

First Semiannual 2015 Groundwater Monitoring Report

Margaret Spaulding Water Treatment Facility
ID# 115241 – REM #7058
SW ¼ SE ¼ Section 28, T9N, R81W
Jackson County, CO

CM Production LLC

Table of Contents

1.	Introduction.....	1
1.1	Site Background and Characteristics.....	1
1.2	Regulatory Framework.....	1
2.	Groundwater Sampling.....	1
3.	Analytical Results	2
4.	Conclusions.....	3
5.	Future Site Activities.....	3

Figure Index

Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Groundwater Contour Elevation Map- July 2015
Figure 4	Groundwater Analytical Results- July 2015

Table Index

Table 1	Groundwater Elevation Data- July 2015
Table 2	Groundwater Analytical Data- July 2015

Appendices

Appendix A	Historical Groundwater Elevation Data
Appendix B	Historical Groundwater Analytical Data
Appendix C	Laboratory Analytical Reports

1. Introduction

GHD Services, Inc. (GHD), formerly Conestoga-Rovers and Associates, Inc., prepared this *First Semiannual 2015 Groundwater Monitoring Report* on behalf of CM Production LLC for the Margaret Spaulding Treatment Site.

GHD conducted semiannual groundwater monitoring and sampling activities on July 7, 2015 at the Margaret Spaulding Water Treatment Facility (Site), SW ¼ SE ¼ Section 28, T9N, R81W, Jackson County, Colorado, which is located on the Lone Pine Ranch off of County Road 12W (Figure 1). This report summarizes:

- Background and site characteristics
- Semiannual groundwater monitoring activities
- Analytical results
- Planned site activities

1.1 Site Background and Characteristics

The Margaret Spaulding Water Treatment Facility, operated by CM Production LLC, includes aboveground storage tanks, various aboveground and underground piping, a truck loading rack, and six pits (Figure 2). Site investigation activities were initiated in April 2012, by the previous owner (Lone Pine Gas, Inc.). In July 2015, GHD was retained as the environmental consultant for the Site by CM Production LLC.

A total of six groundwater monitoring wells were installed at the Site during site characterization activities in 2013. Semiannual groundwater monitoring and sampling are currently being conducted at the Site.

The Colorado Department of Public Health and Environment – Water Quality Control Division (CDPHE-WQCD) required CM Production LLC to cease the produced water discharge to Spring Gulch (Permit # CO0048712) on October 31, 2013 pursuant to the June 25, 2013 Compliance Order on Consent, Number IC-130624.

Remediation activities that have been conducted at the Site have included soil treatment, pit decommissioning work and groundwater monitoring.

1.2 Regulatory Framework

The standards for the cleanup of the petroleum hydrocarbon impacts associated with the Site and enforced water quality standards and pit closure standards are based on Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1. Sampling activities were conducted in accordance with COGCC guidance.

2. Groundwater Sampling

GHD conducted groundwater monitoring at the Site on July 7, 2015. GHD measured fluid levels in the six (6) on-site monitoring wells prior to the collection of water quality samples. Groundwater

elevations ranged from 8207.21 feet-above mean sea level (ft-amsl) at MW-1 to 8211.47 ft-amsl at MW-6. Groundwater flows to the northwest with a hydraulic gradient of approximately 0.0014 feet per foot (ft/ft). For the July 2015 groundwater monitoring, the Groundwater Elevation Contour Map is presented as Figure 3, Groundwater Elevation Measurements are presented in Table 1, and Historical Groundwater Elevation Data is summarized in Appendix A.

Groundwater samples were collected from all of the Site's monitoring wells and included wells MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6. Prior to gauging, each monitoring well was opened and the cap was removed to allow groundwater levels to stabilize and equilibrate. Samples were collected following the removal of a minimum of one well volume with a disposable bailer. The groundwater samples were collected using clean, disposable bailers, decanted into clean laboratory-provided containers, and placed on ice in an insulated cooler. The coolers were delivered to Accutest Laboratories in Wheat Ridge, Colorado under chain-of-custody protocols.

Accutest analyzed the groundwater samples for:

- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8260B
- Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO) by EPA Method 8260B
- Total Petroleum Hydrocarbons – Diesel Range Organics (TPH-DRO) by EPA Method 8015B
- TDS by SM 2540C
- Chloride and Sulfate by EPA Method 300

3. Analytical Results

Sample results for the Margaret Spaulding Water Treatment Facility are summarized as follows:

- BTEX were not detected above the groundwater COGCC Table 910-1 levels during the July 2015 monitoring and sampling event
- TPH-GRO was detected above the lower laboratory detection limit in monitoring well MW-1 at a concentration of 339 micrograms per liter (µg/L). TPH-GRO was not detected above the laboratory detection limit in the remaining monitoring wells
- TPH-DRO was detected above the lower laboratory detection limit in monitoring wells MW-1 (16 mg/L), MW-2 (1.54 mg/L), MW-5 (0.909 mg/L), and MW-6 (0.521 mg/L)
- Chloride and sulfate were detected above the lower laboratory detection limits in all monitoring wells, but were below the CDPHE-WQCC Regulation #41 standard of 250 mg/L
- TDS ranged from 112 mg/L in MW-4 to 316 mg/L in MW-1, but were below the CDPHE-WQCC Regulation #41 standard range of 0 to 400 mg/L

Groundwater analytical data are summarized in Table 2 and historical groundwater analytical data is summarized in Appendix B. The laboratory report is presented in Appendix C. Groundwater analytical results are shown on Figure 4.

4. Conclusions

The groundwater analytical results for this sampling period showed all hydrocarbon constituents are below applicable COGCC Table 910-1 standards as previously observed for this Site.

The next biannual groundwater sampling event will be conducted in November 2015.

5. Future Site Activities

The stockpiled soil removed from the former overflow treater holding pit can be sampled and analyzed for TPH-GRO, TPH-DRO, and TPH-ORO to acquire base results to compare to Table 910-1. If the sample results are greater than the Table 910-1 standard (500 mg/kg), then the soil will be landfarmed as discussed in the Form 27 – COGCC Site Investigation and Remediation Workplan that was approved on March 9, 2015.

GHD is currently reviewing three remedial options for the soil of the five remaining pits

- Option 1 would include removing the impacted soil from the remaining pits and having it properly disposed of offsite and the pits backfilled with clean backfill
- Option 2 would consist of a similar soil removal process from the pits, but the soil would be landfarmed on-site
- Option 3 would consist of in-situ treatment of the soil in the pits with Cool-Ox[®] solution. It uses intercalated calcium/magnesium peroxide that releases oxygen and slowly facilitates the aerobic degradation of petroleum hydrocarbons. The Cool-Ox[®] process treats a wide range of chemicals due to the controlled nature of the process and the slightly alkaline pH of 8, and is not an exothermic reaction. Cool-Ox[®] will also work well by not reacting with the bentonite liner/seal that is present below the pit. Baseline samples would be taken from each pit and analyzed for TPH-GRO, TPH-DRO and TPH-ORO prior to application of the Cool-Ox[®]. In-situ application of the Cool-Ox[®] would then be administered and allowed to react with the impacted soil in the pits. Follow up soil samples would then be collected from the pits approximately 30 days post application, then 60 days and then 90 days. If the soil analysis is below the Table 910-1 soil standards at 90 days, discussion of pit closure with the COGCC will be addressed. If the analytical results are greater than the Table 910-1 standards, the pits will need a follow-up Cool-Ox[®] treatment.

GHD will review and discuss these options with CM Production LLC. Once a decision is made, the COGCC will be notified of the preferred option chosen, and implementation of that option will be discussed with the COGCC.

All of Which is Respectfully Submitted,

GHD Services Inc.

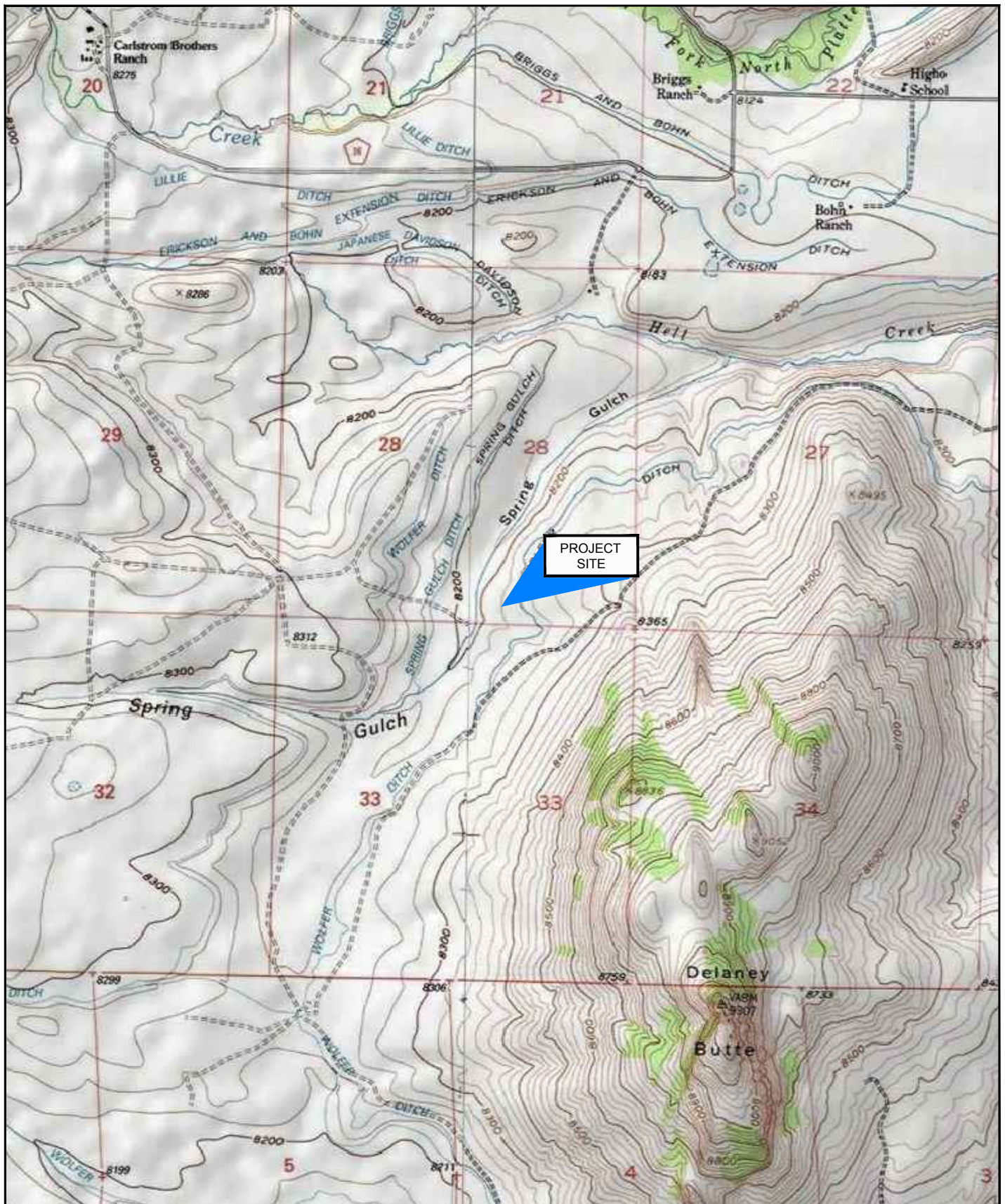


Justin Covey
Project Geologist



Chrissi Ruby
Project Manager

Figures



Source: USGS 7.5 MINUTE QUAD "DELANEY BUTTE AND PITCHPINE MOUNTAIN, COLORADO"

LAT/LONG: 40.717665° NORTH, 106.498721° WEST

0 1000 2000ft

Coordinate System:
NAD 83 (2011) STATE PLANE-
COLORADO NORTH (US FEET)



CM PRODUCTION, LLC
JACKSON COUNTY, COLORADO
MARGARET SPAULDING TREATMENT SITE

SITE LOCATION MAP

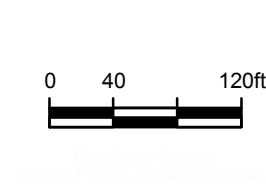
11103525-01

Sep 2, 2015

FIGURE 1



Source: USDA FSA Imagery, July 22, 2013



CM PRODUCTION, LLC
JACKSON COUNTY, COLORADO
MARGARET SPAULDING TREATMENT SITE

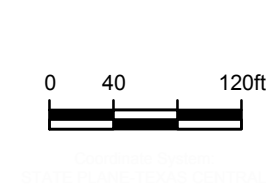
SITE PLAN

11103525-01
Aug 31, 2015

FIGURE 2



Source: USDA FSA Imagery, July 22, 2013

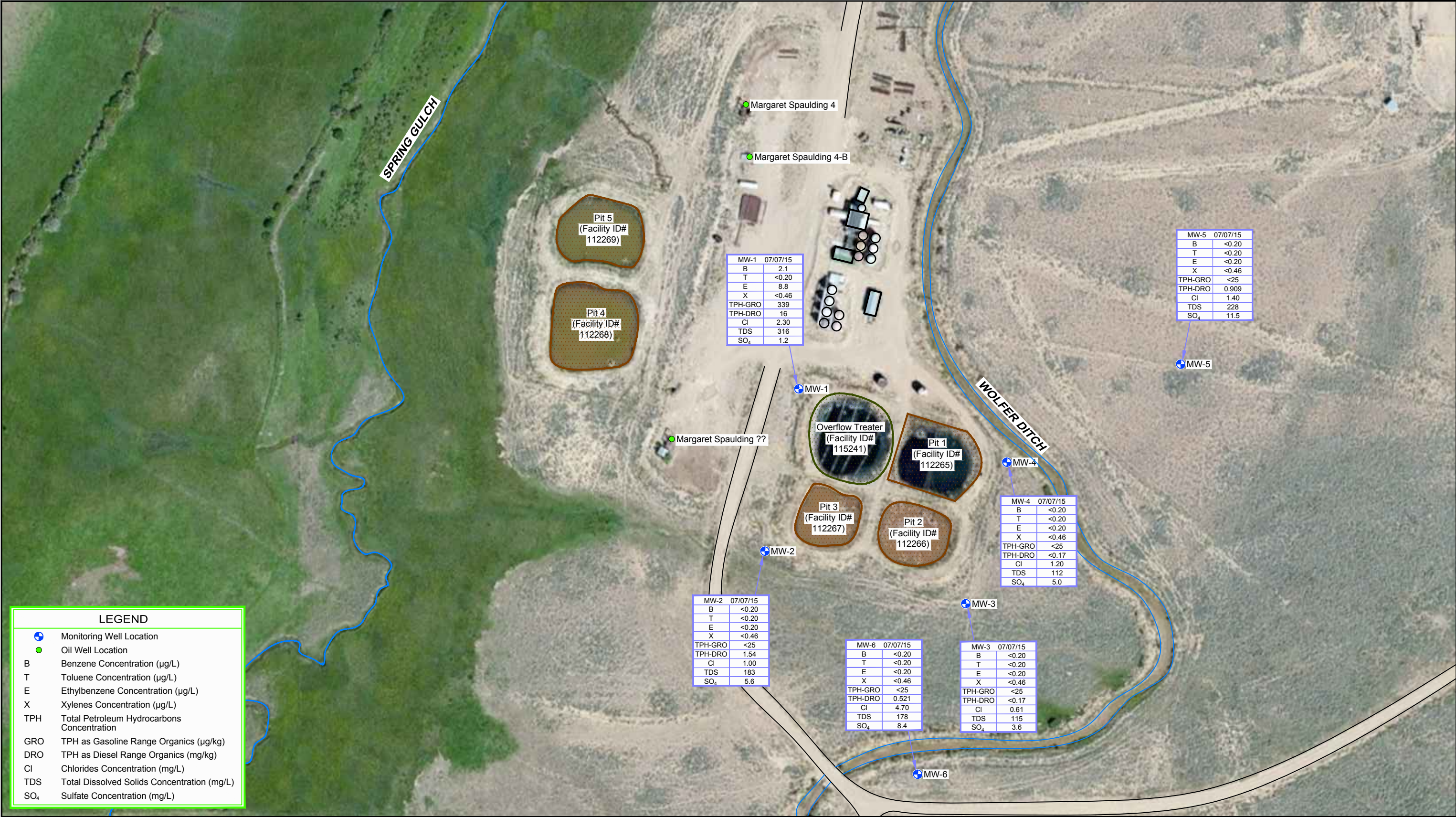


CM PRODUCTION, LLC
JACKSON COUNTY, COLORADO
MARGARET SPAULDING TREATMENT SITE

POTENTIOMETRIC MAP

11103525-01
Aug 31, 2015

FIGURE 3



Source: USDA FSA Imagery, July 22, 2013



CM PRODUCTION, LLC
JACKSON COUNTY, COLORADO
MARGARET SPAULDING TREATMENT SITE

11103525-01
Aug 31, 2015

GROUNDWATER ANALYTICAL

FIGURE 4

Tables

Table 1 Summary of Fluid Levels
CM Production, LLC., Margaret Spaulding Water Treatment Site - Jackson County, Colorado

Well ID/MP Elevation	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod. Thick (ft)	TD (ft-bmp)	Groundwater Elevation (ft-msl)
MW-1 8227.34	07/07/15		20.13	0.00	30.99	8207.21
MW-2 8219.87	07/07/15		11.16	0.00	24.87	8208.71
MW-3 8229.00	07/07/15		18.60	0.00	34.35	8210.40
MW-4 8235.71	07/07/15		26.65	0.00	42.50	8209.06
MW-5 8244.96	07/07/15		36.35	0.00	42.70	8208.61
MW-6 8242.23	07/07/15		30.76	0.00	47.55	8211.47

Notes:

DTP - depth to product

DTW - depth to water

TD - total depth

ft - feet

ft-bmp - feet-below measuring point

ft-msl - feet-mean sea level

Table 2 Summary of Groundwater Analytical Results and Field Parameters
CM Production - Margaret Spaulding Water Treatment Site - Jackson County, Colorado

Monitor Well ID/ MP Elevation	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)	Product Thickness (feet)	Depth to Water (ft-bmp)	Groundwater Elevation (ft-msl)	Temperature (deg-C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)	Chloride (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)
Table 910-1 concentration levels		5	560-1,000	700	1,400-10,000											<1.25 x background	<1.25 x background	<1.25 x background
MW-1 8227.34	07/07/15	2.1	<0.20	8.8	<0.46	339	16		20.13	8,207.21	10.05	0.322	2.79	7.18	-7.0	2.30	316	1.2
MW-2 8219.87	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	1.54		11.16	8,208.71	10.79	0.123	7.81	4.14	273.3	1.00	183	5.6
MW-3 8229.00	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	<0.17		18.60	8,210.40	9.16	0.115	9.08	7.21	122.7	0.61	115	3.6
MW-4 8235.71	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	<0.17		26.65	8,209.06	9.18	0.113	8.45	6.99	212.1	1.20	112	5.0
MW-5 8244.96	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	0.909		36.35	#REF!	10.63	0.181	8.37	7.05	143.0	1.40	228	11.5
MW-6 8242.23	7/7/15	<0.20	<0.20	<0.20	<0.46	<25	0.521		30.76	8,211.47	9.32	0.182	7.77	6.68	145.8	4.70	178	8.4

Notes:

BOLD = Exceeds New Mexico Water Quality Commission (NMWQC) Standard

µg/L = microgram per liter

mg/L= micrograms per liter

< = Not detected above indicated level

BTEX = Benzene, Toluene, Ethylbenzene and Xylenes

BTEX analyzed by Method EPA 8260

ft-bmp - feet-below measuring point

ft-msl - feet-mean sea level

deg-C - degrees-Celsius

mS/cm - milliSiemens per centimeter

mV - millivolts

Appendix A

Historical Groundwater Elevation Data

Appendix A - Historical Fluid Levels
Summary of Fluid Level Measurements
CM Production Inc. - Lone Pine Field Pits
Groundwater Monitoring

Station ID#	Date Measured	Northing	Easting	Depth to Product (feet)	Depth to Water (feet)	Total Depth (feet)	Water Column (feet)	Measuring Point Elevation (ft-amsl)	Calculated Groundwater Elevation (ft - amsl)
MW-1	7/12/2012	4403030.111	506765.951		19.00			8227.34	8208.34
	9/19/2013			ND	22.18	30.99	8.81		8205.16
	11/20/2013			ND	23.16		7.83		8204.18
	3/25/2014			ND	24.57		6.42		8202.77
	6/26/2014			ND	20.26		10.73		8207.08
	9/22/2014			ND	22.46		8.53		8204.88
	11/19/2014			ND	23.82		7.17		8220.17
MW-2	7/12/2012	4403049.744	506765.848		10.01			8219.87	8209.86
	9/19/2013			ND	13.33	24.87	11.54		8206.54
	11/20/2013			ND	14.26		10.61		8205.61
	3/25/2014			NM	NM	NM	NM		NM
	6/26/2014			ND	11.22		13.65		8208.65
	9/22/2014			ND	13.70		11.17		8206.17
	11/19/2014			ND	15.00		9.87		8210.00
MW-3	7/12/2012	4403107.371	506677.024		17.38			8229.00	8211.62
	9/19/2013			ND	22.13	34.35	12.22		8206.87
	11/20/2013			ND	23.24		11.11		8205.76
	3/25/2014			ND	24.87		9.48		8204.13
	6/26/2014			ND	18.82		15.53		8210.18
	9/22/2014			ND	22.19		12.16		8206.81
	11/19/2014			ND	23.80		10.55		8218.45
MW-4	7/12/2012	4403109.303	506751.803		24.77			8235.71	8210.94
	9/19/2013			ND	29.71	42.50	12.79		8206.00
	11/20/2013			ND	30.90		11.60		8204.81
	3/24/2014			ND	32.56		9.94		8203.15
	6/26/2014			ND	26.67		15.83		8209.04
	9/22/2014			ND	29.84		12.66		8205.87
	11/19/2014			ND	31.55		10.95		8224.76
MW-5	7/12/2012	4403107.537	506790.649		34.37			8244.96	8210.59
	9/19/2013			ND	34.27	42.70	8.43		8210.69
	11/20/2013			ND	40.56		2.14		8204.40
	3/25/2014			NM	NM	NM	NM		NM
	6/26/2014			ND	35.56		7.14		8209.40
	9/22/2014			ND	39.45		3.25		8205.51
	11/19/2014			ND	41.20		1.50		8243.46
MW-6	7/12/2012	4402964.351	506739.099		34.37			8242.23	8207.86
	9/19/2013			ND	39.42	47.55	8.13		8202.81
	11/20/2013			ND	35.28		12.27		8206.95
	3/25/2014			ND	36.81		10.74		8205.42
	6/26/2014			ND	30.45		17.10		8211.78
	9/22/2014			ND	34.20		13.35		8208.03
	11/19/2014			NM	NM		NM		NM

ft - amsl fee above mean sea level

ND Not Detected

Monitoring wells were installed and surveyed by North Park Engineering - R. Miller on 06/18/2012.

Coordinate System - UTM Zone 13/NAD 1983

North Park Engineering measured groundwater in the monitoring wells on 07/12/2012.

Olsson Associates measured fluid levels in the monitoring wells on 09/19/2013, 11/20/2013, 3/25/2014, 6/26/2014, and 9/22/2014.

Appendix B

Historical Groundwater Analytical Data

Appendix B - Historical Analytical Results
Groundwater Analytical Results
Summary of Volatile Organic Compounds and Total Petroleum Hydrocarbons
CM Production Inc. - Lone Pine Field Pits

Station ID#	Date Sampled	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)
COGCC 910-1		0.005	0.56	0.7	1.4	N/A	N/A
MW-1	4/17/2012	< 0.002	< 0.002	< 0.002	< 0.004	< 0.05	4.3
	1/8/2013	< 0.001	0.0032	< 0.001	< 0.001	0.057	2.1
	9/19/2013	< 0.001	< 0.002	0.00073 J	< 0.001	NA	26.8
	11/20/2013	< 0.001	< 0.001	< 0.001	< 0.001	NA	6.5
	3/25/2014	< 0.001	< 0.001	< 0.002	< 0.001	NA	2.26
	6/26/2014	0.0029	< 0.001	0.0081	< 0.001	< 0.2	6.6
	9/22/2014	< 0.001	< 0.001	0.0089 J	< 0.001	< 0.2	8.57
	11/19/2014	< 0.001	< 0.001	< 0.001	< 0.002	< 0.050	4.1
MW-2	4/17/2012	< 0.002	< 0.002	< 0.002	< 0.004	< 0.05	1.1
	1/8/2013	< 0.001	0.0029	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	< 0.40
	11/20/2013	< 0.001	< 0.001	< 0.001	< 0.001	NA	2.5
	3/25/2014	NS	NS	NS	NS	NS	NS
	6/26/2014	< 0.001	< 0.002	< 0.002	< 0.003	< 0.2	1.48
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	1.31
	11/19/2014	< 0.001	< 0.001	< 0.001	< 0.002	< 0.050	1.44
MW-3	4/17/2012	< 0.002	< 0.002	< 0.002	< 0.004	< 0.05	3.9
	1/8/2013	< 0.001	< 0.001	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	NA
	11/20/2013	< 0.001	< 0.001	< 0.001	< 0.001	NA	< 1.0
	3/25/2014	< 0.001	< 0.002	< 0.002	< 0.003	NA	0.441
	6/26/2014	< 0.001	< 0.002	< 0.002	< 0.003	< 0.2	0.418
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	0.399
	11/19/2014	< 0.001	< 0.001	< 0.001	< 0.002	< 0.050	0.214
MW-4	4/17/2012	< 0.002	< 0.002	< 0.002	< 0.004	< 0.05	1.2
	1/8/2013	< 0.001	< 0.001	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	NA
	11/20/2013	< 0.001	< 0.001	< 0.001	< 0.001	NA	1.7
	3/25/2014	< 0.001	< 0.002	< 0.002	< 0.003	< 0.2	3.12
	6/26/2014	< 0.001	< 0.002	< 0.002	< 0.003	< 0.2	1.65
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	1.21
	11/19/2014	< 0.001	< 0.001	< 0.001	< 0.002	< 0.05	1.09
MW-5	4/17/2012	NS	NS	NS	NS	NS	NS
	1/8/2013	NS	NS	NS	NS	NS	NS
	2/5/2013	< 0.001	< 0.001	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	NA
	11/20/2013	NS	NS	NS	NS	NS	NS
	3/25/2014	NS	NS	NS	NS	NS	NS
	6/26/2014	NS	NS	NS	NS	NS	NS
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	2.63
	11/19/2014	NS	NS	NS	NS	NS	NS
MW-6	4/17/2012	NS	NS	NS	NS	NS	NS
	1/8/2013	NS	NS	NS	NS	NS	NS
	2/5/2013	< 0.001	< 0.001	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	NA
	11/20/2013	NS	NS	NS	NS	NS	NS
	3/25/2014	NS	NS	NS	NS	NS	NS
	6/26/2014	NS	NS	NS	NS	NS	NS
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	1.57
	11/19/2014	NS	NS	NS	NS	NS	NS

COGCC 910-1 Colorado Oil and Gas Conservation Commission Table 910-1 Concentration Levels

mg/L milligrams per liter

N/A Not Applicable (COGCC has not established a Table 910-1 Concentration Level for GRO or DRO in Groundwater)

< or ND Not Detected NA Not Analyzed NS Not Sampled

Appendix B - Historical Analytical Results
Groundwater Analytical Results
Semi-Volatile Organic Compounds - Polycyclic Aromatic Hydrocarbons
CM Production Inc. - Lone Pine Field Pits

Station ID#	Date Sampled	Acenaphthene (mg/l)	Anthracene (mg/l)	Benzo(a) anthracene (mg/l)	Benzo(b) fluoranthene (mg/l)	Benzo(a) pyrene (mg/l)	Chrysene (mg/l)	Dibenzo(a,h) anthracene (mg/l)	Fluoranthene (mg/l)	Fluorene (mg/l)	Indeno (1,2,3-cd) pyrene (mg/l)	Naphthalene (mg/l)	Pyrene (mg/l)	DRO (mg/l)
COGCC 910-1		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
CDPHE-WQCC Reg 41		0.42	2.1	0.00048	0.00048	0.00048	0.00048	0.00048	0.28	0.28	0.00048	0.14	0.21	NE
MW-1	9/19/2013	0.0003	< 0.00019	< 0.000095	< 0.000095	< 0.00019	0.00014	< 0.000095	< 0.00019	0.002	< 0.00019	0.00036	< 0.00019	26.8
	11/20/2013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	6.5
	3/25/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	2.26
	6/26/2014	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	6.6
	9/22/2014	0.00038	< 0.00019	< 0.000095	< 0.000095	< 0.000095	0.00017	< 0.000095	< 0.00019	< 0.00019	0.000071	< 0.00019	< 0.00019	8.57
	11/19/2014	< 0.0047	< 0.0047	< 0.0047	< 0.00094	< 0.00094	< 0.00094	< 0.00094	< 0.0047	< 0.0047	< 0.00094	< 0.0047	< 0.0047	4.1
MW-2	9/19/2013	< 0.00038	< 0.00038	< 0.00019	< 0.00019	< 0.00038	< 0.00019	< 0.00019	< 0.00038	< 0.00038	< 0.00039	< 0.00039	< 0.00038	< 0.40
	11/20/2013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	2.5
	3/25/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/26/2014	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	1.48
	9/22/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	1.31
	11/19/2014	< 0.0047	< 0.0047	< 0.000094	< 0.000094	< 0.00094	< 0.00094	< 0.000094	< 0.0047	< 0.0047	< 0.000094	< 0.0047	< 0.0047	1.44
MW-3	9/19/2013	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	NA
	11/20/2013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.10	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 1.0
	3/25/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	0.441
	6/26/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.418
	9/22/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	0.399
	11/19/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.214
MW-4	9/19/2013	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	NA
	11/20/2013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	1.7
	3/25/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	3.12
	6/26/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.65
	9/22/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	1.21
	11/19/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MW-5	9/19/2013	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	NA
	11/20/2013	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/25/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/26/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/22/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2.63
	11/19/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	9/19/2013	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	NA
	11/20/2013	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/25/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/26/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/22/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.57
	11/19/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

OGCC 910- Colorado Oil and Gas Conservation Commission Table 910-1 Concentration Levels

mg/L milligrams per liter

N/A Not Applicable - Total PAH (polycyclic aromatic hydrocarbons)

NE None Established - the COGCC has Table 910-1 Concentration Levels for PAHs in soil, but has not established PAH concentrations in Groundwater

< Not Detected above the laboratory reporting limit

NS Not Sampled

Note: Upgradient wells MW-5 and MW-6 were not sampled.

Appendix B - Historical Analytical Results
Summary of Inorganic Compounds in Groundwater
CM Production Inc. - Lone Pine Field Pits
Groundwater Monitoring

Station ID#	Date Measured	Chloride (mg/L)	Iron (mg/L)	TDS (mg/L)	Sulfate (mg/L)
COGCC T 910-1		< 1.25 x background	NE	< 1.25 x background	< 1.25 x background
MW-1	4/17/2012	9.41		360	3.43
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	4.6		452	2.5
	9/23/2014	2.7	30.1	470	2.6
	11/19/2014	3.9	42.1	384	4.5
MW-2	4/17/2012	1.71		120	4.48
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	1.3		156	6.0
	9/22/2014	1.0	29.2	230	4.0
	11/19/2014	0.8	66.8	156	3.2
MW-3	4/17/2012	6.8		160	10.04
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	0.93		133	4.9
	9/23/2014	0.51	49.1	130	2.3
	11/19/2014	1.3	71.5	100	2.6
MW-4	4/17/2012	6.34		160	4.47
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	2.3		134	4.7
	9/22/2014	0.84	64.7	144	4.2
	11/19/2014	0.71	44.4	90.0	3.2
MW-5	4/17/2012	NS		NS	NS
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	NS		NS	NS
	9/22/2014	1.0	27.7	150	8.8
	11/19/2014	NS	NS	NS	NS
MW-6	4/17/2012	NS		NS	NS
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	NS		NS	NS
	9/22/2014	2.1	74.8	168	6.8
	11/19/2014	NS	NS	NS	NS

mg/L milligrams per liter

ND Not Detected

NS Not Sampled

Appendix C

Laboratory Analytical Reports



07/21/15

Technical Report for

GHD Services Inc.

Margaret Spaulding Water Treatment Site

11103525

Accutest Job Number: D72587

Sampling Date: 07/07/15

Report to:

**GHD Services Inc.
14998 West 6th Avenue Frontage Road #800
Golden, CO 80401
cruby@craworld.com; justin.covey@ghd.com**

ATTN: Chrissi Ruby

Total number of pages in report: 43



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read 'Scott Heideman'.

**Scott Heideman
Laboratory Director**

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

Table of Contents

-1-

Section 1: Sample Summary	3
Section 2: Summary of Hits	4
Section 3: Sample Results	5
3.1: D72587-1: MW-1	6
3.2: D72587-2: MW-2	9
3.3: D72587-3: MW-3	12
3.4: D72587-4: MW-4	15
3.5: D72587-5: MW-5	18
3.6: D72587-6: MW-6	21
Section 4: Misc. Forms	24
4.1: Chain of Custody	25
Section 5: GC Semi-volatiles - QC Data Summaries	27
5.1: Method Blank Summary	28
5.2: Blank Spike Summary	29
5.3: Matrix Spike/Matrix Spike Duplicate Summary	30
Section 6: General Chemistry - QC Data Summaries	31
6.1: Method Blank and Spike Results Summary	32
6.2: Duplicate Results Summary	33
6.3: Matrix Spike Results Summary	34
6.4: Matrix Spike Duplicate Results Summary	35
Section 7: Misc. Forms (Accutest Northern California, Inc.)	36
7.1: Chain of Custody	37
Section 8: GC/MS Volatiles - QC Data (Accutest Northern California, Inc.)	39
8.1: Method Blank Summary	40
8.2: Blank Spike/Blank Spike Duplicate Summary	41
8.3: Laboratory Control Sample Summary	42
8.4: Matrix Spike/Matrix Spike Duplicate Summary	43



Sample Summary

GHD Services Inc.

Job No: D72587

Margaret Spaulding Water Treatment Site
Project No: 11103525

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D72587-1	07/07/15	16:10 JLC	07/08/15	AQ	Ground Water	MW-1
D72587-2	07/07/15	15:00 JLC	07/08/15	AQ	Ground Water	MW-2
D72587-3	07/07/15	15:25 JLC	07/08/15	AQ	Ground Water	MW-3
D72587-4	07/07/15	15:49 JLC	07/08/15	AQ	Ground Water	MW-4
D72587-5	07/07/15	14:20 JLC	07/08/15	AQ	Ground Water	MW-5
D72587-6	07/07/15	14:42 JLC	07/08/15	AQ	Ground Water	MW-6

Summary of Hits

Page 1 of 1

Job Number: D72587
Account: GHD Services Inc.
Project: Margaret Spaulding Water Treatment Site
Collected: 07/07/15

Lab Sample ID	Client Sample ID	Result/ Analyte Qual	RL	MDL	Units	Method
D72587-1	MW-1					
Benzene ^a		2.1	1.0	0.20	ug/l	SW846 8260B
Ethylbenzene ^a		8.8	1.0	0.20	ug/l	SW846 8260B
TPH-GRO (C6-C10) ^a		339	50	25	ug/l	SW846 8260B
TPH-DRO (C10-C28)		16.0	0.19	0.17	mg/l	SW846-8015B
Chloride		2.3	0.50		mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved		316	10		mg/l	SM 2540C-2011
Sulfate		1.2	0.50		mg/l	EPA 300.0/SW846 9056
D72587-2	MW-2					
TPH-DRO (C10-C28)		1.54	0.19	0.17	mg/l	SW846-8015B
Chloride		1.0	0.50		mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved		183	10		mg/l	SM 2540C-2011
Sulfate		5.6	0.50		mg/l	EPA 300.0/SW846 9056
D72587-3	MW-3					
Chloride		0.61	0.50		mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved		115	10		mg/l	SM 2540C-2011
Sulfate		3.6	0.50		mg/l	EPA 300.0/SW846 9056
D72587-4	MW-4					
Chloride		1.2	0.50		mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved		112	10		mg/l	SM 2540C-2011
Sulfate		5.0	0.50		mg/l	EPA 300.0/SW846 9056
D72587-5	MW-5					
TPH-DRO (C10-C28)		0.909	0.19	0.17	mg/l	SW846-8015B
Chloride		1.4	0.50		mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved		228	10		mg/l	SM 2540C-2011
Sulfate		11.5	0.50		mg/l	EPA 300.0/SW846 9056
D72587-6	MW-6					
TPH-DRO (C10-C28)		0.521	0.19	0.17	mg/l	SW846-8015B
Chloride		4.7	0.50		mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved		178	10		mg/l	SM 2540C-2011
Sulfate		8.4	0.50		mg/l	EPA 300.0/SW846 9056

(a) Analysis performed at Accutest Laboratories, San Jose, CA.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	MW-1						
Lab Sample ID:	D72587-1					Date Sampled:	07/07/15
Matrix:	AQ - Ground Water					Date Received:	07/08/15
Method:	SW846 8260B					Percent Solids:	n/a
Project:	Margaret Spaulding Water Treatment Site						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	U28975.D	1	07/16/15	ANC	n/a	n/a	C:VU1171
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	2.1	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	8.8	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.46	ug/l	
	TPH-GRO (C6-C10)	339	50	25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		70-130%
2037-26-5	Toluene-D8	92%		70-130%
460-00-4	4-Bromofluorobenzene	97%		70-130%

(a) Analysis performed at Accutest Laboratories, San Jose, CA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-1		
Lab Sample ID:	D72587-1	Date Sampled:	07/07/15
Matrix:	AQ - Ground Water	Date Received:	07/08/15
Method:	SW846-8015B SW846 3510C	Percent Solids:	n/a
Project:	Margaret Spaulding Water Treatment Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH034528.D	1	07/10/15	JS	07/09/15	OP12029	GFH1450
Run #2							

	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	16.0	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	82%		11-142%		

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-1	Date Sampled:	07/07/15
Lab Sample ID:	D72587-1	Date Received:	07/08/15
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	Margaret Spaulding Water Treatment Site		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	2.3	0.50	mg/l	1	07/11/15 16:40	JB	EPA 300.0/SW846 9056
Solids, Total Dissolved	316	10	mg/l	1	07/09/15	JD	SM 2540C-2011
Sulfate	1.2	0.50	mg/l	1	07/11/15 16:40	JB	EPA 300.0/SW846 9056

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-2	Date Sampled:	07/07/15
Lab Sample ID:	D72587-2	Date Received:	07/08/15
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Margaret Spaulding Water Treatment Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	U28976.D	1	07/16/15	ANC	n/a	n/a	C:VU1171
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.46	ug/l	
	TPH-GRO (C6-C10)	ND	50	25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		70-130%
2037-26-5	Toluene-D8	96%		70-130%
460-00-4	4-Bromofluorobenzene	95%		70-130%

(a) Analysis performed at Accutest Laboratories, San Jose, CA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-2	
Lab Sample ID:	D72587-2	Date Sampled: 07/07/15
Matrix:	AQ - Ground Water	Date Received: 07/08/15
Method:	SW846-8015B SW846 3510C	Percent Solids: n/a
Project:	Margaret Spaulding Water Treatment Site	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH034519.D	1	07/10/15	JS	07/09/15	OP12029	GFH1451
Run #2							

	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	1.54	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	77%		11-142%		

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-2	Date Sampled:	07/07/15
Lab Sample ID:	D72587-2	Date Received:	07/08/15
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	Margaret Spaulding Water Treatment Site		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	1.0	0.50	mg/l	1	07/11/15 16:54	JB	EPA 300.0/SW846 9056
Solids, Total Dissolved	183	10	mg/l	1	07/09/15	JD	SM 2540C-2011
Sulfate	5.6	0.50	mg/l	1	07/11/15 16:54	JB	EPA 300.0/SW846 9056

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-3	Date Sampled:	07/07/15
Lab Sample ID:	D72587-3	Date Received:	07/08/15
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Margaret Spaulding Water Treatment Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	U28977.D	1	07/16/15	ANC	n/a	n/a	C:VU1171
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.46	ug/l	
	TPH-GRO (C6-C10)	ND	50	25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		70-130%
2037-26-5	Toluene-D8	97%		70-130%
460-00-4	4-Bromofluorobenzene	94%		70-130%

(a) Analysis performed at Accutest Laboratories, San Jose, CA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-3						
Lab Sample ID:	D72587-3					Date Sampled:	07/07/15
Matrix:	AQ - Ground Water					Date Received:	07/08/15
Method:	SW846-8015B SW846 3510C					Percent Solids:	n/a
Project:	Margaret Spaulding Water Treatment Site						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH034521.D	1	07/10/15	JS	07/09/15	OP12029	GFH1451
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	66%		11-142%		

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-3	Date Sampled:	07/07/15
Lab Sample ID:	D72587-3	Date Received:	07/08/15
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	Margaret Spaulding Water Treatment Site		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	0.61	0.50	mg/l	1	07/11/15 15:57	JB	EPA 300.0/SW846 9056
Solids, Total Dissolved	115	10	mg/l	1	07/09/15	JD	SM 2540C-2011
Sulfate	3.6	0.50	mg/l	1	07/11/15 15:57	JB	EPA 300.0/SW846 9056

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-4	Date Sampled:	07/07/15
Lab Sample ID:	D72587-4	Date Received:	07/08/15
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Margaret Spaulding Water Treatment Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	U28978.D	1	07/16/15	ANC	n/a	n/a	C:VU1171
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.46	ug/l	
	TPH-GRO (C6-C10)	ND	50	25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		70-130%
2037-26-5	Toluene-D8	97%		70-130%
460-00-4	4-Bromofluorobenzene	91%		70-130%

(a) Analysis performed at Accutest Laboratories, San Jose, CA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	MW-4	
Lab Sample ID:	D72587-4	Date Sampled: 07/07/15
Matrix:	AQ - Ground Water	Date Received: 07/08/15
Method:	SW846-8015B SW846 3510C	Percent Solids: n/a
Project:	Margaret Spaulding Water Treatment Site	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH034523.D	1	07/10/15	JS	07/09/15	OP12029	GFH1451
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	60%		11-142%		

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-4	Date Sampled:	07/07/15
Lab Sample ID:	D72587-4	Date Received:	07/08/15
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	Margaret Spaulding Water Treatment Site		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	1.2	0.50	mg/l	1	07/11/15 14:13	JB	EPA 300.0/SW846 9056
Solids, Total Dissolved	112	10	mg/l	1	07/09/15	JD	SM 2540C-2011
Sulfate	5.0	0.50	mg/l	1	07/11/15 14:13	JB	EPA 300.0/SW846 9056

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-5	Date Sampled:	07/07/15
Lab Sample ID:	D72587-5	Date Received:	07/08/15
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Margaret Spaulding Water Treatment Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	U28979.D	1	07/16/15	ANC	n/a	n/a	C:VU1171
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.46	ug/l	
	TPH-GRO (C6-C10)	ND	50	25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		70-130%
2037-26-5	Toluene-D8	97%		70-130%
460-00-4	4-Bromofluorobenzene	90%		70-130%

(a) Analysis performed at Accutest Laboratories, San Jose, CA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-5		
Lab Sample ID:	D72587-5	Date Sampled:	07/07/15
Matrix:	AQ - Ground Water	Date Received:	07/08/15
Method:	SW846-8015B SW846 3510C	Percent Solids:	n/a
Project:	Margaret Spaulding Water Treatment Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH034530.D	1	07/10/15	JS	07/09/15	OP12029	GFH1450
Run #2							

	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	0.909	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	97%		11-142%		

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-5	Date Sampled:	07/07/15
Lab Sample ID:	D72587-5	Date Received:	07/08/15
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	Margaret Spaulding Water Treatment Site		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	1.4	0.50	mg/l	1	07/11/15 14:27	JB	EPA 300.0/SW846 9056
Solids, Total Dissolved	228	10	mg/l	1	07/09/15	JD	SM 2540C-2011
Sulfate	11.5	0.50	mg/l	1	07/11/15 14:27	JB	EPA 300.0/SW846 9056

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-6	Date Sampled:	07/07/15
Lab Sample ID:	D72587-6	Date Received:	07/08/15
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Margaret Spaulding Water Treatment Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	U28980.D	1	07/16/15	ANC	n/a	n/a	C:VU1171
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.46	ug/l	
	TPH-GRO (C6-C10)	ND	50	25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		70-130%
2037-26-5	Toluene-D8	97%		70-130%
460-00-4	4-Bromofluorobenzene	92%		70-130%

(a) Analysis performed at Accutest Laboratories, San Jose, CA.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-6						
Lab Sample ID:	D72587-6					Date Sampled:	07/07/15
Matrix:	AQ - Ground Water					Date Received:	07/08/15
Method:	SW846-8015B SW846 3510C					Percent Solids:	n/a
Project:	Margaret Spaulding Water Treatment Site						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH034529.D	1	07/10/15	JS	07/09/15	OP12029	GFH1451
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	0.521	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	84%		11-142%		

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-6	Date Sampled:	07/07/15
Lab Sample ID:	D72587-6	Date Received:	07/08/15
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	Margaret Spaulding Water Treatment Site		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	4.7	0.50	mg/l	1	07/11/15 14:42	JB	EPA 300.0/SW846 9056
Solids, Total Dissolved	178	10	mg/l	1	07/09/15	JD	SM 2540C-2011
Sulfate	8.4	0.50	mg/l	1	07/11/15 14:42	JB	EPA 300.0/SW846 9056

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL. 303-425-6024 877-737-4521
FAX 303-425-6021

FED-EX Tracking # _____ Account Quote # _____		Bottle Order Control # _____ Accutest Job # D72587	
Requested Analysis (see TEST CODE sheet)			Matrix Codes
<div style="display: flex; justify-content: space-between;"> <div> BTEX/GRO 8200 8015 705 01-1504 </div> <div> <div style="display: flex; justify-content: space-around;"> <div>↓</div> <div>↓</div> <div>↓</div> <div>↓</div> </div> </div> </div>			DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank
			LAB USE ONLY <div style="text-align: right;"> 01 02 03 04 05 06 07B </div>
Comments / Special Instructions <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> 3 coolers </div>			<div style="text-align: right;"> 60 77 </div>
including courier delivery.			
Date Time: _____		Received By: 2	
Date Time: _____		Received By: 4	
<input type="checkbox"/> Intact <input type="checkbox"/> Not intact		On Ice <input checked="" type="checkbox"/> Cooler Temp. 53	

D72587: Chain of Custody

Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D72587 **Client:** GHD **Project:** MARGARET SPAULDING WT SITE
Date / Time Received: 7/8/2015 12:00:00 PM **Delivery Method:** _____ **Airbill #'s:** hd
Cooler Temps (Initial/Adjusted): #1: (5.3/5.3);

Cooler Security
Y or N

- | | |
|--|--|
| 1. Custody Seals Present: <input checked="" type="checkbox"/> <input type="checkbox"/> | 3. COC Present: <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 2. Custody Seals Intact: <input checked="" type="checkbox"/> <input type="checkbox"/> | 4. Smpl Dates/Time OK <input checked="" type="checkbox"/> <input type="checkbox"/> |

Cooler Temperature
Y or N

- | | |
|---|--|
| 1. Temp criteria achieved: <input checked="" type="checkbox"/> <input type="checkbox"/> | |
| 2. Cooler temp verification: <u>Bar Therm;</u> | |
| 3. Cooler media: <u>Ice (Bag)</u> | |
| 4. No. Coolers: <u>1</u> | |

Quality Control Preservation
Y or N
N/A

- | | |
|---|--|
| 1. Trip Blank present / cooler: <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | |
| 2. Trip Blank listed on COC: <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | |
| 3. Samples preserved properly: <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | |
| 4. VOCs headspace free: <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | |

Comments

Sample Integrity - Documentation
Y or N

- | | |
|---|--|
| 1. Sample labels present on bottles: <input checked="" type="checkbox"/> <input type="checkbox"/> | |
| 2. Container labeling complete: <input checked="" type="checkbox"/> <input type="checkbox"/> | |
| 3. Sample container label / COC agree: <input checked="" type="checkbox"/> <input type="checkbox"/> | |

Sample Integrity - Condition
Y or N

- | | |
|---|--|
| 1. Sample recvd within HT: <input checked="" type="checkbox"/> <input type="checkbox"/> | |
| 2. All containers accounted for: <input checked="" type="checkbox"/> <input type="checkbox"/> | |
| 3. Condition of sample: <u>Intact</u> | |

Sample Integrity - Instructions
Y or N
N/A

- | | |
|--|--|
| 1. Analysis requested is clear: <input checked="" type="checkbox"/> <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests: <input type="checkbox"/> <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: <input checked="" type="checkbox"/> <input type="checkbox"/> | |
| 4. Compositing instructions clear: <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | |
| 5. Filtering instructions clear: <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | |

GC Semi-volatiles

5

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D72587
Account: CRACOG GHD Services Inc.
Project: Margaret Spaulding Water Treatment Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12029-MB	FH034514.D	1	07/10/15	JS	07/09/15	OP12029	GFH1450

The QC reported here applies to the following samples:

Method: SW846-8015B

D72587-1, D72587-2, D72587-3, D72587-4, D72587-5, D72587-6

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.18	mg/l	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	49% 11-142%

Blank Spike Summary

Page 1 of 1

Job Number: D72587
Account: CRACOG GHD Services Inc.
Project: Margaret Spaulding Water Treatment Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12029-BS	FH034516.D	1	07/10/15	JS	07/09/15	OP12029	GFH1450

The QC reported here applies to the following samples:

Method: SW846-8015B

D72587-1, D72587-2, D72587-3, D72587-4, D72587-5, D72587-6

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	5	2.40	48	22-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	63%	11-142%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D72587
Account: CRACOG GHD Services Inc.
Project: Margaret Spaulding Water Treatment Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP12029-MS	FH034518.D	1	07/10/15	JS	07/09/15	OP12029	GFH1450
OP12029-MSD	FH034520.D	1	07/10/15	JS	07/09/15	OP12029	GFH1450
D72500-10	FH034522.D	1	07/10/15	JS	07/09/15	OP12029	GFH1450

The QC reported here applies to the following samples:

Method: SW846-8015B

D72587-1, D72587-2, D72587-3, D72587-4, D72587-5, D72587-6

CAS No.	Compound	D72500-10 mg/l	Spike Q mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND	5	2.73	55	5	2.98	60	9	20-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D72500-10	Limits
84-15-1	o-Terphenyl	76%	80%	84%	11-142%

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D72587
Account: CRACOG - GHD Services Inc.
Project: Margaret Spaulding Water Treatment Site

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chloride	GP15738/GN30708	0.50	0.0	mg/l	5	4.93	98.6	90-110%
Fluoride	GP15738/GN30708	0.10	0.0	mg/l	1	0.995	99.5	90-110%
Solids, Total Dissolved	GN30680	10	0.0	mg/l	400	408	102.0	90-110%
Solids, Total Dissolved	GN30680	10	0.0	mg/l				
Sulfate	GP15738/GN30708	0.50	0.0	mg/l	5	4.91	98.2	90-110%

Associated Samples:

Batch GN30680: D72587-1, D72587-2, D72587-3, D72587-4, D72587-5, D72587-6

Batch GP15738: D72587-1, D72587-2, D72587-3, D72587-4, D72587-5, D72587-6

(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D72587
Account: CRACOG - GHD Services Inc.
Project: Margaret Spaulding Water Treatment Site

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Solids, Total Dissolved	GN30680	D72587-4	mg/l	112	113	0.9	0-20%

Associated Samples:

Batch GN30680: D72587-1, D72587-2, D72587-3, D72587-4, D72587-5, D72587-6

(*) Outside of QC limits

6.2

6

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D72587
Account: CRACOG - GHD Services Inc.
Project: Margaret Spaulding Water Treatment Site

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chloride	GP15738/GN30708	D72587-3	mg/l	0.61	5	5.4	95.8	80-120%
Fluoride	GP15738/GN30708	D72587-3	mg/l	0.82	1	1.5	98.0	80-120%
Fluoride	GP15738/GN30708	D72587-3	mg/l	0.52	1	1.5	98.0	80-120%
Sulfate	GP15738/GN30708	D72587-3	mg/l	3.6	5	8.5	98.0	80-120%

Associated Samples:

Batch GP15738: D72587-1, D72587-2, D72587-3, D72587-4, D72587-5, D72587-6

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D72587
Account: CRACOG - GHD Services Inc.
Project: Margaret Spaulding Water Treatment Site

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chloride	GP15738/GN30708	D72587-3	mg/l	0.61	5	5.7	5.4	20%
Fluoride	GP15738/GN30708	D72587-3	mg/l	0.82	1	1.6	6.5	20%
Fluoride	GP15738/GN30708	D72587-3	mg/l	0.52	1	1.6	6.5	20%
Sulfate	GP15738/GN30708	D72587-3	mg/l	3.6	5	8.5	0.0	20%

Associated Samples:

Batch GP15738: D72587-1, D72587-2, D72587-3, D72587-4, D72587-5, D72587-6

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

6.4

6

Misc. Forms

Custody Documents and Other Forms

(Accutest Northern California, Inc.)

Includes the following where applicable:

- Chain of Custody



4036 Youngfield St., Wheat Ridge, CO 80033
303-425-6021 FAX: 303-425-6854

A2
7/9 ~~8 of 13~~

Client Information			Subcontract Laboratory Information						Analytical Information								
Name Accutest Mountain States (AMS)			Name Accutest - Northern California						V6260BTXGRO		Trip Blank/HOLD						
Address 4036 Youngfield St.			Address 2105 Lundy Ave.														
City Wheat Ridge,	State CO	Zip 80033	City San Jose			State CA								Zip 95131			
Send Report to: Scott Heideman Renea Rooks			Contact: Sample Management														
Any questions contact: Phone/Fax #: (303) 425-6021; (303) 425-6854			Phone: (408) 588-0200														
Field ID / Point of Collection		Date	Time	Matrix	# of bottles	HCL	NaOH	HNO3	H2SO4	None	V6260BTXGRO		Trip Blank/HOLD		Comments		
D72587 -1	7/7/15	4:10 PM	AQ	3												x	
-2	7/7/15	3:00 PM	AQ	3												x	
-3	7/7/15	3:25 PM	AQ	3												x	
-4	7/7/15	3:49 PM	AQ	3												x	
-5	7/7/15	2:20 PM	AQ	3												x	
-6	7/7/15	2:42 PM	AQ	3												x	
-7	7/7/15	12:00 PM	AQ	2													x
Turnaround Information			Data Deliverable Information						Comments / Remarks								
<input checked="" type="checkbox"/> 10 Business Day Standard <input type="checkbox"/> Other _____ (Days)			Approved By: _____			<input type="checkbox"/> Commercial "A" <input type="checkbox"/> Commercial "B" <input type="checkbox"/> Commercial "BN" <input type="checkbox"/> Reduced Tier 1 <input type="checkbox"/> Full Tier 1			<input type="checkbox"/> PDF <input type="checkbox"/> Compact Disk Deliverable <input type="checkbox"/> Electronic Delivery: _____ <input type="checkbox"/> State Forms <input type="checkbox"/> Other (Specify) _____			Please use Colorado regulations and RLS.					
10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.																	
Sample Custody must be documented below each time samples change possession, including courier delivery.										For Subcontract Laboratory Use Only							
Relinquished by:		Date & Time:		Received by:		Date & Time:		Seal #:		Headspace:							
1		7/9/15		1		7/9/15		Intact		Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>							
Relinquished by:		Date & Time:		Received by:		Date & Time:		Preserved where applicable:									
2 F&B&X		7/9/15 9:55		2 H&L		7/9/15 9:55		<input type="checkbox"/>									
Relinquished by:		Date & Time:		Received by:		Date & Time:		Temperature °C:		On Ice <input checked="" type="checkbox"/>							
3				3				0.4 = 0.1/1.3									

Accutest Northern California, Inc.



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D72587 Client: AMS Project: D72587
Date / Time Received: 7/9/2015 9:55:00 AM Delivery Method: FedEx Airbill #'s: 628957025073
Cooler Temps (Initial/Adjusted): #1: (1.4/1.3):

Cooler Security

	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Therm ID:	<u>IR2;</u>		
3. Cooler media:	<u>Ice (Bag)</u>		
4. No. Coolers:	<u>1</u>		

Quality Control Preservation

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Sample Integrity - Documentation

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	<u>Intact</u>		

Sample Integrity - Instructions

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

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D72587: Chain of Custody

Page 2 of 2

GC/MS Volatiles

QC Data Summaries

(Accutest Northern California, Inc.)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D72587

Account: ALMS Accutest Mountain States

Project: CRACOG: Margaret Spaulding Water Treatment Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VU1171-MB	U28963.D	1	07/16/15	TN	n/a	n/a	VU1171

The QC reported here applies to the following samples:

Method: SW846 8260B

D72587-1, D72587-2, D72587-3, D72587-4, D72587-5, D72587-6

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.20	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
108-88-3	Toluene	ND	1.0	0.20	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.46	ug/l	
	TPH-GRO (C6-C10)	ND	50	25	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	105% 70-130%
2037-26-5	Toluene-D8	102% 70-130%
460-00-4	4-Bromofluorobenzene	92% 70-130%

8.1.1

8

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: D72587

Account: ALMS Accutest Mountain States

Project: CRACOG: Margaret Spaulding Water Treatment Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VU1171-BS	U28960.D	1	07/16/15	TN	n/a	n/a	VU1171
VU1171-BSD	U28961.D	1	07/16/15	TN	n/a	n/a	VU1171

The QC reported here applies to the following samples:

Method: SW846 8260B

D72587-1, D72587-2, D72587-3, D72587-4, D72587-5, D72587-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	20	18.2	91	18.1	91	1	77-122/25
100-41-4	Ethylbenzene	20	18.5	93	18.9	95	2	76-126/17
108-88-3	Toluene	20	17.9	90	18.4	92	3	75-122/17
1330-20-7	Xylene (total)	60	53.9	90	55.1	92	2	77-125/17

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	110%	104%	70-130%
2037-26-5	Toluene-D8	98%	99%	70-130%
460-00-4	4-Bromofluorobenzene	101%	100%	70-130%

* = Outside of Control Limits.

Laboratory Control Sample Summary

Job Number: D72587
Account: ALMS Accutest Mountain States
Project: CRACOG: Margaret Spaulding Water Treatment Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VU1171-LCS	U28962.D	1	07/16/15	TN	n/a	n/a	VU1171

The QC reported here applies to the following samples: Method: SW846 8260B

D72587-1, D72587-2, D72587-3, D72587-4, D72587-5, D72587-6

CAS No.	Compound	Spike ug/l	LCS ug/l	LCS %	Limits
	TPH-GRO (C6-C10)	125	146	117	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	70-130%
2037-26-5	Toluene-D8	101%	70-130%
460-00-4	4-Bromofluorobenzene	94%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D72587
Account: ALMS Accutest Mountain States
Project: CRACOG: Margaret Spaulding Water Treatment Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
C40649-8MS	U28982.D	5	07/16/15	TN	n/a	n/a	VU1171
C40649-8MSD	U28983.D	5	07/16/15	TN	n/a	n/a	VU1171
C40649-8	U28981.D	5	07/16/15	TN	n/a	n/a	VU1171

The QC reported here applies to the following samples: Method: SW846 8260B

D72587-1, D72587-2, D72587-3, D72587-4, D72587-5, D72587-6

CAS No.	Compound	C40649-8 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	100	88.2	88	100	88.3	88	0	77-122/16
100-41-4	Ethylbenzene	ND	100	90.7	91	100	90.4	90	0	76-126/17
108-88-3	Toluene	ND	100	88.7	89	100	88.3	88	0	75-122/17
1330-20-7	Xylene (total)	ND	300	266	89	300	264	88	1	77-125/17

CAS No.	Surrogate Recoveries	MS	MSD	C40649-8	Limits
1868-53-7	Dibromofluoromethane	103%	102%	101%	70-130%
2037-26-5	Toluene-D8	97%	97%	99%	70-130%
460-00-4	4-Bromofluorobenzene	98%	97%	90%	70-130%

* = Outside of Control Limits.