Date: 12/12/2018				SeqNo: 1880668	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		99.8	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R56282			RunNo: 56282						
Prep Date:	Analysis Date: 12/12/2018			SeqNo: 1880668		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	9.7		10.00		96.6	70	130			
Surr: Dibromofluoromethane	9.8		10.00		98.4	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

Sample ID 2ng 8260 pql ag	SampType: LCS4			TestCode: EPA Method 8260B: VOLATILES						
Client ID: BatchQC	Batch ID: R56282			RunNo: 56282						
Prep Date:	Analysis Date: 12/12/2018			SeqNo: 1881983		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.47	1.0	0.4000	0	117	70	130			J
Toluene	0.42	1.0	0.4000	0	104	70	130			J
Ethylbenzene	0.39	1.0	0.4000	0	97.4	70	130			J
Methyl tert-butyl ether (MTBE)	ND	1.0	0.8000	0	0	70	130			S
1,2,4-Trimethylbenzene	ND	1.0	0.4000	0	0	70	130			S
1,3,5-Trimethylbenzene	0.44	1.0	0.4000	0	111	70	130			J
1,2-Dichloroethane (EDC)	0.55	1.0	0.4000	0	138	70	130			JS
1,2-Dibromoethane (EDB)	0.45	1.0	0.4000	0	112	70	130			J
Naphthalene	ND	2.0	0.4000	0	0	70	130			S
1-Methylnaphthalene	ND	4.0	0.4000	0	0	60	140			S
2-Methylnaphthalene	ND	4.0	0.4000	0	0	60	140			S
Acetone	2.4	10	0.8000	0	303	70	130			JS
Bromobenzene	0.37	1.0	0.4000	0	93.6	70	130			J
Bromodichloromethane	0.44	1.0	0.4000	0	110	70	130			J
Bromoform	0.51	1.0	0.4000	0	126	70	130			J
Bromomethane	0.51	3.0	0.4000	0	127	41.8	145			J
2-Butanone	2.3	10	0.8000	0	290	70	130			JS
Carbon disulfide	0.80	10	0.8000	0	99.8	70	130			J
Carbon Tetrachloride	0.41	1.0	0.4000	0	104	70	130			J
Chlorobenzene	0.38	1.0	0.4000	0	95.8	70	130			J
Chloroethane	1.2	2.0	0.4000	0	293	70	130			JS
Chloroform	0.43	1.0	0.4000	0	107	70	130			J
Chloromethane	0.69	3.0	0.4000	0	173	56	137			JS
2-Chlorotoluene	0.45	1.0	0.4000	0	111	70	130			J
4-Chlorotoluene	0.50	1.0	0.4000	0	125	70	130			J
cis-1,2-DCE	0.43	1.0	0.4000	0	107	70	130			J
cis-1,3-Dichloropropene	0.42	1.0	0.4000	0	104	70	130			J
1,2-Dibromo-3-chloropropane	ND	2.0	0.4000	0	0	70	130			S
Dibromochloromethane	0.46	1.0	0.4000	0	115	70	130			J
Dibromomethane	0.41	1.0	0.4000	0	104	70	130			J

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	2ng 8260 pql ag	SampType: LCS4			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	BatchQC	Batch ID: R56282			RunNo: 56282					
Prep Date:	Analysis Date: 12/12/2018			SeqNo: 1881983		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	0.47	1.0	0.4000	0	117	70	130			J
1,3-Dichlorobenzene	0.46	1.0	0.4000	0	115	70	130			J
1,4-Dichlorobenzene	0.49	1.0	0.4000	0	123	70	130			J
Dichlorodifluoromethane	0.35	1.0	0.4000	0	87.0	51.4	146			J
1,1-Dichloroethane	0.58	1.0	0.4000	0	146	70	130			JS
1,1-Dichloroethene	0.52	1.0	0.4000	0	131	70	130			JS
1,2-Dichloropropane	ND	1.0	0.4000	0	0	70	130			S
1,3-Dichloropropane	0.35	1.0	0.4000	0	88.5	70	130			J
2,2-Dichloropropane	0.38	2.0	0.4000	0	94.6	70	130			J
1,1-Dichloropropene	0.48	1.0	0.4000	0	119	70	130			J
Hexachlorobutadiene	0.42	1.0	0.4000	0	105	70	130			J
2-Hexanone	1.1	10	0.8000	0	138	70	130			JS
Isopropylbenzene	0.43	1.0	0.4000	0	107	70	130			J
4-Isopropyltoluene	0.44	1.0	0.4000	0	110	70	130			J
4-Methyl-2-pentanone	0.86	10	0.8000	0	108	70	130			J
Methylene Chloride	0.51	3.0	0.4000	0	128	70	130			J
n-Butylbenzene	0.50	3.0	0.4000	0	124	70	130			J
n-Propylbenzene	0.48	1.0	0.4000	0	120	70	130			J
sec-Butylbenzene	0.48	1.0	0.4000	0	119	70	130			J
Styrene	0.43	1.0	0.4000	0	108	70	130			J
tert-Butylbenzene	0.48	1.0	0.4000	0	119	70	130			J
1,1,1,2-Tetrachloroethane	0.38	1.0	0.4000	0	95.4	70	130			J
1,1,2,2-Tetrachloroethane	0.47	2.0	0.4000	0	116	70	130			J
Tetrachloroethene (PCE)	ND	1.0	0.4000	0	0	70	130			S
trans-1,2-DCE	0.52	1.0	0.4000	0	130	70	130			J
trans-1,3-Dichloropropene	0.46	1.0	0.4000	0	114	70	130			J
1,2,3-Trichlorobenzene	0.51	1.0	0.4000	0	129	70	130			J
1,2,4-Trichlorobenzene	0.43	1.0	0.4000	0	108	70	130			J
1,1,1-Trichloroethane	0.44	1.0	0.4000	0	111	70	130			J
1,1,2-Trichloroethane	0.45	1.0	0.4000	0	111	70	130			J
Trichloroethene (TCE)	0.46	1.0	0.4000	0	116	70	130			J
Trichlorofluoromethane	0.41	1.0	0.4000	0	103	70	130			J
1,2,3-Trichloropropane	ND	2.0	0.4000	0	0	70	130			S
Vinyl chloride	0.63	1.0	0.4000	0	157	67.1	132			JS
Xylenes, Total	1.2	1.5	1.200	0	102	70	130			J
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		95.7	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	A56304	RunNo:	56304					
Prep Date:		Analysis Date:	12/13/2018	SeqNo:	1882423	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		96.1	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	9.6		10.00		95.8	70	130			

Sample ID	100ng lcs	SampType:	LCS	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID:	A56304	RunNo:	56304					
Prep Date:		Analysis Date:	12/13/2018	SeqNo:	1882424	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.9	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		95.7	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	9.3		10.00		93.4	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	MB-42021		SampType: MBLK		TestCode: EPA Method 7470: Mercury					
Client ID:	PBW		Batch ID: 42021		RunNo: 56262					
Prep Date:	12/10/2018		Analysis Date: 12/11/2018		SeqNo: 1879715		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000094	0.00020								J

Sample ID	LCS-42021			SampType:	LCS			TestCode:	EPA Method 7470: Mercury			
Client ID:	LCSW			Batch ID:	42021			RunNo:	56262			
Prep Date:	12/10/2018			Analysis Date:	12/11/2018			SeqNo:	1879716		Units:	mg/L
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Mercury	0.0052	0.00020	0.005000	0	104	80	120					

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	MB-41991		SampType: MBLK		TestCode: EPA 6010B: Total Recoverable Metals					
Client ID:	PBW		Batch ID: 41991		RunNo: 56358					
Prep Date:	12/8/2018		Analysis Date: 12/14/2018		SeqNo: 1887700		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	0.0049	0.020								J

Sample ID	LCS-41991		SampType: LCS		TestCode: EPA 6010B: Total Recoverable Metals					
Client ID:	LCSW		Batch ID: 41991		RunNo: 56358					
Prep Date:	12/8/2018		Analysis Date: 12/14/2018		SeqNo: 1887701		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.020	0.5000	0	99.4	80	120			
Beryllium	0.51	0.0030	0.5000	0	103	80	120			
Cadmium	0.50	0.0020	0.5000	0	100	80	120			
Chromium	0.50	0.0060	0.5000	0	99.2	80	120			
Cobalt	0.48	0.0060	0.5000	0	95.7	80	120			
Nickel	0.48	0.010	0.5000	0	96.4	80	120			
Silver	0.10	0.0050	0.1000	0	101	80	120			
Vanadium	0.51	0.050	0.5000	0	102	80	120			
Zinc	0.49	0.020	0.5000	0	97.9	80	120			

Sample ID	1812373-003DMS		SampType: MS		TestCode: EPA 6010B: Total Recoverable Metals					
Client ID:	MW-1		Batch ID: 41991		RunNo: 56358					
Prep Date:	12/8/2018		Analysis Date: 12/14/2018		SeqNo: 1887711		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.52	0.020	0.5000	0	104	75	125			
Beryllium	0.53	0.0030	0.5000	0	106	75	125			
Cadmium	0.51	0.0020	0.5000	0	101	75	125			
Chromium	0.51	0.0060	0.5000	0	102	75	125			
Cobalt	0.49	0.0060	0.5000	0	97.5	75	125			
Nickel	0.49	0.010	0.5000	0	98.9	75	125			
Silver	0.10	0.0050	0.1000	0	104	75	125			
Vanadium	0.52	0.050	0.5000	0	104	75	125			
Zinc	0.51	0.020	0.5000	0	102	75	125			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812373

07-Jan-19

Client: Marathon

Project: 2018 Post Closure Sampling LTU

Sample ID	1812373-003DMSD	SampType:	MSD	TestCode:	EPA 6010B: Total Recoverable Metals					
Client ID:	MW-1	Batch ID:	41991	RunNo:	56358					
Prep Date:	12/8/2018	Analysis Date:	12/14/2018	SeqNo:	1887712	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.51	0.020	0.5000	0	102	75	125	1.92	20	
Beryllium	0.52	0.0030	0.5000	0	104	75	125	2.35	20	
Cadmium	0.50	0.0020	0.5000	0	99.6	75	125	1.81	20	
Chromium	0.50	0.0060	0.5000	0	99.8	75	125	2.12	20	
Cobalt	0.48	0.0060	0.5000	0	96.1	75	125	1.52	20	
Nickel	0.49	0.010	0.5000	0	97.4	75	125	1.48	20	
Silver	0.10	0.0050	0.1000	0	102	75	125	1.97	20	
Vanadium	0.51	0.050	0.5000	0	102	75	125	1.75	20	
Zinc	0.51	0.020	0.5000	0	101	75	125	0.869	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **MARATHON GALLUP**

Work Order Number: **1812373**

RcptNo: 1

Received By: **Andy Freeman** 12/6/2018 5:08:00 PM

Completed By: **Jazzmine Burkhead** 12/7/2018 8:38:10 AM

Reviewed By: **ENM** 12/7/18

Labeled by: **JO 12.7.18**
Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐

2. How was the sample delivered? Client

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐

4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐

5. Sample(s) in proper container(s)? Yes ☒ No ☐

6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐

7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐

8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐

9. VOA vials have zero headspace? Yes ☒ No ☐ No VOA Vials ☐

10. Were any sample containers received broken? Yes ☐ No ☒

11. Does paperwork match bottle labels? Yes ☒ No ☐

(Note discrepancies on chain of custody)

12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐

13. Is it clear what analyses were requested? Yes ☒ No ☐

14. Were all holding times able to be met? Yes ☒ No ☐

(If no, notify customer for authorization.)

of preserved bottles checked for pH: **12 6**
(<2 or >12 unless noted)
Adjusted: **NO**
Checked by: **JO 12.7.18**

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

16. Additional remarks: **Received 6 dissolved bottles for metal. Call client to confirm if they need.**

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.6	Good	Yes			
2	4.8	Good	Yes			

Chain-of-Custody Record

Client:	Marathon Petroleum
Mailing Address:	GALLUP REFINERY
	92 GIANT CROSSING ROAD, GALLUP, NM 87301
Phone #:	505-722-3833
Email or Fax#:	505-863-0930
QA/QC Package:	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Level 4 (Full Validation)
Accreditation:	<input type="checkbox"/> NELAP <input type="checkbox"/> EDD (Type)
Project Manager:	BRIGGS MOORE
Sampler:	C. JOHNSON
On Ice:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Temperature:	2.6°C, 4.8°C



**HALL ENVIRONMENTAL
ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	8260 (Skinner List)	8015D EXTENDED(DRO/MRO/GRO)	8270 + Phenols (Skinner List)	Metals - Skinner List	CYANIDE	Air Bubbles (Y or N)
12/6/2018	700	AQUEOUS	Field Blank	3-40ml VOAs	HCL	1812373	X					
12/6/2018	700	AQUEOUS	Trip Blank	3-40ml VOAs	HCL	001	X					
12/6/2018	810	AQUEOUS	MW-1	MISC	MISC	002	X	X	X	X		
12/6/2018	837	AQUEOUS	MW-2	MISC	MISC	003	X	X	X	X		
12/6/2018	918	AQUEOUS	MW-5	MISC	MISC	004	X	X	2	X	X	
12/6/2018	1345	AQUEOUS	SMW-4	MISC	MISC	005	X	X	X	X	X	
12/6/2018	1300	AQUEOUS	MW-4	MISC	MISC	006	X	X	X	X	X	
12/6/2018	1310	AQUEOUS	DUPLICATE	MISC	MISC	007	X	X	X	X	X	
						008	X	X	X	X	X	

Remarks: WQCC METALS TO INCLUDE RCRA 8 METALS MINUS URANIUM, INCLUDES MERCURY (See Attached Skinner List)

2 coolers: 2.6°C, 4.8°C

Relinquished by:	Time:	Date:
Relinquished by:	Time:	Date:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Table 2A. Modified Skinner List 8260 Volatile Organics and PHCs^a

Parameter	EPA Method SW-846	Description	Containers	Preservative	Holding Time/Days	Liquid Reporting Limit (µg/L)	Soil Reporting Limit (mg/kg)
Benzene	8260	GC/MS	G	4°C	14	5	0.67
2-Butanone (MEK)	8260	GC/MS	G	4°C	14	1900	7000
Carbon Disulfide	8260	GC/MS	G	4°C	14	1000	350
Chlorobenzene	8260	GC/MS	G	4°C	14	39	54
Chloroform	8260	GC/MS	G	4°C	14	0.16	0.24
Chloromethane	8260	GC/MS	G	4°C	14	1.5	1.2
1,1 Dichloroethane	8260	GC/MS	G	4°C	14	25	580
1,2 Dichloroethane	8260	GC/MS	G	4°C	14	5	0.34
1,1 Dichloroethene	8260	GC/MS	G	4°C	14	5.0	0.053
trans-1,2-Dichloroethene	8260	GC/MS	G	4°C	14	100	63
1,4-Dioxane	8260	GC/MS	G	4°C	14	6.1	44
Ethylbenzene ^a	8260	GC/MS	G	4°C	14	700	230
Methylene Chloride	8260	GC/MS	G	4°C	14	4.3	8.6
Styrene	8260	GC/MS	G	4°C	14	100	1700
1,1,2,2-Tetrachloroethane ^b	8260	GC/MS	G	4°C	14	0.055	0.37
Tetrachloroethene ^b	8260	GC/MS	G	4°C	14	5	4.9
Toluene	8260	GC/MS	G	4°C	14	750	1000
1,1,1-Trichloroethane	8260	GC/MS	G	4°C	14	60	200
Trichloroethene	8260	GC/MS	G	4°C	14	5	2.7
Total Xylene ^{a,d}	8260	GC/MS	G	4°C	14	620	860
Ethylene Dibromide ^b	8260	GC/MS	G	4°C	14	0.1	0.005
Acetone	8260	GC/MS	G	4°C	14	610	1500

^aPrincipal hazardous constituent identified in Ciniza Hazardous Waste Facility Permit.

^bAdditional constituents.

^cBased on EPA Region 6, Human Health Medium-Specific Screening Levels (1999) and NM WQCC Regulations (1996). Analytical detection limits are required to be lower than reporting limits.

^dRegulatory limits for individual isomers combined into a 'total' limit for these compounds.

mg/kg = milligrams per kilogram

µg/L = microgram per liter

G = glass with Teflon-lined lid

GC/MS = gas chromatography/mass spectrometry

Table 2B. Modified Skinner List 8270 Semivolatile Organics Including TPH and PHCs^a

Parameter	EPA Method SW-846	Description	Container	Preservative	Holding Time/Days	Liquid Reporting Limit (µg/L) ^c	Soil Reporting Limit (mg/kg) ^c
Anthracene	8270	GC/MS	G	4°C	14	1800	16000
Acenaphthene	8270	GC/MS	G	4°C	14	370	2800
Benzo(a)Anthracene	8270	GC/MS	G	4°C	14	0.09	0.62
Benzo(b)Fluoranthene	8270	GC/MS	G	4°C	14	0.09	0.62
Benzo(k)Fluoranthene	8270	GC/MS	G	4°C	14	0.9	6.2
Benzo(a)Pyrene ^a	8270	GC/MS	G	4°C	14	0.0007	0.062
Butyl Benzyl Phthalate	8270	GC/MS	G	4°C	14	7300	240
Chrysene ^a	8270	GC/MS	G	4°C	14	9.2	62
Diethyl Phthalate	8270	GC/MS	G	4°C	14	29000	49000
7,12-Dimethylbenz(a)-Anthracene	8270	GC/MS	G	4°C	14	370000	100000
Dimethyl Phthalate	8270	GC/MS	G	4°C	14	730	1200
Di-n-Octyl Phthalate	8270	GC/MS	G	4°C	14	1500	2300
Fluoranthene	8270	GC/MS	G	4°C	14	240	2000
Fluorene	8270	GC/MS	G	4°C	14	0.09	0.62
Indeno(1,2,3-cd)Pyrene	8270	GC/MS	G	4°C	14	30	660
2-Methylnaphthalene ^a	8270	GC/MS	G	4°C	14	1800	3000
2-Methylphenol (Cresol)	8270	GC/MS	G	4°C	14	1980	3300
3/4-Methylphenol (Cresol)	8270	GC/MS	G	4°C	14	30	55
Naphthalene ^a	8270	GC/MS	G	4°C	14	3.4	17
Nitrobenzene	8270	GC/MS	G	4°C	14	2300	3800
4-Nitrophenol	8270	GC/MS	G	4°C	14	180	1700
Phenanthrene ^a	8270	GC/MS	G	4°C	14	37	61
Pyrene ^a	8270	GC/MS	G	4°C	14	0.0056	0.04
Pyridine	8270	GC/MS	G	4°C	14	5	36000
Quinoline	8270	GC/MS	G	4°C	14	6.0	35
Benzenethiole	8270	GC/MS	G	4°C	14	0.0092	0.062
Phenol	8270	GC/MS	G	4°C	14	675	410
Bis(2-Ethylhexyl)phthalate ^b	8270	GC/MS	G	4°C	14	30	1200
Dibenz(a,j)acridine ^b	8270	GC/MS	G	4°C	14	73	120
Dibenz(a,h)-anthracene	8270	GC/MS	G	4°C	14		
Dichlorobenzene ^{b,f}	8270	GC/MS	G	4°C	14		
Methyl Naphthalene	8270	GC/MS	G	4°C	14		
2,4-Dimethylphenol	8270	GC/MS	G	4°C	14		
2,4-Dinitrotoluene	8270	GC/MS	G	4°C	14		

Table 2B. Modified Skinner List 8270 Semivolatile Organics Including TPH and PHCs^a (Continued)

Parameter	EPA Method SW-846	Description	Container	Preservative	Holding Time/Days	Liquid Reporting Limit (µg/L) ^c	Soil Reporting Limit (mg/kg) ^c
2,4-Dinitrophenol ^b	8270	GC/MS	G	4°C	14	73	120
Benzo(j)Fluoranthene	8270	GC/MS	G	4°C	14	30	61
2-Chlorophenol	8270	GC/MS	G	4°C	14	6.1	44
2,4,6-Trichlorophenol	8270	GC/MS	G	4°C	14	3700	6100
Di-n-Butyl Phthalate	8270	GC/MS	G	4°C	14	11000	18000
Benzyl Alcohol ^b	8270	GC/MS	G	4°C	14	3780	6300
Methyl Chrysene	8270	GC/MS	G	4°C	14	—	1000
Total Cresol ^{a, f}	8015m	GS	G	4°C	7	—	—
TPH ^a							

^aPrincipal hazardous constituent identified in Ciniza Hazardous Waste Facility Permit.

^bAdditional constituents.

^cBased on EPA Region 6, Human Health Medium-Specific Screening Levels (1999) and NM WQCC Regulations (1996). Analytical detection limits are required to be lower than reporting limits.

^dNo regulatory limit provided. Laboratory detection limit will be used.

^eRegulatory limits for individual isomers combined into a 'total' limit for these compounds.

^fTotal naphthalene plus monomethylnaphthalenes regulatory limit is < 30µg/L for aqueous samples.

^hTotal Petroleum Hydrocarbon as Gasoline Range Organics and Diesel Range Organics

µg/L = microgram per liter

mg/kg = milligram per kilogram

G = glass with Teflon-lined lid

GC/MS = gas chromatography/mass spectrometry

GC = gas chromatography

Table 2C. Modified Skinner List Metals and PHCs^a

Parameter	EPA Method SW-846	Description	Container	Preservative ^b	Holding Time/Days	Aqueous Reporting Limit (µg/L) ^c	Soil Reporting Limit (mg/kg) ^c
Antimony	7060(aq), 6010	GFAA/ICP	P or G	4°C	180	6.0	31
Arsenic	6010	ICP-AES	P or G	4°C	180	50	22
Barium	6010	ICP-AES	P or G	4°C	180	2000	5400
Beryllium	6010	ICP-AES	P or G	4°C	180	4.0	150
Cadmium	6010	ICP-AES	P or G	4°C	180	5.0	39
Chromium ^a	6010	ICP-AES	P or G	4°C	180	50	210
Cobalt	6010	ICP-AES	P or G	4°C	180	50	3400
Lead ^a	6010	ICP-AES	P or G	4°C	180	15	400
Nickel	6010	ICP-AES	P or G	4°C	180	100	1600
Selenium	6010	ICP-AES	P or G	4°C	180	50	390
Silver	6010	ICP-AES	P or G	4°C	180	50	390
Vanadium	6010	ICP-AES	P or G	4°C	180	260	550
Zinc	6010	ICP-AES	P or G	4°C	180	10000	23000

^aPrincipal hazardous constituent identified in Ciniza Hazardous Waste Facility Permit.

^bAqueous samples are field acidified to pH < 2 with HNO₃ and must not be refrigerated. Non-aqueous samples are cooled to 4°C.

^cBased on EPA Region 6, Human Health Medium-Specific Screening Levels (1999) and NM WQCC Regulations (1996). Analytical detection limits are required to be lower than reporting limits.

µg/l = microgram per liter
mg/kg = milligram per kilogram
ICP-AES = Inductively Coupled Plasma - Atomic Emission Spectroscopy
G = glass
P = linear polyethylene, polypropylene, or Teflon

Table 2D. Mercury^a and Cyanide

Parameter	EPA Method SW-846	Description	Container	Preservative	Holding Time/Days	Aqueous Reporting Limit (µg/L) ^c	Soil Reporting Limit (mg/kg) ^c
Mercury ^a	7470/7471	CVAA	P or G	4°C ^b	28	2.0	23.
Cyanide	335.3/ 9010, 9014	Colorimetry	P or G	4°C ^d	14	200	1200

^aPrincipal hazardous constituent identified in Ciniza Hazardous Waste Facility Permit.
^bAqueous samples are field acidified to pH < 2 with HNO₃ and must not be refrigerated. Non-aqueous samples are cooled to 4°C.
^cBased on EPA Region 6, Human Health Medium-Specific Screening Levels and NM WQCC Regulations (1996). Analytical detection limits are required to be lower than reporting limits.
^dAqueous samples are field adjusted to pH > 12 with NaOH and refrigerated. Non-aqueous samples are cooled to 4°C.

µg/l = microgram per liter
mg/kg = milligram per kilogram
CVAA = cold vapor atomic absorption
G = glass
P = linear polyethylene, polypropylene, or Teflon



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 08, 2019

Brian Moore
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: Land Treatment Unit

OrderNo.: 1812764

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 3 sample(s) on 12/13/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812764

Date Reported: 1/8/2019

CLIENT: Marathon

Client Sample ID: LTU FB01

Project: Land Treatment Unit

Collection Date: 12/11/2018 3:45:00 PM

Lab ID: 1812764-001

Matrix: AQUEOUS

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE								Analyst: JME
Diesel Range Organics (DRO)	ND	0.63	1.0		mg/L	1	12/14/2018 11:16:56 A	42095
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	12/14/2018 11:16:56 A	42095
Surr: DNOP	91.9	0	76.7-135		%Rec	1	12/14/2018 11:16:56 A	42095
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.024	0.050		mg/L	1	12/17/2018 10:52:38 A	G56381
Surr: BFB	84.4	0	72.8-125		%Rec	1	12/17/2018 10:52:38 A	G56381
EPA METHOD 6020: TOTAL METALS								Analyst: DBK
Antimony	ND	0.00050	0.0010		mg/L	1	12/28/2018 4:23:55 PM	42270
Arsenic	ND	0.00050	0.0010		mg/L	1	12/28/2018 4:23:55 PM	42270
Lead	ND	0.00050	0.0010		mg/L	1	12/27/2018 3:35:45 PM	42270
Selenium	ND	0.00050	0.0010		mg/L	1	12/28/2018 4:23:55 PM	42270
EPA METHOD 7470: MERCURY								Analyst: pmf
Mercury	0.000072	0.000038	0.00020	J	mg/L	1	12/19/2018 11:59:44 A	42182
EPA 6010B: TOTAL RECOVERABLE METALS								Analyst: rde
Barium	ND	0.020	0.020		mg/L	1	12/26/2018 1:39:43 PM	42228
Beryllium	ND	0.00044	0.0030		mg/L	1	12/26/2018 1:39:43 PM	42228
Cadmium	ND	0.00099	0.0020		mg/L	1	12/26/2018 1:39:43 PM	42228
Chromium	ND	0.0011	0.0060		mg/L	1	12/28/2018 11:55:34 A	42228
Cobalt	ND	0.00098	0.0060		mg/L	1	12/28/2018 11:55:34 A	42228
Nickel	ND	0.0027	0.010		mg/L	1	12/28/2018 11:55:34 A	42228
Silver	ND	0.0018	0.0050		mg/L	1	12/26/2018 1:39:43 PM	42228
Vanadium	ND	0.0023	0.050		mg/L	1	12/26/2018 1:39:43 PM	42228
Zinc	0.0080	0.0033	0.020	J	mg/L	1	1/3/2019 12:35:16 PM	42228
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Benzene	ND	0.17	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Toluene	ND	0.17	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,2,4-Trimethylbenzene	ND	0.25	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,3,5-Trimethylbenzene	ND	0.23	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Naphthalene	ND	0.29	2.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1-Methylnaphthalene	ND	0.34	4.0		µg/L	1	12/20/2018 12:39:42 P	A56506
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Acetone	5.3	0.76	10	J	µg/L	1	12/20/2018 12:39:42 P	A56506
Bromobenzene	ND	0.32	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812764

Date Reported: 1/8/2019

CLIENT: Marathon

Client Sample ID: LTU FB01

Project: Land Treatment Unit

Collection Date: 12/11/2018 3:45:00 PM

Lab ID: 1812764-001

Matrix: AQUEOUS

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromodichloromethane	ND	0.28	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Bromoform	ND	0.32	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Bromomethane	ND	0.27	3.0		µg/L	1	12/20/2018 12:39:42 P	A56506
2-Butanone	ND	1.4	10		µg/L	1	12/20/2018 12:39:42 P	A56506
Carbon disulfide	ND	0.39	10		µg/L	1	12/20/2018 12:39:42 P	A56506
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Chlorobenzene	ND	0.29	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Chloroethane	ND	0.16	2.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Chloroform	ND	0.24	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Chloromethane	ND	0.32	3.0		µg/L	1	12/20/2018 12:39:42 P	A56506
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
4-Chlorotoluene	ND	0.28	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Dibromochloromethane	ND	0.24	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Dibromomethane	ND	0.32	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,1-Dichloroethane	ND	0.18	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,2-Dichloropropane	ND	0.17	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Hexachlorobutadiene	ND	0.39	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
2-Hexanone	ND	0.91	10		µg/L	1	12/20/2018 12:39:42 P	A56506
Isopropylbenzene	ND	0.22	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
4-Methyl-2-pentanone	ND	0.45	10		µg/L	1	12/20/2018 12:39:42 P	A56506
Methylene Chloride	ND	0.21	3.0		µg/L	1	12/20/2018 12:39:42 P	A56506
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/20/2018 12:39:42 P	A56506
n-Propylbenzene	ND	0.24	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
sec-Butylbenzene	ND	0.20	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Styrene	ND	0.25	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 2 of 19
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812764

Date Reported: 1/8/2019

CLIENT: Marathon

Client Sample ID: LTU FB01

Project: Land Treatment Unit

Collection Date: 12/11/2018 3:45:00 PM

Lab ID: 1812764-001

Matrix: AQUEOUS

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,1,1-Trichloroethane	ND	0.16	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Trichlorofluoromethane	ND	0.14	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Vinyl chloride	ND	0.12	1.0		µg/L	1	12/20/2018 12:39:42 P	A56506
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/20/2018 12:39:42 P	A56506
1,4-Dioxane	ND	2.3	10		µg/L	1	12/20/2018 12:39:42 P	A56506
Surr: 1,2-Dichloroethane-d4	99.9	0	70-130		%Rec	1	12/20/2018 12:39:42 P	A56506
Surr: 4-Bromofluorobenzene	96.8	0	70-130		%Rec	1	12/20/2018 12:39:42 P	A56506
Surr: Dibromofluoromethane	107	0	70-130		%Rec	1	12/20/2018 12:39:42 P	A56506
Surr: Toluene-d8	103	0	70-130		%Rec	1	12/20/2018 12:39:42 P	A56506

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 3 of 19
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1812764**Date Reported: **1/8/2019****CLIENT:** Marathon**Client Sample ID:** Trip Blank**Project:** Land Treatment Unit**Collection Date:****Lab ID:** 1812764-002**Matrix:** TRIP BLANK**Received Date:** 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.17	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Toluene	ND	0.17	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,2,4-Trimethylbenzene	ND	0.25	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,3,5-Trimethylbenzene	ND	0.23	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Naphthalene	ND	0.29	2.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1-Methylnaphthalene	ND	0.34	4.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Acetone	1.1	0.76	10	J	µg/L	1	12/20/2018 1:09:29 PM	A56506
Bromobenzene	ND	0.32	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Bromodichloromethane	ND	0.28	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Bromoform	ND	0.32	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Bromomethane	ND	0.27	3.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
2-Butanone	ND	1.4	10		µg/L	1	12/20/2018 1:09:29 PM	A56506
Carbon disulfide	ND	0.39	10		µg/L	1	12/20/2018 1:09:29 PM	A56506
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Chlorobenzene	ND	0.29	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Chloroethane	ND	0.16	2.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Chloroform	ND	0.24	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Chloromethane	ND	0.32	3.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
4-Chlorotoluene	ND	0.28	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Dibromochloromethane	ND	0.24	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Dibromomethane	ND	0.32	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,1-Dichloroethane	ND	0.18	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,2-Dichloropropane	ND	0.17	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	12/20/2018 1:09:29 PM	A56506

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812764

Date Reported: 1/8/2019

CLIENT: Marathon

Client Sample ID: Trip Blank

Project: Land Treatment Unit

Collection Date:

Lab ID: 1812764-002

Matrix: TRIP BLANK

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Hexachlorobutadiene	ND	0.39	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
2-Hexanone	ND	0.91	10		µg/L	1	12/20/2018 1:09:29 PM	A56506
Isopropylbenzene	ND	0.22	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
4-Methyl-2-pentanone	ND	0.45	10		µg/L	1	12/20/2018 1:09:29 PM	A56506
Methylene Chloride	ND	0.21	3.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
n-Propylbenzene	ND	0.24	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
sec-Butylbenzene	ND	0.20	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Styrene	ND	0.25	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,1,1-Trichloroethane	ND	0.16	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Trichlorofluoromethane	ND	0.14	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Vinyl chloride	ND	0.12	1.0		µg/L	1	12/20/2018 1:09:29 PM	A56506
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/20/2018 1:09:29 PM	A56506
1,4-Dioxane	ND	2.3	10		µg/L	1	12/20/2018 1:09:29 PM	A56506
Surr: 1,2-Dichloroethane-d4	100	0	70-130		%Rec	1	12/20/2018 1:09:29 PM	A56506
Surr: 4-Bromofluorobenzene	94.3	0	70-130		%Rec	1	12/20/2018 1:09:29 PM	A56506
Surr: Dibromofluoromethane	105	0	70-130		%Rec	1	12/20/2018 1:09:29 PM	A56506
Surr: Toluene-d8	100	0	70-130		%Rec	1	12/20/2018 1:09:29 PM	A56506

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 5 of 19
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812764

Date Reported: 1/8/2019

CLIENT: Marathon

Client Sample ID: LTU EB01

Project: Land Treatment Unit

Collection Date: 12/11/2018 3:25:00 PM

Lab ID: 1812764-003

Matrix: AQUEOUS

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE								Analyst: JME
Diesel Range Organics (DRO)	ND	0.63	1.0		mg/L	1	12/14/2018 11:40:50 A	42095
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	12/14/2018 11:40:50 A	42095
Surr: DNOP	92.5	0	76.7-135		%Rec	1	12/14/2018 11:40:50 A	42095
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.024	0.050		mg/L	1	12/17/2018 11:15:24 A	G56381
Surr: BFB	79.3	0	72.8-125		%Rec	1	12/17/2018 11:15:24 A	G56381
EPA METHOD 6020: TOTAL METALS								Analyst: DBK
Antimony	ND	0.00050	0.0010		mg/L	1	12/28/2018 4:28:16 PM	42270
Arsenic	ND	0.00050	0.0010		mg/L	1	12/28/2018 4:28:16 PM	42270
Lead	ND	0.00050	0.0010		mg/L	1	12/27/2018 3:40:06 PM	42270
Selenium	ND	0.00050	0.0010		mg/L	1	12/28/2018 4:28:16 PM	42270
EPA METHOD 7470: MERCURY								Analyst: pmf
Mercury	0.000076	0.000038	0.00020	J	mg/L	1	12/19/2018 12:02:01 P	42182
EPA 6010B: TOTAL RECOVERABLE METALS								Analyst: rde
Barium	ND	0.020	0.020		mg/L	1	12/26/2018 1:50:37 PM	42228
Beryllium	ND	0.00044	0.0030		mg/L	1	12/26/2018 1:50:37 PM	42228
Cadmium	ND	0.00099	0.0020		mg/L	1	12/26/2018 1:50:37 PM	42228
Chromium	ND	0.0011	0.0060		mg/L	1	12/28/2018 11:59:53 A	42228
Cobalt	ND	0.00098	0.0060		mg/L	1	12/28/2018 11:59:53 A	42228
Nickel	ND	0.0027	0.010		mg/L	1	12/28/2018 11:59:53 A	42228
Silver	ND	0.0018	0.0050		mg/L	1	12/26/2018 1:50:37 PM	42228
Vanadium	ND	0.0023	0.050		mg/L	1	12/26/2018 1:50:37 PM	42228
Zinc	0.0084	0.0033	0.020	J	mg/L	1	1/3/2019 12:37:25 PM	42228
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Benzene	ND	0.17	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Toluene	ND	0.17	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Ethylbenzene	ND	0.22	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,2,4-Trimethylbenzene	ND	0.25	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,3,5-Trimethylbenzene	ND	0.23	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,2-Dichloroethane (EDC)	ND	0.19	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,2-Dibromoethane (EDB)	ND	0.23	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Naphthalene	ND	0.29	2.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1-Methylnaphthalene	ND	0.34	4.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
2-Methylnaphthalene	ND	0.35	4.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Acetone	5.5	0.76	10	J	µg/L	1	12/20/2018 1:38:29 PM	A56506
Bromobenzene	ND	0.32	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812764

Date Reported: 1/8/2019

CLIENT: Marathon

Client Sample ID: LTU EB01

Project: Land Treatment Unit

Collection Date: 12/11/2018 3:25:00 PM

Lab ID: 1812764-003

Matrix: AQUEOUS

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromodichloromethane	ND	0.28	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Bromoform	ND	0.32	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Bromomethane	ND	0.27	3.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
2-Butanone	ND	1.4	10		µg/L	1	12/20/2018 1:38:29 PM	A56506
Carbon disulfide	ND	0.39	10		µg/L	1	12/20/2018 1:38:29 PM	A56506
Carbon Tetrachloride	ND	0.14	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Chlorobenzene	ND	0.29	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Chloroethane	ND	0.16	2.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Chloroform	ND	0.24	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Chloromethane	ND	0.32	3.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
2-Chlorotoluene	ND	0.25	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
4-Chlorotoluene	ND	0.28	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
cis-1,2-DCE	ND	0.38	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
cis-1,3-Dichloropropene	ND	0.30	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,2-Dibromo-3-chloropropane	ND	0.47	2.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Dibromochloromethane	ND	0.24	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Dibromomethane	ND	0.32	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,2-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,3-Dichlorobenzene	ND	0.31	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,4-Dichlorobenzene	ND	0.29	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Dichlorodifluoromethane	ND	0.26	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,1-Dichloroethane	ND	0.18	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,1-Dichloroethene	ND	0.12	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,2-Dichloropropane	ND	0.17	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,3-Dichloropropane	ND	0.27	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
2,2-Dichloropropane	ND	0.23	2.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,1-Dichloropropene	ND	0.16	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Hexachlorobutadiene	ND	0.39	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
2-Hexanone	ND	0.91	10		µg/L	1	12/20/2018 1:38:29 PM	A56506
Isopropylbenzene	ND	0.22	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
4-Isopropyltoluene	ND	0.24	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
4-Methyl-2-pentanone	ND	0.45	10		µg/L	1	12/20/2018 1:38:29 PM	A56506
Methylene Chloride	ND	0.21	3.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
n-Butylbenzene	ND	0.25	3.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
n-Propylbenzene	ND	0.24	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
sec-Butylbenzene	ND	0.20	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Styrene	ND	0.25	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
tert-Butylbenzene	ND	0.22	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 7 of 19
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812764

Date Reported: 1/8/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: LTU EB01

Project: Land Treatment Unit

Collection Date: 12/11/2018 3:25:00 PM

Lab ID: 1812764-003

Matrix: AQUEOUS

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
1,1,2,2-Tetrachloroethane	ND	0.33	2.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Tetrachloroethene (PCE)	ND	0.15	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
trans-1,2-DCE	ND	0.18	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
trans-1,3-Dichloropropene	ND	0.28	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,2,3-Trichlorobenzene	ND	0.28	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,2,4-Trichlorobenzene	ND	0.27	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,1,1-Trichloroethane	ND	0.16	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,1,2-Trichloroethane	ND	0.23	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Trichloroethene (TCE)	ND	0.26	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Trichlorofluoromethane	ND	0.14	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,2,3-Trichloropropane	ND	0.57	2.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Vinyl chloride	ND	0.12	1.0		µg/L	1	12/20/2018 1:38:29 PM	A56506
Xylenes, Total	ND	0.64	1.5		µg/L	1	12/20/2018 1:38:29 PM	A56506
1,4-Dioxane	ND	2.3	10		µg/L	1	12/20/2018 1:38:29 PM	A56506
Surr: 1,2-Dichloroethane-d4	99.5	0	70-130		%Rec	1	12/20/2018 1:38:29 PM	A56506
Surr: 4-Bromofluorobenzene	97.1	0	70-130		%Rec	1	12/20/2018 1:38:29 PM	A56506
Surr: Dibromofluoromethane	107	0	70-130		%Rec	1	12/20/2018 1:38:29 PM	A56506
Surr: Toluene-d8	99.1	0	70-130		%Rec	1	12/20/2018 1:38:29 PM	A56506

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 8 of 19
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217017
Project Name: 1812764

Analytical Results Report

Sample Number	181217017-001	Sampling Date	12/11/2018	Date/Time Received	12/14/2018 10:35 AM
Client Sample ID	1812764-001E/LTU FB01	Sampling Time	3:45 PM	Extraction Date	12/18/2018
Matrix	Water				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1-Methylnaphthalene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	1.02	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Phenol	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	
Quinoline	ND	ug/L	0.5	12/22/2018 1:05:00 AM	TGT	EPA 8270D	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217017
Project Name: 1812764

Surrogate Data

Sample Number		181217017-001		
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	64.0	43-120	
2-Fluorobiphenyl	EPA 8270D	87.6	55-127	
2-Fluorophenol	EPA 8270D	91.8	41-119	
Nitrobenzene-d5	EPA 8270D	91.2	55-120	
Phenol-d5	EPA 8270D	91.8	52-115	
Terphenyl-d14	EPA 8270D	94.8	22-133	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217017
Project Name: 1812764

Analytical Results Report

Sample Number 181217017-003 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/2018 10:35 AM
Client Sample ID 1812764-003E/LTU EB01 **Sampling Time** 3:25 PM **Extraction Date** 12/18/2018
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1-Methylnaphthalene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Anthracene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Chrysene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Fluorene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Naphthalene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Pyrene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
1,3-Dichlorobenzene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Phenol	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Pyridine	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	
Quinoline	ND	ug/L	0.5	12/22/2018 1:32:00 AM	TGT	EPA 8270D	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C595; MT:CertID0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217017
Project Name: 1812764

Surrogate Data

Sample Number	181217017-003			
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	66.6	43-120	
2-Fluorobiphenyl	EPA 8270D	88.0	55-127	
2-Fluorophenol	EPA 8270D	92.2	41-119	
Nitrobenzene-d5	EPA 8270D	90.0	55-120	
Phenol-d5	EPA 8270D	91.2	52-115	
Terphenyl-d14	EPA 8270D	80.4	22-133	

Authorized Signature



Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Monday, December 31, 2018

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Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217017
Project Name: 1812764

Analytical Results Report Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Chrysene	4.84	ug/L	5	96.8	54-137	12/18/2018	12/21/2018
2-Methylnaphthalene	4.78	ug/L	5	95.6	56-128	12/18/2018	12/21/2018
Acenaphthene	4.69	ug/L	5	93.8	40-118	12/18/2018	12/21/2018
Acenaphthylene	4.68	ug/L	5	93.6	52-124	12/18/2018	12/21/2018
Anthracene	4.77	ug/L	5	95.4	44-122	12/18/2018	12/21/2018
Benzo(ghi)perylene	4.22	ug/L	5	84.4	50-136	12/18/2018	12/21/2018
Benzo[a]anthracene	4.81	ug/L	5	96.2	42-124	12/18/2018	12/21/2018
Benzo[a]pyrene	4.41	ug/L	5	88.2	41-133	12/18/2018	12/21/2018
1-Methylnaphthalene	4.76	ug/L	5	95.2	49-127	12/18/2018	12/21/2018
Benzo[k]fluoranthene	4.85	ug/L	5	97.0	42-143	12/18/2018	12/21/2018
Phenol	4.50	ug/L	5	90.0	45-134	12/18/2018	12/21/2018
Dibenz[a,h]anthracene	4.18	ug/L	5	83.6	52-140	12/18/2018	12/21/2018
Fluoranthene	4.97	ug/L	5	99.4	45-134	12/18/2018	12/21/2018
Fluorene	4.77	ug/L	5	95.4	41-123	12/18/2018	12/21/2018
Indeno[1,2,3-cd]pyrene	4.18	ug/L	5	83.6	51-137	12/18/2018	12/21/2018
Naphthalene	4.62	ug/L	5	92.4	53-120	12/18/2018	12/21/2018
Phenanthrene	4.79	ug/L	5	95.8	60-124	12/18/2018	12/21/2018
Pyrene	4.86	ug/L	5	97.2	65-139	12/18/2018	12/21/2018
bis(2-Ethylhexyl)phthalate	4.16	ug/L	5	83.2	51-149	12/18/2018	12/21/2018
Benzo[b]fluoranthene	4.85	ug/L	5	97.0	40-139	12/18/2018	12/21/2018

Lab Control Sample Duplicate

Parameter	LCSD Result	Units	LCSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Chrysene	4.46	ug/L	5	89.2	8.2	0-20	12/18/2018	12/21/2018
2-Methylnaphthalene	4.63	ug/L	5	92.6	3.2	0-20	12/18/2018	12/21/2018
Acenaphthene	4.52	ug/L	5	90.4	3.7	0-20	12/18/2018	12/21/2018
Acenaphthylene	4.51	ug/L	5	90.2	3.7	0-20	12/18/2018	12/21/2018
Anthracene	4.54	ug/L	5	90.8	4.9	0-20	12/18/2018	12/21/2018
Benzo(ghi)perylene	4.33	ug/L	5	86.6	2.6	0-20	12/18/2018	12/21/2018
Benzo[a]anthracene	4.69	ug/L	5	93.8	2.5	0-20	12/18/2018	12/21/2018
Benzo[a]pyrene	4.19	ug/L	5	83.8	5.1	0-20	12/18/2018	12/21/2018
1-Methylnaphthalene	4.63	ug/L	5	92.6	2.8	0-20	12/18/2018	12/21/2018
Benzo[k]fluoranthene	4.50	ug/L	5	90.0	7.5	0-20	12/18/2018	12/21/2018
Phenol	4.33	ug/L	5	86.6	3.9	0-25	12/18/2018	12/21/2018

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cart0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217017
Project Name: 1812764

Analytical Results Report Quality Control Data

Lab Control Sample Duplicate

Parameter	LCSD Result	Units	LCSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Dibenz[a,h]anthracene	4.28	ug/L	5	85.6	2.4	0-20	12/18/2018	12/21/2018
Fluoranthene	4.72	ug/L	5	94.4	5.2	0-20	12/18/2018	12/21/2018
Fluorene	4.57	ug/L	5	91.4	4.3	0-20	12/18/2018	12/21/2018
Indeno[1,2,3-cd]pyrene	4.28	ug/L	5	85.6	2.4	0-20	12/18/2018	12/21/2018
Naphthalene	4.49	ug/L	5	89.8	2.9	0-20	12/18/2018	12/21/2018
Phenanthrene	4.58	ug/L	5	91.6	4.5	0-20	12/18/2018	12/21/2018
Pyrene	4.48	ug/L	5	89.6	8.1	0-20	12/18/2018	12/21/2018
bis(2-Ethylhexyl)phthalate	4.15	ug/L	5	83.0	0.2	0-43	12/18/2018	12/21/2018
Benzo[b]fluoranthene	4.66	ug/L	5	93.2	4.0	0-20	12/18/2018	12/21/2018

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
1,2-Dichlorobenzene	ND	ug/L	0.5	12/18/2018	12/21/2018
1,3-Dichlorobenzene	ND	ug/L	0.5	12/18/2018	12/21/2018
1,4-Dichlorobenzene	ND	ug/L	0.5	12/18/2018	12/21/2018
1-Methylnaphthalene	ND	ug/L	0.01	12/18/2018	12/21/2018
2,4-Dimethylphenol	ND	ug/L	0.5	12/18/2018	12/21/2018
2,4-Dinitrophenol	ND	ug/L	0.5	12/18/2018	12/21/2018
2-Methylnaphthalene	ND	ug/L	0.01	12/18/2018	12/21/2018
2-Methylphenol	ND	ug/L	0.5	12/18/2018	12/21/2018
3+4-Methylphenol	ND	ug/L	0.5	12/18/2018	12/21/2018
4-Nitrophenol	ND	ug/L	0.5	12/18/2018	12/21/2018
Acenaphthene	ND	ug/L	0.01	12/18/2018	12/21/2018
Acenaphthylene	ND	ug/L	0.01	12/18/2018	12/21/2018
Anthracene	ND	ug/L	0.01	12/18/2018	12/21/2018
Benzo(ghi)perylene	ND	ug/L	0.01	12/18/2018	12/21/2018
Benzo[a]anthracene	ND	ug/L	0.01	12/18/2018	12/21/2018
Benzo[a]pyrene	ND	ug/L	0.01	12/18/2018	12/21/2018
Benzo[b]fluoranthene	ND	ug/L	0.01	12/18/2018	12/21/2018
Benzo[k]fluoranthene	ND	ug/L	0.01	12/18/2018	12/21/2018
bis(2-Ethylhexyl)phthalate	ND	ug/L	0.5	12/18/2018	12/21/2018
Chrysene	ND	ug/L	0.01	12/18/2018	12/21/2018
Dibenz[a,h]anthracene	ND	ug/L	0.01	12/18/2018	12/21/2018
Diethylphthalate	ND	ug/L	0.5	12/18/2018	12/21/2018
Dimethylphthalate	ND	ug/L	0.5	12/18/2018	12/21/2018

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871089

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217017
Project Name: 1812764

Analytical Results Report Quality Control Data

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Di-n-butylphthalate	ND	ug/L	0.5	12/18/2018	12/21/2018
Fluoranthene	ND	ug/L	0.01	12/18/2018	12/21/2018
Fluorene	ND	ug/L	0.01	12/18/2018	12/21/2018
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.01	12/18/2018	12/21/2018
Naphthalene	ND	ug/L	0.01	12/18/2018	12/21/2018
Phenanthrene	ND	ug/L	0.01	12/18/2018	12/21/2018
Phenol	ND	ug/L	0.5	12/18/2018	12/21/2018
Pyrene	ND	ug/L	0.01	12/18/2018	12/21/2018
Pyridine	ND	ug/L	0.5	12/18/2018	12/21/2018

AR Acceptable Range
ND Not Detected
PQL Practical Quantitation Limit
RPD Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
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Client: HALL ENVIRONMENTAL ANALYSIS LAB **Batch #:** 181217017
Address: 4901 HAWKINS NE SUITE D **Project Name:** 1812764
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Analytical Results Report

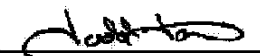
Sample Number 181217017-002 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/2018 10:35 AM
Client Sample ID 1812764-001F/LTU FB01 **Sampling Time** 3:45 PM
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	12/21/2018 12:00:00 PM	BKP	EPA 335.4	

Sample Number 181217017-004 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/2018 10:35 AM
Client Sample ID 1812764-003F/LTU EB01 **Sampling Time** 3:25 PM
Matrix Water
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/L	0.01	12/21/2018 12:00:00 PM	BKP	EPA 335.4	

Authorized Signature


Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

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Monday, December 31, 2018

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Client: HALL ENVIRONMENTAL ANALYSIS LAB **Batch #:** 181217017
Address: 4901 HAWKINS NE SUITE D **Project Name:** 1812764
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Analytical Results Report Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Cyanide	0.520	mg/L	0.5	104.0	90-110	12/21/2018	12/26/2018

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
181214035-003	Cyanide	ND	0.537	mg/L	0.5	107.4	80-120	12/21/2018	12/26/2018

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Cyanide	0.517	mg/L	0.5	103.4	3.8	0-20	12/21/2018	12/26/2018

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide	ND	mg/L	0.01	12/21/2018	12/26/2018

AR Acceptable Range
ND Not Detected
PQL Practical Quantitation Limit
RPD Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E67893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
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Monday, December 31, 2018

Page 1 of 1

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812764

08-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	MB-42270		SampType:	MBLK		TestCode:	EPA Method 6020: Total Metals				
Client ID:	PBW		Batch ID:	42270		RunNo:	56633				
Prep Date:	12/21/2018		Analysis Date:	12/27/2018		SeqNo:	1894698		Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead	ND	0.0010									

Sample ID	LLLCS-42270		SampType: LCSLL		TestCode: EPA Method 6020: Total Metals					
Client ID:	BatchQC		Batch ID: 42270		RunNo: 56633					
Prep Date:	12/21/2018		Analysis Date: 12/27/2018		SeqNo: 1894699		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0010	0.0010	0.001000	0	105	70	130			

Sample ID	LCS-42270		SampType:	LCS		TestCode:	EPA Method 6020: Total Metals				
Client ID:	LCSW		Batch ID:	42270		RunNo:	56633				
Prep Date:	12/21/2018		Analysis Date:	12/27/2018		SeqNo:	1894700		Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead	0.048	0.0010	0.05000	0	95.5	80	120				

Sample ID	LCS-42270		SampType: LCS		TestCode: EPA Method 6020: Total Metals					
Client ID:	LCSW		Batch ID: 42270		RunNo: 56670					
Prep Date:	12/21/2018		Analysis Date: 12/28/2018		SeqNo: 1896445		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.053	0.0010	0.05000	0	106	80	120			
Arsenic	0.049	0.0010	0.05000	0	98.7	80	120			
Selenium	0.048	0.0010	0.05000	0	97.0	80	120			

Sample ID	MB-42270		SampType: MBLK		TestCode: EPA Method 6020: Total Metals					
Client ID:	PBW		Batch ID: 42270		RunNo: 56670					
Prep Date:	12/21/2018		Analysis Date: 12/28/2018		SeqNo: 1896476		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Selenium	ND	0.0010								

Sample ID	LLLCS-42270		SampType: LCSLL		TestCode: EPA Method 6020: Total Metals					
Client ID:	BatchQC		Batch ID: 42270		RunNo: 56670					
Prep Date:	12/21/2018		Analysis Date: 12/28/2018		SeqNo: 1896478		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0011	0.0010	0.001000	0	105	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812764

08-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	LLLCS-42270		SampType: LCSLL		TestCode: EPA Method 6020: Total Metals					
Client ID:	BatchQC		Batch ID: 42270		RunNo: 56670					
Prep Date:	12/21/2018		Analysis Date: 12/28/2018		SeqNo: 1896478		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00096	0.0010	0.001000	0	95.8	70	130			J
Selenium	0.0011	0.0010	0.001000	0	110	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812764

08-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	LCS-42095		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	LCSW		Batch ID: 42095		RunNo: 56344					
Prep Date:	12/13/2018		Analysis Date: 12/14/2018		SeqNo: 1883555		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	4.3	1.0	5.000	0	85.9	70	130			
Surr: DNOP	0.42		0.5000		84.3	76.7	135			

Sample ID	MB-42095		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range					
Client ID:	PBW		Batch ID: 42095		RunNo: 56344					
Prep Date:	12/13/2018		Analysis Date: 12/14/2018		SeqNo: 1883556		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	0.84		1.000		83.8	76.7	135			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812764

08-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID RB	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBW	Batch ID: G56381		RunNo: 56381							
Prep Date:	Analysis Date: 12/17/2018		SeqNo: 1885544		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		87.5	72.8	125			

Sample ID 2.5UG GRO LCS	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSW	Batch ID: G56381		RunNo: 56381							
Prep Date:	Analysis Date: 12/17/2018		SeqNo: 1885545		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	98.8	77.7	130			
Surr: BFB	21		20.00		107	72.8	125			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812764

08-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	A56506	RunNo:	56506					
Prep Date:		Analysis Date:	12/20/2018	SeqNo:	1889881	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	1.5	10								J
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812764

08-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: A56506			RunNo: 56506						
Prep Date:	Analysis Date: 12/20/2018			SeqNo: 1889881		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		94.2	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	10		10.00		99.5	70	130			

Sample ID 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: A56506			RunNo: 56506						
Prep Date:	Analysis Date: 12/20/2018			SeqNo: 1889882		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	94.4	70	130			
Toluene	19	1.0	20.00	0	95.7	70	130			
Chlorobenzene	19	1.0	20.00	0	93.2	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812764

08-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID: A56506			RunNo: 56506					
Prep Date:		Analysis Date: 12/20/2018			SeqNo: 1889882		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	20	1.0	20.00	0	100	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	92.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		99.3	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.5	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.7		10.00		97.5	70	130			

Sample ID	rb1	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: A56506			RunNo: 56506					
Prep Date:		Analysis Date: 12/20/2018			SeqNo: 1889944		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	0.42	4.0								J
2-Methylnaphthalene	0.43	4.0								J
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	1.5	10								J
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812764

08-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID rb1	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: A56506			RunNo: 56506						
Prep Date:	Analysis Date: 12/20/2018			SeqNo: 1889944	Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812764

08-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	rb1	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	A56506	RunNo:	56506					
Prep Date:		Analysis Date:	12/20/2018	SeqNo:	1889944	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	9.8		10.00		98.2	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.7		10.00		97.1	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812764

08-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	MB-42182		SampType: MBLK		TestCode: EPA Method 7470: Mercury					
Client ID:	PBW		Batch ID: 42182		RunNo: 56465					
Prep Date:	12/18/2018		Analysis Date: 12/19/2018		SeqNo: 1888152		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000071	0.00020								J

Sample ID	LCS-42182			SampType:	LCS		TestCode:	EPA Method 7470: Mercury			
Client ID:	LCSW			Batch ID:	42182		RunNo:	56465			
Prep Date:	12/18/2018			Analysis Date:	12/19/2018		SeqNo:	1888153	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.0049	0.00020	0.005000	0	97.3	80	120				

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812764

08-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	MB-42228		SampType: MBLK		TestCode: EPA 6010B: Total Recoverable Metals					
Client ID:	PBW		Batch ID: 42228		RunNo: 56631					
Prep Date:	12/20/2018		Analysis Date: 12/26/2018		SeqNo: 1894530		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Nickel	ND	0.010								
Silver	ND	0.0050								
Vanadium	ND	0.050								
Zinc	0.0064	0.020								J

Sample ID	LCS-42228		SampType: LCS		TestCode: EPA 6010B: Total Recoverable Metals					
Client ID:	LCSW		Batch ID: 42228		RunNo: 56631					
Prep Date:	12/20/2018		Analysis Date: 12/26/2018		SeqNo: 1894531		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.50	0.020	0.5000	0	101	80	120			
Beryllium	0.53	0.0030	0.5000	0	107	80	120			
Cadmium	0.51	0.0020	0.5000	0	102	80	120			
Chromium	0.50	0.0060	0.5000	0	101	80	120			
Cobalt	0.49	0.0060	0.5000	0	99.0	80	120			
Nickel	0.49	0.010	0.5000	0	98.7	80	120			
Silver	0.10	0.0050	0.1000	0	102	80	120			
Vanadium	0.51	0.050	0.5000	0	103	80	120			
Zinc	0.50	0.020	0.5000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **MARATHON GALLUP**

Work Order Number: **1812764**

RcptNo: 1

Received By: **Victoria Zellar** 12/13/2018 8:57:00 AM

Victoria Zellar

Completed By: **Erin Melendrez** 12/13/2018 10:57:35 AM

Erin Melendrez

Reviewed By: **LB**

12/13/18

LB *JAB 12/13/18*

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐

2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐

4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐

5. Sample(s) in proper container(s)? Yes ☒ No ☐

6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐

7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐

8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐

9. VOA vials have zero headspace? Yes ☒ No ☐ No VOA Vials ☐

10. Were any sample containers received broken? Yes ☐ No ☒

11. Does paperwork match bottle labels? Yes ☒ No ☐

(Note discrepancies on chain of custody)

12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐

13. Is it clear what analyses were requested? Yes ☒ No ☐

14. Were all holding times able to be met? Yes ☒ No ☐

(If no, notify customer for authorization.)

of preserved
bottles checked
for pH:

2:2
(2 or >2 unless noted)

Adjusted?

No

Checked by:

JAB 12/13/18

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:

Date:

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.4	Good	Yes			

OF

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Project Manager: Brian Moore

Sampler:	TRITCO	
On Ice:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Sample Temperature:	34°C	

X Level 4 (Full Validation)

01710

☒ Yes ☐ No

[illegible]

Received by:	Date	Time
--------------	------	------

W3 171316

Received by: W. J. Wilson Date: 12/1/81 Time: 1:30

55

ATTACHMENT 1

Region 5 Waste Management Branch "Skinner List" Constituents of Concern for Wastes from Petroleum Processes

Inorganics

Antimony	Cadmium	Lead	Silver
Arsenic	Chromium	Mercury	Vanadium
Barium	Cobalt	Nickel	Zinc
Beryllium	Cyanide	Selenium	

Volatile Organics

Benzene	1,2-Dichloroethane	Ethylene dibromide (EDB)	1,1,1-Trichloroethane
Carbon disulfide	1,1-Dichloroethane	Methyl ethyl ketone (MEK)	Trichloroethene
Chlorobenzene	1,4-Dioxane	Styrene	Tetrachloroethylene
Chloroform	Ethylbenzene	Toluene	Xylenes (total)

Semivolatile Organics

Acenaphthene	o-Cresol	Diethyl phthalate	Naphthalene
Anthracene	m-Cresol	2,4 Dimethylphenol	4-Nitrophenol
Benzo(a)anthracene	p-Cresol	Dimethyl phthalate	Phenanthrene
Benzo(b)fluoranthene	Dibenz(a,h)anthracene	2,4 Dinitrophenol	Phenol
Benzo(k)fluoranthene	Di-n-butyl phthalate	Fluoranthene	Pyrene
Benzo(a)pyrene	1,2-Dichlorobenzene*	Fluorene	Pyridine
Bis(2-ethylhexyl) phthalate	1,3-Dichlorobenzene*	Indeno(1,2,3-cd)pyrene	Quinoline
Chrysene	1,4-Dichlorobenzene*	Methyl tertiary butyl ether (MTBE)	*- can be tested as a volatile

Low Concentration Polynuclear Aromatic Hydrocarbons (Optional)

Benzo(a)anthracene	Benzo(k)fluoranthene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene
Benzo(b)fluoranthene	Benzo(a)pyrene	Chrysene*	

* added to this group to assist the chromatographic resolution of chrysene from Dibenz(a,h)anthracene in sample extracts

Optional Semivolatile Organics

~~Indene~~ no ~~Benzenethiol**~~ no ~~Dibenz(a,h)acridine~~ no ~~1-Methylnaphthalene*~~

*Note that 2-Methylnaphthalene is part of Appendix IX and is a CLP TCL organic. 1-Methylnaphthalene is not on these lists.

**Benzenethiol can be detected in certain petroleum refinery wastes. Its measurement must compensate for its instability at neutral and acid pH values during sample preparation and its unstable instrument calibration standards



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 02, 2019

Brian Moore
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: Land Treatment Unit

OrderNo.: 1812773

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 13 sample(s) on 12/13/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU CIL1 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 12:45:00 PM

Lab ID: 1812773-001

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: irm	
Diesel Range Organics (DRO)	ND	1.9	9.6		mg/Kg	1	12/17/2018 4:16:06 PM	42114
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	12/17/2018 4:16:06 PM	42114
Surr: DNOP	102	0	50.6-138		%Rec	1	12/17/2018 4:16:06 PM	42114
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.4	5.0		mg/Kg	1	12/14/2018 9:27:40 PM	42099
Surr: BFB	101	0	73.8-119		%Rec	1	12/14/2018 9:27:40 PM	42099
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	ND	0.0070	0.035		mg/Kg	1	12/17/2018 5:51:08 PM	42146
EPA METHOD 6010B: SOIL METALS							Analyst: rde	
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:58:06 PM	42119
Arsenic	ND	6.9	12		mg/Kg	5	12/20/2018 2:58:06 PM	42119
Barium	240	0.11	0.48		mg/Kg	5	12/20/2018 2:58:06 PM	42119
Beryllium	1.6	0.044	0.72		mg/Kg	5	12/20/2018 2:58:06 PM	42119
Cadmium	ND	0.12	0.48		mg/Kg	5	12/20/2018 2:58:06 PM	42119
Chromium	20	0.38	1.4		mg/Kg	5	12/20/2018 2:58:06 PM	42119
Cobalt	7.1	0.51	1.4		mg/Kg	5	12/22/2018 3:49:16 PM	42119
Lead	1.3	1.2	1.2		mg/Kg	5	12/20/2018 2:58:06 PM	42119
Nickel	18	0.72	2.4		mg/Kg	5	12/20/2018 2:58:06 PM	42119
Selenium	ND	6.1	12		mg/Kg	5	12/20/2018 2:58:06 PM	42119
Silver	ND	0.15	1.2		mg/Kg	5	12/20/2018 2:58:06 PM	42119
Vanadium	34	0.32	12		mg/Kg	5	12/20/2018 2:58:06 PM	42119
Zinc	26	1.9	12		mg/Kg	5	12/22/2018 3:49:16 PM	42119
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.0041	0.025		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Toluene	ND	0.0048	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Ethylbenzene	ND	0.0029	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.012	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,2,4-Trimethylbenzene	ND	0.0046	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,3,5-Trimethylbenzene	ND	0.0048	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0051	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0046	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Naphthalene	ND	0.010	0.10		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1-Methylnaphthalene	ND	0.029	0.20		mg/Kg	1	12/17/2018 2:01:05 PM	42099
2-Methylnaphthalene	ND	0.022	0.20		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Acetone	ND	0.041	0.75		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Bromobenzene	ND	0.0048	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Bromodichloromethane	ND	0.0046	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 1 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU CIL1 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 12:45:00 PM

Lab ID: 1812773-001

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0045	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Bromomethane	ND	0.012	0.15		mg/Kg	1	12/17/2018 2:01:05 PM	42099
2-Butanone	ND	0.058	0.50		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Carbon disulfide	ND	0.016	0.50		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Carbon tetrachloride	ND	0.0047	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Chlorobenzene	ND	0.0064	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Chloroethane	ND	0.0074	0.10		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Chloroform	ND	0.0040	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Chloromethane	ND	0.0048	0.15		mg/Kg	1	12/17/2018 2:01:05 PM	42099
2-Chlorotoluene	ND	0.0043	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
4-Chlorotoluene	ND	0.0041	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
cis-1,2-DCE	ND	0.0068	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
cis-1,3-Dichloropropene	ND	0.0042	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0051	0.10		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Dibromochloromethane	ND	0.0035	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Dibromomethane	ND	0.0054	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,2-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,3-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,4-Dichlorobenzene	ND	0.0042	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Dichlorodifluoromethane	ND	0.012	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,1-Dichloroethane	ND	0.0032	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,2-Dichloropropane	ND	0.0036	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,3-Dichloropropane	ND	0.0054	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
2,2-Dichloropropane	ND	0.016	0.10		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,1-Dichloropropene	ND	0.0045	0.10		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Hexachlorobutadiene	ND	0.0051	0.10		mg/Kg	1	12/17/2018 2:01:05 PM	42099
2-Hexanone	ND	0.0083	0.50		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Isopropylbenzene	ND	0.0036	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
4-Isopropyltoluene	ND	0.0041	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
4-Methyl-2-pentanone	ND	0.0094	0.50		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Methylene chloride	ND	0.0088	0.15		mg/Kg	1	12/17/2018 2:01:05 PM	42099
n-Butylbenzene	ND	0.0047	0.15		mg/Kg	1	12/17/2018 2:01:05 PM	42099
n-Propylbenzene	ND	0.0040	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
sec-Butylbenzene	ND	0.0056	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Styrene	ND	0.0039	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
tert-Butylbenzene	ND	0.0047	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0034	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0051	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 2 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU CIL1 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 12:45:00 PM

Lab ID: 1812773-001

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
trans-1,2-DCE	ND	0.0046	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
trans-1,3-Dichloropropene	ND	0.0053	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,2,3-Trichlorobenzene	ND	0.0044	0.10		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,2,4-Trichlorobenzene	ND	0.0050	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,1,1-Trichloroethane	ND	0.0045	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,1,2-Trichloroethane	ND	0.0035	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Trichloroethene (TCE)	ND	0.0058	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Trichlorofluoromethane	ND	0.017	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,2,3-Trichloropropane	ND	0.0081	0.10		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Vinyl chloride	ND	0.0033	0.050		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Xylenes, Total	ND	0.013	0.10		mg/Kg	1	12/17/2018 2:01:05 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 2:01:05 PM	42099
Surr: Dibromofluoromethane	106		70-130		%Rec	1	12/17/2018 2:01:05 PM	42099
Surr: 1,2-Dichloroethane-d4	103		70-130		%Rec	1	12/17/2018 2:01:05 PM	42099
Surr: Toluene-d8	99.6		70-130		%Rec	1	12/17/2018 2:01:05 PM	42099
Surr: 4-Bromofluorobenzene	92.6		70-130		%Rec	1	12/17/2018 2:01:05 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 3 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU CIL1 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 1:00:00 PM

Lab ID: 1812773-002

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: Irm	
Diesel Range Organics (DRO)	ND	2.0	9.9		mg/Kg	1	12/17/2018 5:22:12 PM	42114
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	12/17/2018 5:22:12 PM	42114
Surr: DNOP	96.5	0	50.6-138		%Rec	1	12/17/2018 5:22:12 PM	42114
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.4	4.8		mg/Kg	1	12/14/2018 9:51:17 PM	42099
Surr: BFB	96.2	0	73.8-119		%Rec	1	12/14/2018 9:51:17 PM	42099
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	ND	0.0070	0.035		mg/Kg	1	12/17/2018 6:06:28 PM	42146
EPA METHOD 6010B: SOIL METALS							Analyst: rde	
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:21:09 PM	42119
Arsenic	ND	6.9	12		mg/Kg	5	12/20/2018 2:21:09 PM	42119
Barium	230	0.11	0.48		mg/Kg	5	12/20/2018 2:21:09 PM	42119
Beryllium	1.3	0.044	0.73		mg/Kg	5	12/20/2018 2:21:09 PM	42119
Cadmium	ND	0.12	0.48		mg/Kg	5	12/20/2018 2:21:09 PM	42119
Chromium	18	0.39	1.5		mg/Kg	5	12/20/2018 2:21:09 PM	42119
Cobalt	8.1	0.51	1.5		mg/Kg	5	12/20/2018 2:21:09 PM	42119
Lead	1.9	1.2	1.2		mg/Kg	5	12/20/2018 2:21:09 PM	42119
Nickel	18	0.72	2.4		mg/Kg	5	12/20/2018 2:21:09 PM	42119
Selenium	ND	6.1	12		mg/Kg	5	12/20/2018 2:21:09 PM	42119
Silver	ND	0.16	1.2		mg/Kg	5	12/20/2018 2:21:09 PM	42119
Vanadium	32	0.32	12		mg/Kg	5	12/20/2018 2:21:09 PM	42119
Zinc	31	1.9	12		mg/Kg	5	12/20/2018 2:21:09 PM	42119
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.0039	0.024		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Toluene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Ethylbenzene	ND	0.0028	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.011	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,2,4-Trimethylbenzene	ND	0.0044	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,3,5-Trimethylbenzene	ND	0.0047	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0049	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0044	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Naphthalene	ND	0.0096	0.096		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1-Methylnaphthalene	ND	0.028	0.19		mg/Kg	1	12/17/2018 2:30:47 PM	42099
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Acetone	ND	0.040	0.72		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Bromobenzene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Bromodichloromethane	ND	0.0044	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 4 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU CIL1 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 1:00:00 PM

Lab ID: 1812773-002

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0043	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Bromomethane	ND	0.012	0.14		mg/Kg	1	12/17/2018 2:30:47 PM	42099
2-Butanone	ND	0.056	0.48		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Carbon disulfide	ND	0.016	0.48		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Carbon tetrachloride	ND	0.0046	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Chlorobenzene	ND	0.0062	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Chloroethane	ND	0.0071	0.096		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Chloroform	ND	0.0039	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Chloromethane	ND	0.0046	0.14		mg/Kg	1	12/17/2018 2:30:47 PM	42099
2-Chlorotoluene	ND	0.0042	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
4-Chlorotoluene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
cis-1,2-DCE	ND	0.0066	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
cis-1,3-Dichloropropene	ND	0.0041	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0049	0.096		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Dibromochloromethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Dibromomethane	ND	0.0052	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,2-Dichlorobenzene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,3-Dichlorobenzene	ND	0.0042	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,4-Dichlorobenzene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Dichlorodifluoromethane	ND	0.011	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,1-Dichloroethane	ND	0.0031	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,1-Dichloroethene	ND	0.019	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,2-Dichloropropane	ND	0.0035	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,3-Dichloropropane	ND	0.0052	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
2,2-Dichloropropane	ND	0.016	0.096		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,1-Dichloropropene	ND	0.0044	0.096		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Hexachlorobutadiene	ND	0.0049	0.096		mg/Kg	1	12/17/2018 2:30:47 PM	42099
2-Hexanone	ND	0.0080	0.48		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Isopropylbenzene	ND	0.0035	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
4-Isopropyltoluene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
4-Methyl-2-pentanone	ND	0.0091	0.48		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Methylene chloride	ND	0.0085	0.14		mg/Kg	1	12/17/2018 2:30:47 PM	42099
n-Butylbenzene	ND	0.0045	0.14		mg/Kg	1	12/17/2018 2:30:47 PM	42099
n-Propylbenzene	ND	0.0038	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
sec-Butylbenzene	ND	0.0054	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Styrene	ND	0.0038	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
tert-Butylbenzene	ND	0.0045	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0032	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0049	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 5 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU CIL1 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 1:00:00 PM

Lab ID: 1812773-002

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0038	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
trans-1,2-DCE	ND	0.0044	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
trans-1,3-Dichloropropene	ND	0.0051	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,2,3-Trichlorobenzene	ND	0.0042	0.096		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,2,4-Trichlorobenzene	ND	0.0049	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,1,1-Trichloroethane	ND	0.0043	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,1,2-Trichloroethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Trichloroethene (TCE)	ND	0.0056	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Trichlorofluoromethane	ND	0.016	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,2,3-Trichloropropane	ND	0.0078	0.096		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Vinyl chloride	ND	0.0031	0.048		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Xylenes, Total	ND	0.012	0.096		mg/Kg	1	12/17/2018 2:30:47 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 2:30:47 PM	42099
Surr: Dibromofluoromethane	103		70-130		%Rec	1	12/17/2018 2:30:47 PM	42099
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	1	12/17/2018 2:30:47 PM	42099
Surr: Toluene-d8	99.4		70-130		%Rec	1	12/17/2018 2:30:47 PM	42099
Surr: 4-Bromofluorobenzene	93.3		70-130		%Rec	1	12/17/2018 2:30:47 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 6 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU CIL2 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 12:00:00 PM

Lab ID: 1812773-003

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: irm
Diesel Range Organics (DRO)	ND	2.0	10		mg/Kg	1	12/17/2018 5:44:15 PM	42114
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	12/17/2018 5:44:15 PM	42114
Surr: DNOP	96.8	0	50.6-138		%Rec	1	12/17/2018 5:44:15 PM	42114
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.8		mg/Kg	1	12/14/2018 10:14:50 P	42099
Surr: BFB	95.9	0	73.8-119		%Rec	1	12/14/2018 10:14:50 P	42099
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	0.0079	0.0066	0.033	J	mg/Kg	1	12/17/2018 6:09:36 PM	42146
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:30:39 PM	42119
Arsenic	ND	7.1	12		mg/Kg	5	12/20/2018 2:30:39 PM	42119
Barium	310	0.12	0.50		mg/Kg	5	12/20/2018 2:30:39 PM	42119
Beryllium	1.7	0.046	0.75		mg/Kg	5	12/20/2018 2:30:39 PM	42119
Cadmium	ND	0.12	0.50		mg/Kg	5	12/20/2018 2:30:39 PM	42119
Chromium	17	0.40	1.5		mg/Kg	5	12/20/2018 2:30:39 PM	42119
Cobalt	6.9	0.53	1.5		mg/Kg	5	12/22/2018 4:32:13 PM	42119
Lead	3.0	1.2	1.2		mg/Kg	5	12/20/2018 2:30:39 PM	42119
Nickel	16	0.75	2.5		mg/Kg	5	12/20/2018 2:30:39 PM	42119
Selenium	ND	6.3	12		mg/Kg	5	12/20/2018 2:30:39 PM	42119
Silver	ND	0.16	1.2		mg/Kg	5	12/20/2018 2:30:39 PM	42119
Vanadium	28	0.33	12		mg/Kg	5	12/20/2018 2:30:39 PM	42119
Zinc	24	2.0	12		mg/Kg	5	12/22/2018 4:32:13 PM	42119
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Benzene	ND	0.0039	0.024		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Toluene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Ethylbenzene	ND	0.0028	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.011	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,2,4-Trimethylbenzene	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,3,5-Trimethylbenzene	ND	0.0047	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0049	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Naphthalene	ND	0.0096	0.096		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1-Methylnaphthalene	ND	0.028	0.19		mg/Kg	1	12/17/2018 3:00:34 PM	42099
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Acetone	ND	0.040	0.72		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Bromobenzene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Bromodichloromethane	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 7 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU CIL2 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 12:00:00 PM

Lab ID: 1812773-003

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0043	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Bromomethane	ND	0.012	0.14		mg/Kg	1	12/17/2018 3:00:34 PM	42099
2-Butanone	ND	0.056	0.48		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Carbon disulfide	ND	0.016	0.48		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Carbon tetrachloride	ND	0.0046	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Chlorobenzene	ND	0.0062	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Chloroethane	ND	0.0071	0.096		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Chloroform	ND	0.0039	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Chloromethane	ND	0.0046	0.14		mg/Kg	1	12/17/2018 3:00:34 PM	42099
2-Chlorotoluene	ND	0.0042	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
4-Chlorotoluene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
cis-1,2-DCE	ND	0.0066	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
cis-1,3-Dichloropropene	ND	0.0041	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0049	0.096		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Dibromochloromethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Dibromomethane	ND	0.0052	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,2-Dichlorobenzene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,3-Dichlorobenzene	ND	0.0042	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,4-Dichlorobenzene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Dichlorodifluoromethane	ND	0.011	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,1-Dichloroethane	ND	0.0031	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,1-Dichloroethene	ND	0.019	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,2-Dichloropropane	ND	0.0035	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,3-Dichloropropane	ND	0.0052	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
2,2-Dichloropropane	ND	0.016	0.096		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,1-Dichloropropene	ND	0.0044	0.096		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Hexachlorobutadiene	ND	0.0049	0.096		mg/Kg	1	12/17/2018 3:00:34 PM	42099
2-Hexanone	ND	0.0080	0.48		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Isopropylbenzene	ND	0.0035	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
4-Isopropyltoluene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
4-Methyl-2-pentanone	ND	0.0091	0.48		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Methylene chloride	ND	0.0085	0.14		mg/Kg	1	12/17/2018 3:00:34 PM	42099
n-Butylbenzene	ND	0.0045	0.14		mg/Kg	1	12/17/2018 3:00:34 PM	42099
n-Propylbenzene	ND	0.0038	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
sec-Butylbenzene	ND	0.0054	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Styrene	ND	0.0038	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
tert-Butylbenzene	ND	0.0045	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0033	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0049	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 8 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C1L2 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 12:00:00 PM

Lab ID: 1812773-003

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0038	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
trans-1,2-DCE	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
trans-1,3-Dichloropropene	ND	0.0051	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,2,3-Trichlorobenzene	ND	0.0042	0.096		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,2,4-Trichlorobenzene	ND	0.0049	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,1,1-Trichloroethane	ND	0.0043	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,1,2-Trichloroethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Trichloroethene (TCE)	ND	0.0056	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Trichlorofluoromethane	ND	0.016	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,2,3-Trichloropropane	ND	0.0078	0.096		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Vinyl chloride	ND	0.0031	0.048		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Xylenes, Total	ND	0.012	0.096		mg/Kg	1	12/17/2018 3:00:34 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 3:00:34 PM	42099
Surr: Dibromofluoromethane	104		70-130		%Rec	1	12/17/2018 3:00:34 PM	42099
Surr: 1,2-Dichloroethane-d4	101		70-130		%Rec	1	12/17/2018 3:00:34 PM	42099
Surr: Toluene-d8	102		70-130		%Rec	1	12/17/2018 3:00:34 PM	42099
Surr: 4-Bromofluorobenzene	97.7		70-130		%Rec	1	12/17/2018 3:00:34 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 9 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU CIL2 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 12:10:00 PM

Lab ID: 1812773-004

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: irm
Diesel Range Organics (DRO)	ND	1.9	9.6		mg/Kg	1	12/17/2018 6:06:23 PM	42114
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	12/17/2018 6:06:23 PM	42114
Surr: DNOP	98.2	0	50.6-138		%Rec	1	12/17/2018 6:06:23 PM	42114
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.8		mg/Kg	1	12/14/2018 10:38:19 P	42099
Surr: BFB	97.6	0	73.8-119		%Rec	1	12/14/2018 10:38:19 P	42099
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	ND	0.0070	0.035		mg/Kg	1	12/17/2018 6:18:24 PM	42146
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:32:27 PM	42119
Arsenic	ND	6.9	12		mg/Kg	5	12/20/2018 2:32:27 PM	42119
Barium	340	0.11	0.48		mg/Kg	5	12/20/2018 2:32:27 PM	42119
Beryllium	1.7	0.044	0.72		mg/Kg	5	12/20/2018 2:32:27 PM	42119
Cadmium	ND	0.12	0.48		mg/Kg	5	12/20/2018 2:32:27 PM	42119
Chromium	19	0.38	1.4		mg/Kg	5	12/20/2018 2:32:27 PM	42119
Cobalt	7.4	0.51	1.4		mg/Kg	5	12/22/2018 4:33:53 PM	42119
Lead	2.9	1.2	1.2		mg/Kg	5	12/20/2018 2:32:27 PM	42119
Nickel	18	0.72	2.4		mg/Kg	5	12/20/2018 2:32:27 PM	42119
Selenium	ND	6.1	12		mg/Kg	5	12/20/2018 2:32:27 PM	42119
Silver	ND	0.15	1.2		mg/Kg	5	12/20/2018 2:32:27 PM	42119
Vanadium	33	0.32	12		mg/Kg	5	12/20/2018 2:32:27 PM	42119
Zinc	27	1.9	12		mg/Kg	5	12/22/2018 4:33:53 PM	42119
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Benzene	ND	0.0039	0.024		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Toluene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Ethylbenzene	ND	0.0028	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.011	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,2,4-Trimethylbenzene	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,3,5-Trimethylbenzene	ND	0.0047	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0049	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Naphthalene	ND	0.0096	0.096		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1-Methylnaphthalene	ND	0.028	0.19		mg/Kg	1	12/17/2018 3:29:30 PM	42099
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Acetone	ND	0.040	0.72		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Bromobenzene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Bromodichloromethane	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 10 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU CIL2 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 12:10:00 PM

Lab ID: 1812773-004

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0043	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Bromomethane	ND	0.012	0.14		mg/Kg	1	12/17/2018 3:29:30 PM	42099
2-Butanone	ND	0.056	0.48		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Carbon disulfide	ND	0.016	0.48		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Carbon tetrachloride	ND	0.0046	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Chlorobenzene	ND	0.0062	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Chloroethane	ND	0.0071	0.096		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Chloroform	ND	0.0039	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Chloromethane	ND	0.0046	0.14		mg/Kg	1	12/17/2018 3:29:30 PM	42099
2-Chlorotoluene	ND	0.0042	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
4-Chlorotoluene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
cis-1,2-DCE	ND	0.0066	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
cis-1,3-Dichloropropene	ND	0.0041	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0049	0.096		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Dibromochloromethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Dibromomethane	ND	0.0052	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,2-Dichlorobenzene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,3-Dichlorobenzene	ND	0.0042	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,4-Dichlorobenzene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Dichlorodifluoromethane	ND	0.011	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,1-Dichloroethane	ND	0.0031	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,1-Dichloroethene	ND	0.019	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,2-Dichloropropane	ND	0.0035	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,3-Dichloropropane	ND	0.0052	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
2,2-Dichloropropane	ND	0.016	0.096		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,1-Dichloropropene	ND	0.0044	0.096		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Hexachlorobutadiene	ND	0.0049	0.096		mg/Kg	1	12/17/2018 3:29:30 PM	42099
2-Hexanone	ND	0.0080	0.48		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Isopropylbenzene	ND	0.0035	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
4-Isopropyltoluene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
4-Methyl-2-pentanone	ND	0.0091	0.48		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Methylene chloride	ND	0.0085	0.14		mg/Kg	1	12/17/2018 3:29:30 PM	42099
n-Butylbenzene	ND	0.0045	0.14		mg/Kg	1	12/17/2018 3:29:30 PM	42099
n-Propylbenzene	ND	0.0038	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
sec-Butylbenzene	ND	0.0054	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Styrene	ND	0.0038	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
tert-Butylbenzene	ND	0.0045	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0033	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0049	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 11 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical ReportLab Order **1812773**Date Reported: **1/2/2019****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Marathon**Client Sample ID:** LTU C1L2 TZ**Project:** Land Treatment Unit**Collection Date:** 12/11/2018 12:10:00 PM**Lab ID:** 1812773-004**Matrix:** SOIL**Received Date:** 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0038	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
trans-1,2-DCE	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
trans-1,3-Dichloropropene	ND	0.0051	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,2,3-Trichlorobenzene	ND	0.0042	0.096		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,2,4-Trichlorobenzene	ND	0.0049	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,1,1-Trichloroethane	ND	0.0043	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,1,2-Trichloroethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Trichloroethene (TCE)	ND	0.0056	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Trichlorofluoromethane	ND	0.016	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,2,3-Trichloropropane	ND	0.0078	0.096		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Vinyl chloride	ND	0.0031	0.048		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Xylenes, Total	ND	0.012	0.096		mg/Kg	1	12/17/2018 3:29:30 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 3:29:30 PM	42099
Surr: Dibromofluoromethane	105		70-130		%Rec	1	12/17/2018 3:29:30 PM	42099
Surr: 1,2-Dichloroethane-d4	98.2		70-130		%Rec	1	12/17/2018 3:29:30 PM	42099
Surr: Toluene-d8	104		70-130		%Rec	1	12/17/2018 3:29:30 PM	42099
Surr: 4-Bromofluorobenzene	96.6		70-130		%Rec	1	12/17/2018 3:29:30 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 12 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU ZOI DUP

Project: Land Treatment Unit

Collection Date: 12/11/2018

Lab ID: 1812773-005

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: Irm
Diesel Range Organics (DRO)	ND	2.0	9.8		mg/Kg	1	12/17/2018 6:28:19 PM	42114
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	12/17/2018 6:28:19 PM	42114
Surr: DNOP	97.1	0	50.6-138		%Rec	1	12/17/2018 6:28:19 PM	42114
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.8		mg/Kg	1	12/14/2018 11:01:48 P	42099
Surr: BFB	99.1	0	73.8-119		%Rec	1	12/14/2018 11:01:48 P	42099
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	ND	0.0068	0.034		mg/Kg	1	12/17/2018 6:21:40 PM	42146
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:34:19 PM	42119
Arsenic	ND	6.9	12		mg/Kg	5	12/20/2018 2:34:19 PM	42119
Barium	270	0.11	0.48		mg/Kg	5	12/20/2018 2:34:19 PM	42119
Beryllium	1.7	0.044	0.72		mg/Kg	5	12/20/2018 2:34:19 PM	42119
Cadmium	ND	0.12	0.48		mg/Kg	5	12/20/2018 2:34:19 PM	42119
Chromium	20	0.38	1.4		mg/Kg	5	12/20/2018 2:34:19 PM	42119
Cobalt	7.4	0.51	1.4		mg/Kg	5	12/22/2018 4:35:26 PM	42119
Lead	1.7	1.2	1.2		mg/Kg	5	12/20/2018 2:34:19 PM	42119
Nickel	19	0.72	2.4		mg/Kg	5	12/20/2018 2:34:19 PM	42119
Selenium	ND	6.1	12		mg/Kg	5	12/20/2018 2:34:19 PM	42119
Silver	ND	0.15	1.2		mg/Kg	5	12/20/2018 2:34:19 PM	42119
Vanadium	33	0.32	12		mg/Kg	5	12/20/2018 2:34:19 PM	42119
Zinc	28	1.9	12		mg/Kg	5	12/22/2018 4:35:26 PM	42119
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Benzene	ND	0.0040	0.024		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Toluene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Ethylbenzene	ND	0.0028	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.011	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,2,4-Trimethylbenzene	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,3,5-Trimethylbenzene	ND	0.0047	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0049	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Naphthalene	ND	0.0097	0.097		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1-Methylnaphthalene	ND	0.028	0.19		mg/Kg	1	12/17/2018 3:58:36 PM	42099
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Acetone	ND	0.040	0.73		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Bromobenzene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Bromodichloromethane	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 13 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU ZOI DUP

Project: Land Treatment Unit

Collection Date: 12/11/2018

Lab ID: 1812773-005

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Bromomethane	ND	0.012	0.15		mg/Kg	1	12/17/2018 3:58:36 PM	42099
2-Butanone	ND	0.056	0.48		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Carbon disulfide	ND	0.016	0.48		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Carbon tetrachloride	ND	0.0046	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Chlorobenzene	ND	0.0062	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Chloroethane	ND	0.0071	0.097		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Chloroform	ND	0.0039	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Chloromethane	ND	0.0046	0.15		mg/Kg	1	12/17/2018 3:58:36 PM	42099
2-Chlorotoluene	ND	0.0042	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
4-Chlorotoluene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
cis-1,2-DCE	ND	0.0066	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
cis-1,3-Dichloropropene	ND	0.0041	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0050	0.097		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Dibromochloromethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Dibromomethane	ND	0.0052	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,2-Dichlorobenzene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,3-Dichlorobenzene	ND	0.0042	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,4-Dichlorobenzene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Dichlorodifluoromethane	ND	0.011	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,1-Dichloroethane	ND	0.0031	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,1-Dichloroethene	ND	0.019	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,2-Dichloropropane	ND	0.0035	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,3-Dichloropropane	ND	0.0052	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
2,2-Dichloropropane	ND	0.016	0.097		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,1-Dichloropropene	ND	0.0044	0.097		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Hexachlorobutadiene	ND	0.0049	0.097		mg/Kg	1	12/17/2018 3:58:36 PM	42099
2-Hexanone	ND	0.0080	0.48		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Isopropylbenzene	ND	0.0035	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
4-Isopropyltoluene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
4-Methyl-2-pentanone	ND	0.0091	0.48		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Methylene chloride	ND	0.0085	0.15		mg/Kg	1	12/17/2018 3:58:36 PM	42099
n-Butylbenzene	ND	0.0045	0.15		mg/Kg	1	12/17/2018 3:58:36 PM	42099
n-Propylbenzene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
sec-Butylbenzene	ND	0.0054	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Styrene	ND	0.0038	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
tert-Butylbenzene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0033	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0049	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 14 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical ReportLab Order **1812773**Date Reported: **1/2/2019****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Marathon**Client Sample ID:** LTU ZOI DUP**Project:** Land Treatment Unit**Collection Date:** 12/11/2018**Lab ID:** 1812773-005**Matrix:** SOIL**Received Date:** 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0039	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
trans-1,2-DCE	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
trans-1,3-Dichloropropene	ND	0.0051	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,2,3-Trichlorobenzene	ND	0.0042	0.097		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,2,4-Trichlorobenzene	ND	0.0049	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,1,1-Trichloroethane	ND	0.0044	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,1,2-Trichloroethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Trichloroethene (TCE)	ND	0.0056	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Trichlorofluoromethane	ND	0.016	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,2,3-Trichloropropane	ND	0.0078	0.097		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Vinyl chloride	ND	0.0032	0.048		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Xylenes, Total	ND	0.012	0.097		mg/Kg	1	12/17/2018 3:58:36 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 3:58:36 PM	42099
Surr: Dibromofluoromethane	106		70-130		%Rec	1	12/17/2018 3:58:36 PM	42099
Surr: 1,2-Dichloroethane-d4	98.9		70-130		%Rec	1	12/17/2018 3:58:36 PM	42099
Surr: Toluene-d8	102		70-130		%Rec	1	12/17/2018 3:58:36 PM	42099
Surr: 4-Bromofluorobenzene	97.5		70-130		%Rec	1	12/17/2018 3:58:36 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 15 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C2L1 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 2:20:00 PM

Lab ID: 1812773-006

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: irm
Diesel Range Organics (DRO)	51	2.0	9.9		mg/Kg	1	12/17/2018 12:29:55 P	42114
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	12/17/2018 12:29:55 P	42114
Surr: DNOP	67.3	0	50.6-138		%Rec	1	12/17/2018 12:29:55 P	42114
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.9		mg/Kg	1	12/14/2018 11:25:07 P	42099
Surr: BFB	98.7	0	73.8-119		%Rec	1	12/14/2018 11:25:07 P	42099
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	0.026	0.0066	0.033	J	mg/Kg	1	12/18/2018 10:47:00 A	42146
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:36:14 PM	42119
Arsenic	ND	7.0	12		mg/Kg	5	12/20/2018 2:36:14 PM	42119
Barium	410	0.11	0.49		mg/Kg	5	12/20/2018 2:36:14 PM	42119
Beryllium	1.5	0.045	0.74		mg/Kg	5	12/20/2018 2:36:14 PM	42119
Cadmium	ND	0.12	0.49		mg/Kg	5	12/20/2018 2:36:14 PM	42119
Chromium	21	0.39	1.5		mg/Kg	5	12/20/2018 2:36:14 PM	42119
Cobalt	6.3	0.52	1.5		mg/Kg	5	12/22/2018 4:37:04 PM	42119
Lead	6.6	1.2	1.2		mg/Kg	5	12/20/2018 2:36:14 PM	42119
Nickel	17	0.73	2.5		mg/Kg	5	12/20/2018 2:36:14 PM	42119
Selenium	ND	6.2	12		mg/Kg	5	12/20/2018 2:36:14 PM	42119
Silver	ND	0.16	1.2		mg/Kg	5	12/20/2018 2:36:14 PM	42119
Vanadium	27	0.33	12		mg/Kg	5	12/20/2018 2:36:14 PM	42119
Zinc	45	1.9	12		mg/Kg	5	12/22/2018 4:37:04 PM	42119
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Benzene	ND	0.0040	0.025		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Toluene	ND	0.0047	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Ethylbenzene	ND	0.0029	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.012	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,2,4-Trimethylbenzene	ND	0.0045	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,3,5-Trimethylbenzene	ND	0.0048	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0050	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0045	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Naphthalene	ND	0.0098	0.098		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1-Methylnaphthalene	ND	0.028	0.20		mg/Kg	1	12/17/2018 4:27:32 PM	42099
2-Methylnaphthalene	ND	0.021	0.20		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Acetone	ND	0.041	0.74		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Bromobenzene	ND	0.0047	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Bromodichloromethane	ND	0.0045	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 16 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C2L1 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 2:20:00 PM

Lab ID: 1812773-006

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0044	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Bromomethane	ND	0.012	0.15		mg/Kg	1	12/17/2018 4:27:32 PM	42099
2-Butanone	ND	0.057	0.49		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Carbon disulfide	ND	0.016	0.49		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Carbon tetrachloride	ND	0.0047	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Chlorobenzene	ND	0.0063	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Chloroethane	ND	0.0072	0.098		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Chloroform	ND	0.0040	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Chloromethane	ND	0.0047	0.15		mg/Kg	1	12/17/2018 4:27:32 PM	42099
2-Chlorotoluene	ND	0.0043	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
4-Chlorotoluene	ND	0.0040	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
cis-1,2-DCE	ND	0.0067	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
cis-1,3-Dichloropropene	ND	0.0041	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0050	0.098		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Dibromochloromethane	ND	0.0035	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Dibromomethane	ND	0.0053	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,2-Dichlorobenzene	ND	0.0040	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,3-Dichlorobenzene	ND	0.0043	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,4-Dichlorobenzene	ND	0.0041	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Dichlorodifluoromethane	ND	0.011	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,1-Dichloroethane	ND	0.0031	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,1-Dichloroethene	ND	0.020	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,2-Dichloropropane	ND	0.0036	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,3-Dichloropropane	ND	0.0053	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
2,2-Dichloropropane	ND	0.016	0.098		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,1-Dichloropropene	ND	0.0045	0.098		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Hexachlorobutadiene	ND	0.0050	0.098		mg/Kg	1	12/17/2018 4:27:32 PM	42099
2-Hexanone	ND	0.0082	0.49		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Isopropylbenzene	ND	0.0035	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
4-Isopropyltoluene	ND	0.0041	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
4-Methyl-2-pentanone	ND	0.0093	0.49		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Methylene chloride	ND	0.0087	0.15		mg/Kg	1	12/17/2018 4:27:32 PM	42099
n-Butylbenzene	ND	0.0046	0.15		mg/Kg	1	12/17/2018 4:27:32 PM	42099
n-Propylbenzene	ND	0.0039	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
sec-Butylbenzene	ND	0.0055	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Styrene	ND	0.0039	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
tert-Butylbenzene	ND	0.0046	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0033	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0050	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 17 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: LTU C2L1 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 2:20:00 PM

Lab ID: 1812773-006

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0039	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
trans-1,2-DCE	ND	0.0045	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
trans-1,3-Dichloropropene	ND	0.0052	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,2,3-Trichlorobenzene	ND	0.0043	0.098		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,2,4-Trichlorobenzene	ND	0.0050	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,1,1-Trichloroethane	ND	0.0044	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,1,2-Trichloroethane	ND	0.0035	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Trichloroethene (TCE)	ND	0.0057	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Trichlorofluoromethane	ND	0.017	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,2,3-Trichloropropane	ND	0.0080	0.098		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Vinyl chloride	ND	0.0032	0.049		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Xylenes, Total	ND	0.012	0.098		mg/Kg	1	12/17/2018 4:27:32 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 4:27:32 PM	42099
Surr: Dibromofluoromethane	106		70-130		%Rec	1	12/17/2018 4:27:32 PM	42099
Surr: 1,2-Dichloroethane-d4	99.2		70-130		%Rec	1	12/17/2018 4:27:32 PM	42099
Surr: Toluene-d8	100		70-130		%Rec	1	12/17/2018 4:27:32 PM	42099
Surr: 4-Bromofluorobenzene	97.8		70-130		%Rec	1	12/17/2018 4:27:32 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C2L1 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 2:35:00 PM

Lab ID: 1812773-007

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: Irm	
Diesel Range Organics (DRO)	55	2.0	9.9		mg/Kg	1	12/17/2018 12:52:01 P	42114
Motor Oil Range Organics (MRO)	78	50	50		mg/Kg	1	12/17/2018 12:52:01 P	42114
Surr: DNOP	105	0	50.6-138		%Rec	1	12/17/2018 12:52:01 P	42114
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB	
Gasoline Range Organics (GRO)	ND	1.4	4.8		mg/Kg	1	12/14/2018 11:48:34 P	42099
Surr: BFB	93.3	0	73.8-119		%Rec	1	12/14/2018 11:48:34 P	42099
EPA METHOD 7471: MERCURY							Analyst: pmf	
Mercury	0.30	0.0069	0.034		mg/Kg	1	12/18/2018 10:49:00 A	42146
EPA METHOD 6010B: SOIL METALS							Analyst: rde	
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:37:54 PM	42119
Arsenic	ND	7.0	12		mg/Kg	5	12/20/2018 2:37:54 PM	42119
Barium	280	0.11	0.49		mg/Kg	5	12/20/2018 2:37:54 PM	42119
Beryllium	1.7	0.045	0.74		mg/Kg	5	12/20/2018 2:37:54 PM	42119
Cadmium	ND	0.12	0.49		mg/Kg	5	12/20/2018 2:37:54 PM	42119
Chromium	24	0.39	1.5		mg/Kg	5	12/20/2018 2:37:54 PM	42119
Cobalt	6.9	0.52	1.5		mg/Kg	5	12/22/2018 4:38:44 PM	42119
Lead	4.8	1.2	1.2		mg/Kg	5	12/20/2018 2:37:54 PM	42119
Nickel	18	0.74	2.5		mg/Kg	5	12/20/2018 2:37:54 PM	42119
Selenium	ND	6.2	12		mg/Kg	5	12/20/2018 2:37:54 PM	42119
Silver	ND	0.16	1.2		mg/Kg	5	12/20/2018 2:37:54 PM	42119
Vanadium	28	0.33	12		mg/Kg	5	12/20/2018 2:37:54 PM	42119
Zinc	45	2.0	12		mg/Kg	5	12/22/2018 4:38:44 PM	42119
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Benzene	ND	0.0039	0.024		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Toluene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Ethylbenzene	ND	0.0028	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.011	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,2,4-Trimethylbenzene	ND	0.0044	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,3,5-Trimethylbenzene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0049	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0044	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Naphthalene	ND	0.0096	0.095		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1-Methylnaphthalene	ND	0.027	0.19		mg/Kg	1	12/17/2018 4:56:49 PM	42099
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Acetone	ND	0.040	0.72		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Bromobenzene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Bromodichloromethane	ND	0.0044	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 19 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C2L1 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 2:35:00 PM

Lab ID: 1812773-007

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0043	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Bromomethane	ND	0.012	0.14		mg/Kg	1	12/17/2018 4:56:49 PM	42099
2-Butanone	ND	0.055	0.48		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Carbon disulfide	ND	0.016	0.48		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Carbon tetrachloride	ND	0.0045	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Chlorobenzene	ND	0.0061	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Chloroethane	ND	0.0070	0.095		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Chloroform	ND	0.0038	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Chloromethane	ND	0.0046	0.14		mg/Kg	1	12/17/2018 4:56:49 PM	42099
2-Chlorotoluene	ND	0.0042	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
4-Chlorotoluene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
cis-1,2-DCE	ND	0.0065	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
cis-1,3-Dichloropropene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0049	0.095		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Dibromochloromethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Dibromomethane	ND	0.0051	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,2-Dichlorobenzene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,3-Dichlorobenzene	ND	0.0041	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,4-Dichlorobenzene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Dichlorodifluoromethane	ND	0.011	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,1-Dichloroethane	ND	0.0031	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,1-Dichloroethene	ND	0.019	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,2-Dichloropropane	ND	0.0035	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,3-Dichloropropane	ND	0.0052	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
2,2-Dichloropropane	ND	0.016	0.095		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,1-Dichloropropene	ND	0.0043	0.095		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Hexachlorobutadiene	ND	0.0049	0.095		mg/Kg	1	12/17/2018 4:56:49 PM	42099
2-Hexanone	ND	0.0079	0.48		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Isopropylbenzene	ND	0.0034	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
4-Isopropyltoluene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
4-Methyl-2-pentanone	ND	0.0090	0.48		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Methylene chloride	ND	0.0084	0.14		mg/Kg	1	12/17/2018 4:56:49 PM	42099
n-Butylbenzene	ND	0.0044	0.14		mg/Kg	1	12/17/2018 4:56:49 PM	42099
n-Propylbenzene	ND	0.0038	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
sec-Butylbenzene	ND	0.0054	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Styrene	ND	0.0037	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
tert-Butylbenzene	ND	0.0045	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0032	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0048	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 20 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C2L1 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 2:35:00 PM

Lab ID: 1812773-007

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0038	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
trans-1,2-DCE	ND	0.0044	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
trans-1,3-Dichloropropene	ND	0.0050	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,2,3-Trichlorobenzene	ND	0.0042	0.095		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,2,4-Trichlorobenzene	ND	0.0048	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,1,1-Trichloroethane	ND	0.0043	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,1,2-Trichloroethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Trichloroethene (TCE)	ND	0.0055	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Trichlorofluoromethane	ND	0.016	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,2,3-Trichloropropane	ND	0.0077	0.095		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Vinyl chloride	ND	0.0031	0.048		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Xylenes, Total	ND	0.012	0.095		mg/Kg	1	12/17/2018 4:56:49 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 4:56:49 PM	42099
Surr: Dibromofluoromethane	107		70-130		%Rec	1	12/17/2018 4:56:49 PM	42099
Surr: 1,2-Dichloroethane-d4	96.0		70-130		%Rec	1	12/17/2018 4:56:49 PM	42099
Surr: Toluene-d8	104		70-130		%Rec	1	12/17/2018 4:56:49 PM	42099
Surr: 4-Bromofluorobenzene	98.0		70-130		%Rec	1	12/17/2018 4:56:49 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 21 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C2L2 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 3:00:00 PM

Lab ID: 1812773-008

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: Irm
Diesel Range Organics (DRO)	5300	20	98		mg/Kg	10	12/17/2018 1:14:01 PM	42114
Motor Oil Range Organics (MRO)	5500	490	490		mg/Kg	10	12/17/2018 1:14:01 PM	42114
Surr: DNOP	0	0	50.6-138	S	%Rec	10	12/17/2018 1:14:01 PM	42114
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.8		mg/Kg	1	12/15/2018 12:12:05 A	42099
Surr: BFB	93.6	0	73.8-119		%Rec	1	12/15/2018 12:12:05 A	42099
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	4.9	0.13	0.64		mg/Kg	20	12/18/2018 10:51:00 A	42146
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:39:41 PM	42119
Arsenic	16	7.1	12		mg/Kg	5	12/20/2018 2:39:41 PM	42119
Barium	350	0.12	0.50		mg/Kg	5	12/20/2018 2:39:41 PM	42119
Beryllium	1.4	0.046	0.75		mg/Kg	5	12/20/2018 2:39:41 PM	42119
Cadmium	ND	0.12	0.50		mg/Kg	5	12/20/2018 2:39:41 PM	42119
Chromium	92	0.40	1.5		mg/Kg	5	12/20/2018 2:39:41 PM	42119
Cobalt	8.0	0.53	1.5		mg/Kg	5	12/22/2018 4:40:23 PM	42119
Lead	44	1.2	1.2		mg/Kg	5	12/20/2018 2:39:41 PM	42119
Nickel	40	0.74	2.5		mg/Kg	5	12/20/2018 2:39:41 PM	42119
Selenium	ND	6.3	12		mg/Kg	5	12/20/2018 2:39:41 PM	42119
Silver	ND	0.16	1.2		mg/Kg	5	12/20/2018 2:39:41 PM	42119
Vanadium	36	0.33	12		mg/Kg	5	12/20/2018 2:39:41 PM	42119
Zinc	390	2.0	12		mg/Kg	5	12/22/2018 4:40:23 PM	42119
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Benzene	ND	0.0039	0.024		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Toluene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Ethylbenzene	ND	0.0028	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.011	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,2,4-Trimethylbenzene	ND	0.0044	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,3,5-Trimethylbenzene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0049	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0043	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Naphthalene	ND	0.0095	0.095		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1-Methylnaphthalene	ND	0.027	0.19		mg/Kg	1	12/17/2018 5:26:06 PM	42099
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Acetone	ND	0.040	0.71		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Bromobenzene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Bromodichloromethane	ND	0.0043	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 22 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C2L2 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 3:00:00 PM

Lab ID: 1812773-008

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0043	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Bromomethane	ND	0.011	0.14		mg/Kg	1	12/17/2018 5:26:06 PM	42099
2-Butanone	ND	0.055	0.48		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Carbon disulfide	ND	0.016	0.48		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Carbon tetrachloride	ND	0.0045	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Chlorobenzene	ND	0.0061	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Chloroethane	ND	0.0070	0.095		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Chloroform	ND	0.0038	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Chloromethane	ND	0.0046	0.14		mg/Kg	1	12/17/2018 5:26:06 PM	42099
2-Chlorotoluene	ND	0.0041	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
4-Chlorotoluene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
cis-1,2-DCE	ND	0.0065	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
cis-1,3-Dichloropropene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0049	0.095		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Dibromochloromethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Dibromomethane	ND	0.0051	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,2-Dichlorobenzene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,3-Dichlorobenzene	ND	0.0041	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,4-Dichlorobenzene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Dichlorodifluoromethane	ND	0.011	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,1-Dichloroethane	ND	0.0030	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,1-Dichloroethene	ND	0.019	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,2-Dichloropropane	ND	0.0035	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,3-Dichloropropane	ND	0.0052	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
2,2-Dichloropropane	ND	0.016	0.095		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,1-Dichloropropene	ND	0.0043	0.095		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Hexachlorobutadiene	ND	0.0048	0.095		mg/Kg	1	12/17/2018 5:26:06 PM	42099
2-Hexanone	ND	0.0079	0.48		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Isopropylbenzene	ND	0.0034	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
4-Isopropyltoluene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
4-Methyl-2-pentanone	ND	0.0090	0.48		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Methylene chloride	ND	0.0084	0.14		mg/Kg	1	12/17/2018 5:26:06 PM	42099
n-Butylbenzene	ND	0.0044	0.14		mg/Kg	1	12/17/2018 5:26:06 PM	42099
n-Propylbenzene	ND	0.0038	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
sec-Butylbenzene	ND	0.0054	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Styrene	ND	0.0037	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
tert-Butylbenzene	ND	0.0045	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0032	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0048	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 23 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C2L2 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 3:00:00 PM

Lab ID: 1812773-008

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0038	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
trans-1,2-DCE	ND	0.0044	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
trans-1,3-Dichloropropene	ND	0.0050	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,2,3-Trichlorobenzene	ND	0.0042	0.095		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,2,4-Trichlorobenzene	ND	0.0048	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,1,1-Trichloroethane	ND	0.0043	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,1,2-Trichloroethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Trichloroethene (TCE)	ND	0.0055	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Trichlorofluoromethane	ND	0.016	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,2,3-Trichloropropane	ND	0.0077	0.095		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Vinyl chloride	ND	0.0031	0.048		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Xylenes, Total	ND	0.012	0.095		mg/Kg	1	12/17/2018 5:26:06 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 5:26:06 PM	42099
Surr: Dibromofluoromethane	105		70-130		%Rec	1	12/17/2018 5:26:06 PM	42099
Surr: 1,2-Dichloroethane-d4	101		70-130		%Rec	1	12/17/2018 5:26:06 PM	42099
Surr: Toluene-d8	106		70-130		%Rec	1	12/17/2018 5:26:06 PM	42099
Surr: 4-Bromofluorobenzene	98.3		70-130		%Rec	1	12/17/2018 5:26:06 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 24 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C2L2 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 3:10:00 PM

Lab ID: 1812773-009

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: irm
Diesel Range Organics (DRO)	1100	19	97		mg/Kg	10	12/17/2018 2:20:09 PM	42114
Motor Oil Range Organics (MRO)	850	490	490		mg/Kg	10	12/17/2018 2:20:09 PM	42114
Surr: DNOP	0	0	50.6-138	S	%Rec	10	12/17/2018 2:20:09 PM	42114
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.3	4.6		mg/Kg	1	12/15/2018 12:35:31 A	42099
Surr: BFB	94.9	0	73.8-119		%Rec	1	12/15/2018 12:35:31 A	42099
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	0.033	0.0064	0.032		mg/Kg	1	12/18/2018 10:53:01 A	42146
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:41:22 PM	42119
Arsenic	7.7	7.0	12	J	mg/Kg	5	12/20/2018 2:41:22 PM	42119
Barium	320	0.11	0.49		mg/Kg	5	12/20/2018 2:41:22 PM	42119
Beryllium	1.6	0.045	0.74		mg/Kg	5	12/20/2018 2:41:22 PM	42119
Cadmium	ND	0.12	0.49		mg/Kg	5	12/20/2018 2:41:22 PM	42119
Chromium	55	0.39	1.5		mg/Kg	5	12/20/2018 2:41:22 PM	42119
Cobalt	19	0.52	1.5		mg/Kg	5	12/22/2018 4:42:01 PM	42119
Lead	19	1.2	1.2		mg/Kg	5	12/20/2018 2:41:22 PM	42119
Nickel	23	0.73	2.5		mg/Kg	5	12/20/2018 2:41:22 PM	42119
Selenium	ND	6.2	12		mg/Kg	5	12/20/2018 2:41:22 PM	42119
Silver	ND	0.16	1.2		mg/Kg	5	12/20/2018 2:41:22 PM	42119
Vanadium	33	0.33	12		mg/Kg	5	12/20/2018 2:41:22 PM	42119
Zinc	150	1.9	12		mg/Kg	5	12/22/2018 4:42:01 PM	42119
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Benzene	ND	0.0037	0.023		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Toluene	ND	0.0044	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Ethylbenzene	ND	0.0027	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.011	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,2,4-Trimethylbenzene	ND	0.0042	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,3,5-Trimethylbenzene	ND	0.0044	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0047	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0042	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Naphthalene	ND	0.0092	0.092		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1-Methylnaphthalene	ND	0.026	0.18		mg/Kg	1	12/17/2018 5:55:07 PM	42099
2-Methylnaphthalene	ND	0.020	0.18		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Acetone	ND	0.038	0.69		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Bromobenzene	ND	0.0044	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Bromodichloromethane	ND	0.0042	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 25 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C2L2 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 3:10:00 PM

Lab ID: 1812773-009

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0041	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Bromomethane	ND	0.011	0.14		mg/Kg	1	12/17/2018 5:55:07 PM	42099
2-Butanone	ND	0.053	0.46		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Carbon disulfide	ND	0.015	0.46		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Carbon tetrachloride	ND	0.0043	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Chlorobenzene	ND	0.0059	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Chloroethane	ND	0.0067	0.092		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Chloroform	ND	0.0037	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Chloromethane	ND	0.0044	0.14		mg/Kg	1	12/17/2018 5:55:07 PM	42099
2-Chlorotoluene	ND	0.0040	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
4-Chlorotoluene	ND	0.0038	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
cis-1,2-DCE	ND	0.0063	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
cis-1,3-Dichloropropene	ND	0.0039	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0047	0.092		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Dibromochloromethane	ND	0.0033	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Dibromomethane	ND	0.0049	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,2-Dichlorobenzene	ND	0.0038	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,3-Dichlorobenzene	ND	0.0040	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,4-Dichlorobenzene	ND	0.0038	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Dichlorodifluoromethane	ND	0.011	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,1-Dichloroethane	ND	0.0029	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,1-Dichloroethene	ND	0.018	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,2-Dichloropropane	ND	0.0033	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,3-Dichloropropane	ND	0.0050	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
2,2-Dichloropropane	ND	0.015	0.092		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,1-Dichloropropene	ND	0.0042	0.092		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Hexachlorobutadiene	ND	0.0047	0.092		mg/Kg	1	12/17/2018 5:55:07 PM	42099
2-Hexanone	ND	0.0076	0.46		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Isopropylbenzene	ND	0.0033	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
4-Isopropyltoluene	ND	0.0038	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
4-Methyl-2-pentanone	ND	0.0087	0.46		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Methylene chloride	ND	0.0081	0.14		mg/Kg	1	12/17/2018 5:55:07 PM	42099
n-Butylbenzene	ND	0.0043	0.14		mg/Kg	1	12/17/2018 5:55:07 PM	42099
n-Propylbenzene	ND	0.0037	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
sec-Butylbenzene	ND	0.0052	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Styrene	ND	0.0036	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
tert-Butylbenzene	ND	0.0043	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0031	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0046	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 26 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: LTU C2L2 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 3:10:00 PM

Lab ID: 1812773-009

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0037	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
trans-1,2-DCE	ND	0.0042	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
trans-1,3-Dichloropropene	ND	0.0048	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,2,3-Trichlorobenzene	ND	0.0040	0.092		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,2,4-Trichlorobenzene	ND	0.0046	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,1,1-Trichloroethane	ND	0.0041	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,1,2-Trichloroethane	ND	0.0032	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Trichloroethene (TCE)	ND	0.0053	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Trichlorofluoromethane	ND	0.016	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,2,3-Trichloropropane	ND	0.0074	0.092		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Vinyl chloride	ND	0.0030	0.046		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Xylenes, Total	ND	0.012	0.092		mg/Kg	1	12/17/2018 5:55:07 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 5:55:07 PM	42099
Surr: Dibromofluoromethane	107		70-130		%Rec	1	12/17/2018 5:55:07 PM	42099
Surr: 1,2-Dichloroethane-d4	99.3		70-130		%Rec	1	12/17/2018 5:55:07 PM	42099
Surr: Toluene-d8	106		70-130		%Rec	1	12/17/2018 5:55:07 PM	42099
Surr: 4-Bromofluorobenzene	98.0		70-130		%Rec	1	12/17/2018 5:55:07 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 27 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C3L1 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 11:15:00 AM

Lab ID: 1812773-010

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: TOM
Diesel Range Organics (DRO)	61	2.0	9.9		mg/Kg	1	12/18/2018 10:15:29 P	42114
Motor Oil Range Organics (MRO)	84	50	50		mg/Kg	1	12/18/2018 10:15:29 P	42114
Surr: DNOP	106	0	50.6-138		%Rec	1	12/18/2018 10:15:29 P	42114
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	5.0		mg/Kg	1	12/15/2018 12:58:58 A	42099
Surr: BFB	97.7	0	73.8-119		%Rec	1	12/15/2018 12:58:58 A	42099
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	1.4	0.033	0.16		mg/Kg	5	12/18/2018 10:55:03 A	42146
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:43:07 PM	42119
Arsenic	ND	6.8	12		mg/Kg	5	12/20/2018 2:43:07 PM	42119
Barium	360	0.11	0.48		mg/Kg	5	12/20/2018 2:43:07 PM	42119
Beryllium	1.7	0.044	0.72		mg/Kg	5	12/20/2018 2:43:07 PM	42119
Cadmium	ND	0.12	0.48		mg/Kg	5	12/20/2018 2:43:07 PM	42119
Chromium	95	0.38	1.4		mg/Kg	5	12/20/2018 2:43:07 PM	42119
Cobalt	7.7	0.51	1.4		mg/Kg	5	12/22/2018 4:50:20 PM	42119
Lead	15	1.2	1.2		mg/Kg	5	12/20/2018 2:43:07 PM	42119
Nickel	22	0.72	2.4		mg/Kg	5	12/20/2018 2:43:07 PM	42119
Selenium	ND	6.0	12		mg/Kg	5	12/20/2018 2:43:07 PM	42119
Silver	ND	0.15	1.2		mg/Kg	5	12/20/2018 2:43:07 PM	42119
Vanadium	35	0.32	12		mg/Kg	5	12/20/2018 2:43:07 PM	42119
Zinc	230	1.9	12		mg/Kg	5	12/22/2018 4:50:20 PM	42119
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Benzene	ND	0.0041	0.025		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Toluene	ND	0.0047	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Ethylbenzene	ND	0.0029	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.012	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,2,4-Trimethylbenzene	ND	0.0045	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,3,5-Trimethylbenzene	ND	0.0048	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0051	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0045	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Naphthalene	ND	0.0099	0.099		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1-Methylnaphthalene	ND	0.028	0.20		mg/Kg	1	12/17/2018 6:24:25 PM	42099
2-Methylnaphthalene	ND	0.022	0.20		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Acetone	ND	0.041	0.74		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Bromobenzene	ND	0.0048	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Bromodichloromethane	ND	0.0045	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 28 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C3L1 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 11:15:00 AM

Lab ID: 1812773-010

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0045	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Bromomethane	ND	0.012	0.15		mg/Kg	1	12/17/2018 6:24:25 PM	42099
2-Butanone	ND	0.057	0.50		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Carbon disulfide	ND	0.016	0.50		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Carbon tetrachloride	ND	0.0047	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Chlorobenzene	ND	0.0063	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Chloroethane	ND	0.0073	0.099		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Chloroform	ND	0.0040	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Chloromethane	ND	0.0047	0.15		mg/Kg	1	12/17/2018 6:24:25 PM	42099
2-Chlorotoluene	ND	0.0043	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
4-Chlorotoluene	ND	0.0041	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
cis-1,2-DCE	ND	0.0068	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
cis-1,3-Dichloropropene	ND	0.0042	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0051	0.099		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Dibromochloromethane	ND	0.0035	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Dibromomethane	ND	0.0053	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,2-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,3-Dichlorobenzene	ND	0.0043	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,4-Dichlorobenzene	ND	0.0041	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Dichlorodifluoromethane	ND	0.012	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,1-Dichloroethane	ND	0.0032	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,1-Dichloroethene	ND	0.020	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,2-Dichloropropane	ND	0.0036	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,3-Dichloropropane	ND	0.0054	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
2,2-Dichloropropane	ND	0.016	0.099		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,1-Dichloropropene	ND	0.0045	0.099		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Hexachlorobutadiene	ND	0.0050	0.099		mg/Kg	1	12/17/2018 6:24:25 PM	42099
2-Hexanone	ND	0.0082	0.50		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Isopropylbenzene	ND	0.0036	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
4-Isopropyltoluene	ND	0.0041	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
4-Methyl-2-pentanone	ND	0.0094	0.50		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Methylene chloride	ND	0.0088	0.15		mg/Kg	1	12/17/2018 6:24:25 PM	42099
n-Butylbenzene	ND	0.0046	0.15		mg/Kg	1	12/17/2018 6:24:25 PM	42099
n-Propylbenzene	ND	0.0040	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
sec-Butylbenzene	ND	0.0056	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Styrene	ND	0.0039	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
tert-Butylbenzene	ND	0.0047	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0033	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0050	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 29 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical ReportLab Order **1812773**Date Reported: **1/2/2019****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Marathon**Client Sample ID:** LTU C3L1 ZOI**Project:** Land Treatment Unit**Collection Date:** 12/11/2018 11:15:00 AM**Lab ID:** 1812773-010**Matrix:** SOIL**Received Date:** 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0040	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
trans-1,2-DCE	ND	0.0045	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
trans-1,3-Dichloropropene	ND	0.0052	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,2,3-Trichlorobenzene	ND	0.0044	0.099		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,2,4-Trichlorobenzene	ND	0.0050	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,1,1-Trichloroethane	ND	0.0045	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,1,2-Trichloroethane	ND	0.0035	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Trichloroethene (TCE)	ND	0.0057	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Trichlorofluoromethane	ND	0.017	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,2,3-Trichloropropane	ND	0.0080	0.099		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Vinyl chloride	ND	0.0032	0.050		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Xylenes, Total	ND	0.012	0.099		mg/Kg	1	12/17/2018 6:24:25 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 6:24:25 PM	42099
Surr: Dibromofluoromethane	106		70-130		%Rec	1	12/17/2018 6:24:25 PM	42099
Surr: 1,2-Dichloroethane-d4	104		70-130		%Rec	1	12/17/2018 6:24:25 PM	42099
Surr: Toluene-d8	107		70-130		%Rec	1	12/17/2018 6:24:25 PM	42099
Surr: 4-Bromofluorobenzene	97.4		70-130		%Rec	1	12/17/2018 6:24:25 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 30 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C3L1 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 11:30:00 AM

Lab ID: 1812773-011

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: irm
Diesel Range Organics (DRO)	ND	1.9	9.5		mg/Kg	1	12/17/2018 7:12:07 PM	42114
Motor Oil Range Organics (MRO)	ND	48	48		mg/Kg	1	12/17/2018 7:12:07 PM	42114
Surr: DNOP	106	0	50.6-138		%Rec	1	12/17/2018 7:12:07 PM	42114
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.9		mg/Kg	1	12/15/2018 1:22:23 AM	42099
Surr: BFB	96.2	0	73.8-119		%Rec	1	12/15/2018 1:22:23 AM	42099
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	0.0085	0.0069	0.034	J	mg/Kg	1	12/18/2018 10:57:04 A	42146
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:44:59 PM	42119
Arsenic	ND	7.1	12		mg/Kg	5	12/20/2018 2:44:59 PM	42119
Barium	280	0.12	0.50		mg/Kg	5	12/20/2018 2:44:59 PM	42119
Beryllium	1.8	0.046	0.75		mg/Kg	5	12/20/2018 2:44:59 PM	42119
Cadmium	ND	0.12	0.50		mg/Kg	5	12/20/2018 2:44:59 PM	42119
Chromium	19	0.40	1.5		mg/Kg	5	12/20/2018 2:44:59 PM	42119
Cobalt	7.0	0.53	1.5		mg/Kg	5	12/22/2018 4:52:00 PM	42119
Lead	ND	1.2	1.2		mg/Kg	5	12/20/2018 2:44:59 PM	42119
Nickel	17	0.75	2.5		mg/Kg	5	12/20/2018 2:44:59 PM	42119
Selenium	ND	6.3	12		mg/Kg	5	12/20/2018 2:44:59 PM	42119
Silver	ND	0.16	1.2		mg/Kg	5	12/20/2018 2:44:59 PM	42119
Vanadium	31	0.33	12		mg/Kg	5	12/20/2018 2:44:59 PM	42119
Zinc	26	2.0	12		mg/Kg	5	12/22/2018 4:52:00 PM	42119
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Benzene	ND	0.0040	0.024		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Toluene	ND	0.0046	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Ethylbenzene	ND	0.0028	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.012	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,2,4-Trimethylbenzene	ND	0.0044	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,3,5-Trimethylbenzene	ND	0.0047	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0050	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0044	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Naphthalene	ND	0.0097	0.097		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1-Methylnaphthalene	ND	0.028	0.19		mg/Kg	1	12/17/2018 6:53:38 PM	42099
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Acetone	ND	0.040	0.73		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Bromobenzene	ND	0.0047	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Bromodichloromethane	ND	0.0044	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 31 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C3L1 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 11:30:00 AM

Lab ID: 1812773-011

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0044	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Bromomethane	ND	0.012	0.15		mg/Kg	1	12/17/2018 6:53:38 PM	42099
2-Butanone	ND	0.056	0.49		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Carbon disulfide	ND	0.016	0.49		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Carbon tetrachloride	ND	0.0046	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Chlorobenzene	ND	0.0062	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Chloroethane	ND	0.0072	0.097		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Chloroform	ND	0.0039	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Chloromethane	ND	0.0046	0.15		mg/Kg	1	12/17/2018 6:53:38 PM	42099
2-Chlorotoluene	ND	0.0042	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
4-Chlorotoluene	ND	0.0040	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
cis-1,2-DCE	ND	0.0066	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
cis-1,3-Dichloropropene	ND	0.0041	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0050	0.097		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Dibromochloromethane	ND	0.0034	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Dibromomethane	ND	0.0052	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,2-Dichlorobenzene	ND	0.0040	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,3-Dichlorobenzene	ND	0.0042	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,4-Dichlorobenzene	ND	0.0041	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Dichlorodifluoromethane	ND	0.011	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,1-Dichloroethane	ND	0.0031	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,1-Dichloroethene	ND	0.019	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,2-Dichloropropane	ND	0.0035	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,3-Dichloropropane	ND	0.0053	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
2,2-Dichloropropane	ND	0.016	0.097		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,1-Dichloropropene	ND	0.0044	0.097		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Hexachlorobutadiene	ND	0.0049	0.097		mg/Kg	1	12/17/2018 6:53:38 PM	42099
2-Hexanone	ND	0.0081	0.49		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Isopropylbenzene	ND	0.0035	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
4-Isopropyltoluene	ND	0.0040	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
4-Methyl-2-pentanone	ND	0.0092	0.49		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Methylene chloride	ND	0.0086	0.15		mg/Kg	1	12/17/2018 6:53:38 PM	42099
n-Butylbenzene	ND	0.0045	0.15		mg/Kg	1	12/17/2018 6:53:38 PM	42099
n-Propylbenzene	ND	0.0039	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
sec-Butylbenzene	ND	0.0055	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Styrene	ND	0.0038	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
tert-Butylbenzene	ND	0.0046	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0033	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0049	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 32 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical ReportLab Order **1812773**Date Reported: **1/2/2019****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Marathon**Client Sample ID:** LTU C3L1 TZ**Project:** Land Treatment Unit**Collection Date:** 12/11/2018 11:30:00 AM**Lab ID:** 1812773-011**Matrix:** SOIL**Received Date:** 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0039	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
trans-1,2-DCE	ND	0.0044	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
trans-1,3-Dichloropropene	ND	0.0051	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,2,3-Trichlorobenzene	ND	0.0043	0.097		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,2,4-Trichlorobenzene	ND	0.0049	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,1,1-Trichloroethane	ND	0.0044	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,1,2-Trichloroethane	ND	0.0034	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Trichloroethene (TCE)	ND	0.0056	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Trichlorofluoromethane	ND	0.016	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,2,3-Trichloropropane	ND	0.0079	0.097		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Vinyl chloride	ND	0.0032	0.049		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Xylenes, Total	ND	0.012	0.097		mg/Kg	1	12/17/2018 6:53:38 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 6:53:38 PM	42099
Surr: Dibromofluoromethane	108		70-130		%Rec	1	12/17/2018 6:53:38 PM	42099
Surr: 1,2-Dichloroethane-d4	105		70-130		%Rec	1	12/17/2018 6:53:38 PM	42099
Surr: Toluene-d8	108		70-130		%Rec	1	12/17/2018 6:53:38 PM	42099
Surr: 4-Bromofluorobenzene	98.7		70-130		%Rec	1	12/17/2018 6:53:38 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 33 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C3L2 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 10:40:00 AM

Lab ID: 1812773-012

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: Irm
Diesel Range Organics (DRO)	ND	2.0	10		mg/Kg	1	12/17/2018 7:34:05 PM	42114
Motor Oil Range Organics (MRO)	ND	50	50		mg/Kg	1	12/17/2018 7:34:05 PM	42114
Surr: DNOP	106	0	50.6-138		%Rec	1	12/17/2018 7:34:05 PM	42114
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.9		mg/Kg	1	12/15/2018 1:45:49 AM	42099
Surr: BFB	97.6	0	73.8-119		%Rec	1	12/15/2018 1:45:49 AM	42099
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	ND	0.0067	0.033		mg/Kg	1	12/18/2018 10:58:59 A	42146
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:46:48 PM	42119
Arsenic	ND	6.9	12		mg/Kg	5	12/20/2018 2:46:48 PM	42119
Barium	330	0.11	0.48		mg/Kg	5	12/20/2018 2:46:48 PM	42119
Beryllium	1.6	0.044	0.73		mg/Kg	5	12/20/2018 2:46:48 PM	42119
Cadmium	ND	0.12	0.48		mg/Kg	5	12/20/2018 2:46:48 PM	42119
Chromium	16	0.39	1.5		mg/Kg	5	12/20/2018 2:46:48 PM	42119
Cobalt	6.5	0.51	1.5		mg/Kg	5	12/22/2018 4:53:37 PM	42119
Lead	3.9	1.2	1.2		mg/Kg	5	12/20/2018 2:46:48 PM	42119
Nickel	16	0.72	2.4		mg/Kg	5	12/20/2018 2:46:48 PM	42119
Selenium	ND	6.1	12		mg/Kg	5	12/20/2018 2:46:48 PM	42119
Silver	ND	0.16	1.2		mg/Kg	5	12/20/2018 2:46:48 PM	42119
Vanadium	26	0.32	12		mg/Kg	5	12/20/2018 2:46:48 PM	42119
Zinc	21	1.9	12		mg/Kg	5	12/22/2018 4:53:37 PM	42119
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Benzene	ND	0.0040	0.024		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Toluene	ND	0.0046	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Ethylbenzene	ND	0.0028	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.012	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,2,4-Trimethylbenzene	ND	0.0044	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,3,5-Trimethylbenzene	ND	0.0047	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0050	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0044	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Naphthalene	ND	0.0097	0.097		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1-Methylnaphthalene	ND	0.028	0.19		mg/Kg	1	12/17/2018 7:22:52 PM	42099
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Acetone	ND	0.040	0.73		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Bromobenzene	ND	0.0047	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Bromodichloromethane	ND	0.0044	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 34 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C3L2 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 10:40:00 AM

Lab ID: 1812773-012

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0044	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Bromomethane	ND	0.012	0.15		mg/Kg	1	12/17/2018 7:22:52 PM	42099
2-Butanone	ND	0.056	0.49		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Carbon disulfide	ND	0.016	0.49		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Carbon tetrachloride	ND	0.0046	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Chlorobenzene	ND	0.0062	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Chloroethane	ND	0.0071	0.097		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Chloroform	ND	0.0039	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Chloromethane	ND	0.0046	0.15		mg/Kg	1	12/17/2018 7:22:52 PM	42099
2-Chlorotoluene	ND	0.0042	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
4-Chlorotoluene	ND	0.0040	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
cis-1,2-DCE	ND	0.0066	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
cis-1,3-Dichloropropene	ND	0.0041	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0050	0.097		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Dibromochloromethane	ND	0.0034	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Dibromomethane	ND	0.0052	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,2-Dichlorobenzene	ND	0.0040	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,3-Dichlorobenzene	ND	0.0042	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,4-Dichlorobenzene	ND	0.0041	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Dichlorodifluoromethane	ND	0.011	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,1-Dichloroethane	ND	0.0031	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,1-Dichloroethene	ND	0.019	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,2-Dichloropropane	ND	0.0035	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,3-Dichloropropane	ND	0.0053	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
2,2-Dichloropropane	ND	0.016	0.097		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,1-Dichloropropene	ND	0.0044	0.097		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Hexachlorobutadiene	ND	0.0049	0.097		mg/Kg	1	12/17/2018 7:22:52 PM	42099
2-Hexanone	ND	0.0081	0.49		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Isopropylbenzene	ND	0.0035	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
4-Isopropyltoluene	ND	0.0040	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
4-Methyl-2-pentanone	ND	0.0092	0.49		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Methylene chloride	ND	0.0086	0.15		mg/Kg	1	12/17/2018 7:22:52 PM	42099
n-Butylbenzene	ND	0.0045	0.15		mg/Kg	1	12/17/2018 7:22:52 PM	42099
n-Propylbenzene	ND	0.0039	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
sec-Butylbenzene	ND	0.0055	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Styrene	ND	0.0038	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
tert-Butylbenzene	ND	0.0046	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0033	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0049	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 35 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C3L2 ZOI

Project: Land Treatment Unit

Collection Date: 12/11/2018 10:40:00 AM

Lab ID: 1812773-012

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0039	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
trans-1,2-DCE	ND	0.0044	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
trans-1,3-Dichloropropene	ND	0.0051	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,2,3-Trichlorobenzene	ND	0.0043	0.097		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,2,4-Trichlorobenzene	ND	0.0049	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,1,1-Trichloroethane	ND	0.0044	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,1,2-Trichloroethane	ND	0.0034	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Trichloroethene (TCE)	ND	0.0056	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Trichlorofluoromethane	ND	0.016	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,2,3-Trichloropropane	ND	0.0079	0.097		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Vinyl chloride	ND	0.0032	0.049		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Xylenes, Total	ND	0.012	0.097		mg/Kg	1	12/17/2018 7:22:52 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 7:22:52 PM	42099
Surr: Dibromofluoromethane	110		70-130		%Rec	1	12/17/2018 7:22:52 PM	42099
Surr: 1,2-Dichloroethane-d4	103		70-130		%Rec	1	12/17/2018 7:22:52 PM	42099
Surr: Toluene-d8	108		70-130		%Rec	1	12/17/2018 7:22:52 PM	42099
Surr: 4-Bromofluorobenzene	99.0		70-130		%Rec	1	12/17/2018 7:22:52 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 36 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon

Client Sample ID: LTU C3L2 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 10:55:00 AM

Lab ID: 1812773-013

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS								Analyst: irm
Diesel Range Organics (DRO)	ND	1.9	9.7		mg/Kg	1	12/17/2018 7:55:58 PM	42114
Motor Oil Range Organics (MRO)	ND	49	49		mg/Kg	1	12/17/2018 7:55:58 PM	42114
Surr: DNOP	117	0	50.6-138		%Rec	1	12/17/2018 7:55:58 PM	42114
EPA METHOD 8015D: GASOLINE RANGE								Analyst: NSB
Gasoline Range Organics (GRO)	ND	1.4	4.8		mg/Kg	1	12/15/2018 2:09:15 AM	42099
Surr: BFB	97.6	0	73.8-119		%Rec	1	12/15/2018 2:09:15 AM	42099
EPA METHOD 7471: MERCURY								Analyst: pmf
Mercury	ND	0.0068	0.034		mg/Kg	1	12/18/2018 11:00:53 A	42146
EPA METHOD 6010B: SOIL METALS								Analyst: rde
Antimony	ND	1.8	12		mg/Kg	5	12/20/2018 2:56:18 PM	42119
Arsenic	ND	7.0	12		mg/Kg	5	12/20/2018 2:56:18 PM	42119
Barium	350	0.11	0.49		mg/Kg	5	12/20/2018 2:56:18 PM	42119
Beryllium	1.3	0.045	0.74		mg/Kg	5	12/20/2018 2:56:18 PM	42119
Cadmium	ND	0.12	0.49		mg/Kg	5	12/20/2018 2:56:18 PM	42119
Chromium	12	0.39	1.5		mg/Kg	5	12/20/2018 2:56:18 PM	42119
Cobalt	5.5	0.52	1.5		mg/Kg	5	12/22/2018 4:55:16 PM	42119
Lead	3.6	1.2	1.2		mg/Kg	5	12/20/2018 2:56:18 PM	42119
Nickel	12	0.73	2.5		mg/Kg	5	12/20/2018 2:56:18 PM	42119
Selenium	ND	6.2	12		mg/Kg	5	12/20/2018 2:56:18 PM	42119
Silver	ND	0.16	1.2		mg/Kg	5	12/20/2018 2:56:18 PM	42119
Vanadium	22	0.33	12		mg/Kg	5	12/20/2018 2:56:18 PM	42119
Zinc	18	1.9	12		mg/Kg	5	12/22/2018 4:55:16 PM	42119
EPA METHOD 8260B: VOLATILES								Analyst: DJF
Benzene	ND	0.0039	0.024		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Toluene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Ethylbenzene	ND	0.0028	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Methyl tert-butyl ether (MTBE)	ND	0.011	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,2,4-Trimethylbenzene	ND	0.0044	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,3,5-Trimethylbenzene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,2-Dichloroethane (EDC)	ND	0.0049	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,2-Dibromoethane (EDB)	ND	0.0044	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Naphthalene	ND	0.0096	0.096		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1-Methylnaphthalene	ND	0.028	0.19		mg/Kg	1	12/17/2018 7:52:13 PM	42099
2-Methylnaphthalene	ND	0.021	0.19		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Acetone	ND	0.040	0.72		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Bromobenzene	ND	0.0046	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Bromodichloromethane	ND	0.0044	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 37 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C3L2 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 10:55:00 AM

Lab ID: 1812773-013

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Bromoform	ND	0.0043	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Bromomethane	ND	0.012	0.14		mg/Kg	1	12/17/2018 7:52:13 PM	42099
2-Butanone	ND	0.056	0.48		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Carbon disulfide	ND	0.016	0.48		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Carbon tetrachloride	ND	0.0046	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Chlorobenzene	ND	0.0062	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Chloroethane	ND	0.0071	0.096		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Chloroform	ND	0.0039	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Chloromethane	ND	0.0046	0.14		mg/Kg	1	12/17/2018 7:52:13 PM	42099
2-Chlorotoluene	ND	0.0042	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
4-Chlorotoluene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
cis-1,2-DCE	ND	0.0066	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
cis-1,3-Dichloropropene	ND	0.0041	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,2-Dibromo-3-chloropropane	ND	0.0049	0.096		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Dibromochloromethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Dibromomethane	ND	0.0052	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,2-Dichlorobenzene	ND	0.0039	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,3-Dichlorobenzene	ND	0.0042	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,4-Dichlorobenzene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Dichlorodifluoromethane	ND	0.011	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,1-Dichloroethane	ND	0.0031	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,1-Dichloroethene	ND	0.019	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,2-Dichloropropane	ND	0.0035	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,3-Dichloropropane	ND	0.0052	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
2,2-Dichloropropane	ND	0.016	0.096		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,1-Dichloropropene	ND	0.0044	0.096		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Hexachlorobutadiene	ND	0.0049	0.096		mg/Kg	1	12/17/2018 7:52:13 PM	42099
2-Hexanone	ND	0.0080	0.48		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Isopropylbenzene	ND	0.0035	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
4-Isopropyltoluene	ND	0.0040	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
4-Methyl-2-pentanone	ND	0.0091	0.48		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Methylene chloride	ND	0.0085	0.14		mg/Kg	1	12/17/2018 7:52:13 PM	42099
n-Butylbenzene	ND	0.0045	0.14		mg/Kg	1	12/17/2018 7:52:13 PM	42099
n-Propylbenzene	ND	0.0038	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
sec-Butylbenzene	ND	0.0054	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Styrene	ND	0.0038	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
tert-Butylbenzene	ND	0.0045	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,1,1,2-Tetrachloroethane	ND	0.0032	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,1,2,2-Tetrachloroethane	ND	0.0049	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 38 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1812773

Date Reported: 1/2/2019

CLIENT: Marathon

Client Sample ID: LTU C3L2 TZ

Project: Land Treatment Unit

Collection Date: 12/11/2018 10:55:00 AM

Lab ID: 1812773-013

Matrix: SOIL

Received Date: 12/13/2018 8:57:00 AM

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8260B: VOLATILES							Analyst: DJF	
Tetrachloroethene (PCE)	ND	0.0038	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
trans-1,2-DCE	ND	0.0044	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
trans-1,3-Dichloropropene	ND	0.0051	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,2,3-Trichlorobenzene	ND	0.0042	0.096		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,2,4-Trichlorobenzene	ND	0.0049	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,1,1-Trichloroethane	ND	0.0043	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,1,2-Trichloroethane	ND	0.0034	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Trichloroethene (TCE)	ND	0.0056	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Trichlorofluoromethane	ND	0.016	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,2,3-Trichloropropane	ND	0.0078	0.096		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Vinyl chloride	ND	0.0031	0.048		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Xylenes, Total	ND	0.012	0.096		mg/Kg	1	12/17/2018 7:52:13 PM	42099
1,4-Dioxane	ND	0	0		mg/Kg	1	12/17/2018 7:52:13 PM	42099
Surr: Dibromofluoromethane	107		70-130		%Rec	1	12/17/2018 7:52:13 PM	42099
Surr: 1,2-Dichloroethane-d4	103		70-130		%Rec	1	12/17/2018 7:52:13 PM	42099
Surr: Toluene-d8	109		70-130		%Rec	1	12/17/2018 7:52:13 PM	42099
Surr: 4-Bromofluorobenzene	99.0		70-130		%Rec	1	12/17/2018 7:52:13 PM	42099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 39 of 50
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-001 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/20110:38 AM
Matrix Soil **Sampling Time** 12:45 PM
Client Sample ID 1812773-001B/LTU C1L1 ZOI
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/Kg	0.22	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Anthracene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Fluorene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Naphthalene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Pyrene	ND	mg/Kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	12/22/2018 1:58:00 AM	TGT	EPA 8270D	
%moisture	13.8	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C585
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT: CertID0095; FL(NELAP): E871099

Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: HALL ENVIRONMENTAL ANALYSIS LAB **Batch #:** 181217021
Address: 4901 HAWKINS NE SUITE D **Project Name:** 1812773
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Analytical Results Report

Sample Number	181217021-001	Sampling Date	12/11/2018	Date/Time Received	12/14/20110:38 AM
Matrix	Soil	Sampling Time	12:45 PM		
Client Sample ID	1812773-001B/LTU C1L1 ZOI				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
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Surrogate Data

Sample Number	181217021-001			
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	55.0	41-121	
2-Fluorobiphenyl	EPA 8270D	74.4	51-121	
2-Fluorophenol	EPA 8270D	81.2	33-114	
Nitrobenzene-d5	EPA 8270D	67.6	30-121	
Phenol-d5	EPA 8270D	84.2	34-120	
Terphenyl-d14	EPA 8270D	79.2	40-134	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-002 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/20110:38 AM
Matrix Soil **Sampling Time** 1:00 PM
Client Sample ID 1812773-002B/LTU C1L1 TZ
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/Kg	0.259	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Anthracene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Fluorene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Naphthalene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Pyrene	ND	mg/Kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	12/22/2018 2:25:00 AM	TGT	EPA 8270D	
%moisture	12.8	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB **Batch #:** 181217021
Address: 4901 HAWKINS NE SUITE D **Project Name:** 1812773
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Analytical Results Report

Sample Number	181217021-002	Sampling Date	12/11/2018	Date/Time Received	12/14/20110:38 AM
Matrix	Soil	Sampling Time	1:00 PM		
Client Sample ID	1812773-002B/LTU C1L1 TZ				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
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Surrogate Data

Sample Number	181217021-002			
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	52.2	41-121	
2-Fluorobiphenyl	EPA 8270D	72.8	51-121	
2-Fluorophenol	EPA 8270D	82.0	33-114	
Nitrobenzene-d5	EPA 8270D	66.8	30-121	
Phenol-d5	EPA 8270D	84.0	34-120	
Terphenyl-d14	EPA 8270D	73.2	40-134	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-003 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/2018 10:38 AM
Matrix Soil **Sampling Time** 12:00 PM
Client Sample ID 1812773-003B/LTU C1L2 ZOI
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/Kg	0.248	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Anthracene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Fluoranthene	0.06	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	J
Fluorene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Naphthalene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Pyrene	ND	mg/Kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	12/22/2018 4:38:00 AM	TGT	EPA 8270D	
%moisture	13.6	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C585
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB **Batch #:** 181217021
Address: 4901 HAWKINS NE SUITE D **Project Name:** 1812773
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Analytical Results Report

Sample Number	181217021-003	Sampling Date	12/11/2018	Date/Time Received	12/14/20110:38 AM
Matrix	Soil	Sampling Time	12:00 PM		
Client Sample ID	1812773-003B/LTU C1L2 ZOI				
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
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Surrogate Data

Sample Number	181217021-003			
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	54.6	41-121	
2-Fluorobiphenyl	EPA 8270D	74.8	51-121	
2-Fluorophenol	EPA 8270D	77.0	33-114	
Nitrobenzene-d5	EPA 8270D	65.2	30-121	
Phenol-d5	EPA 8270D	78.8	34-120	
Terphenyl-d14	EPA 8270D	79.2	40-134	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-004 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/20110:38 AM
Matrix Soil **Sampling Time** 12:10 PM
Client Sample ID 1812773-004B/LTU C1L2 TZ
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/Kg	0.254	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	ND	mg/kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Anthracene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Fluorene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Naphthalene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
Pyrene	ND	mg/Kg	0.1	12/22/2018 2:52:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	2/22/2018 2:52:00 AM	TGT	EPA 8270D	
%moisture	13.5	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Surrogate Data

Sample Number		181217021-004		
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	59.2	41-121	
2-Fluorobiphenyl	EPA 8270D	74.4	51-121	
2-Fluorophenol	EPA 8270D	82.8	33-114	
Nitrobenzene-d5	EPA 8270D	66.0	30-121	
Phenol-d5	EPA 8270D	85.6	34-120	
Terphenyl-d14	EPA 8270D	80.4	40-134	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-005 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/20110:38 AM
Matrix Soil **Sampling Time**
Client Sample ID 1812773-005B/LTU ZOI DUP
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/Kg	0.278	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Anthracene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Fluorene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Naphthalene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Pyrene	ND	mg/Kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	12/22/2018 3:19:00 AM	TGT	EPA 8270D	
%moisture	13.6	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Surrogate Data

Sample Number 181217021-005				
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	58.0	41-121	
2-Fluorobiphenyl	EPA 8270D	72.4	51-121	
2-Fluorophenol	EPA 8270D	76.8	33-114	
Nitrobenzene-d5	EPA 8270D	62.4	30-121	
Phenol-d5	EPA 8270D	82.2	34-120	
Terphenyl-d14	EPA 8270D	83.2	40-134	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-006 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/20110:38 AM
Matrix Soil **Sampling Time** 2:20 PM
Client Sample ID 1812773-006B/LTU C2L1 ZOI
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	1.18	mg/Kg	0.276	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Anthracene	ND	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	0.13	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	0.27	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	0.07	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	J
Benzo[b]fluoranthene	0.05	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	J
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	0.06	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	J
Fluoranthene	ND	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Fluorene	ND	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Naphthalene	ND	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Pyrene	ND	mg/Kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	12/22/2018 6:24:00 AM	TGT	EPA 8270D	
%moisture	10.9	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C595; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Surrogate Data

Sample Number		181217021-006		
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	51.8	41-121	
2-Fluorobiphenyl	EPA 8270D	71.6	51-121	
2-Fluorophenol	EPA 8270D	73.8	33-114	
Nitrobenzene-d5	EPA 8270D	64.4	30-121	
Phenol-d5	EPA 8270D	77.6	34-120	
Terphenyl-d14	EPA 8270D	71.2	40-134	

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Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-007 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/2018 10:38 AM
Matrix Soil **Sampling Time** 2:35 PM
Client Sample ID 1812773-007B/LTU C2L1 TZ
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	0.430	mg/Kg	0.25	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Anthracene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	0.05	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	J
Benzo[a]anthracene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Fluorene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Naphthalene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Pyrene	ND	mg/Kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	12/22/2018 5:31:00 AM	TGT	EPA 8270D	
%moisture	13.7	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C585
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:CERT0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Surrogate Data

Sample Number 181217021-007

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	48.2	41-121
2-Fluorobiphenyl	EPA 8270D	65.2	51-121
2-Fluorophenol	EPA 8270D	66.4	33-114
Nitrobenzene-d5	EPA 8270D	56.8	30-121
Phenol-d5	EPA 8270D	71.2	34-120
Terphenyl-d14	EPA 8270D	70.0	40-134

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-008 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/20110:38 AM
Matrix Soil **Sampling Time** 3:00 PM
Client Sample ID 1812773-008B/LTU C2L2 ZOI
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	52.7	mg/Kg	1.41	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	0.06	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	J
2-Methylnaphthalene	0.07	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	J
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Anthracene	0.08	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	J
Benzo(ghi)perylene	0.96	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	2.68	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	0.41	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	0.51	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	0.62	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Fluorene	ND	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	0.34	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Naphthalene	ND	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Phenanthrene	0.19	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Pyrene	0.26	mg/Kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	0.32	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	12/22/2018 7:17:00 AM	TGT	EPA 8270D	
%moisture	17.2	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021

Project Name: 1812773

Surrogate Data

Sample Number 181217021-008

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	109.6	41-121
2-Fluorobiphenyl	EPA 8270D	83.2	51-121
2-Fluorophenol	EPA 8270D	82.4	33-114
Nitrobenzene-d5	EPA 8270D	76.8	30-121
Phenol-d5	EPA 8270D	92.0	34-120
Terphenyl-d14	EPA 8270D	75.6	40-134

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-009 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/20110:38 AM
Matrix Soil **Sampling Time** 3:10 PM
Client Sample ID 1812773-009B/LTU C2L2 TZ
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	0.976	mg/Kg	0.247	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Anthracene	ND	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	0.21	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	0.65	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	0.10	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	0.11	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	0.12	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Fluorene	ND	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	0.07	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	J
Naphthalene	ND	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Pyrene	0.09	mg/Kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	J
1,2-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	0.05	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	J
Diethylphthalate	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	12/22/2018 6:51:00 AM	TGT	EPA 8270D	
%moisture	16.6	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Surrogate Data

Sample Number 181217021-009				
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	63.6	41-121	
2-Fluorobiphenyl	EPA 8270D	75.6	51-121	
2-Fluorophenol	EPA 8270D	76.0	33-114	
Nitrobenzene-d5	EPA 8270D	66.0	30-121	
Phenol-d5	EPA 8270D	83.0	34-120	
Terphenyl-d14	EPA 8270D	74.4	40-134	

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Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-010 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/20110:38 AM
Matrix Soil **Sampling Time** 11:15 AM
Client Sample ID 1812773-010B/LTU C3L1 ZOI
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	0.477	mg/Kg	0.269	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Anthracene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	0.07	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	J
Benzo[a]anthracene	0.09	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	J
Benzo[a]pyrene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Fluorene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Naphthalene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Pyrene	ND	mg/Kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	12/22/2018 5:58:00 AM	TGT	EPA 8270D	
%moisture	12.0	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:Cert0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Surrogate Data

Sample Number 181217021-010

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	57.4	41-121
2-Fluorobiphenyl	EPA 8270D	75.2	51-121
2-Fluorophenol	EPA 8270D	73.0	33-114
Nitrobenzene-d5	EPA 8270D	67.6	30-121
Phenol-d5	EPA 8270D	78.4	34-120
Terphenyl-d14	EPA 8270D	75.2	40-134

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-011 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/20110:38 AM
Matrix Soil **Sampling Time** 11:30 AM
Client Sample ID 1812773-011B/LTU C3L1 TZ
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/Kg	0.271	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Anthracene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Fluorene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Naphthalene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Pyrene	ND	mg/Kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	12/22/2018 4:12:00 AM	TGT	EPA 8270D	
%moisture	13.9	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB **Batch #:** 181217021
Address: 4901 HAWKINS NE SUITE D **Project Name:** 1812773
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Surrogate Data

Sample Number		181217021-011		
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	52.6	41-121	
2-Fluorobiphenyl	EPA 8270D	66.0	51-121	
2-Fluorophenol	EPA 8270D	70.0	33-114	
Nitrobenzene-d5	EPA 8270D	56.8	30-121	
Phenol-d5	EPA 8270D	72.6	34-120	
Terphenyl-d14	EPA 8270D	75.2	40-134	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-012 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/2018 10:38 AM
Matrix Soil **Sampling Time** 10:40 AM
Client Sample ID 1812773-012B/LTU C3L2 ZOI
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/Kg	0.269	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Anthracene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Fluorene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Naphthalene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Pyrene	ND	mg/Kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	12/22/2018 5:05:00 AM	TGT	EPA 8270D	
%moisture	13.2	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Surrogate Data

Sample Number		181217021-012		
Surrogate Standard	Method	Percent Recovery	Control Limits	
2,4,6-Tribromophenol	EPA 8270D	63.4	41-121	
2-Fluorobiphenyl	EPA 8270D	68.4	51-121	
2-Fluorophenol	EPA 8270D	64.8	33-114	
Nitrobenzene-d5	EPA 8270D	69.6	30-121	
Phenol-d5	EPA 8270D	74.4	34-120	
Terphenyl-d14	EPA 8270D	79.6	40-134	

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report

Sample Number 181217021-013 **Sampling Date** 12/11/2018 **Date/Time Received** 12/14/20110:38 AM
Matrix Soil **Sampling Time** 10:55 AM
Client Sample ID 1812773-013B/LTU C3L2 TZ
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide	ND	mg/Kg	0.196	12/19/2018 11:30:00 AM	BKP	EPA 335.4	
1-Methylnaphthalene	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
2-Methylnaphthalene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Anthracene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Benzo(ghi)perylene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Benzo[a]anthracene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Benzo[a]pyrene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Benzo[b]fluoranthene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Benzo[k]fluoranthene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Chrysene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Dibenz[a,h]anthracene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Fluoranthene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Fluorene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Naphthalene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Phenanthrene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Pyrene	ND	mg/Kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
1,2-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
1,4-Dichlorobenzene	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
2,4-Dimethylphenol	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
2,4-Dinitrophenol	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
2-Methylphenol	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
3+4-Methylphenol	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
4-Nitrophenol	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Diethylphthalate	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Dimethylphthalate	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Di-n-butylphthalate	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Phenol	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Pyridine	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
Quinoline	ND	mg/kg	0.1	12/22/2018 3:45:00 AM	TGT	EPA 8270D	
%moisture	10.2	Percent		12/19/2018 2:26:00 PM	BKP	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Anatek Labs, Inc.

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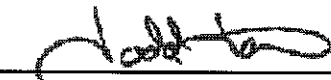
Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Surrogate Data

Sample Number	181217021-013		
Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270D	58.8	41-121
2-Fluorobiphenyl	EPA 8270D	72.0	51-121
2-Fluorophenol	EPA 8270D	65.2	33-114
Nitrobenzene-d5	EPA 8270D	61.6	30-121
Phenol-d5	EPA 8270D	72.0	34-120
Terphenyl-d14	EPA 8270D	82.8	40-134

Authorized Signature



Todd Taruscio, Lab Manager

J The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

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Client: HALL ENVIRONMENTAL ANALYSIS LAB
Address: 4901 HAWKINS NE SUITE D
ALBUQUERQUE, NM 87109
Attn: ANDY FREEMAN

Batch #: 181217021
Project Name: 1812773

Analytical Results Report Quality Control Data

Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Cyanide	0.524	mg/kg	0.5	104.8	90-110	12/19/2018	12/19/2018

Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
181217021-001	Cyanide	ND	11.2	mg/kg	13.4	83.6	70-130	12/19/2018	12/19/2018

Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Cyanide	11.3	mg/kg	13.4		0.9	0-25	12/19/2018	12/19/2018

Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide	ND	mg/Kg	0.01	12/19/2018	12/19/2018

AR Acceptable Range
ND Not Detected
PQL Practical Quantitation Limit
RPD Relative Percentage Difference

Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812773

02-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	LCS-42114		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 42114		RunNo: 56379					
Prep Date:	12/14/2018		Analysis Date: 12/17/2018		SeqNo: 1884998		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	54	10	50.00	0	109	70	130			
Surr: DNOP	4.7		5.000		94.4	50.6	138			

Sample ID	MB-42114	SampType: MBLK			TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID: 42114			RunNo: 56379					
Prep Date:	12/14/2018	Analysis Date: 12/17/2018			SeqNo: 1884999		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	50.6	138			

Sample ID	1812773-001AMS		SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LTU C1L1 ZOI		Batch ID: 42114		RunNo: 56379					
Prep Date:	12/14/2018		Analysis Date: 12/17/2018		SeqNo: 1885949		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	54	9.9	49.60	0	110	53.5	126			
Surr: DNOP	4.8		4.960		96.7	50.6	138			

Sample ID	1812773-001AMSD		SampType:	MSD		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	LTU C1L1 ZOI		Batch ID:	42114		RunNo:	56379				
Prep Date:	12/14/2018		Analysis Date:	12/17/2018		SeqNo:	1885950		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	50	9.8	48.88	0	103	53.5	126	7.78	21.7		
Surr: DNOP	5.0		4.888		102	50.6	138	0	0		

Sample ID	LCS-42154		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 42154		RunNo: 56409					
Prep Date:	12/17/2018		Analysis Date: 12/18/2018		SeqNo: 1886087		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.1		5.000		81.7	50.6	138			

Sample ID	MB-42154		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS		Batch ID: 42154		RunNo: 56409					
Prep Date:	12/17/2018		Analysis Date: 12/18/2018		SeqNo: 1886088		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812773

02-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	MB-42154		SampType:	MBLK		TestCode:	EPA Method 8015M/D: Diesel Range Organics			
Client ID:	PBS		Batch ID:	42154		RunNo:	56409			
Prep Date:	12/17/2018		Analysis Date:	12/18/2018		SeqNo:	1886088		Units: %Rec	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.8		10.00		88.1	50.6	138			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812773

02-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	MB-42100		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBS		Batch ID: 42100		RunNo: 56353					
Prep Date:	12/13/2018		Analysis Date: 12/14/2018		SeqNo: 1884432		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	920		1000		92.0	73.8	119			

Sample ID	LCS-42100		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: 42100		RunNo: 56353					
Prep Date:	12/13/2018		Analysis Date: 12/14/2018		SeqNo: 1884434		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		106	73.8	119			

Sample ID	MB-42099		SampType:	MBLK		TestCode:	EPA Method 8015D: Gasoline Range				
Client ID:	PBS		Batch ID:	42099		RunNo:	56353				
Prep Date:	12/13/2018		Analysis Date:	12/14/2018		SeqNo:	1884458		Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	ND	5.0									
Surr: BFB	950		1000		95.2	73.8	119				

Sample ID	LCS-42099		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: 42099		RunNo: 56353					
Prep Date:	12/13/2018		Analysis Date: 12/14/2018		SeqNo: 1884460		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	104	80.1	123			
Surr: BFB	1100		1000		107	73.8	119			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812773

02-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	mb-42099		SampType:	MBLK		TestCode:	EPA Method 8260B: Volatiles			
Client ID:	PBS		Batch ID:	42099		RunNo:	56400			
Prep Date:	12/13/2018		Analysis Date:	12/18/2018		SeqNo:	1885587		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812773

02-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	mb-42099		SampType:	MBLK		TestCode:	EPA Method 8260B: Volatiles			
Client ID:	PBS		Batch ID:	42099		RunNo:	56400			
Prep Date:	12/13/2018		Analysis Date:	12/18/2018		SeqNo:	1885587		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.56		0.5000		112	70	130			
Surr: 1,2-Dichloroethane-d4	0.53		0.5000		107	70	130			
Surr: Toluene-d8	0.56		0.5000		111	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		105	70	130			

Sample ID	lcs-42099		SampType:	LCS		TestCode:	EPA Method 8260B: Volatiles			
Client ID:	LCSS		Batch ID:	42099		RunNo:	56400			
Prep Date:	12/13/2018		Analysis Date:	12/18/2018		SeqNo:	1885588		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.025	1.000	0	94.6	70	130			
Toluene	1.0	0.050	1.000	0	100	70	130			
Chlorobenzene	1.0	0.050	1.000	0	101	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812773

02-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	ics-42099		SampType: LCS		TestCode: EPA Method 8260B: Volatiles					
Client ID:	LCSS		Batch ID: 42099		RunNo: 56400					
Prep Date:	12/13/2018		Analysis Date: 12/18/2018		SeqNo: 1885588		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	1.0	0.050	1.000	0	104	50.8	164			
Trichloroethene (TCE)	0.98	0.050	1.000	0	98.3	70	130			
Surr: Dibromofluoromethane	0.58		0.5000		115	70	130			
Surr: 1,2-Dichloroethane-d4	0.53		0.5000		107	70	130			
Surr: Toluene-d8	0.57		0.5000		113	70	130			
Surr: 4-Bromofluorobenzene	0.53		0.5000		106	70	130			

Sample ID	1812773-001ams		SampType: MS		TestCode: EPA Method 8260B: Volatiles					
Client ID:	LTU C1L1 ZOI		Batch ID: 42099		RunNo: 56400					
Prep Date:	12/13/2018		Analysis Date: 12/17/2018		SeqNo: 1885590		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.86	0.024	0.9643	0	89.1	68.9	131			
Toluene	0.90	0.048	0.9643	0	92.9	64.3	137			
Chlorobenzene	0.88	0.048	0.9643	0	90.9	65.9	143			
1,1-Dichloroethene	0.99	0.048	0.9643	0	103	53.4	150			
Trichloroethene (TCE)	0.87	0.048	0.9643	0	90.5	70	130			
Surr: Dibromofluoromethane	0.55		0.4822		113	70	130			
Surr: 1,2-Dichloroethane-d4	0.52		0.4822		107	70	130			
Surr: Toluene-d8	0.52		0.4822		108	70	130			
Surr: 4-Bromofluorobenzene	0.51		0.4822		106	70	130			

Sample ID	1812773-001amsd		SampType: MSD		TestCode: EPA Method 8260B: Volatiles					
Client ID:	LTU C1L1 ZOI		Batch ID: 42099		RunNo: 56400					
Prep Date:	12/13/2018		Analysis Date: 12/17/2018		SeqNo: 1885591		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.86	0.024	0.9479	0	90.2	68.9	131	0.403	20	
Toluene	0.92	0.047	0.9479	0	97.5	64.3	137	3.10	20	
Chlorobenzene	0.92	0.047	0.9479	0	96.6	65.9	143	4.35	20	
1,1-Dichloroethene	0.95	0.047	0.9479	0	101	53.4	150	3.98	20	
Trichloroethene (TCE)	0.90	0.047	0.9479	0	95.2	70	130	3.39	20	
Surr: Dibromofluoromethane	0.54		0.4739		114	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.53		0.4739		111	70	130	0	0	
Surr: Toluene-d8	0.54		0.4739		114	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.49		0.4739		103	70	130	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812773

02-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	MB-42146		SampType: MBLK		TestCode: EPA Method 7471: Mercury					
Client ID:	PBS		Batch ID: 42146		RunNo: 56412					
Prep Date:	12/17/2018		Analysis Date: 12/17/2018		SeqNo: 1886105		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercurv	ND	0.033								

Sample ID	LLLCS-42146		SampType: LCSLL		TestCode: EPA Method 7471: Mercury					
Client ID:	BatchQC		Batch ID: 42146		RunNo: 56412					
Prep Date:	12/17/2018		Analysis Date: 12/17/2018		SeqNo: 1886107		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0085	0.033	0.006660	0	127	70	130			J

Sample ID	LCS-42146		SampType: LCS		TestCode: EPA Method 7471: Mercury					
Client ID:	LCSS		Batch ID: 42146		RunNo: 56412					
Prep Date:	12/17/2018		Analysis Date: 12/17/2018		SeqNo: 1886108		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.15	0.033	0.1667	0	89.3	80	120			

Sample ID	1812773-001AMS		SampType: MS		TestCode: EPA Method 7471: Mercury					
Client ID:	LTU C1L1 ZOI		Batch ID: 42146		RunNo: 56412					
Prep Date:	12/17/2018		Analysis Date: 12/17/2018		SeqNo: 1886110		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.14	0.033	0.1658	0	85.5	80	120			

Sample ID	1812773-001AMSD		SampType: MSD		TestCode: EPA Method 7471: Mercury					
Client ID:	LTU C1L1 ZOI		Batch ID: 42146		RunNo: 56412					
Prep Date:	12/17/2018		Analysis Date: 12/17/2018		SeqNo: 1886111		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.15	0.034	0.1729	0	88.3	80	120	7.33	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812773

02-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	MB-42119		SampType: MBLK		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	PBS		Batch ID: 42119		RunNo: 56472					
Prep Date:	12/14/2018		Analysis Date: 12/19/2018		SeqNo: 1888302		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	ND	0.10								
Beryllium	ND	0.15								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Cobalt	ND	0.30								
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.54	2.5								J

Sample ID	LCS-42119		SampType: LCS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	LCSS		Batch ID: 42119		RunNo: 56472					
Prep Date:	12/14/2018		Analysis Date: 12/19/2018		SeqNo: 1888303		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	25	2.5	25.00	0	100	80	120			
Arsenic	26	2.5	25.00	0	106	80	120			
Barium	25	0.10	25.00	0	101	80	120			
Beryllium	26	0.15	25.00	0	106	80	120			
Cadmium	25	0.10	25.00	0	101	80	120			
Chromium	25	0.30	25.00	0	101	80	120			
Cobalt	24	0.30	25.00	0	97.5	80	120			
Nickel	25	0.50	25.00	0	99.4	80	120			
Selenium	24	2.5	25.00	0	94.7	80	120			
Silver	5.1	0.25	5.000	0	103	80	120			
Vanadium	26	2.5	25.00	0	104	80	120			
Zinc	25	2.5	25.00	0	99.7	80	120			

Sample ID	MB-42119	SampType: MBLK			TestCode: EPA Method 6010B: Soil Metals					
Client ID:	PBS	Batch ID: 42119			RunNo: 56498					
Prep Date:	12/14/2018	Analysis Date: 12/20/2018			SeqNo: 1889585		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	2.5								
Arsenic	ND	2.5								
Barium	0.024	0.10								J
Beryllium	ND	0.15								

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812773

02-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	MB-42119		SampType: MBLK		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	PBS		Batch ID: 42119		RunNo: 56498					
Prep Date:	12/14/2018		Analysis Date: 12/20/2018		SeqNo: 1889585		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	0.10								
Chromium	ND	0.30								
Cobalt	ND	0.30								
Lead	ND	0.25								
Nickel	ND	0.50								
Selenium	ND	2.5								
Silver	ND	0.25								
Vanadium	ND	2.5								
Zinc	0.65	2.5								J

Sample ID	LCS-42119		SampType: LCS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	LCSS		Batch ID: 42119		RunNo: 56498					
Prep Date:	12/14/2018		Analysis Date: 12/20/2018		SeqNo: 1889586		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	26	2.5	25.00	0	105	80	120			
Arsenic	26	2.5	25.00	0	104	80	120			
Barium	26	0.10	25.00	0	103	80	120			
Beryllium	27	0.15	25.00	0	108	80	120			
Cadmium	26	0.10	25.00	0	105	80	120			
Chromium	26	0.30	25.00	0	105	80	120			
Cobalt	26	0.30	25.00	0	103	80	120			
Lead	25	0.25	25.00	0	102	80	120			
Nickel	26	0.50	25.00	0	103	80	120			
Selenium	25	2.5	25.00	0	101	80	120			
Silver	5.1	0.25	5.000	0	101	80	120			
Vanadium	26	2.5	25.00	0	106	80	120			
Zinc	27	2.5	25.00	0	106	80	120			

Sample ID	1812773-001AMS		SampType: MS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	LTU C1L1 ZOI		Batch ID: 42119		RunNo: 56498					
Prep Date:	12/14/2018		Analysis Date: 12/20/2018		SeqNo: 1890179		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	12	24.79	0	0	75	125			S
Arsenic	24	12	24.79	0	96.4	75	125			
Barium	430	0.50	24.79	237.6	793	75	125			S
Beryllium	28	0.74	24.79	1.588	106	75	125			
Cadmium	24	0.50	24.79	0	95.8	75	125			
Chromium	45	1.5	24.79	19.68	100	75	125			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812773

02-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	1812773-001AMS	SampType:	MS	TestCode:	EPA Method 6010B: Soil Metals					
Client ID:	LTU C1L1 ZOI	Batch ID:	42119	RunNo:	56498					
Prep Date:	12/14/2018	Analysis Date:	12/20/2018	SeqNo:	1890179	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	24	1.2	24.79	1.303	91.2	75	125			
Nickel	43	2.5	24.79	18.13	101	75	125			
Selenium	23	12	24.79	0	91.1	75	125			
Silver	2.7	1.2	4.957	0	54.4	75	125			S
Vanadium	62	12	24.79	33.90	113	75	125			

Sample ID	1812773-001AMSD	SampType:	MSD	TestCode:	EPA Method 6010B: Soil Metals					
Client ID:	LTU C1L1 ZOI	Batch ID:	42119	RunNo:	56498					
Prep Date:	12/14/2018	Analysis Date:	12/20/2018	SeqNo:	1890180	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	12	24.77	0	0	75	125	0	20	S
Arsenic	22	12	24.77	0	90.1	75	125	6.89	20	
Barium	340	0.50	24.77	237.6	405	75	125	25.0	20	RS
Beryllium	28	0.74	24.77	1.588	108	75	125	2.17	20	
Cadmium	24	0.50	24.77	0	96.4	75	125	0.566	20	
Chromium	45	1.5	24.77	19.68	104	75	125	1.74	20	
Lead	24	1.2	24.77	1.303	91.2	75	125	0.0539	20	
Nickel	44	2.5	24.77	18.13	105	75	125	2.19	20	
Selenium	24	12	24.77	0	98.3	75	125	7.53	20	
Silver	2.3	1.2	4.955	0	46.8	75	125	15.0	20	S
Vanadium	61	12	24.77	33.90	107	75	125	2.12	20	

Sample ID	1812773-001APS	SampType:	PS	TestCode:	EPA Method 6010B: Soil Metals					
Client ID:	LTU C1L1 ZOI	Batch ID:	42119	RunNo:	56498					
Prep Date:		Analysis Date:	12/20/2018	SeqNo:	1890181	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	97	12	120.5	0	80.3	80	120			
Barium	350	0.48	120.5	237.6	90.4	80	120			
Silver	18	1.2	24.09	0	76.6	80	120			S

Sample ID	1812773-001AMS	SampType:	MS	TestCode:	EPA Method 6010B: Soil Metals					
Client ID:	LTU C1L1 ZOI	Batch ID:	42119	RunNo:	56598					
Prep Date:	12/14/2018	Analysis Date:	12/22/2018	SeqNo:	1893481	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	28	1.5	24.79	7.148	86.0	75	125			
Zinc	49	12	24.79	25.89	94.8	75	125			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812773

02-Jan-19

Client: Marathon
Project: Land Treatment Unit

Sample ID	1812773-001AMSD	SampType:	MSD	TestCode:	EPA Method 6010B: Soil Metals					
Client ID:	LTU C1L1 ZOI	Batch ID:	42119	RunNo:	56598					
Prep Date:	12/14/2018	Analysis Date:	12/22/2018	SeqNo:	1893482	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	29	1.5	24.77	7.148	88.7	75	125	2.25	20	
Zinc	51	12	24.77	25.89	103	75	125	3.92	20	

Sample ID	1812773-001APS	SampType:	PS	TestCode:	EPA Method 6010B: Soil Metals					
Client ID:	LTU C1L1 ZOI	Batch ID:	42119	RunNo:	56598					
Prep Date:		Analysis Date:	12/22/2018	SeqNo:	1893483	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	110	1.4	120.5	7.148	85.6	80	120			
Zinc	140	12	120.5	25.89	90.7	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Sample Log-In Check List

Client Name: **MARATHON GALLUP**

Work Order Number: **1812773**

RcptNo: 1

Received By: **Victoria Zellar** 12/13/2018 8:57:00 AM

Completed By: **Erin Melendrez** 12/13/2018 11:13:39 AM

Reviewed By:

LB: JAB 12/13/18
Victoria Zellar
U. U. G.

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐

2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐

4. Were all samples received at a temperature of >0° C to 6.0° C Yes ☒ No ☐ NA ☐

5. Sample(s) in proper container(s)? Yes ☒ No ☐

6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐

7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐

8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐

9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒

10. Were any sample containers received broken? Yes ☐ No ☒

11. Does paperwork match bottle labels? Yes ☒ No ☐

(Note discrepancies on chain of custody)

12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐

13. Is it clear what analyses were requested? Yes ☒ No ☐

14. Were all holding times able to be met? Yes ☒ No ☐

(If no, notify customer for authorization.)

of preserved bottles checked for pH: 12/13/18
(<2 or >12 unless noted)
Adjusted? JAB
Checked by: JAB

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.9	Good	Yes			

[illegible]

Location of:
 Bus
 Limit

[illegible]

Tel. 505-345-3975 Fax 505-345-4107

BTEX+MTBE+TMB's(8021)																				
BTEX+MTBE+TPH(Gas only)																				
TPH 8015 (GRO/DRO/MRO)	X	X	X	X																
TPH (Method 418.1)																				
EDB (Method 8011)																				
PAH (8310 or 8270SIMS)																				
RCRA 8 Metals																				
Anions (F ⁻ ,Cl ⁻ ,NO ₃ ⁻ ,NO ₂ ⁻ ,PO ₄ ⁻ ,SO ₄ ⁻)																				
8081 Pesticides / 8082 PCB's																				
8260B MOD. SKINNER LIST	X	X	X	X																
8270 MOD. SKINNER LIST	X	X	X	X																
METALS MOD SKINNER LIST	X	X	X	X																
MERCURY	X	X	X	X																
CYANIDE	X	X	X	X																
Air Bubbles (Y or N)																				

Remarks: *Caltech vuz 12/11/18 8.57*

Country WZ 1713188.57

Received by: Patricia D. Ballan

Relinquished by:

0

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

[illegible]

ATTACHMENT 1

Region 5 Waste Management Branch "Skinner List" Constituents of Concern for Wastes from Petroleum Processes

Inorganics

Antimony	Cadmium	Lead	Silver
Arsenic	Chromium	Mercury	Vanadium
Barium	Cobalt	Nickel	Zinc
Beryllium	Cyanide	Selenium	

Volatile Organics

Benzene	1,2-Dichloroethane	Ethylene dibromide (EDB)	1,1,1-Trichloroethane
Carbon disulfide	1,1-Dichloroethane	Methyl ethyl ketone (MEK)	Trichloroethene
Chlorobenzene	1,4-Dioxane	Styrene	Tetrachloroethylene
Chloroform	Ethylbenzene	Toluene	Xylenes (total)

Semivolatile Organics

Acenaphthene	o-Cresol	Diethyl phthalate	Naphthalene
Anthracene	m-Cresol	2,4 Dimethylphenol	4-Nitrophenol
Benzo(a)anthracene	p-Cresol	Dimethyl phthalate	Phenanthrene
Benzo(b)fluoranthene	Dibenz(a,h)anthracene	2,4 Dinitrophenol	Phenol
Benzo(k)fluoranthene	Di-n-butyl phthalate	Fluoranthene	Pyrene
Benzo(a)pyrene	1,2-Dichlorobenzene*	Fluorene	Pyridine
Bis(2-ethylhexyl) phthalate	1,3-Dichlorobenzene*	Indeno(1,2,3-cd)pyrene	Quinoline
Chrysene	1,4-Dichlorobenzene*	Methyl tertiary butyl ether (MTBE)	*- can be tested as a volatile

Low Concentration Polynuclear Aromatic Hydrocarbons (Optional)

Benzo(a)anthracene	Benzo(k)fluoranthene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene
Benzo(b)fluoranthene	Benzo(a)pyrene	Chrysene*	

* added to this group to assist the chromatographic resolution of chrysene from Dibenz(a,h)anthracene in sample extracts

Optional Semivolatile Organics

~~Indene~~ no ~~Benzenethiol**~~ no ~~Dibenz(a,h)acridine~~ no ~~1-Methylnaphthalene*~~

*Note that 2-Methylnaphthalene is part of Appendix IX and is a CLP TCL organic. 1-Methylnaphthalene is not on these lists.

**Benzenethiol can be detected in certain petroleum refinery wastes. Its measurement must compensate for its instability at neutral and acid pH values during sample preparation and its unstable instrument calibration standards

APPENDIX H
GROUNDWATER ANALYTICAL DATA
(ON ATTACHED CD)

APPENDIX I
GROUNDWATER DATA VALIDATION
(ON ATTACHED CD)

APPENDIX J

NEW MONITORING WELL LOGS

APPENDIX K
YSI 556 OPERATIONS MANUAL
(ON ATTACHED CD)