November 14, 2016 Reference No. 088210-30

Mr. Zane Kurtz
Sr. Safety and Environmental Representative
5509 Champions Dr.
Midland, TX 79706
VIA E-Mail: zane_kurtz@eogresources.com

Dear Mr. Kurtz:

Re: Assessment Summary Report
Diamond 8 Fed Com No. 1 (API #30-025-30632)
1RP-4356
EOG Resources, Inc.
Site Location: Sec. 8, T 25-S, R 34-E
(Lat 32.150452°, Long -103.490868°)
Lea County, New Mexico

GHD Services, Inc. (GHD) is pleased to present this report for the above referenced site. Assessment activities were performed at the Diamond 8 Fed Com No. 1 (hereafter referred to as the "Site"), from August 12, 2016 through September 26, 2016 by GHD. The Site is located within Section 8, Township 25 South, Range 34 East, in Lea County, New Mexico (Figure 1).

The Site is an active well site located approximately 18 miles west-northwest of Jal, New Mexico. According to EOG personnel, a release of approximately 130 barrels (bbls) of produced water occurred when fire melted the poly lines containing produced water. Approximately 80 barrels (bbls) of produced water was recovered. The release was discovered on July 19, 2016. A C-141 Form was submitted to the New Mexico Oil Conservation Division (NMOCD) on July 20, 2016 and remediation permit (RP) number 1RP-4356 was assigned.

Initial soil sampling of the release area was performed by GHD on August 12, 2016. Subsequent soil sampling was performed by GHD beginning in August through September of 2016 and is discussed further in this report.

1. Introduction

A C-141 Form was submitted to the New Mexico Oil Conservation Division (NMOCD) and remediation permit (RP) number 1RP-4356 was assigned. Approximately 1554 cubic yards (yd^3) of impacted soil was removed and disposed of at the Sundance Services - Parabo Facility in Eunice, New Mexico (Sundance).

There are relatively few groundwater wells in the area of the Site with which to obtain a depth to groundwater. Based on information available from the United States Geological Survey (USGS) website, the closest USGS gauging site, approximately 2.6 miles south-southeast of the site, indicates groundwater at a depth of approximately 174 feet below ground surface (bgs) in 2013.

There do not appear to be any well head protection areas and no surface water bodies within 200 to 1000 ft of the Site. Therefore, the preliminary total ranking score for the Site is 0 (see table below).

Based on this score, the applicable NMOCD Site-specific Recommended Remediation Action Limits (RRALs) are 10 milligrams per kilogram (mg/kg) for benzene, 50 mg/kg for total benzene, toluene, ethylbenzene, and xylenes (BTEX), 5,000 mg/kg for total petroleum hydrocarbons (TPH), and 500 mg/kg for chlorides.

New Mexico Oil Conservation Division Site Assessment	
Ranking Criteria	Score
Depth to Ground Water (> 100 ft bgs)	0
Wellhead Protection Area (> 1000 ft from water source, > 200 ft from domestic source)	0
Distance to Surface Body Water (200-1000 ft)	0
Ranking Criteria Total Score	**0***
*Because the ranking criteria total score is 10, NMOCD established RRALs are 10 mg/kg for benzene, 50 mg/kg for total BTEX, 5,000 mg/kg for TPH[1], and 500 mg/kg for chlorides.	

1. NMOCD Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993

2. Assessment Activities

Site assessment activities were began on August 15, 2016 by GHD. Excavation activities were performed by SDR Enterprises, LLC (SDS) of Hobbs, New Mexico. Soil samples were analyzed by Hall Environmental Analysis Laboratory (Hall Environmental) of Albuquerque, New Mexico. All analytical data are included in Appendix A. The analytical data obtained from the initial soil samples collected indicated that the horizontal and vertical extent of petroleum hydrocarbon and chloride concentrations within the west side of the spill area had been delineated to below RRALs. However, the horizontal and vertical extent of chloride concentrations in an area denoted as the impacted area was not delineated. The initial soil sample results are summarized in Table 1.

Further soil sampling and excavation activities were performed by GHD and SDR between August 15 through September 19, 2016 to assess the horizontal and vertical extents of chloride concentrations in the soil in the impacted area. Fifty seven additional soil samples were collected using a hand auger at depths ranging from 2.0 ft bgs to 12.0 ft bgs. The samples were submitted to Hall Environmental for analysis of chloride by EPA Method 300, BTEX by EPA Method 8015, and gasoline and diesel range TPH by EPA Method 8015.

Laboratory analytical results from these events indicate that chloride concentrations in six samples along the eastern portion of the excavation area were above the RRAL for chloride; the remaining samples that were submitted were below the RRAL for chloride (Table 1). Based on this, it appeared that additional soil sampling would be required.

A total of approximately 1554 cubic yards of impacted soil were excavated and transported to Sundance for landfill disposal. Waste manifests are still being collected and will be submitted with the closure request report.

After excavation was completed, 10 additional confirmation soil samples were collected on September 20, 2016 and three additional confirmation soil samples were collected on September 26, 2016 in the area of excavation. The samples were submitted to Hall Environmental for analysis of chloride by EPA Method 300. Laboratory analytical results from this event indicated that chloride concentrations of the excavation area were below the RRAL for chloride (Table 1).

There were two areas where the vertical delineation was not confirmed with a follow-up sample. Confirmation of delineation was not provided for the sample location, S-088210-30-081916-SP-04, in the northeast corner of the excavation and sample location, S-088210-30-091916-SP-02, on the east side of the excavation. The two areas noted will further be delineated for vertical extent prior to backfilling the excavation. In general, it appears that the vertical and horizontal extent of chloride has been fully assessed and confirmed in the remainder of the excavation as shown on Figure 2.

3. Summary and Recommendations

Based on the assessment of the petroleum hydrocarbon and chloride concentrations, GHD recommends the following:

- Placement of a 20 mil polyethylene liner in the bottom of the excavation (see Figure 2 for the excavation area) at a depth of 4 ft bgs.
- Backfilling of the excavation with clean fill material and wheel compacting to grade.
- Fertilizing and reseeding of the disturbed area with a BLM-approved seed mix.

Should you have any questions, or require additional information regarding this submittal, please feel free to contact myself or Bernie Bockisch at (505) 884-0672 or Bernard.Bockisch@ghd.com.

Sincerely,

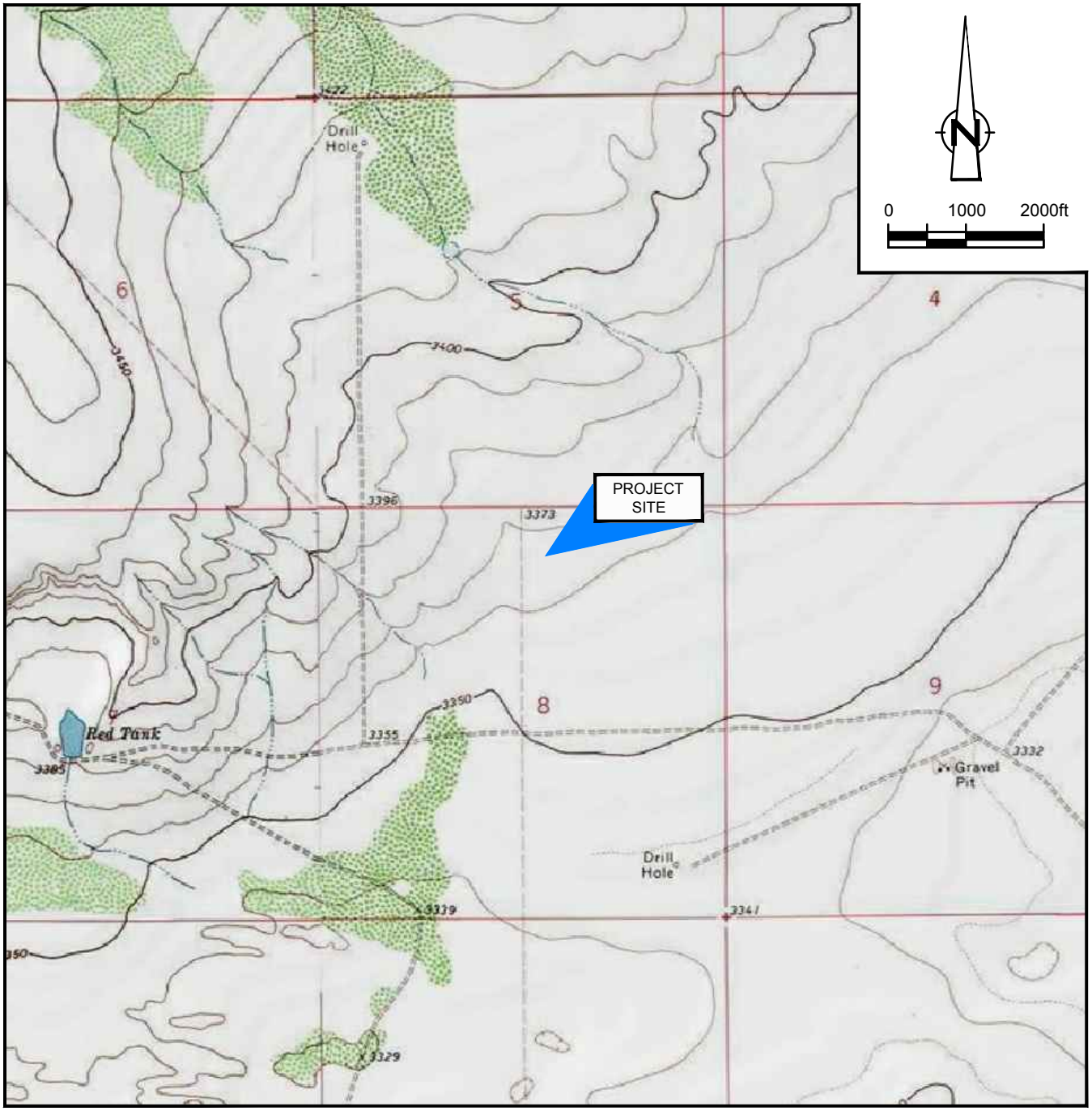
GHD

Betsy Gerwig
Senior Project Manager

Bernard Bockisch
Senior Project Manager

BB/mc/30

Figures



SOURCE: USGS 7.5 MINUTE QUAD
"WOODLEY FLAT AND BELL LAKE, NEW MEXICO"

LAT/LONG: 32.150452° NORTH, 103.490868° WEST
COORDINATE: NAD83 DATUM, U.S. FOOT
STATE PLANE ZONE - NEW MEXICO EAST

Figure 1

SITE LOCATION MAP
DIAMOND 8 FED COM #1
LEA COUNTY, NEW MEXICO
EOG Resources

GHD

088210-30(000)GN-DL001 OCT 20, 2016

S-088210-30-081616-SP-01
Depth: 12' Chloride: 570
S-088210-30-081616-SP-02
Depth: 14' Chloride: 110
S-088210-30-081516-SP-05
Depth: 7' Chloride: 340
S-088210-30-081816-SP-04
Depth: 2' Chloride: 250
S-088210-30-081816-SP-02
Depth: 2' Chloride: ND
S-088210-30-081516-SP-03
Depth: 2' Chloride: 51
S-088210-30-081216-SP-01
Depth: 4' Chloride: 80
S-088210-30-081816-SP-01
Depth: 2' Chloride: 200
S-088210-30-081916-SP-04
Depth: 12' Chloride: 700
S-088210-30-081516-SP-04
Depth: 4' Chloride: 80
S-088210-30-092016-SP-07
Depth: 2' Chloride: ND
S-088210-30-092016-SP-10
Depth: 2' Chloride: ND
S-088210-30-081816-SP-05
Depth: 2' Chloride: 70
S-088210-30-081516-SP-01
Depth: 2' Chloride: ND
S-088210-30-081216-SP-02
Depth: 2' Chloride: ND
S-088210-30-092616-SP-02
Depth: 6' Chloride: ND
S-088210-30-081916-SP-01
Depth: 2' Chloride: 210
S-088210-30-081916-SP-02
Depth: 4' Chloride: ND
S-088210-30-092016-SP-06
Depth: 2' Chloride: ND
S-088210-30-081516-SP-02
Depth: 2' Chloride: ND
S-088210-30-092016-SP-05
Depth: 2' Chloride: ND
S-088210-30-092616-SP-01
Depth: 6' Chloride: ND
S-088210-30-082216-SP-01
Depth: 2' Chloride: 430
S-088210-30-081916-SP-05
Depth: 2' Chloride: ND
S-088210-30-082216-SP-02
Depth: 4' Chloride: 530
S-088210-30-081916-SP-06
Depth: 6' Chloride: ND
S-088210-30-081816-SP-06
Depth: 2' Chloride: 34
S-088210-30-081816-SP-03
Depth: 4' Chloride: 64
S-088210-30-082516-SP-01
Depth: 2' Chloride: ND
S-088210-30-092016-SP-04
Depth: 2' Chloride: ND
S-088210-30-092016-SP-08
Depth: 2' Chloride: ND
S-088210-30-092616-SP-03
Depth: 8' Chloride: 140
S-088210-30-081916-SP-03
Depth: 6' Chloride: 100
S-088210-30-091916-SP-05
Depth: 2' Chloride: ND
S-088210-30-091916-SP-02
Depth: 2' Chloride: 970
S-088210-30-082216-SP-03
Depth: 2' Chloride: 58
S-088210-30-091916-SP-01
Depth: 2' Chloride: 360
S-088210-30-082216-SP-05
Depth: 2' Chloride: 150
S-088210-30-091616-SP-02
Depth: 2' Chloride: 140
S-088210-30-082216-SP-04
Depth: 4' Chloride: 210
S-088210-30-092016-SP-09
Depth: 4' Chloride: 92
S-088210-30-091616-SP-03
Depth: 2' Chloride: 66
S-088210-30-082316-SP-03
Depth: 12' Chloride: 120
S-088210-30-092016-SP-02
Depth: 2' Chloride: 80
S-088210-30-082516-SP-02
Depth: 2' Chloride: ND
S-088210-30-082316-SP-01
Depth: 2' Chloride: 170
S-088210-30-082316-SP-02
Depth: 4' Chloride: 150
S-088210-30-082616-SP-03
Depth: 2' Chloride: ND
S-088210-30-081216-SP-03
Depth: 4' Chloride: 410
S-088210-30-091916-SP-03
Depth: 2' Chloride: ND
S-088210-30-091616-SP-01
Depth: 2' Chloride: ND
S-088210-30-082516-SP-03
Depth: 2' Chloride: 520
S-088210-30-092016-SP-03
Depth: 2' Chloride: ND
S-088210-30-082516-SP-04
Depth: 4' Chloride: 150
S-088210-30-082616-SP-02
Depth: 2' Chloride: ND
S-088210-30-082616-SP-01
Depth: 2' Chloride: 80
S-088210-30-082316-SP-04
Depth: 6' Chloride: 110
S-088210-30-091316-SP-03
Depth: 4' Chloride: ND
S-088210-30-091616-SP-06
Depth: 2' Chloride: 120
S-088210-30-091516-SP-01
Depth: 4' Chloride: 45
S-088210-30-092016-SP-01
Depth: 2' Chloride: ND
S-088210-30-091616-SP-05
Depth: 2' Chloride: ND
S-088210-30-082516-SP-05
Depth: 2' Chloride: ND
S-088210-30-091916-SP-04
Depth: 2' Chloride: ND
S-088210-30-082516-SP-06
Depth: 4' Chloride: ND
S-088210-30-091516-SP-02
Depth: 2' Chloride: 96
S-088210-30-081216-SP-04
Depth: 2' Chloride: ND
S-088210-30-081216-SP-05
Depth: 2' Chloride: 92
S-088210-30-082616-SP-04
Depth: 4' Chloride: 750
S-088210-30-082616-SP-05
Depth: 6' Chloride: ND
S-088210-30-091316-SP-01
Depth: 4' Chloride: ND
S-088210-30-081216-SP-07
Depth: 2' Chloride: ND
S-088210-30-091316-SP-04
Depth: 2' Chloride: 270
S-088210-30-081216-SP-06
Depth: 2' Chloride: ND
S-088210-30-091316-SP-02
Depth: 4' Chloride: ND
S-088210-30-091516-SP-03
Depth: 4' Chloride: 270
S-088210-30-091616-SP-04
Depth: 6' Chloride: ND
S-088210-30-081216-SP-08
Depth: 2' Chloride: 120
S-088210-30-081216-SP-09
Depth: 2' Chloride: ND

N

0 20 60ft

LEGEND

- Soil Sample Location (August 12, 2016)
- Soil Sample Location (August 15, 2016)
- Soil Sample Location (August 16, 2016)
- Soil Sample Location (August 18, 2016)
- Soil Sample Location (August 23, 2016)
- Soil Sample Location (August 25, 2016)
- Soil Sample Location (August 26, 2016)
- Soil Sample Location (September 13, 2016)
- Soil Sample Location (September 15, 2016)
- Soil Sample Location (September 16, 2016)
- Soil Sample Location (September 19, 2016)
- Soil Sample Location (September 20, 2016)
- Soil Sample Location (September 26, 2016)
- Spill Release Boundary
- Excavation Boundary
- ND Not Detected

GHD

NOTE:

1. Chloride samples are in milligrams/kilogram.

Figure 2

ENTERPRISE PIPELINE SAMPLE LOCATION MAP
DIAMOND 8 FED COM #1
LEA COUNTY, NEW MEXICO
EOG Resources

Tables

Table 1

Diamond 8 Fed Com #1 - Soil Analytical Data

Sample ID	Depth (ft. bgs)	Date	Benzene	Toluene	Ethylbenzene	Xylenes	BTEX	TPH (GRO)	TPH (DRO)	Total TPH	Chloride
S-088210-30-081216-SP-01	4.0	12/08/2016	<0.023	<0.047	<0.047	<0.094	<0.211	<4.7	<9.7	<14.4	80
S-088210-30-081216-SP-02	2.0	12/08/2016	<0.023	<0.047	<0.047	<0.094	<0.211	<4.7	<9.2	<13.9	<30
S-088210-30-081216-SP-03	4.0	12/08/2016	<0.024	<0.048	<0.048	<0.096	<0.216	<4.8	<9.5	<14.3	410
S-088210-30-081216-SP-04	2.0	12/08/2016	<0.024	<0.049	<0.049	<0.097	<0.219	<4.9	<9.8	<14.7	<30
S-088210-30-081216-SP-05	2.0	12/08/2016	<0.023	<0.046	<0.046	<0.092	<0.207	<4.6	<9.8	<14.4	92
S-088210-30-081216-SP-06	2.0	12/08/2016	<0.023	<0.047	<0.047	<0.094	<0.211	<4.7	<9.9	<14.6	<30
S-088210-30-081216-SP-07	2.0	12/08/2016	<0.024	<0.048	<0.048	<0.097	<0.217	<4.8	<9.7	<14.5	<30
S-088210-30-081216-SP-08	2.0	12/08/2016	<0.025	<0.050	<0.050	<0.099	<0.224	<5.0	<10	<15	120
S-088210-30-081216-SP-09	2.0	12/08/2016	<0.024	<0.048	<0.048	<0.096	<0.216	<4.8	<9.9	<14.7	<30
S-088210-30-081516-SP-01	2.0	15/08/2016	<0.023	<0.046	<0.046	<0.092	<0.207	<4.6	<9.9	<14.5	<30
S-088210-30-081516-SP-02	2.0	15/08/2016	<0.024	<0.048	<0.048	<0.096	<0.216	<4.8	<9.9	<14.7	<30
S-088210-30-081516-SP-03	2.0	15/08/2016	<0.023	<0.046	<0.046	<0.093	<0.208	<4.6	<9.2	<13.8	51
S-088210-30-081516-SP-04	4.0	15/08/2016	<0.024	<0.049	<0.049	<0.097	<0.219	<4.9	<9.6	<14.5	80
S-088210-30-081516-SP-05	7.0	15/08/2016	<0.024	<0.049	<0.049	<0.097	<0.219	<4.9	<9.2	<14.1	340
S-088210-30-081616-SP-01	12.0	16/08/2016	--	--	--	--	--	--	--	--	**570**
S-088210-30-081616-SP-02	14.0	16/08/2016	--	--	--	--	--	--	--	--	110
S-088210-30-081816-SP-01	2.0	18/08/2016	--	--	--	--	--	--	--	--	200
S-088210-30-081816-SP-02	2.0	18/08/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-081816-SP-03	4.0	18/08/2016	--	--	--	--	--	--	--	--	64
S-088210-30-081816-SP-04	2.0	18/08/2016	--	--	--	--	--	--	--	--	250
S-088210-30-081816-SP-05	2.0	18/08/2016	--	--	--	--	--	--	--	--	70
S-088210-30-081816-SP-06	2.0	18/08/2016	--	--	--	--	--	--	--	--	34
S-088210-30-081916-SP-01	2.0	19/08/2016	--	--	--	--	--	--	--	--	210
S-088210-30-081916-SP-02	4.0	19/08/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-081916-SP-03	6.0	19/08/2016	--	--	--	--	--	--	--	--	100
S-088210-30-081916-SP-04	12.0	19/08/2016	--	--	--	--	--	--	--	--	**700**
S-088210-30-081916-SP-05	2.0	19/08/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-081916-SP-06	6.0	19/08/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-082216-SP-01	2.0	22/08/2016	--	--	--	--	--	--	--	--	430
S-088210-30-082216-SP-02	4.0	22/08/2016	--	--	--	--	--	--	--	--	**530**
S-088210-30-082216-SP-03	2.0	22/08/2016	--	--	--	--	--	--	--	--	58
S-088210-30-082216-SP-04	4.0	22/08/2016	--	--	--	--	--	--	--	--	210
S-088210-30-082216-SP-05	2.0	22/08/2016	--	--	--	--	--	--	--	--	150
S-088210-30-082316-SP-01	2.0	23/08/2016	--	--	--	--	--	--	--	--	170
S-088210-30-082316-SP-02	4.0	23/08/2016	--	--	--	--	--	--	--	--	150
S-088210-30-082316-SP-03	12.0	23/08/2016	--	--	--	--	--	--	--	--	120
S-088210-30-082316-SP-04	6.0	23/08/2016	--	--	--	--	--	--	--	--	110
S-088210-30-082516-SP-01	2.0	25/08/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-082516-SP-02	2.0	25/08/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-082516-SP-03	2.0	25/08/2016	--	--	--	--	--	--	--	--	**520**
S-088210-30-082516-SP-04	4.0	25/08/2016	--	--	--	--	--	--	--	--	150
S-088210-30-082516-SP-05	2.0	25/08/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-082516-SP-06	4.0	25/08/2016	--	--	--	--	--	--	--	--	<30

Table 1

Diamond 8 Fed Com #1 - Soil Analytical Data

Sample ID	Depth (ft. bgs)	Date	Benzene	Toluene	Ethylbenzene	Xylenes	BTEX	TPH (GRO)	TPH (DRO)	Total TPH	Chloride
S-088210-30-082616-SP-01	2.0	26/08/2016	--	--	--	--	--	--	--	--	80
S-088210-30-082616-SP-02	2.0	26/08/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-082616-SP-03	2.0	26/08/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-082616-SP-04	4.0	26/08/2016	--	--	--	--	--	--	--	--	**750**
S-088210-30-082616-SP-05	6.0	26/08/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-091316-SP-01	4.0	13/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-091316-SP-02	4.0	13/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-091316-SP-03	4.0	13/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-091316-SP-04	2.0	13/09/2016	--	--	--	--	--	--	--	--	270
S-088210-30-091516-SP-01	4.0	15/09/2016	--	--	--	--	--	--	--	--	45
S-088210-30-091516-SP-02	2.0	15/09/2016	--	--	--	--	--	--	--	--	96
S-088210-30-091516-SP-03	4.0	15/09/2016	--	--	--	--	--	--	--	--	270
S-088210-30-091616-SP-01	2.0	16/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-091616-SP-02	2.0	16/09/2016	--	--	--	--	--	--	--	--	140
S-088210-30-091616-SP-03	2.0	16/09/2016	--	--	--	--	--	--	--	--	66
S-088210-30-091616-SP-04	6.0	16/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-091616-SP-05	2.0	16/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-091616-SP-06	2.0	16/09/2016	--	--	--	--	--	--	--	--	120
S-088210-30-091916-SP-01	2.0	19/09/2016	--	--	--	--	--	--	--	--	360
S-088210-30-091916-SP-02	2.0	19/09/2016	--	--	--	--	--	--	--	--	**970**
S-088210-30-091916-SP-03	2.0	19/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-091916-SP-04	2.0	19/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-091916-SP-05	2.0	19/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-092016-SP-01	2.0	20/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-092016-SP-02	2.0	20/09/2016	--	--	--	--	--	--	--	--	80
S-088210-30-092016-SP-03	2.0	20/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-092016-SP-04	2.0	20/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-092016-SP-05	2.0	20/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-092016-SP-06	2.0	20/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-092016-SP-07	2.0	20/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-092016-SP-08	2.0	20/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-092016-SP-09	4.0	20/09/2016	--	--	--	--	--	--	--	--	92
S-088210-30-092016-SP-10	2.0	20/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-092616-SP-01	6.0	26/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-092616-SP-02	6.0	26/09/2016	--	--	--	--	--	--	--	--	<30
S-088210-30-092616-SP-03-mix-1	stockpile mix ratio 2:1	26/09/2016	--	--	--	--	--	--	--	--	830
S-088210-30-092616-SP-04-mix-2	stockpile mix ratio 3:1	26/09/2016	--	--	--	--	--	--	--	--	710
S-088210-30-092616-SP-05	8.0	26/09/2016	--	--	--	--	--	--	--	--	140
Recommended Remediation Action Limits			**10**	**Total BTEX: 50**				**Total TPH: 5000**			**500**

Notes:
All samples are in milligrams per kilogram
Bolded numbers are above the RRAL