

# SECOND QUARTER 2019 SITE MONITORING DATA

## MOSIER 23-12F

COGCC SPILL TRACKING # 448998  
COGCC REMEDIATION # 10158

Prepared for:



2115 117th Avenue  
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Prepared by:



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**TABLE 1**  
**GROUNDWATER ELEVATION DATA**  
**NOBLE ENERGY, INC. - MOSIER 23-12F**

Monitoring Well ID	Date	Top of Casing Elevation (ft. AMSL)	Total Depth (ft. BTOC)	Depth to Water (ft. BTOC)	Depth to LNAPL (ft. BTOC)	LNAPL Thickness (ft.)	Groundwater Elevation* (ft. AMSL)
BH01	01/19/17	NM	13.57	12.57	8.65	3.92	NM
BH01	02/21/17	Well Destroyed During Excavation					
BH02	01/19/17	NM	NM	14.47	11.16	3.31	NM
BH02	02/21/17	Well Destroyed During Excavation					
BH04	01/19/17	NM	NM	15.53	11.41	4.12	NM
BH04	02/21/17	Well Destroyed During Excavation					
BH07	01/19/17	NM	NM	11.36	10.71	0.65	NM
BH07	02/21/17	Well Destroyed During Excavation					
BH09	01/19/17	NM	NM	11.65	11.57	0.08	NM
BH09	02/21/17	Well Destroyed During Excavation					
BH13	10/20/17	4729.82	11.29	6.00	ND	ND	4723.82
BH13	01/19/18	4729.82	11.24	7.40	ND	ND	4722.42
BH13	04/18/18	4729.82	11.23	8.95	ND	ND	4720.87
BH13	07/09/18	4729.82	11.32	8.28	ND	ND	4721.54
BH13	10/05/18	4729.82	11.31	7.75	ND	ND	4722.07
BH13	01/03/19	4729.82	11.28	9.07	ND	ND	4720.75
BH13	04/12/19	4729.82	11.37	10.44	ND	ND	4719.38
BH14	10/20/17	4729.82	14.76	6.00	ND	ND	4723.82
BH14	01/19/18	4729.82	14.64	7.40	ND	ND	4722.42
BH14	04/18/18	4729.82	14.63	8.94	ND	ND	4720.88
BH14	07/09/18	4729.82	14.48	8.28	ND	ND	4721.54
BH14	10/05/18	4729.82	14.44	7.70	ND	ND	4722.12
BH14	01/03/19	4729.82	14.44	9.08	ND	ND	4720.74
BH14	04/12/19	4729.82	14.42	10.47	ND	ND	4719.35
BH15	10/20/17	4730.14	11.22	6.43	ND	ND	4723.71
BH15	01/19/18	4730.14	11.20	7.85	ND	ND	4722.29
BH15	04/18/18	4730.14	11.22	9.37	ND	ND	4720.77
BH15	07/09/18	4730.14	11.26	8.69	ND	ND	4721.45
BH15	10/05/18	4730.14	11.24	8.16	ND	ND	4721.98
BH15	01/03/19	4730.14	11.23	9.52	ND	ND	4720.62
BH15	04/12/19	4730.14	11.29	10.91	ND	ND	4719.23
BH16	10/20/17	4729.88	11.21	6.21	ND	ND	4723.67
BH16	01/19/18	4729.88	11.13	7.57	ND	ND	4722.31
BH16	04/18/18	4729.88	11.14	9.15	ND	ND	4720.73
BH16	07/09/18	4729.88	11.30	8.46	ND	ND	4721.42
BH16	10/05/18	4729.88	11.27	7.92	ND	ND	4721.96
BH16	01/03/19	4729.88	11.26	9.27	ND	ND	4720.61
BH16	04/12/19	4729.88	11.33	10.71	ND	ND	4719.17
BH17	10/20/17	4729.71	11.24	6.02	ND	ND	4723.69
BH17	01/19/18	4729.71	11.20	7.39	ND	ND	4722.32
BH17	04/18/18	4729.71	11.20	8.98	ND	ND	4720.73
BH17	07/09/18	4729.71	11.23	8.27	ND	ND	4721.44

**TABLE 1**  
**GROUNDWATER ELEVATION DATA**  
**NOBLE ENERGY, INC. - MOSIER 23-12F**

<b>Monitoring Well ID</b>	<b>Date</b>	<b>Top of Casing Elevation (ft. AMSL)</b>	<b>Total Depth (ft. BTOC)</b>	<b>Depth to Water (ft. BTOC)</b>	<b>Depth to LNAPL (ft. BTOC)</b>	<b>LNAPL Thickness (ft.)</b>	<b>Groundwater Elevation* (ft. AMSL)</b>
BH17	10/05/18	4729.71	11.21	7.74	ND	ND	4721.97
BH17	01/03/19	4729.71	11.21	9.09	ND	ND	4720.62
BH17	04/12/19	4729.71	11.25	10.42	ND	ND	4719.29
BH18	10/20/17	4729.50	11.62	5.77	ND	ND	4723.73
BH18	01/19/18	4729.50	11.47	7.15	ND	ND	4722.35
BH18	04/18/18	4729.50	11.39	8.70	ND	ND	4720.80
BH18	07/09/18	4729.50	11.53	8.03	ND	ND	4721.47
BH18	10/05/18	4729.50	11.50	7.48	ND	ND	4722.02
BH18	01/03/19	4729.50	11.55	8.83	ND	ND	4720.67
BH18	04/12/19	4729.50	11.56	10.18	ND	ND	4719.32
BH19	10/20/17	4729.73	11.40	5.94	ND	ND	4723.79
BH19	01/19/18	4729.73	11.35	7.32	ND	ND	4722.41
BH19	04/18/18	4729.73	11.35	8.88	ND	ND	4720.85
BH19	07/09/18	4729.73	11.60	8.19	ND	ND	4721.54
BH19	10/05/18	4729.73	11.58	7.66	ND	ND	4722.07
BH19	01/03/19	4729.73	11.58	8.99	ND	ND	4720.74
BH19	04/12/19	4729.73	11.64	10.42	ND	ND	4719.31
BH20	10/20/17	4731.78	13.52	7.96	ND	ND	4723.82
BH20	01/19/18	4731.78	13.44	9.34	ND	ND	4722.44
BH20	04/18/18	4731.78	13.43	10.92	ND	ND	4720.86
BH20	07/09/18	4731.78	13.64	10.23	ND	ND	4721.55
BH20	10/05/18	4731.78	13.63	9.69	ND	ND	4722.09
BH20	01/03/19	4731.78	13.64	11.02	ND	ND	4720.76
BH20	04/12/19	4731.78	13.73	12.42	ND	ND	4719.36
BH21	12/18/17	4730.34	14.25	7.78	ND	ND	4722.56
BH21	01/19/18	4730.34	14.26	8.12	ND	ND	4722.22
BH21	04/18/18	4730.34	14.18	9.66	ND	ND	4720.68
BH21	07/09/18	4730.34	14.19	9.96	ND	ND	4720.38
BH21	10/05/18	4730.34	14.18	8.42	ND	ND	4721.92
BH21	01/03/19	4730.34	14.10	9.82	ND	ND	4720.52
BH21	04/12/19	4730.34	14.15	11.20	ND	ND	4719.14
BH22	12/18/17	4729.78	15.55	7.16	ND	ND	4722.62
BH22	01/19/18	4729.78	15.45	7.52	ND	ND	4722.26
BH22	04/18/18	4729.78	15.35	9.09	ND	ND	4720.69
BH22	07/09/18	4729.78	15.32	8.38	ND	ND	4721.40
BH22	10/05/18	4729.78	15.29	7.84	ND	ND	4721.94
BH22	01/03/19	4729.78	15.27	9.22	ND	ND	4720.56
BH22	04/12/19	4729.78	15.33	10.64	10.59	0.05	4719.18
BH23	12/18/17	4732.23	18.86	9.62	ND	ND	4722.61
BH23	01/19/18	4732.23	18.85	9.99	ND	ND	4722.24
BH23	04/18/18	4732.23	18.73	11.57	ND	ND	4720.66
BH23	07/09/18	4732.23	18.65	10.88	ND	ND	4721.35

**TABLE 1**  
**GROUNDWATER ELEVATION DATA**  
**NOBLE ENERGY, INC. - MOSIER 23-12F**

<b>Monitoring Well ID</b>	<b>Date</b>	<b>Top of Casing Elevation (ft. AMSL)</b>	<b>Total Depth (ft. BTOC)</b>	<b>Depth to Water (ft. BTOC)</b>	<b>Depth to LNAPL (ft. BTOC)</b>	<b>LNAPL Thickness (ft.)</b>	<b>Groundwater Elevation* (ft. AMSL)</b>
BH23	10/05/18	4732.23	18.63	10.32	ND	ND	4721.91
BH23	01/03/19	4732.23	18.55	11.69	ND	ND	4720.54
BH23	04/12/19	4732.23	18.41	13.11	ND	ND	4719.12
BH24	12/18/17	4732.40	17.75	9.69	ND	ND	4722.71
BH24	01/19/18	4732.40	17.79	10.09	ND	ND	4722.31
BH24	04/18/18	4732.40	17.76	11.69	ND	ND	4720.71
BH24	07/09/18	4732.40	17.55	10.98	ND	ND	4721.42
BH24	10/05/18	4732.40	17.50	10.45	ND	ND	4721.95
BH24	01/03/19	4732.40	17.52	11.80	ND	ND	4720.60
BH24	04/12/19	4732.40	17.49	13.24	ND	ND	4719.16
BH25	12/18/17	4732.80	18.84	10.26	ND	ND	4722.54
BH25	01/19/18	4732.80	18.80	10.62	ND	ND	4722.18
BH25	04/18/18	4732.80	18.79	12.16	ND	ND	4720.64
BH25	07/09/18	4732.80	18.78	11.46	ND	ND	4721.34
BH25	10/05/18	4732.80	18.82	10.92	ND	ND	4721.88
BH25	01/03/19	4732.80	18.80	12.32	ND	ND	4720.48
BH25	04/12/19	4732.80	18.74	13.70	ND	ND	4719.10
BH26	01/19/18	4729.59	15.41	7.40	ND	ND	4722.19
BH26	04/18/18	4729.59	15.36	8.99	ND	ND	4720.60
BH26	07/09/18	4729.59	10.99	8.27	ND	ND	4721.32
BH26	10/05/18	4729.59	15.15	7.73	ND	ND	4721.86
BH26	01/03/19	4729.59	15.15	9.10	ND	ND	4720.49
BH26	04/12/19	4729.59	14.98	10.53	ND	ND	4719.06
BH27	01/19/18	4730.27	14.42	8.12	ND	ND	4722.15
BH27	04/18/18	4730.27	14.40	9.71	ND	ND	4720.56
BH27	07/09/18	4730.27	14.39	8.99	ND	ND	4721.28
BH27	10/05/18	4730.27	14.34	8.45	ND	ND	4721.82
BH27	01/03/19	4730.27	14.33	9.84	ND	ND	4720.43
BH27	04/12/19	4730.27	14.40	11.25	ND	ND	4719.02
BH28	01/19/18	4731.71	14.01	9.64	ND	ND	4722.07
BH28	04/18/18	4731.71	14.59	11.17	ND	ND	4720.54
BH28	07/09/18	4731.71	14.62	10.47	ND	ND	4721.24
BH28	10/05/18	4731.71	14.59	9.92	ND	ND	4721.79
BH28	01/03/19	4731.71	14.57	11.35	ND	ND	4720.36
BH28	04/12/19	4731.71	14.68	12.72	ND	ND	4718.99
BH29	01/19/18	4732.48	14.69	10.41	ND	ND	4722.07
BH29	04/18/18	4732.48	14.66	11.91	ND	ND	4720.57
BH29	07/09/18	4732.48	14.74	11.18	ND	ND	4721.30
BH29	10/05/18	4732.48	14.70	10.65	ND	ND	4721.83
BH29	01/03/19	4732.48	14.69	12.08	ND	ND	4720.40
BH29	04/12/19	4732.48	14.79	13.43	ND	ND	4719.05

**TABLE 1**  
**GROUNDWATER ELEVATION DATA**  
**NOBLE ENERGY, INC. - MOSIER 23-12F**

Monitoring Well ID	Date	Top of Casing Elevation (ft. AMSL)	Total Depth (ft. BTOC)	Depth to Water (ft. BTOC)	Depth to LNAPL (ft. BTOC)	LNAPL Thickness (ft.)	Groundwater Elevation* (ft. AMSL)
BH30	01/19/18	4732.25	14.46	10.07	ND	ND	4722.18
BH30	04/18/18	4732.25	14.41	11.59	ND	ND	4720.66
BH30	07/09/18	4732.25	14.49	10.87	ND	ND	4721.38
BH30	10/05/18	4732.25	14.48	10.35	ND	ND	4721.9
BH30	01/03/19	4732.25	14.42	11.78	ND	ND	4720.47
BH30	04/12/19	4732.25	14.57	13.09	ND	ND	4719.16
BH31	07/09/18	4732.56	17.67	10.94	ND	ND	4721.62
BH31	10/05/18	4732.56	17.6	10.41	ND	ND	4722.15
BH31	01/03/19	4732.56	17.58	11.73	ND	ND	4720.83
BH31	04/12/19	4732.56	17.50	13.11	ND	ND	4719.45
BH32	07/09/18	4732.49	17.81	10.93	ND	ND	4721.56
BH32	10/05/18	4732.49	17.77	10.41	ND	ND	4722.08
BH32	01/03/19	4732.49	17.75	11.75	ND	ND	4720.74
BH32	04/12/19	4732.49	17.79	13.10	ND	ND	4719.39
BH33	07/09/18	4730.34	15.49	8.88	ND	ND	4721.46
BH33	10/05/18	4730.34	15.44	8.35	ND	ND	4721.99
BH33	01/03/19	4730.34	15.35	9.72	ND	ND	4720.62
BH33	04/12/19	4730.34	15.31	11.07	ND	ND	4719.27

**NOTES:**

ft. = Feet

AMSL = Above mean sea level

BTOC = Below top of casing

LNAPL = Light non-aqueous phase liquid

ND = Not Detected

NM = Not Measured

Soil borings BH03, BH05, BH06, BH08, BH10-BH12 were not converted to monitoring wells.

\* Groundwater elevation was corrected for product thickness (when present) using the following calculation:

Groundwater elevation = (TOC Elevation - Measured Depth to Water)+(LNAPL Thickness in Well x LNAPL Relative Density)

LNAPL relative density was estimated to be 0.75

**TABLE 2**  
**GROUNDWATER ANALYTICAL DATA**  
**NOBLE ENERGY, INC. - MOSIER 23-12F**

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
<b>COGCC Standard</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
BH01	01/19/17	<b>Not Sampled - 3.92' LNAPL Present</b>			
BH01	02/21/17	Well Destroyed During Excavation			
BH02	01/19/17	<b>Not Sampled - 3.31' LNAPL Present</b>			
BH02	02/21/17	Well Destroyed During Excavation			
BH04	01/19/17	<b>Not Sampled - 4.12' LNAPL Present</b>			
BH04	02/21/17	Well Destroyed During Excavation			
BH07	01/19/17	<b>Not Sampled - 0.65' LNAPL Present</b>			
BH07	02/21/17	Well Destroyed During Excavation			
BH09	01/19/17	<b>Not Sampled - 0.08' LNAPL Present</b>			
BH09	02/21/17	Well Destroyed During Excavation			
BH13	10/20/17	<1.0	<1.0	<1.0	<2.0
BH13	01/19/18	<b>40</b>	<1.0	<1.0	<2.0
BH13	04/18/18	<b>55</b>	<1.0	<1.0	<2.0
BH13	07/09/18	<b>6</b>	<1.0	<1.0	<2.0
BH13	10/05/18	1	<1.0	<1.0	<2.0
BH13	01/03/19	<1.0	<1.0	<1.0	<2.0
BH13	04/12/19	<1.0	<1.0	<1.0	<2.0
BH14	10/20/17	<1.0	<1.0	<1.0	<2.0
BH14	01/19/18	<1.0	<1.0	<1.0	<2.0
BH14	04/18/18	<b>18</b>	<1.0	<1.0	<2.0
BH14	07/09/18	4.5	<1.0	<1.0	<2.0
BH14	10/05/18	2.3	<1.0	<1.0	<2.0
BH14	01/03/19	1.4	<1.0	<1.0	<2.0
BH14	04/12/19	<b>14</b>	<1.0	<1.0	<2.0
BH15	10/20/17	<b>5,900</b>	<b>5,800</b>	340	<b>2,900</b>
BH15	01/19/18	<b>6,800</b>	<b>4,300</b>	440	<b>5,200</b>
BH15	04/18/18	<b>7,100</b>	<b>3,000</b>	490	<b>5,900</b>
BH15	07/09/18	<b>11,000</b>	520	<b>710</b>	<b>7,200</b>
BH15	10/05/18	<b>6,000</b>	66	16	<b>4,900</b>
BH15	01/03/19	<b>15,000</b>	<b>2,200</b>	<b>21,000</b>	<b>7,600</b>
BH15	04/12/19	Insufficient Water - No sample collected			
BH16	10/20/17	<b>1,600</b>	1.6	9.9	<2.0
BH16	01/19/18	<b>1,400</b>	<1.0	7.3	<2.0
BH16	04/18/18	<b>980</b>	<1.0	<1.0	<2.0
BH16	07/09/18	<b>900</b>	<1.0	<1.0	<2.0
BH16	10/05/18	<b>10</b>	<1.0	<1.0	<2.0
BH16	01/03/19	<b>420</b>	<1.0	<1.0	<2.0
BH16	04/12/19	<b>12</b>	<1.0	<1.0	<2.0
BH17	10/20/17	<b>150</b>	<1.0	<1.0	<2.0
BH17	01/19/18	<b>270</b>	1.2	1.2	2.2
BH17	04/18/18	<b>210</b>	<1.0	<1.0	<2.0
BH17	07/09/18	<b>120</b>	<1.0	<1.0	<2.0

**TABLE 2**  
**GROUNDWATER ANALYTICAL DATA**  
**NOBLE ENERGY, INC. - MOSIER 23-12F**

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
<b>COGCC Standard</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
BH17	10/05/18	36	<1.0	<1.0	<2.0
BH17	01/03/19	9.5	1.2	<1.0	<2.0
BH17	04/12/19	25	<1.0	<1.0	<2.0
BH18	10/20/17	<1.0	<1.0	<1.0	640
BH18	01/19/18	990	15	67	1,700
BH18	04/18/18	530	1.1	2.0	21
BH18	07/09/18	110	<1.0	8.1	66
BH18	10/05/18	19	<1.0	1.5	16
BH18	01/03/19	38	<1.0	<1.0	5.2
BH18	04/12/19	870	140	80	830
BH19	10/20/17	51	<1.0	<1.0	460
BH19	01/19/18	470	990	32	560
BH19	04/18/18	87	340	9.8	170
BH19	07/09/18	51	63	4.5	62
BH19	10/05/18	41	69	3.3	57
BH19	01/03/19	130	80	8.1	130
BH19	04/12/19	130	240	8.2	170
BH20	10/20/17	<1.0	<1.0	<1.0	<2.0
BH20	01/19/18	<1.0	<1.0	<1.0	<2.0
BH20	04/18/18	<1.0	<1.0	<1.0	<2.0
BH20	07/09/18	<1.0	<1.0	<1.0	<2.0
BH20	10/05/18	<1.0	<1.0	<1.0	<2.0
BH20	01/03/19	<1.0	<1.0	<1.0	<2.0
BH20	04/12/19	<1.0	<1.0	<1.0	<2.0
BH21	12/18/17	31	<1.0	<1.0	<2.0
BH21	01/19/18	4.0	<1.0	<1.0	<2.0
BH21	04/18/18	27	<1.0	<1.0	<2.0
BH21	07/09/18	7.4	<1.0	<1.0	<2.0
BH21	10/05/18	<1.0	<1.0	<1.0	<2.0
BH21	01/03/19	2.8	<1.0	<1.0	<2.0
BH21	04/12/19	<1.0	<1.0	<1.0	<2.0
BH22	12/18/17	6800	15,000	510	8,000
BH22	01/19/18	5,100	8,400	320	4,500
BH22	04/18/18	5,900	7,000	340	4,200
BH22	07/09/18	2,100	1,900	110	6,000
BH22	10/05/18	25	18	1.2	13
BH22	01/03/19	9,800	7,400	99	830
BH22	04/12/19	2,000	16,000	910	16,000
BH23	12/18/17	510	4.2	<1.0	3.7
BH23	01/19/18	310	<1.0	210	420
BH23	04/18/18	21	3.8	<1.0	3.6
BH23	07/09/18	12	<1.0	<1.0	<2.0
BH23	10/05/18	1.0	1.4	<1.0	<2.0

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**GROUNDWATER ANALYTICAL DATA**  
**NOBLE ENERGY, INC. - MOSIER 23-12F**

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
<b>COGCC Standard</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
BH23	01/03/19	<1.0	<1.0	<1.0	<2.0
BH23	04/12/19	<1.0	<1.0	<1.0	<2.0
BH24	12/18/17	<1.0	<1.0	<1.0	<2.0
BH24	01/19/18	<1.0	<1.0	<1.0	<2.0
BH24	04/18/18	<1.0	<1.0	<1.0	<2.0
BH24	07/09/18	<1.0	<1.0	<1.0	<2.0
BH24	10/05/18	<1.0	<1.0	<1.0	<2.0
BH24	01/03/19	<1.0	<1.0	<1.0	<2.0
BH24	04/12/19	<1.0	<1.0	<1.0	<2.0
BH25	12/18/17	<b>29</b>	<1.0	<1.0	<2.0
BH25	01/19/18	<b>240</b>	<1.0	<1.0	<2.0
BH25	04/18/18	<b>1,100</b>	<1.0	<1.0	<2.0
BH25	07/09/18	<b>3,800</b>	<1.0	<1.0	13
BH25	10/05/18	<b>3,800</b>	1.1	<1.0	52
BH25	01/03/19	<b>3,900</b>	<1.0	<b>860</b>	<b>7,600</b>
BH25	04/12/19	<b>910</b>	180	18	160
BH26	01/19/18	<1.0	<1.0	<1.0	<2.0
BH26	04/18/18	<1.0	<1.0	<1.0	<2.0
BH26	07/09/18	1.0	<1.0	<1.0	<2.0
BH26	10/05/18	<1.0	<1.0	<1.0	<2.0
BH26	01/03/19	<1.0	<1.0	<1.0	<2.0
BH26	04/12/19	<1.0	<1.0	<1.0	<2.0
BH27	01/19/18	<1.0	<1.0	<1.0	<2.0
BH27	04/18/18	<b>14</b>	<1.0	<1.0	<2.0
BH27	07/09/18	<1.0	<1.0	<1.0	<2.0
BH27	10/05/18	<1.0	<1.0	<1.0	<2.0
BH27	01/03/19	<1.0	<1.0	<1.0	<2.0
BH27	04/12/19	<1.0	<1.0	<1.0	<2.0
BH28	01/19/18	<1.0	<1.0	<1.0	<2.0
BH28	04/18/18	<1.0	<1.0	<1.0	<2.0
BH28	07/09/18	<1.0	<1.0	<1.0	<2.0
BH28	10/05/18	<1.0	<1.0	<1.0	<2.0
BH28	01/03/19	3.2	<1.0	<1.0	<2.0
BH28	04/12/19	<1.0	<1.0	<1.0	<2.0
BH29	01/19/18	<1.0	<1.0	<1.0	<2.0
BH29	04/18/18	<1.0	<1.0	<1.0	<2.0
BH29	07/09/18	<1.0	<1.0	<1.0	<2.0
BH29	10/05/18	<1.0	<1.0	<1.0	<2.0
BH29	01/03/19	<1.0	<1.0	<1.0	<2.0
BH29	04/12/19	<1.0	<1.0	<1.0	<2.0
BH30	01/19/18	<1.0	<1.0	<1.0	<2.0
BH30	04/18/18	<1.0	<1.0	<1.0	<2.0

**TABLE 2**  
**GROUNDWATER ANALYTICAL DATA**  
**NOBLE ENERGY, INC. - MOSIER 23-12F**

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
<b>COGCC Standard</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
BH30	07/09/18	<1.0	<1.0	<1.0	<2.0
BH30	10/05/18	<1.0	<1.0	<1.0	<2.0
BH30	01/03/19	<1.0	<1.0	<1.0	<2.0
BH30	04/12/19	<1.0	<1.0	<1.0	<2.0
BH31	07/09/18	<1.0	<1.0	<1.0	<2.0
BH31	10/05/18	<1.0	<1.0	<1.0	<2.0
BH31	01/03/19	<1.0	<1.0	<1.0	<2.0
BH31	04/12/19	<1.0	<1.0	<1.0	<2.0
BH32	07/09/18	<1.0	<1.0	<1.0	<2.0
BH32	10/05/18	<1.0	<1.0	<1.0	<2.0
BH32	01/03/19	<1.0	<1.0	<1.0	<2.0
BH32	04/12/19	<1.0	<1.0	<1.0	<2.0
BH33	07/09/18	<1.0	<1.0	<1.0	<2.0
BH33	10/05/18	<1.0	<1.0	<1.0	<2.0
BH33	01/03/19	<1.0	<1.0	<1.0	<2.0
BH33	04/12/19	<1.0	<1.0	<1.0	<2.0

Notes:

COGCC = Colorado Oil and Gas Conservation Commission

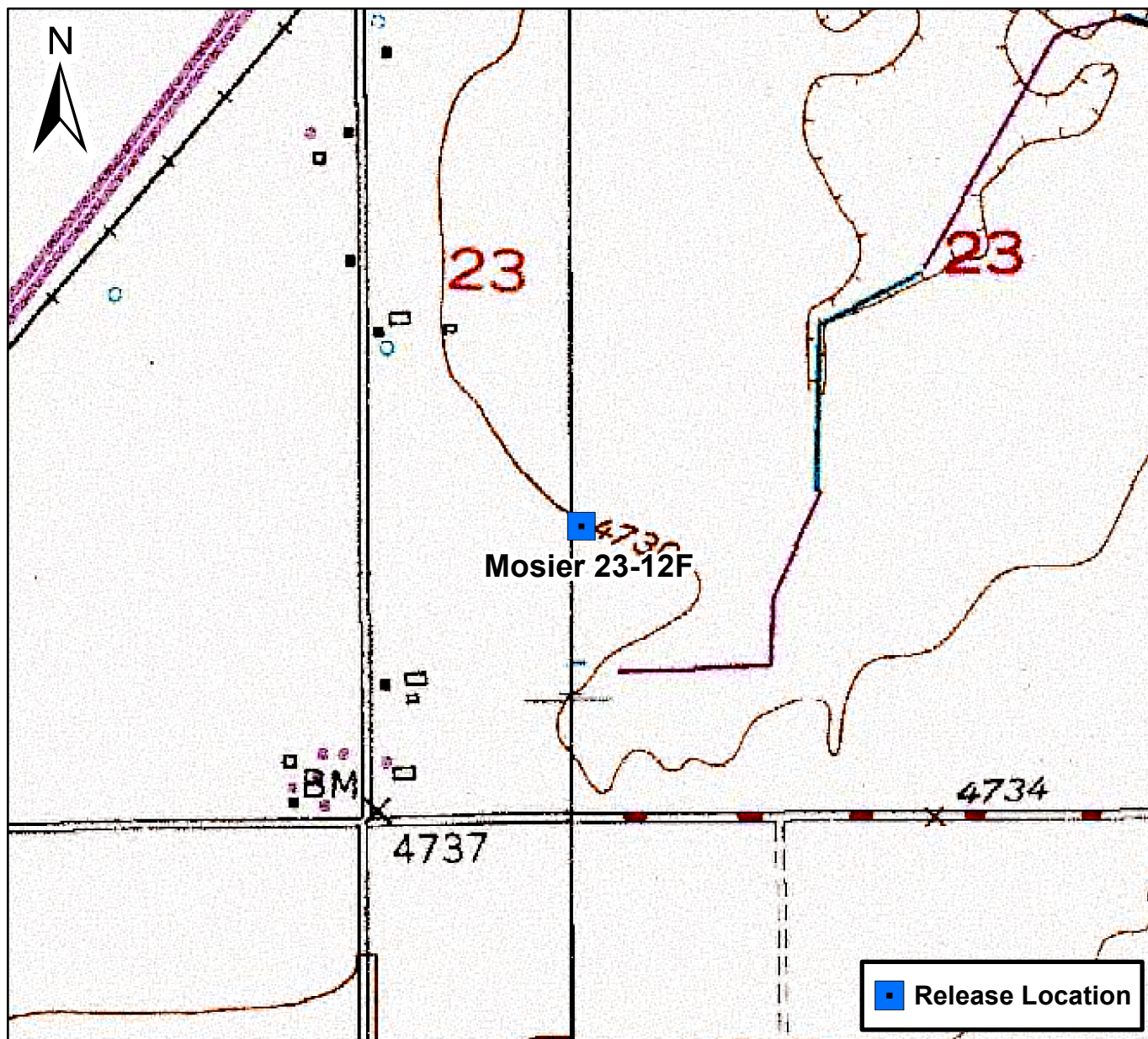
µg/L = Micrograms per liter

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

Groundwater standards referenced from COGCC Table 910-1

**Highlighted results are equal to or exceed the COGCC Table 910-1 standard**

Soil borings BH03, BH05, BH06, BH08, BH10-BH12 were not converted to monitoring wells.



0 750 1,500 Feet

## Figure 1

Site Location Map  
Mosier 23-12F  
NWSW S23 T4N R66W  
Weld County, Colorado





DATE:	08/21/2018
DESIGNED BY:	DA
DRAWN BY:	TL



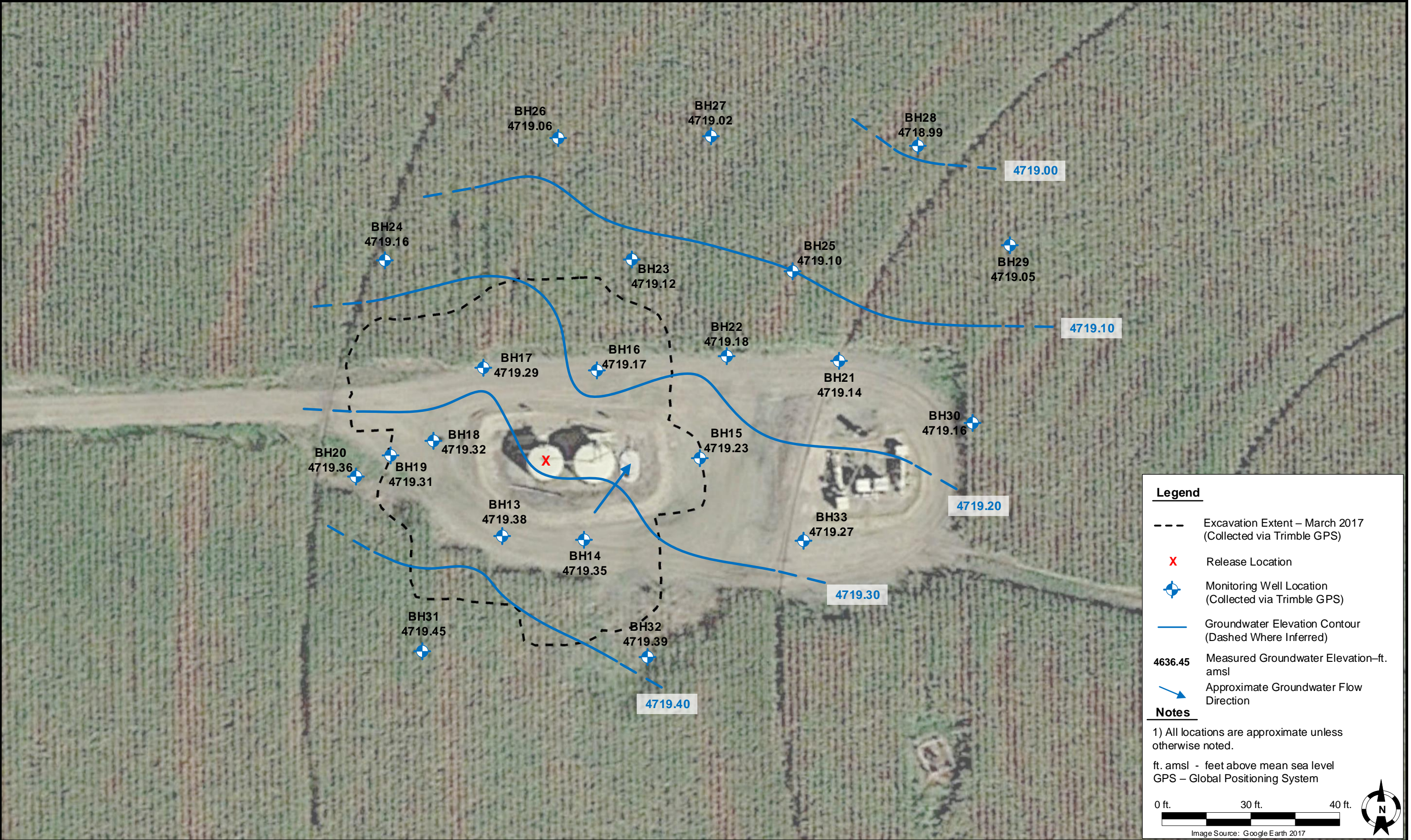
**TASMAN**  
GEOSCIENCES

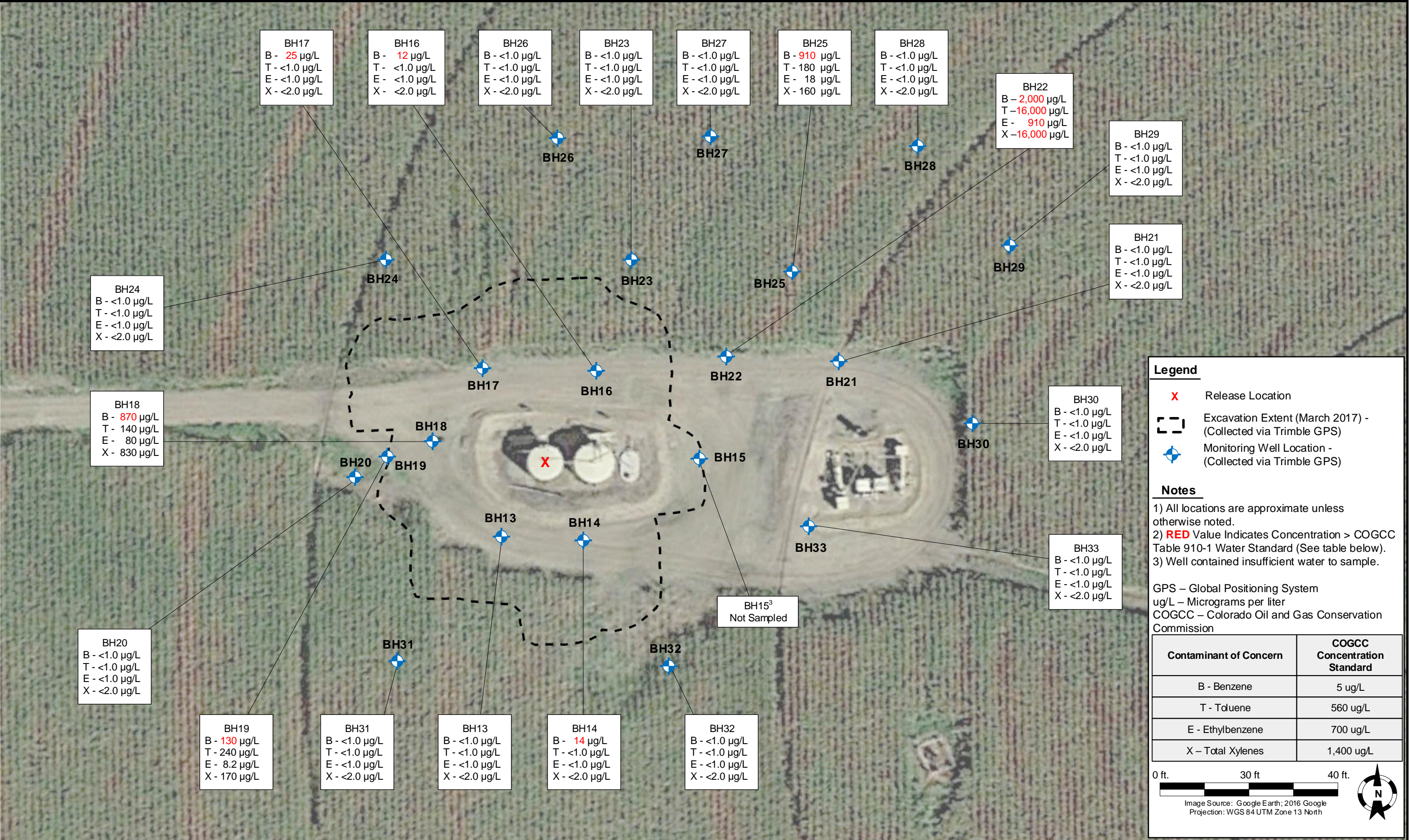
Tasman Geosciences, Inc.  
6899 Pecos Street – Unit C  
Denver, CO 80221

**Noble Energy, Inc. – DJ Basin**  
**Mosier 23-12F**  
NWSW, Section 23, Township 4 North, Range 66 West  
Weld County, Colorado

Site Overview Map

**FIGURE**  
**2**





DATE:	01/14/2019
DESIGNED BY:	B. Bruns
DRAWN BY:	J. Whritenour



**TASMAN**  
GEOSCIENCES

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

**Noble Energy, Inc. – DJ Basin**  
**Mosier 23-12F**  
NWSW, Section 23, Township 4 North, Range 66 West  
Weld County, Colorado

Groundwater Analytical  
Results Figure  
(04/12/19)

**FIGURE**  
**4**

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

April 18, 2019

Brandon Bruns

Tasman Geosciences

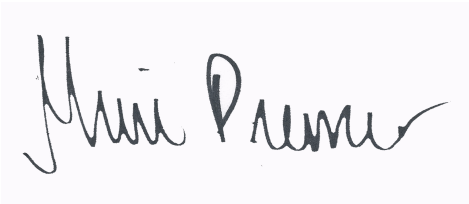
6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Mosier 23-12F

Enclosed are the results of analyses for samples received by Summit Scientific on 04/12/19 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Muri Premier", is displayed on a light purple rectangular background.

Muri Premier For Ben Shrewsbury

Laboratory Manager



Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH13	1904186-01	Water	04/12/19 13:03	04/12/19 18:00
BH14	1904186-02	Water	04/12/19 12:54	04/12/19 18:00
BH16	1904186-03	Water	04/12/19 13:15	04/12/19 18:00
BH17	1904186-04	Water	04/12/19 13:25	04/12/19 18:00
BH18	1904186-05	Water	04/12/19 13:35	04/12/19 18:00
BH19	1904186-06	Water	04/12/19 13:29	04/12/19 18:00
BH20	1904186-07	Water	04/12/19 12:55	04/12/19 18:00
BH21	1904186-08	Water	04/12/19 12:41	04/12/19 18:00
BH22	1904186-09	Water	04/12/19 13:10	04/12/19 18:00
BH23	1904186-10	Water	04/12/19 12:45	04/12/19 18:00
BH24	1904186-11	Water	04/12/19 12:40	04/12/19 18:00
BH25	1904186-12	Water	04/12/19 13:00	04/12/19 18:00
BH26	1904186-13	Water	04/12/19 12:30	04/12/19 18:00
BH27	1904186-14	Water	04/12/19 12:15	04/12/19 18:00
BH28	1904186-15	Water	04/12/19 12:10	04/12/19 18:00
BH29	1904186-16	Water	04/12/19 12:00	04/12/19 18:00
BH30	1904186-17	Water	04/12/19 11:45	04/12/19 18:00
BH31	1904186-18	Water	04/12/19 12:25	04/12/19 18:00
BH32	1904186-19	Water	04/12/19 12:32	04/12/19 18:00
BH33	1904186-20	Water	04/12/19 12:23	04/12/19 18:00

Summit Scientific

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# Summit Scientific

S<sub>2</sub>

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310

1904/186.1

Page 1 of 2

Client: Noble / Tasman

Project Manager: Brandon Bruns, Invoice: Jacob Evans

Address: 6899 Pecos Street

E-Mail: Bbruns@tasman-geo.com

City/State/Zip: Denver / CO/ 80221


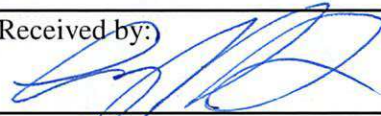
Phone: 970.210.6571

Project Name: MOSIER 23-12F

Sampler Name: T. Lichtenberg

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions	
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR		
1	BH13	4/12/19	1303	2			X		X					X				
2	BH14		1254	3	X													
3	BH16		1315															
4	BH17		1325															
5	BH18		1335															
6	BH19		1329															
7	BH20		1255															
8	BH21		1241															
9	BH22		1310															
10	BH23		1245															

Relinquished by: 	Date/Time: 4/12/19 0100	Received by: Tasman's Lock Box	Date/Time: 4/12/19 0100	<b>Turn Around Time</b> (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> <b>Sample Integrity:</b> Temperature Upon Receipt: 4.8 Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Notes:</b>
Relinquished by: Tasman's Lock Box	Date/Time: 4.12.19 1800	Received by: 	Date/Time: 4.12.19 1800		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

1904186-2

# Summit Scientific

S<sub>2</sub>

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310

Page 2 of 2

Client: Noble / Tasman

Project Manager: Brandon Bruns, Invoice: Jacob Evans

Address: 6899 Pecos Street

E-Mail: Bbruns@tasman-geo.com

City/State/Zip: Denver / CO/ 80221


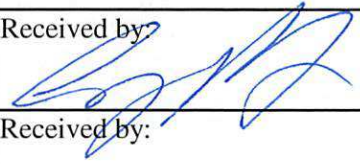
Phone: 970.210.6571

Project Name: MOSIER 23-12F

Sampler Name: T. Lichtenberg

Project Number: \_\_\_\_\_

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested					Special Instructions
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR		
1	BH24	4/12/19	1240	3	X				X					X				
2	BH25		1300															
3	BH26		1230															
4	BH27		1215															
5	BH28		1210															
6	BH29		1200															
7	BH30		1145															
8	BH31		1225															
9	BH32		1232															
10	BH33		1223															

Relinquished by: 	Date/Time: 4/12/19 0100	Received by: Tasman's Lock Box	Date/Time: 4/12/19 0100	<b>Turn Around Time</b> (Check) Same Day _____ 72 hours 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____ <b>Sample Integrity:</b> Temperature Upon Receipt: <u>4.8</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Notes:</b>
Relinquished by: Tasman's Lock Box	Date/Time: 4.12.19 1800	Received by: 	Date/Time: 4.12.19 1800		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

# Sample Receipt Checklist

S2 Work Order 1904186

Client: Noble / Tasman Client Project ID: Mosier 23-12F

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other P.U. Airbill #: \_\_\_\_\_

Matrix (check all that apply): \_\_\_\_\_ Air \_\_\_\_\_ Soil/Solid / Water \_\_\_\_\_ Other: \_\_\_\_\_  
(Describe)

Temp (°C)	<u>4.8</u>
-----------	------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<u>/</u>			
Were all samples received intact <sup>(1)</sup> ?	<u>/</u>			
Was adequate sample volume provided <sup>(1)</sup> ?	<u>/</u>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<u>/</u>	
Are samples with holding times due within 48 hours sample due within 48 hours present?			<u>/</u>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<u>/</u>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<u>/</u>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<u>/</u>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<u>/</u>			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>		<u>/</u>		
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<u>/</u>			<u>Hcl</u>
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			<u>/</u>	
If dissolved metals are requested, were samples field filtered?			<u>/</u>	
Additional Comments (if any):   				
<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.				

CP  
Custodian Printed Name or Initials

[Signature]  
Signature of Custodian

4.12.19 1835  
Date/Time



Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH13**  
**1904186-01 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 13:03**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 13:03**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		99.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Summit Scientific

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



Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH14**  
**1904186-02 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 12:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Benzene</b>	<b>14</b>	1.0		ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **04/12/19 12:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		98.7 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.7 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %		21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH16**  
**1904186-03 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 13:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Benzene</b>	<b>12</b>	1.0		ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **04/12/19 13:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		94.4 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %		21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH17**  
**1904186-04 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 13:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Benzene</b>	<b>25</b>	1.0		ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **04/12/19 13:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		96.1 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.9 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

Summit Scientific

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



Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH18**  
**1904186-05 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
<b>Benzene</b>	<b>870</b>	100	ug/l	100	1904220	04/15/19	04/16/19	EPA 8260B	
<b>Toluene</b>	<b>140</b>	1.0	"	1	"	"	"	"	
<b>Ethylbenzene</b>	<b>80</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>830</b>	200	"	100	"	"	"	"	

Date Sampled: **04/12/19 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH19**  
**1904186-06 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 13:29**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Benzene</b>	<b>130</b>	1.0		ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
<b>Toluene</b>	<b>240</b>	1.0		"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>8.2</b>	1.0		"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>170</b>	2.0		"	"	"	"	"	"	

Date Sampled: **04/12/19 13:29**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		123 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		95.3 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.1 %		21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH20**  
**1904186-07 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH21**  
**1904186-08 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 12:41**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 12:41**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH22**  
**1904186-09 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 13:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Benzene</b>	<b>2000</b>	100		ug/l	100	1904220	04/15/19	04/16/19	EPA 8260B	
<b>Toluene</b>	<b>16000</b>	100		"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>910</b>	100		"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>16000</b>	200		"	"	"	"	"	"	

Date Sampled: **04/12/19 13:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		114 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %		21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH23**  
**1904186-10 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.8 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH24**  
**1904186-11 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 12:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 12:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.3 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH25**  
**1904186-12 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
<b>Benzene</b>	<b>910</b>	100	ug/l	100	1904220	04/15/19	04/16/19	EPA 8260B	
<b>Toluene</b>	<b>180</b>	1.0	"	1	"	"	"	"	
<b>Ethylbenzene</b>	<b>18</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>160</b>	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		140 %		23-173	"	"	"	"	
Surrogate: Toluene-d8		92.0 %		20-170	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.4 %		21-167	"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH26**  
**1904186-13 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		98.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH27**  
**1904186-14 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		98.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH28**  
**1904186-15 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 12:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 12:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.3 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]

Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

## BH29

### 1904186-16 (Water)

#### Summit Scientific

#### Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/12/19 12:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 12:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		99.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.5 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH30**  
**1904186-17 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 11:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 11:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH31**  
**1904186-18 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 12:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 12:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.5 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH32**  
**1904186-19 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 12:32**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 12:32**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		100 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

**BH33**  
**1904186-20 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/12/19 12:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1904220	04/15/19	04/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/12/19 12:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.7 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

### Summit Scientific

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

#### Batch 1904220 - EPA 5030 Water MS

##### Blank (1904220-BLK1)

Prepared: 04/15/19 Analyzed: 04/16/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.9		"	13.3		96.8	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.7	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101	21-167			

##### LCS (1904220-BS1)

Prepared: 04/15/19 Analyzed: 04/16/19

Benzene	28.6	1.0	ug/l	33.3		86.0	70-130			
Toluene	31.2	1.0	"	33.3		93.8	70-130			
Ethylbenzene	34.6	1.0	"	33.3		104	70-130			
m,p-Xylene	65.2	2.0	"	66.7		97.8	70-130			
o-Xylene	32.1	1.0	"	33.3		96.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.3		97.5	23-173			
Surrogate: Toluene-d8	13.4		"	13.3		100	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101	21-167			

##### Matrix Spike (1904220-MS1)

Source: 1904186-01

Prepared: 04/15/19 Analyzed: 04/16/19

Benzene	30.3	1.0	ug/l	33.3	ND	90.8	70-130			
Toluene	31.8	1.0	"	33.3	ND	95.3	70-130			
Ethylbenzene	35.2	1.0	"	33.3	ND	106	70-130			
m,p-Xylene	66.9	2.0	"	66.7	ND	100	70-130			
o-Xylene	32.4	1.0	"	33.3	ND	97.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	15.6		"	13.3		117	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.4	20-170			
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		104	21-167			

Summit Scientific

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Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

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

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

**Batch 1904220 - EPA 5030 Water MS**

Matrix Spike Dup (1904220-MSD1)		Source: 1904186-01			Prepared: 04/15/19 Analyzed: 04/16/19					
Benzene	30.2	1.0	ug/l	33.3	ND	90.6	70-130	0.198	30	
Toluene	31.8	1.0	"	33.3	ND	95.4	70-130	0.0629	30	
Ethylbenzene	34.8	1.0	"	33.3	ND	104	70-130	1.17	30	
m,p-Xylene	65.9	2.0	"	66.7	ND	98.9	70-130	1.51	30	
o-Xylene	32.3	1.0	"	33.3	ND	96.8	70-130	0.556	30	
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.3		109	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.7	20-170			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	21-167			

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



Tasman Geosciences  
6899 Pecos St, Unit C  
Denver CO, 80221

Project: Noble - Mosier 23-12F

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/18/19 11:57

### Notes and Definitions

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