SOIL VAPOR EXTRACTION WITH AIR SPARGE REMEDIATION WORK PLAN AND SYSTEM DESIGN

Williams (Bargath, LLC)
Black Sulphur Compressor Station
Facility Number 428642
Rio Blanco County, Colorado

Remediation # 8268

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1.0 INTRODUCTION

The Black Sulphur Compressor Station is a natural gas gathering and compression facility located in the southwest quarter (SW ¼) of the southwest quarter (SE ¼) of Section 19, Township 2 South, Range 97 West of the 6th Principal Meridian, Rio Blanco County, Colorado northwest of Rifle, Colorado at latitude 39.856808 and longitude -108.329129. Figure 1 is a topographic map depicting the location of the site. The site is located in an area of south-sloping topography at an elevation of approximately 6,287 feet above mean sea level (ft-msl). The area south of the site is Black Sulphur Creek and pasture to the south of the site. North of the site is mountainous with oil and gas development. County Road 26 is adjoins the site to the north.

1.1 Previous Site Investigations

During the removal of a condensate aboveground storage tank, it was discovered that a condensate release had occurred (COGCC Spill No. 2229161). In June 2012 a site characterization was performed by another environmental consultant that included advancing 24 soil borings and the installation of six, 2-inch diameter monitoring wells and one 1-inch diameter monitoring well (MW1 to MW7). Groundwater samples were collected from the seven monitoring wells in June 2012, July 2012, August 2012, and September 2012 for laboratory analysis. Surface water samples were collected from locations upstream and downstream of the compressor station in June 2012.

The project transitioned to Olsson in late January 2013. Olsson collected groundwater samples on a monthly basis beginning in January 2013. Surface water samples have been collected from an upstream, midstream, and downstream locations (access permitting) since February 2013. In March 2013, Olsson prepared an Additional Site Characterization Work Plan of behalf of Williams for submittal to the COGCC. In June 2013, Olsson conducted an additional site investigation which included collecting soil samples for laboratory analysis and installing eight groundwater monitoring wells (MW8 to MW15). Figure 1 is a site map depicting the soil borings and monitoring wells installed during the initial and additional site investigations. In May 2014, Olsson conducted a direct push site investigation to vertically profile potential soil impacts. Figure 3 depicts the locations of the direct push borings advanced in May 2014.

Table 1 through Table 3 summarizes the groundwater sample analyses completed to date. Table 4 summarizes the analytical results obtained for the soil samples collected during the site investigations. As can be seen on Table 1, laboratory analyses historically have reported petroleum constituents in the groundwater samples collected from monitoring wells MW-2, MW-3, and MW-7 above COGCC, Series 900, Exploration and Production (E&P) Waste Management, Table 910-1 concentration levels.

2.0 SVE PILOT TEST

Olsson conducted a soil vapor extraction (SVE) pilot test at the site to evaluate the effectiveness of the technology and to collect data for full scale system design. The pilot test was conducted

at four areas on the site and utilized the existing wells (MW1, MW2, MW3, and MW4) as depicted on Figure 1.

The SVE pilot test was conducted on September 4, 2014, to estimate SVE vacuum/flow relationships, and monitor SVE radius of influence (ROI). During the SVE pilot test, a positive displacement blower applied a vacuum to the monitoring wells resulting in airflow through the well screened formation above the groundwater table.

2.1 Step-Rate Performance SVE Test

The step test is utilized to determine vacuum/flow relationship for the site specific subsurface conditions. During this test, the vacuum was incrementally increased and the flow rate was allowed to stabilize between each increase. Pilot test data sheets are included as Appendix A.

2.1.1 Test 1 at Monitoring Well MW3

In Test 1, the vacuum source was connected to well MW3 located on the east portion of the site. Observation wells used for Test 1 included monitoring wells MW4 and MW10 (Figure 2) located approximate 32 feet and 47.75 feet from vacuum source well MW3, respectively. A starting vacuum of 95-inch of water column (w.c.) was incrementally increased up to a vacuum of 150-inch w.c. The resulting flow from the test ranged from 12 standard cubic feet per minute (scfm) up to a maximum of 28 scfm. During Test 1, a vacuum of 0.17-inch w.c. was observed at observation well MW4. An observed vacuum of 0.14-inch w.c. at MW10. The test was terminated when groundwater from monitoring well MW4 began accumulating in the test SVE system knock-out tank

2.1.2 Test 2 at Monitoring Well MW4

In Test 2, the vacuum source was connected to monitoring MW4. Observation wells used for Test 2 included MW3 and MW10 (Figure 1) located 32 feet and 34.75 feet from vacuum source well MW4, respectively. A starting vacuum of 30-inch of w.c. was incrementally increased up to a vacuum of 80-inch w.c. Initial flow rate of 54 scfm consisted mainly of makeup air introduced into the SVE system by means of a by-pass valve. The make-up was gradually decreased resulting reduce discharge flow. The resulting flow from the test ranged from 54 scfm to a maximum of 10 scfm. During Test 2, a maximum vacuum of 0.08-inch WC was observed at observation well MW10. Vacuum fluctuations were observed during this test potentially resulting from site infrastructure or near-surface geology.

2.1.3 Test 3 at Monitoring Well MW1

In Test 3, the vacuum source was connected to monitoring MW1. Observation wells used for Test 3 included MW2, MW3, MW7 and B8 (a 1-inch piezometer) (Figure 2) located 47.25, 76.5, 23.5, and 30.25 feet from vacuum source well MW1, respectively. A starting vacuum of 30-inch of w.c. was incrementally increased up to a vacuum of 98-inch w.c. Moisture in the flow gauges prevented observing air flow rate from the SVE unit. The make-up air was gradually decreased reducing discharge flow. During Test 3, a maximum vacuum of 0.055-inch WC was observed at observation well MW7. Similar to Test 2, vacuum fluctuations were observed during this test potentially resulting from site infrastructure or geology.

2.1.4 Test 4 at Monitoring Well MW2

In Test 4, the vacuum source was connected to monitoring MW2. Observation wells used for Test 4 included MW1, B4 and B3 (1-inch piezometers) (Figure 2) located 47.25, 17, and 21.5 feet from vacuum source well MW1, respectively. A starting vacuum of 40-inch of w.c. was incrementally increased up to a vacuum of 80-inch w.c. Moisture in the flow gauges prevented observing air flow rate from the SVE unit. The make-up was gradually decreased resulting reduce discharge flow. During Test 4, a maximum vacuum of 0.78-inch WC was observed at observation well B3. Similar to the prior tests, vacuum fluctuations were observed during this test potentially resulting from site infrastructure or near-surface geology.

2.5 Soil Vapor Sampling

Soil vapor samples were conducted to estimate the vapor-phase volatile organic compounds (VOC) mass removal from the pilot test area vicinity. During the operation of the SVE pilot test, samples of extracted soil vapors were also field screened using a photo-ionization detector (PID) to monitor changes in VOC concentrations over the period of the pilot test performance.

3.0 SOIL VAPOR ANALYSIS

During the pilot test, SVE air emission samples were collected in 6-liter Summa canisters at the conclusion of the test. Additionally, PID measurements were taken at the blower exhaust stack. The Summa canister air samples were analyzed for benzene, toluene, ethylbenzene, xylene (BTEX) using EPA Method TO-15. The table below summarizes the analytical results. The laboratory analytical reports are included as Appendix B.

Air Sample Analysis Summary

Sample Number		MW2	MW3
Benzene	ppb	160,000	25,000
Ethylbenzene	ppb	15,000	3,300
Toluene	ppb	320,000	18,000
Xylenes (Total)	ppb	124,000	14,100
TPH	ppb	4,500,000 J	190,000 J

TPH – Total petroleum hydrocarbon ppb – Parts per billion
J – Estimated concentration below laboratory reporting Limit

3.1 SVE System Emissions

The SVE emission sample results were used to determine the amount of petroleum contamination being removed and assess potential air quality permit modifications. For air emission calculations the follow equation using the highest TPH concentration and average air flow volume of 50 scfm and a TPH concentration of 4,500,000 parts per billion (ppb) and the molecular weight of weathered gasoline were used.

$$Qc = \frac{(Cc) * (F) * (MWc) * (60 \text{ minutes/hour}) * (24 \text{ hours/day})}{(10^9) * (V)}$$

where:
Q_c = Mass Emission Rate of Contaminant c, Pounds (lbs)/day
C_c = Concentration of Contaminant c, ppb
1 x 10^9 = Conversion from parts per billion to parts per unit volume
F = Vapor Volume Flow Rate, scfm
V = Molar Volume = 385.3 ft^3/lb-mole (based on Ideal Gas Law for a gas at standard conditions of 68°F and 1 atmosphere)
MW_c = Molecular Weight of Contaminant c (grams/mole)
= 100 grams/mole for TPHg (weathered gasoline/natural gas condensate)

Calculation for TPH-natural gas condensate emission

$$Qc = \frac{(4{,}500{,}000) * (50) * (100) * (60) * (24)}{(10^9) * (385.3)} = \frac{3.24 \times 10^{13}}{3.85 \times 10^{11}} = \textit{84.15 lbs./day TPH}$$

84.15 lbs./day x 365 day = *30,714.8 lbs./year or 15.36 tons/year*

Initial SVE emission concentrations are typically much higher than long term system emissions. Olsson anticipates that the full scale system will not operate at pilot test emission rates for an extended period of time. A catalytic oxidation (cat-ox) unit will treat the SVE system exhaust if needed. The manufactures specifications for the proposed cat-ox unit indicate that up to 99.5 percent efficiency for emission destruction is obtainable. The specifications for the cat-ox unit are included in Appendix C. It is estimated the cat-ox will be used during the first six month of system operation. At which time the use of the cat-ox will be reevaluated. SVE system exhaust samples will be collected periodically (see Section 4.4) to evaluate treated and untreated air emission concentrations.

4.0 AS/SVE SYSTEM REMEDIATION SYSTEM

Pilot testing has shown that site conditions are conducive to remediation using SVE technology. The SVE system will be used for removal of soil-sorbed hydrocarbon impacts in the vadose zone. Based on observations during the pilot test, groundwater plume location, and site configuration, Olsson assumed a 30-foot radius of influence (ROI) for the SVE well placement. As indicated on the attached SVE Pilot Test Data Sheet for Test 3 at monitoring well MW1, vacuum influence was observed at observation well MW3 approximately 76 feet away from the vacuum well (MW1). Using the pilot test data and an SVE well ROI of 30 feet will provide adequate coverage to remediate the impacted area. The proposed remediation system layout and target remediation area are depicted in Figure 4 and Figure 5, respectively. A site map depicting the as-built locations of the AS and SVE wells will be prepared upon completing the well installations.

Air sparging was not conducted during the pilot test. An estimated air sparge ROI of 7.5 feet is represented on Figure 5 and is based on previous experience in similar soil conditions (silty sand with gravel). Air pressures for sparging are anticipated to be between 5 pounds per square in (psi) and 15 psi. Air sparge lines will be divided into three solenoid controlled zones feeding 23 sparge lines. The sparge zones will be run separately at timed intervals as opposed to

sparging all the wells at the same time. This will allow SVE vacuum run times to be coordinated with air sparge cycles to improve system efficiency. Air sparge cycle times are anticipated to be 30 to 90 minutes per zone. Air sparging pressures will be regulated using individual air valves located in the equipment shed. Typically pressures and flow rates are dynamic and change as the remediation progresses. This information will be documented during the system operation and maintenance operations.

4.1 Air Sparge Wells

Air sparging (AS) helps remove the volatile petroleum constituents from the groundwater and promotes biodegradation by increasing dissolved oxygen. Twenty three AS wells are proposed and will be completed below five to eight feet below the groundwater table at 30 feet below ground surface (bgs). The location of the proposed AS wells are depicted on Figure 4. The wells will be constructed using 1-inch diameter PVC pipe. The bottom one to two feet of each AS well will be 0.002-inch factory slotted well screen. A 10/20-mesh graded sand pack will be place to approximately six inches above the well screen. Bentonite-cement grout will be placed above the sand pack and extend to the surface. The AS wells will be installed using a 15 foot offset well and line spacing (Figure 4).

4.2 Soil Vapor Extraction Wells

Four SVE wells will be installed within the fenced area of the site. The well locations are depicted on Figure 4. Boring and well completion logs for the SVE wells will be complete upon installation. The SVE wells will be constructed with 2-inch diameter PVC with the screen interval extending to within five feet of the surface. A 10/20 mesh grade sand pack extends to approximately 6 inches above the screened interval. Bentonite-cement grout extends from the top of the sand pack to the surface.

4.3 Remediation Equipment

The AS/SVE system and cat-ox unit will be located in the southeast portion of the fence within the fence area (Figure 4). The SVE system will be contained in a lockable wooden shed. The catalytic oxidizer is located adjacent to the AS/SVE shed. All AS/SVE equipment, interior lighting, ventilation fan, heater, and the cat-ox unit are National Electric Code (NEC) Class 1, Division 2, Group D compliant. Equipment descriptions and specifications are included as Appendix C.

4.4 Trenching and Connecting Piping

Each AS/SVE well will be connected to an individual 1-inch (AS wells) and 2-inch (SVE wells) Schedule 80 PVC pipe that leads to the inlet header pipe at the equipment shed. Where feasible, the AS/SVE piping and well connections will be installed above surface grade. Below grade well completion access will be provided through flush-mount manholes.

4.5 Remediation Progress Air Samples

Olsson will collect air samples from the SVE blower exhaust sampling port and after cat-ox treatment to evaluate remediation progress and air emissions. Air samples will be collected in

pre-evacuated Summa canisters for laboratory analysis. The air samples will be analyzed for BTEX and TPH using EPA Method TO-15. Initially for the first month the system is operating, SVE exhaust samples will be collected on a weekly basis. During the second and third months of operation, SVE exhaust air samples will be collected on a bi-weekly basis. After the third month of operation, SVE exhaust air samples will be collected once per month. The air sample data will be graphically evaluated to determine instantaneous concentrations and estimate mass removal over time.

4.6 Confirmation Soil Borings

To assess the remediation progress in the source area, Olsson will advance three direct push borings within the impacted soil area to collected soil samples for laboratory analysis. The proposed confirmation soil borings will be located near monitoring well MW2 were previous site investigations observed the highest soil TPH and BTEX concentrations. It is estimate the first confirmation soil samples will be collected approximate six to 12 months after the system operation begin, depending on the SVE stack air sample results.

Soil cores will be collected continuously using a direct push rig equipped with a 2-inch diameter Macro Core® sampler. An Olsson geologist will document the site lithology, examine the soils for suspected environmental impact (i.e. chemical staining and/or odors) and field screen the soils using a photo-ionization detector (PID) for the presence of volatile organic vapors as the borings are advanced. The field soil screening method involves placing a representative sample from each soil core interval into plastic bags, sealing the bags, and allowing the bag contents to equilibrate to the surrounding ambient conditions. The intake probe of a PID is inserted into the individual sample bags to measure the volatile organic vapors desorbed from the impacted soils into the headspace of the bag. The PID readings are recorded in parts per million (ppm). To obtain a vertical profile of the residual hydrocarbon concentrations, four soil samples will be collected for laboratory analysis from each 5-foot boring interval.

4.7 Confirmation Soil Sample Laboratory Analysis

Soil samples analysis will be analyzed for the following COGCC Table 910-1 constituents:

- Gasoline range hydrocarbons (GRO) using EPA Method 8015
- Diesel range hydrocarbons (DRO) using EPA Method 8015
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8260B

4.8 Groundwater Monitoring

Monthly groundwater and surface water monitoring at the site began in June 2012. Olsson requested modifying the monitoring program at the site in April 2014 which was approved by the COGCC in July 2014. Groundwater and surface water sampling will continue to be conducted per the approved modified groundwater sampling plan during the remediation phase to evaluate the remediation system performance.

Upon achieving four consecutive quarters of groundwater BTEX concentration below COGCC concentration levels the AS/SVE system will be shut down. Groundwater monitoring will continue as scheduled and the laboratory results monitored for contaminant rebound.

5.0 SITE SAFETY

Safety concerns associated with this project are:

- Slip and trip hazards
- Hydrogen sulfide (H_2S) gas – The site is a Williams-identified potential hydrogen sulfide gas location
- Muscle strain
- Driving to and from the site
- Site oil and gas production equipment
- Site vehicular traffic
- Adverse weather conditions (heat, snow, and cold)
- Use of motorized equipment at an operating oil and gas production facility
- Exposure to petroleum compounds
- Operation of the AS/SVE pilot test blower system
- Insect bites and animal encounters
- Loud noise from the AS/SVE equipment

A copy of Olsson's Site Specific Health and Safety Plan (HASP) with Job Safety Analysis Worksheets (JSAs) will be maintained in the project file and updated seasonally. A copy of the plan will be kept onsite in the equipment shed.

6.0 SITE CLOSURE REPORT

Olsson will prepare a summary report and request concurrence from the COGCC to grant regulatory closure based on the following:

- Four consecutive post-remediation groundwater sampling events results below COGCC Table 910-1 groundwater BTEX concentration levels
- Confirmation boring soil samples below the COGCC TPH and BTEX Table 910-1 soil concentration levels

TABLES

Table 1 - Groundwater Analytical Summary
BTEX, DRO, and GRO
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	GRO (mg/L)	DRO (mg/L)
	COGCC Table 910-1 Concentration Levels	5 µg/L	1000 µg/L [1]	700 µg/L	10,000 µg/L [1]	No Concentration Level Established	No Concentration Level Established
MW-1	6/15/2012	ND	ND	23	200	NS	NS
MW-1	7/13/2012	ND	ND	2.8	63	NS	NS
MW-1	8/14/2012	ND	ND	2.7	43	NS	NS
MW-1	9/13/2012	ND	ND	2.6	29	NS	NS
MW-1	1/30/2013	ND	ND	ND	ND	ND	1.7
MW-1	2/28/2013	NS	NS	NS	NS	NS	NS
MW-1	3/29/2013	ND	ND	ND	ND	ND	ND
MW-1	4/26/2013	ND	ND	ND	ND	ND	ND
MW-1	5/28/2013	ND	ND	ND	3.4	ND	ND
MW-1	6/20/2013	ND	ND	ND	ND	ND	ND
MW-1	7/29/2013	ND	ND	ND	ND	ND	ND
MW-1	8/27/2013	ND	ND	ND	ND	ND	ND
MW-1	9/17/2013	ND	ND	ND	ND	ND	ND
MW-1	10/29/2013	ND	ND	ND	ND	ND	ND
MW-1	11/25/2013	ND	ND	ND	ND	ND	ND
MW-1	12/17/2013	ND	ND	ND	ND	ND	ND
MW-1	1/21/2014	NT	NT	NT	NT	NT	NT
MW-1	2/25/2014	ND	ND	ND	ND	ND	ND
MW-1	3/26/2014	ND	ND	ND	ND	ND	ND
MW-1	4/29/2014	NT	NT	NT	NT	NT	NT
MW-1	5/27/2014	NT	NT	NT	NT	NT	NT
MW-1	6/24/2014	ND	ND	ND	ND	ND	ND
MW-1	7/28/2014	NT	NT	NT	NT	NT	NT
MW-1	8/25/2014	NT	NT	NT	NT	NT	NT
MW-2	6/15/2012	5800	14000	860	7500	NS	NS
MW-2	7/13/2012	5500	8900	820	5600	NS	NS
MW-2	8/14/2012	5700	9200	880	6300	NS	NS
MW-2	9/13/2012	4700	5800	700	3700	NS	NS
MW-2	1/30/2013	4500	5400	590	3200	39	ND
MW-2	2/28/2013	4400	6800	560	3600	44	1.4
MW-2	3/29/2013	4800	6900	620	3800	42	1.0
MW-2	4/26/2013	4200	6400	640	4100	39	1.4
MW-2	5/28/2013	4600	7100	570	3700	54	1.6
MW-2	6/20/2013	4100	6400	600	4300	52	1.5
MW-2	7/30/2013	3000	1900	550	2900	30	1.3
MW-2	8/28/2013	2900	3800	530	3000	32	2.7
MW-2	9/17/2013	2200	3900	520	3200	32	1.3
MW-2	10/29/2013	2500	4300	520	3400	37	0.46
MW-2	11/26/2013	5000	9700	780	5900	60	2.10
MW-2	12/18/2013	3700	4600	590	3900	30	2.3
MW-2	1/21/2014	NT	NT	NT	NT	NT	NT
MW-2	2/25/2014	2400	4600	810	5000	39	3.2
MW-2	3/26/2014	1900	320	350.0	1600	17	1.2
MW-2	4/29/2014	NT	NT	NT	NT	NT	NT
MW-2	5/27/2014	NT	NT	NT	NT	NT	NT
MW-2	6/24/2014	2000	750	350	1900	20	1.7
MW-2	7/28/2014	NT	NT	NT	NT	NT	NT
MW-2	8/25/2014	NT	NT	NT	NT	NT	NT
MW-3	6/15/2012	1300	780	260	1500	NS	NS
MW-3	7/13/2012	1900	1200	390	2700	NS	NS
MW-3	8/14/2012	2300	1500	480	2900	NS	NS
MW-3	9/13/2012	1700	1200	410	2600	NS	NS
MW-3	1/30/2013	2000	1400	410	2200	19	1.5
MW-3	2/28/2013	NS	NS	NS	NS	NS	NS
MW-3	3/29/2013	1300	1100	250	1500	19	1.3
MW-3	4/26/2013	1600	1700	280	1600	15	1.5

NS = Not sampled (Lab Analytical)
ND = Non Detect
NT = Not Tested (Field Analytical)
J= Analyte reported below laboratory report limit

[1] - Drinking Water Maximum Contaminant Level (MCL)
µg/L - Micrograms per Liter
mg/L - Milligrams per Liter

Above COGCC Table 910-1 Concentration Level

Table 1 - Groundwater Analytical Summary
BTEX, DRO, and GRO
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	GRO (mg/L)	DRO (mg/L)
	COGCC Table 910-1 Concentration Levels	5 µg/L	1000 µg/L [1]	700 µg/L	10,000 µg/L [1]	No Concentration Level Established	No Concentration Level Established
MW-3	5/28/2013	2600	2100	520	2900	26	1.6
MW-3	6/20/2013	2100	2300	410	2400	23	1.2
MW-3	7/30/2013	2000	2600	330	2200	24	0.94
MW-3	8/28/2013	2300	2900	380	2700	24	2.70
MW-3	9/17/2013	1900	2400	270	1800	19	1.40
MW-3	10/29/2013	2500	3200	360	2600	28	0.59
MW-3	6/24/2014	1800	1800	290	1800	21	1.7
MW-3	11/26/2013	3000	3000	540	3500	29	1.70
MW-3	12/18/2013	2700	2600	440	2900	30	1.6
MW-3	1/21/2014	2000	2800	350	2300	24	1.8
MW-3	2/25/2014	2400	3100	370	2500	21	1.2
MW-3	3/26/2014	2700	3200	450	3000	27	1.4
MW-3	4/29/2014	NT	NT	NT	NT	NT	NT
MW-3	5/27/2014	NT	NT	NT	NT	NT	NT
MW-3	6/24/2014	1800	1800	290	1800	21	2
MW-3	7/28/2014	NT	NT	NT	NT	NT	NT
MW-3	8/25/2014	NT	NT	NT	NT	NT	NT
MW-4	6/15/2012	1.5	ND	ND	ND	NS	NS
MW-4	7/13/2012	2.4	ND	ND	ND	NS	NS
MW-4	8/14/2012	2.2	ND	ND	ND	NS	NS
MW-4	9/13/2012	3.8	ND	ND	ND	NS	NS
MW-4	1/30/2013	ND	ND	ND	ND	ND	ND
MW-4	2/28/2013	NS	NS	NS	NS	NS	NS
MW-4	3/29/2013	ND	ND	ND	ND	ND	ND
MW-4	4/26/2013	ND	ND	ND	ND	ND	ND
MW-4	5/28/2013	ND	ND	ND	ND	ND	ND
MW-4	6/20/2013	ND	ND	ND	ND	ND	ND
MW-4	7/29/2013	ND	ND	ND	ND	ND	ND
MW-4	8/27/2013	ND	ND	ND	ND	ND	ND
MW-4	9/16/2013	ND	ND	ND	ND	ND	ND
MW-4	10/28/2013	ND	ND	ND	ND	ND	ND
MW-4	11/25/2013	ND	ND	ND	ND	ND	ND
MW-4	12/17/2013	ND	ND	ND	ND	ND	ND
MW-4	1/20/2014	ND	ND	ND	ND	ND	ND
MW-4	2/24/2014	ND	ND	ND	ND	ND	ND
MW-4	3/25/2014	ND	ND	ND	ND	ND	ND
MW-4	4/29/2014	ND	ND	ND	ND	ND	ND
MW-4	5/27/2014	ND	ND	ND	ND	ND	ND
MW-4	6/23/2014	ND	ND	ND	ND	ND	ND
MW-4	7/28/2014	ND	ND	ND	ND	ND	ND
MW-4	8/25/2014	ND	ND	ND	ND	ND	ND
MW-5	6/15/2012	ND	ND	ND	ND	NS	NS
MW-5	7/13/2012	ND	ND	ND	ND	NS	NS
MW-5	8/14/2012	ND	ND	ND	ND	NS	NS
MW-5	9/13/2012	ND	ND	ND	ND	NS	NS
MW-5	1/30/2013	0.33 J	ND	0.47 J	ND	ND	ND
MW-5	2/28/2013	ND	ND	ND	ND	ND	ND
MW-5	3/29/2013	ND	ND	ND	ND	ND	ND
MW-5	4/26/2013	ND	ND	ND	ND	ND	ND
MW-5	5/28/2013	ND	ND	ND	ND	ND	ND
MW-5	6/20/2013	ND	ND	ND	ND	ND	ND
MW-5	7/29/2013	ND	ND	ND	ND	ND	0.66
MW-5	8/27/2013	ND	ND	ND	ND	ND	ND
MW-5	9/16/2013	ND	ND	ND	ND	ND	ND
MW-5	10/28/2013	ND	ND	ND	ND	ND	ND
MW-5	11/25/2013	ND	ND	ND	ND	ND	ND
MW-5	12/17/2013	ND	ND	ND	ND	ND	ND

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MW-5	1/20/2014	ND	ND	ND	ND	ND	ND
MW-5	2/24/2014	ND	ND	ND	ND	ND	ND
MW-5	3/25/2014	1.7	ND	ND	ND	ND	ND
MW-5	4/29/2014	3.2	ND	ND	ND	ND	ND
MW-5	5/27/2014	3.9	ND	ND	ND	ND	ND
MW-5	6/23/2014	5.4	ND	ND	ND	ND	ND
MW-5	7/28/2014	1.7	ND	ND	ND	ND	0.63
MW-5	8/25/2014	3.5	ND	ND	ND	ND	ND
MW-6	6/15/2012	ND	ND	ND	ND	NS	NS
MW-6	7/13/2012	ND	ND	ND	ND	NS	NS
MW-6	8/14/2012	ND	ND	ND	ND	NS	NS
MW-6	9/13/2012	ND	ND	ND	ND	NS	NS
MW-6	1/30/2013	ND	ND	ND	ND	ND	ND
MW-6	2/28/2013	ND	ND	ND	ND	ND	0.59
MW-6	3/29/2013	ND	ND	ND	ND	ND	ND
MW-6	4/26/2013	ND	ND	ND	ND	ND	ND
MW-6	5/28/2013	ND	ND	ND	ND	ND	ND
MW-6	6/20/2013	ND	ND	ND	ND	ND	ND
MW-6	7/29/2013	ND	ND	ND	ND	ND	ND
MW-6	8/27/2013	ND	ND	ND	ND	ND	ND
MW-6	9/16/2013	ND	ND	ND	ND	ND	ND
MW-6	10/28/2013	ND	ND	ND	ND	ND	ND
MW-6	11/25/2013	ND	ND	ND	ND	ND	ND
MW-6	12/17/2013	ND	ND	ND	ND	ND	ND
MW-6	1/20/2014	ND	ND	ND	ND	ND	ND
MW-6	2/24/2014	ND	ND	ND	ND	ND	ND
MW-6	3/25/2014	ND	ND	ND	ND	ND	ND
MW-6	4/29/2014	NT	NT	NT	NT	NT	NT
MW-6	5/27/2014	NT	NT	NT	NT	NT	NT
MW-6	6/23/2014	ND	ND	ND	ND	ND	ND
MW-6	7/28/2014	NT	NT	NT	NT	NT	NT
MW-6	8/25/2014	NT	NT	NT	NT	NT	NT
MW-7	6/15/2012	9100	37000	3300	35000	NS	NS
MW-7	7/13/2012	13000	36000	1400	15000	NS	NS
MW-7	8/14/2012	10000	28000	1700	16000	NS	NS
MW-7	9/13/2012	9400	25000	1400	14000	NS	NS
MW-7	1/30/2013	4500	11000	840	7200	56	2.7
MW-7	2/28/2013	NS	NS	NS	NS	NS	NS
MW-7	3/29/2013	1400	3800	490	4300	25	1.7
MW-7	4/26/2013	2000	4600	430	3600	22	1.0
MW-7	5/28/2013	5300	8900	670	5800	57	1.9
MW-7	6/20/2013	4900	8500	790	6500	ND	ND
MW-7	7/30/2013	4000	6800	710	5600	45	1.4
MW-7	8/28/2013	3700	6700	600	4700	41	2.3
MW-7	9/17/2013	2800	5800	520	4000	35	2.0
MW-7	10/29/2013	3200	6200	550	4800	48	0.60
MW-7	11/26/2013	5200	10000	800	7000	67	2.50
MW-7	12/18/2013	5700	6500	810	6500	56	2.2
MW-7	1/21/2014	11000	18000	2200	17000	57	1.5
MW-7	2/25/2014	2200	4200	500	3800	30	1.4
MW-7	3/26/2014	4100	9500	910	8000	69	2.7
MW-7	4/29/2014	NT	NT	NT	NT	NT	NT
MW-7	5/27/2014	NT	NT	NT	NT	NT	NT
MW-7	6/24/2014	2200	4700	460	3400	58	1.9
MW-7	7/28/2014	NT	NT	NT	NT	NT	NT
MW-7	8/25/2014	NT	NT	NT	NT	NT	NT

NS = Not sampled (Lab Analytical)
ND = Non Detect
NT = Not Tested (Field Analytical)
J= Analyte reported below laboratory report limit

[1] - Drinking Water Maximum Contaminant Level (MCL)
µg/L - Micrograms per Liter
mg/L - Milligrams per Liter

Above COGCC Table 910-1 Concentration Level

Table 1 - Groundwater Analytical Summary
BTEX, DRO, and GRO
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	GRO (mg/L)	DRO (mg/L)
	COGCC Table 910-1 Concentration Levels	5 µg/L	1000 µg/L [1]	700 µg/L	10,000 µg/L [1]	No Concentration Level Established	No Concentration Level Established
MW-8	7/10/2013	ND	ND	ND	ND	ND	ND
MW-8	7/29/2013	ND	ND	ND	ND	ND	ND
MW-8	8/27/2013	ND	ND	ND	ND	ND	ND
MW-8	9/16/2013	ND	ND	ND	ND	ND	ND
MW-8	10/28/2013	ND	ND	ND	ND	ND	ND
MW-8	11/26/2013	ND	ND	ND	ND	ND	ND
MW-8	12/18/2013	ND	ND	ND	ND	ND	ND
MW-8	1/21/2014	NT	NT	NT	NT	NT	NT
MW-8	2/24/2014	ND	ND	ND	ND	ND	ND
MW-8	3/25/2014	ND	ND	ND	ND	ND	ND
MW-8	4/29/2014	NT	NT	NT	NT	NT	NT
MW-8	5/27/2014	NT	NT	NT	NT	NT	NT
MW-8	6/24/2014	ND	ND	ND	ND	ND	ND
MW-8	7/28/2014	NT	NT	NT	NT	NT	NT
MW-8	8/25/2014	NT	NT	NT	NT	NT	NT
MW-9	7/10/2013	ND	ND	ND	ND	ND	ND
MW-9	7/29/2013	ND	ND	ND	ND	ND	ND
MW-9	8/27/2013	ND	ND	ND	ND	ND	ND
MW-9	9/16/2013	ND	ND	ND	ND	ND	ND
MW-9	10/28/2013	ND	ND	ND	ND	ND	ND
MW-9	11/25/2013	ND	ND	ND	ND	ND	ND
MW-9	12/18/2013	ND	ND	ND	ND	ND	ND
MW-9	1/21/2014	ND	ND	ND	ND	ND	ND
MW-9	6/24/2014	ND	ND	ND	ND	ND	ND
MW-9	2/24/2014	ND	ND	ND	ND	ND	ND
MW-9	3/25/2014	ND	ND	ND	ND	ND	ND
MW-9	4/29/2014	NT	NT	NT	NT	NT	NT
MW-9	5/27/2014	NT	NT	NT	NT	NT	NT
MW-9	6/24/2014	ND	ND	ND	ND	ND	ND
MW-9	7/28/2014	NT	NT	NT	NT	NT	NT
MW-9	8/25/2014	NT	NT	NT	NT	NT	NT
MW-10	7/10/2013	ND	ND	ND	ND	ND	ND
MW-10	7/29/2013	ND	ND	ND	ND	ND	ND
MW-10	8/27/2013	1.4	ND	ND	ND	ND	ND
MW-10	9/16/2013	ND	ND	ND	ND	ND	ND
MW-10	10/28/2013	ND	ND	ND	ND	ND	ND
MW-10	11/25/2013	ND	ND	ND	ND	ND	ND
MW-10	12/18/2013	NT	NT	NT	NT	NT	NT
MW-10	1/21/2014	NT	NT	NT	NT	NT	NT
MW-10	2/24/2014	ND	ND	ND	ND	ND	ND
MW-10	3/25/2014	ND	ND	ND	ND	ND	ND
MW-10	4/29/2014	ND	ND	ND	ND	ND	ND
MW-10	5/27/2014	ND	ND	ND	ND	ND	0.87
MW-10	6/23/2014	ND	ND	ND	ND	ND	0.93
MW-10	7/28/2014	ND	ND	ND	ND	ND	ND
MW-10	8/25/2014	ND	ND	ND	ND	ND	ND
MW-11	7/10/2013	ND	ND	ND	ND	ND	ND
MW-11	7/30/2013	ND	ND	ND	ND	ND	ND
MW-11	8/28/2013	ND	ND	ND	ND	ND	ND
MW-11	9/17/2013	ND	ND	ND	ND	ND	ND
MW-11	10/29/2013	ND	ND	ND	ND	ND	ND
MW-11	11/26/2013	ND	ND	ND	ND	ND	ND
MW-11	12/18/2013	ND	ND	ND	ND	ND	ND
MW-11	1/21/2014	NT	NT	NT	NT	NT	NT
MW-11	2/25/2014	ND	ND	ND	ND	ND	ND

NS = Not sampled (Lab Analytical)
ND = Non Detect
NT = Not Tested (Field Analytical)
J= Analyte reported below laboratory report limit

[1] - Drinking Water Maximum Contaminant Level (MCL)
µg/L - Micrograms per Liter
mg/L - Milligrams per Liter

Above COGCC Table 910-1 Concentration Level

Table 1 - Groundwater Analytical Summary
BTEX, DRO, and GRO
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	GRO (mg/L)	DRO (mg/L)
	COGCC Table 910-1 Concentration Levels	5 µg/L	1000 µg/L [1]	700 µg/L	10,000 µg/L [1]	No Concentration Level Established	No Concentration Level Established
MW-11	3/26/2014	ND	ND	ND	ND	ND	ND
MW-11	4/29/2014	ND	ND	ND	ND	ND	ND
MW-11	5/27/2014	ND	ND	ND	ND	ND	ND
MW-11	6/23/2014	ND	ND	ND	ND	ND	ND
MW-11	7/28/2014	ND	ND	ND	ND	ND	ND
MW-11	8/25/2014	ND	ND	ND	ND	ND	ND
MW-12	7/10/2013	ND	ND	ND	ND	0.25	ND
MW-12	7/30/2013	ND	ND	ND	ND	ND	0.9
MW-12	8/28/2013	ND	ND	ND	ND	ND	ND
MW-12	9/17/2013	ND	ND	ND	ND	ND	ND
MW-12	10/29/2013	ND	ND	ND	ND	ND	ND
MW-12	11/26/2013	ND	ND	ND	ND	ND	ND
MW-12	12/18/2013	ND	ND	ND	ND	ND	ND
MW-12	1/21/2014	ND	ND	ND	ND	ND	ND
MW-12	2/25/2014	ND	ND	ND	ND	ND	ND
MW-12	3/26/2014	ND	ND	ND	ND	ND	ND
MW-12	4/29/2014	ND	ND	ND	ND	ND	ND
MW-12	5/27/2014	ND	ND	ND	ND	ND	ND
MW-12	6/24/2014	ND	ND	ND	ND	ND	5.5
MW-12	7/28/2014	ND	ND	ND	ND	ND	ND
MW-12	8/25/2014	ND	ND	ND	ND	ND	ND
MW-13	7/10/2013	ND	ND	ND	ND	ND	ND
MW-13	7/30/2013	ND	ND	ND	ND	ND	ND
MW-13	8/28/2013	ND	ND	ND	ND	ND	ND
MW-13	9/17/2013	ND	ND	ND	ND	ND	ND
MW-13	10/29/2013	ND	ND	ND	ND	ND	ND
MW-13	11/26/2013	ND	ND	ND	ND	ND	ND
MW-13	12/17/2013	ND	ND	ND	ND	ND	1.5
MW-13	1/20/2014	ND	ND	ND	ND	ND	ND
MW-13	2/25/2014	ND	ND	ND	ND	ND	ND
MW-13	3/26/2014	ND	ND	ND	ND	ND	ND
MW-13	4/29/2014	ND	ND	ND	ND	ND	ND
MW-13	5/27/2014	ND	ND	ND	ND	ND	ND
MW-13	6/24/2014	ND	ND	ND	ND	ND	ND
MW-13	7/28/2014	ND	ND	ND	ND	ND	ND
MW-13	8/25/2014	ND	ND	ND	ND	ND	ND
MW-14	7/10/2013	ND	ND	ND	ND	ND	ND
MW-14	7/30/2013	ND	ND	ND	ND	ND	ND
MW-14	8/28/2013	ND	ND	ND	ND	ND	ND
MW-14	9/17/2013	ND	ND	ND	ND	ND	ND
MW-14	10/29/2013	ND	ND	ND	ND	ND	ND
MW-14	11/26/2013	ND	ND	ND	ND	ND	ND
MW-14	12/17/2013	ND	ND	ND	ND	ND	ND
MW-14	1/21/2014	ND	ND	ND	ND	ND	ND
MW-14	2/25/2014	ND	ND	ND	ND	ND	ND
MW-14	3/26/2014	ND	ND	ND	ND	ND	ND
MW-14	4/29/2014	NT	NT	NT	NT	NT	NT
MW-14	5/27/2014	NT	NT	NT	NT	NT	NT
MW-14	6/24/2014	NT	NT	NT	NT	NT	NT
MW-14	7/28/2014	NT	NT	NT	NT	NT	NT
MW-14	8/25/2014	NT	NT	NT	NT	NT	NT
MW-15	7/10/2013	ND	ND	ND	ND	ND	ND
MW-15	7/30/2013	ND	ND	ND	ND	ND	ND
MW-15	8/28/2013	ND	ND	ND	ND	ND	ND

NS = Not sampled (Lab Analytical)
ND = Non Detect
NT = Not Tested (Field Analytical)
J= Analyte reported below laboratory report limit

[1] - Drinking Water Maximum Contaminant Level (MCL)
µg/L - Micrograms per Liter
mg/L - Milligrams per Liter

Above COGCC Table 910-1 Concentration Level

Table 1 - Groundwater Analytical Summary
BTEX, DRO, and GRO
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	GRO (mg/L)	DRO (mg/L)
	COGCC Table 910-1 Concentration Levels	5 µg/L	1000 µg/L [1]	700 µg/L	10,000 µg/L [1]	No Concentration Level Established	No Concentration Level Established
MW-15	9/17/2013	ND	ND	ND	ND	ND	ND
MW-15	10/29/2013	ND	ND	ND	ND	ND	ND
MW-15	11/25/2013	NS	NS	NS	NS	NS	NS
MW-15	12/18/2013	ND	ND	ND	ND	ND	ND
MW-15	1/20/2014	ND	ND	ND	ND	ND	ND
MW-15	2/25/2014	ND	ND	ND	ND	ND	ND
MW-15	3/26/2014	ND	ND	ND	ND	ND	ND
MW-15	4/29/2014	NT	NT	NT	NT	NT	NT
MW-15	5/27/2014	NT	NT	NT	NT	NT	NT
MW-15	6/24/2014	NT	NT	NT	NT	NT	NT
MW-15	7/28/2014	NT	NT	NT	NT	NT	NT
MW-15	8/25/2014	NT	NT	NT	NT	NT	NT
Black Sulfur Crk. UG	6/4/2012	ND	ND	ND	ND	NS	NS
Black Sulfur Crk. UPCREEK	2/28/2013	ND	ND	ND	ND	ND	ND
Black Sulfur Crk. UPCREEK	3/29/2013	ND	ND	ND	ND	ND	ND
UPCREEK	4/26/2013	ND	ND	ND	ND	ND	ND
UPCREEK	5/28/2013	ND	ND	ND	ND	ND	ND
UPCREEK	6/20/2013	ND	ND	ND	ND	ND	ND
UPCREEK	7/29/2013	ND	ND	ND	ND	ND	ND
UPCREEK	8/27/2013	ND	ND	ND	ND	ND	ND
UPCREEK	9/16/2013	ND	ND	ND	ND	ND	ND
UPCREEK	10/28/2013	ND	ND	ND	ND	ND	ND
UPCREEK	11/25/2013	ND	ND	ND	ND	ND	ND
UPCREEK	12/17/2013	ND	ND	ND	ND	ND	ND
UPCREEK	1/20/2014	ND	ND	ND	ND	0.330	ND
UPCREEK	2/24/2014	ND	ND	ND	ND	ND	ND
UPCREEK	3/25/2014	ND	ND	ND	ND	ND	ND
UPCREEK	4/29/2014	NT	NT	NT	NT	NT	NT
UPCREEK	5/27/2014	NT	NT	NT	NT	NT	NT
UPCREEK	6/23/2014	NT	NT	NT	NT	NT	NT
UPCREEK	7/28/2014	NT	NT	NT	NT	NT	NT
UPCREEK	8/25/2014	NT	NT	NT	NT	NT	NT
Black Sulfur Crk. DG	6/4/2012	ND	2.3	ND	ND	NS	NS
Black Sulfur Crk. DWCREEK	2/28/2013	ND	ND	ND	ND	ND	ND
Black Sulfur Crk. DWCREEK	3/29/2013	ND	ND	ND	ND	ND	ND
DWCREEK	4/26/2013	ND	ND	ND	ND	ND	ND
DWCREEK	5/28/2013	ND	ND	ND	ND	ND	ND
DWCREEK	6/20/2013	ND	ND	ND	ND	ND	ND
DWCREEK	7/29/2013	ND	ND	ND	ND	ND	ND
DWCREEK	8/27/2013	ND	ND	ND	ND	ND	ND
DWCREEK	9/16/2013	ND	ND	ND	ND	ND	ND
DWCREEK	10/28/2013	ND	ND	ND	ND	ND	ND
DWCREEK	11/25/2013	ND	ND	ND	ND	ND	ND
DWCREEK	12/17/2013	ND	ND	ND	ND	ND	ND
DWCREEK	1/20/2014	ND	ND	ND	ND	ND	ND
DWCREEK	2/24/2014	ND	ND	ND	ND	ND	ND
DWCREEK	3/25/2014	ND	ND	ND	ND	ND	ND
DWCREEK	4/29/2014	NT	NT	NT	NT	NT	NT
DWCREEK	5/27/2014	NT	NT	NT	NT	NT	NT
DWCREEK	6/23/2014	NT	NT	NT	NT	NT	NT
DWCREEK	7/28/2014	NT	NT	NT	NT	NT	NT
DWCREEK	8/25/2014	NT	NT	NT	NT	NT	NT

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[1] - Drinking Water Maximum Contaminant Level (MCL)
µg/L - Micrograms per Liter
mg/L - Milligrams per Liter

Above COGCC Table 910-1 Concentration Level

Table 1 - Groundwater Analytical Summary
BTEX, DRO, and GRO
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	GRO (mg/L)	DRO (mg/L)
	COGCC Table 910-1 Concentration Levels	5 µg/L	1000 µg/L [1]	700 µg/L	10,000 µg/L [1]	No Concentration Level Established	No Concentration Level Established
Black Sulfur Crk. SP1	6/4/2012	ND	ND	ND	ND	NS	NS
Black Sulfur Crk. MIDDLECREEK	2/28/2013	ND	ND	ND	ND	ND	ND
Black Sulfur Crk. MIDDLECREEK	3/29/2013	ND	ND	ND	ND	ND	ND
MIDCREEK	4/26/2013	ND	ND	ND	ND	ND	ND
MIDCREEK	5/28/2013	ND	ND	ND	ND	ND	ND
MIDCREEK	6/20/2013	ND	ND	ND	ND	ND	ND
MIDCREEK	7/29/2013	ND	ND	ND	ND	ND	ND
MIDCREEK	8/27/2013	ND	ND	ND	ND	ND	ND
MIDCREEK	9/16/2013	ND	ND	ND	ND	ND	ND
MIDCREEK	10/28/2013	ND	ND	ND	ND	ND	ND
MIDCREEK	11/25/2013	ND	ND	ND	ND	ND	ND
MIDCREEK	12/17/2013	ND	ND	ND	ND	ND	ND
MIDCREEK	1/20/2014	ND	ND	ND	ND	ND	ND
MIDCREEK	2/24/2014	ND	ND	ND	ND	ND	ND
MIDCREEK	3/25/2014	ND	ND	ND	ND	ND	ND
MIDCREEK	4/29/2014	NT	NT	NT	NT	NT	NT
MIDCREEK	5/27/2014	NT	NT	NT	NT	NT	NT
MIDCREEK	6/23/2014	NT	NT	NT	NT	NT	NT
MIDCREEK	7/28/2014	NT	NT	NT	NT	NT	NT
MIDCREEK	8/25/2014	NT	NT	NT	NT	NT	NT

NS = Not sampled (Lab Analytical)
ND = Non Detect
NT = Not Tested (Field Analytical)
J= Analyte reported below laboratory report limit

[1] - Drinking Water Maximum Contaminant Level (MCL)
µg/L - Micrograms per Liter
mg/L - Milligrams per Liter

Above COGCC Table 910-1 Concentration Level

Table 2 - Groundwater Analytical Summary
Inorganics
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	TDS (mg/L)	Chlorides (mg/L)	Sulfates (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)
	COGCC Table 910-1 Concentration Levels	<1.25 X Background	<1.25 X Background	<1.25 X Background	No COGCC Concentration Level Established			
MW-1	6/15/2012	1700	30	520	NS	NS	NS	NS
MW-1	7/13/2012	1300	21	550	NS	NS	NS	NS
MW-1	8/14/2012	1200	19	500	NS	NS	NS	NS
MW-1	9/13/2012	1400	23	520	NS	NS	NS	NS
MW-1	1/30/2013	1100	NS	480	1.6	0.0049 J	0.032 J	0.13
MW-1	2/28/2013	NS	NS	NS	NS	NS	NS	NS
MW-1	3/29/2013	1100	NS	510	1.6	ND	ND	0.063
MW-1	4/26/2013	1200	NS	480	1.6	ND	ND	0.067
MW-1	5/28/2013	1200	NS	520	1.9	0.0260	ND	0.130
MW-1	6/20/2013	1200	NS	490	1.8	ND	ND	0.120
MW-1	7/29/2013	1100	NS	500	1.9	ND	0.310	0.089
MW-1	8/27/2013	1200	NS	490	2.0	ND	0.110	0.082
MW-1	9/17/2013	1100	NS	450	1.8	ND	0.093	0.073
MW-1	10/29/2013	1200	NS	450	1.6	ND	ND	0.075
MW-1	11/25/2013	970	NS	450	1.6	ND	0.120	0.100
MW-1	12/17/2013	1100	NS	490	1.5	ND	ND	0.092
MW-1	1/20/2014	NT	NT	NT	NT	NT	NT	NT
MW-1	2/25/2014	1000	NS	440	1.6	ND	ND	0.16
MW-1	3/26/2014	1200	NS	560	1.8	ND	ND	0.086
MW-1	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-1	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-1	6/24/2014	NT	NT	NT	NT	NT	NT	NT
MW-1	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-1	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-2	6/15/2012	2800	100	570	NS	NS	NS	NS
MW-2	7/13/2012	2700	97	460	NS	NS	NS	NS
MW-2	8/14/2012	2900	85	320	NS	NS	NS	NS
MW-2	9/13/2012	2700	91	280	NS	NS	NS	NS
MW-2	1/30/2013	2700	NS	290	ND	0.0062 J	0.068 J	0.25
MW-2	2/28/2013	2800	NS	320	0.048	ND	ND	0.26
MW-2	3/29/2013	3100	NS	240	ND	ND	0.110	0.27
MW-2	4/26/2013	2800	NS	320	0.075	ND	0.120	0.26
MW-2	5/28/2013	3000	NS	260	0.150	ND	0.086	0.33
MW-2	6/20/2013	2800	NS	230	0.038	ND	0.140	0.26
MW-2	7/30/2013	2400	NS	220	0.039	ND	ND	0.20
MW-2	8/28/2013	1900	NS	300	0.048	ND	0.140	0.19
MW-2	9/17/2013	1700	NS	350	0.038	ND	0.280	0.18
MW-2	10/29/2013	1800	NS	320	0.10	ND	0.088	0.21
MW-2	11/26/2013	2300	NS	200	0.07	ND	ND	0.36
MW-2	12/18/2013	2200	NS	240	ND	0.020	0.20	0.19
MW-2	1/21/2014	NT	NT	NT	NT	NT	NT	NT
MW-2	2/25/2014	1400	NS	420	0.28	ND	10	0.098
MW-2	3/26/2014	1800	NS	370	0.17	ND	0.220	0.210
MW-2	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-2	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-2	6/24/2014	1600	NT	280	0.072	ND	0.52	0.17
MW-2	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-2	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-3	6/15/2012	1500	47	89	NS	NS	NS	NS
MW-3	7/13/2012	1700	41	190	NS	NS	NS	NS
MW-3	8/14/2012	1900	41	220	NS	NS	NS	NS

NS = Not sampled (Lab Analytical) mg/L - Milligrams per Liter

ND = Non Detect

NT = Not Tested (Field Analytical)

J= Analyte reported below laboratory reporting limit

Above COGCC Table 910-1 Concentration Level

Table 2 - Groundwater Analytical Summary
Inorganics
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	TDS (mg/L)	Chlorides (mg/L)	Sulfates (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)
	COGCC Table 910-1 Concentration Levels	<1.25 X Background	<1.25 X Background	<1.25 X Background	No COGCC Concentration Level Established			
MW-3	9/13/2012	1500	44	150	NS	NS	NS	NS
MW-3	1/30/2013	1700	NS	120	ND	0.0072 J	0.036 J	0.21
MW-3	2/28/2013	NS	NS	NS	NS	NS	NS	NS
MW-3	3/29/2013	1600	NS	120	0.072	ND	ND	0.20
MW-3	4/26/2013	1600	NS	95	0.086	ND	ND	0.24
MW-3	5/28/2013	2100	NS	270	0.120	ND	ND	0.16
MW-3	6/20/2013	1800	NS	160	ND	ND	0.110	0.13
MW-3	7/30/2013	1600	NS	23	ND	ND	0.120	0.11
MW-3	8/28/2013	1500	NS	26	ND	ND	0.091	0.12
MW-3	9/17/2013	1400	NS	32	ND	ND	0.130	0.10
MW-3	10/29/2013	1600	NS	50	0.083	ND	0.087	0.098
MW-3	11/26/2013	1900	NS	130	0.053	ND	ND	0.088
MW-3	12/18/2013	1800	NS	170	0.042	ND	0.13	0.080
MW-3	1/21/2014	1500	NS	38	0.26	ND	0.09	0.083
MW-3	2/25/2014	1400	NS	28	0.240	ND	0.120	0.09
MW-3	3/26/2014	1400	NS	61	0.160	ND	0.230	0.097
MW-3	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-3	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-3	6/24/2014	1400	NT	68	0.11	ND	0.23	0.086
MW-3	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-3	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-4	9/13/2012	1600	25	590	NS	NS	NS	NS
MW-4	1/30/2013	1400	NS	610	3.2	0.0095 J	0.036 J	0.0010 J
MW-4	2/28/2013	NS	NS	NS	NS	NS	NS	NS
MW-4	3/29/2013	1200	NS	520	2.1	ND	ND	ND
MW-4	4/26/2013	1200	NS	500	1.6	ND	0.080	0.0066
MW-4	5/28/2013	1300	NS	510	1.9	ND	1.400	0.1200
MW-4	6/20/2013	1200	NS	490	1.9	ND	0.083	0.0140
MW-4	7/29/2013	1200	NS	490	1.2	ND	0.180	0.0280
MW-4	8/27/2013	1300	NS	490	0.9	ND	0.098	0.3900
MW-4	9/16/2013	1100	NS	440	0.6	ND	ND	0.0590
MW-4	10/28/2013	1200	NS	480	1.1	ND	ND	0.037
MW-4	11/25/2013	1200	NS	500	1.4	ND	ND	0.032
MW-4	12/17/2013	1200	NS	510	0.96	ND	ND	ND
MW-4	1/20/2014	1100	NS	450	1.10	ND	ND	0.0310
MW-4	2/24/2014	940	NS	480	0.87	ND	ND	0.033
MW-4	3/25/2014	1100	NS	470	1.30	ND	ND	0.013
MW-4	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-4	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-4	6/23/2014	1200	NT	470	0.76	ND	0.110	0.038
MW-4	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-4	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-5	6/15/2012	1400	51	570	NS	NS	NS	NS
MW-5	7/13/2012	1500	52	1600	NS	NS	NS	NS
MW-5	8/14/2012	1400	26	610	NS	NS	NS	NS
MW-5	9/13/2012	1600	35	690	NS	NS	NS	NS
MW-5	1/30/2013	1700	NS	790	ND	0.0062 J	0.024 J	0.03 J
MW-5	2/28/2013	1600	NS	740	ND	ND	ND	0.30
MW-5	3/29/2013	1300	NS	670	ND	ND	ND	0.33
MW-5	4/26/2013	1500	NS	690	0.063	ND	ND	0.28
MW-5	5/28/2013	1500	NS	680	0.160	ND	ND	0.30

NS = Not sampled (Lab Analytical) mg/L - Milligrams per Liter

ND = Non Detect

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J= Analyte reported below laboratory reporting limit

Above COGCC Table 910-1 Concentration Level

Table 2 - Groundwater Analytical Summary
Inorganics
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	TDS (mg/L)	Chlorides (mg/L)	Sulfates (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)
	COGCC Table 910-1 Concentration Levels	<1.25 X Background	<1.25 X Background	<1.25 X Background	No COGCC Concentration Level Established			
MW-5	6/20/2013	1500	NS	710	0.052	ND	0.094	0.30
MW-5	7/29/2013	1600	NS	750	0.081	0.03	ND	0.34
MW-5	8/27/2013	1700	NS	810	0.110	ND	0.110	0.04
MW-5	9/16/2013	1600	NS	730	0.130	ND	0.082	0.34
MW-5	10/28/2013	1800	NS	860	0.11	ND	ND	0.30
MW-5	11/25/2013	1600	NS	710	0.05	ND	ND	0.26
MW-5	12/17/2013	1600	NS	750	0.19	0.028	0.15	0.25
MW-5	1/20/2014	1500	NS	690	0.29	0.033	ND	0.30
MW-5	2/24/2014	1600	NS	800	0.55	0.039	ND	0.30
MW-5	3/25/2014	2000	NS	930	0.34	0.037	ND	0.36
MW-5	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-5	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-5	6/23/2014	NT	NT	NT	NT	NT	NT	NT
MW-5	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-5	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-6	6/15/2012	3100	73	1500	NS	NS	NS	NS
MW-6	7/13/2012	3100	34	720	NS	NS	NS	NS
MW-6	8/14/2012	3200	52	1400	NS	NS	NS	NS
MW-6	9/13/2012	2900	54	1400	NS	NS	NS	NS
MW-6	1/30/2013	2700	NS	1300	3.0	0.022	0.027 J	0.0012 J
MW-6	2/28/2013	2400	NS	1100	3.2	0.180	ND	0.056
MW-6	3/29/2013	2300	NS	1200	1.5	0.150	ND	0.037
MW-6	4/26/2013	2600	NS	1200	2.5	ND	ND	0.056
MW-6	5/28/2013	2500	NS	1100	2.3	0.021	0.150	0.032
MW-6	6/20/2013	2500	NS	1100	2.1	0.020	0.110	0.022
MW-6	7/29/2013	2400	NS	1100	2.0	0.021	ND	0.017
MW-6	8/27/2013	2400	NS	1100	2.1	ND	ND	0.013
MW-6	9/16/2013	2400	NS	940	2.0	ND	ND	0.015
MW-6	10/28/2013	2300	NS	1000	1.8	ND	ND	0.0084
MW-6	11/25/2013	2300	NS	1000	1.9	ND	ND	ND
MW-6	12/17/2013	2500	NS	1100	1.8	ND	ND	0.0055
MW-6	1/20/2014	2300	NS	1100	1.6	ND	ND	0.019
MW-6	2/24/2014	2100	NS	1000	1.5	ND	ND	0.029
MW-6	3/25/2014	2200	NS	990	1.4	ND	ND	0.014
MW-6	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-6	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-6	6/23/2014	NT	NT	NT	NT	NT	NT	NT
MW-6	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-6	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-7	6/15/2012	1500	51	300	NS	NS	NS	NS
MW-7	7/13/2012	2000	59	79	NS	NS	NS	NS
MW-7	8/14/2012	2000	54	78	NS	NS	NS	NS
MW-7	9/13/2012	2300	59	49	NS	NS	NS	NS
MW-7	1/30/2013	1800	NS	340	ND	ND	0.57	0.19
MW-7	2/28/2013	NS	NS	NS	NS	NS	NS	NS
MW-7	3/29/2013	1000	NS	280	ND	ND	0.21	0.29
MW-7	4/26/2013	1600	NS	520	0.087	ND	0.09	0.31
MW-7	5/28/2013	1800	NS	220	0.097	ND	0.10	0.18
MW-7	6/20/2013	1900	NS	210	ND	ND	0.18	0.12
MW-7	7/30/2013	1900	NS	290	0.047	ND	ND	0.14
MW-7	8/28/2013	1700	NS	300	0.180	ND	ND	0.18

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Above COGCC Table 910-1 Concentration Level

Table 2 - Groundwater Analytical Summary
Inorganics
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	TDS (mg/L)	Chlorides (mg/L)	Sulfates (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)
	COGCC Table 910-1 Concentration Levels	<1.25 X Background	<1.25 X Background	<1.25 X Background	No COGCC Concentration Level Established			
MW-7	9/17/2013	1500	NS	340	0.140	ND	0.14	0.18
MW-7	10/29/2013	1600	NS	340	ND	ND	ND	0.15
MW-7	11/26/2013	1900	NS	240	ND	ND	ND	0.13
MW7	12/18/2013	2000	NS	230	ND	ND	0.19	0.11
MW-7	1/21/2014	2000	NS	290	ND	ND	0.18	0.10
MW-7	2/25/2014	1400	NS	330	0.36	ND	0.095	0.19
MW-7	3/26/2014	1600	NS	270	0.24	ND	0.260	0.17
MW-7	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-7	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-7	6/24/2014	1900	NT	260	0.18	ND	0.21	0.14
MW-7	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-7	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-8	7/10/2013	1800	NS	NS	3.80	0.034	ND	0.0054
MW-8	7/29/2013	1800	NS	940	4.60	ND	ND	ND
MW-8	8/27/2013	1800	NS	950	3.20	ND	0.11	ND
MW-8	9/16/2013	1500	NS	720	3.40	ND	0.09	ND
MW-8	10/28/2013	1400	NS	690	3.2	ND	ND	0.0059
MW-8	11/26/2013	1400	NS	700	3.4	ND	ND	ND
MW-8	12/18/2013	1400	NS	670	3.1	ND	ND	ND
MW-8	1/21/2014	NT	NT	NT	NT	NT	NT	NT
MW-8	2/24/2014	810	NS	840	3.9	ND	ND	ND
MW-8	3/25/2014	1800	ND	950	4.5	ND	ND	ND
MW-8	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-8	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-8	6/24/2014	2500	NT	1200	7.0	ND	ND	ND
MW-8	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-8	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-9	7/10/2013	1200	NS	NS	1.70	ND	ND	ND
MW-9	7/29/2013	1200	NS	540	1.60	ND	0.22	0.0065
MW-9	8/27/2013	1200	NS	530	1.70	ND	0.12	ND
MW-9	9/16/2013	1100	NS	500	1.40	ND	0.09	0.0110
MW-9	10/28/2013	1100	NS	560	1.6	ND	ND	0.018
MW-9	11/25/2013	1200	NS	570	1.8	ND	0.09	0.051
MW-9	12/18/2013	1100	NS	550	1.5	ND	ND	0.030
MW-9	1/21/2014	1200	NS	510	1.4	ND	0.12	0.055
MW-9	2/24/2014	1100	NS	500	1.4	ND	ND	0.047
MW-9	3/25/2014	1000	NS	510	1.4	ND	0.12	0.063
MW-9	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-9	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-9	6/24/2014	NT	NT	NT	NT	NT	NT	NT
MW-9	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-9	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-10	7/10/2013	1800	NS	NS	2.70	0.054	ND	0.0430
MW-10	7/29/2013	1800	NS	610	1.90	ND	ND	0.0400
MW-10	8/27/2013	1800	NS	530	0.71	ND	0.12	0.2900
MW-10	9/16/2013	1300	NS	480	0.58	ND	0.084	0.1400
MW-10	10/28/2013	1800	NS	600	1.9	0.031	0.17	0.069
MW-10	11/25/2013	1500	NS	560	3.3	ND	ND	0.032
MW-10	12/18/2013	NT	NT	NT	NT	NT	NT	NT
MW-10	1/21/2014	NT	NT	NT	NT	NT	NT	NT

NS = Not sampled (Lab Analytical) mg/L - Milligrams per Liter

ND = Non Detect

NT = Not Tested (Field Analytical)

J= Analyte reported below laboratory reporting limit

Above COGCC Table 910-1 Concentration Level

Table 2 - Groundwater Analytical Summary
Inorganics
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	TDS (mg/L)	Chlorides (mg/L)	Sulfates (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)
	COGCC Table 910-1 Concentration Levels	<1.25 X Background	<1.25 X Background	<1.25 X Background	No COGCC Concentration Level Established			
MW-10	2/24/2014	1800	NS	710	3.0	ND	0.78	0.085
MW-10	3/25/2014	2100	NS	790	3.8	ND	0.14	0.058
MW-10	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-10	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-10	6/23/2014	NT	NT	NT	NT	NT	NT	NT
MW-10	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-10	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-11	7/10/2013	1200	NS	NS	0.13	0.160	ND	0.0410
MW-11	7/30/2013	1100	NS	450	0.14	ND	0.47	0.0750
MW-11	8/28/2013	1100	NS	460	0.15	ND	ND	0.0700
MW-11	9/17/2013	1100	NS	410	0.13	ND	ND	0.0640
MW-11	10/29/2013	1100	NS	420	0.24	ND	ND	0.0200
MW-11	11/26/2013	1100	NS	460	0.30	ND	ND	0.0170
MW-11	12/18/2013	1100	NS	470	0.25	ND	ND	ND
MW-11	1/21/2014	NT	NT	NT	NT	NT	NT	NT
MW-11	2/25/2014	1100	NS	450	0.41	ND	ND	ND
MW-11	3/26/2014	1200	NS	490	0.38	ND	ND	0.0070
MW-11	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-11	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-11	6/23/2014	NT	NT	NT	NT	NT	NT	NT
MW-11	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-11	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-12	7/10/2013	1000	NS	NS	0.18	0.021	0.13	0.3300
MW-12	7/30/2013	970	NS	410	0.13	ND	ND	0.2800
MW-12	8/28/2013	1000	NS	430	0.16	ND	ND	0.2800
MW-12	9/17/2013	970	NS	370	0.17	ND	0.12	0.2200
MW-12	10/29/2013	1000	NS	400	0.23	ND	ND	0.1600
MW-12	11/26/2013	1000	NS	430	0.25	ND	ND	0.2000
MW-12	12/18/2013	1200	NS	450	0.22	ND	ND	0.073
MW-12	1/21/2014	1100	NS	440	0.29	ND	0.095	0.100
MW-12	2/25/2014	1000	NS	440	0.27	ND	0.11	0.088
MW-12	3/26/2014	1000	NS	510	0.29	ND	ND	0.120
MW-12	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-12	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-12	6/23/2014	NT	NT	NT	NT	NT	NT	NT
MW-12	7/28//14	NT	NT	NT	NT	NT	NT	NT
MW-12	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-13	7/10/2013	880	NS	NS	0.42	ND	ND	0.0300
MW-13	7/30/2013	970	NS	380	0.41	ND	0.095	0.0380
MW-13	8/28/2013	920	NS	390	0.41	ND	ND	0.0510
MW-13	9/17/2013	920	NS	350	0.37	ND	0.097	0.0530
MW-13	10/29/2013	960	NS	370	0.40	ND	ND	0.0510
MW-13	11/26/2013	890	NS	390	0.38	ND	ND	0.0460
MW-13	12/17/2013	920	NS	400	0.30	ND	ND	0.036
MW-13	1/20/2014	900	NS	370	0.32	ND	ND	0.046
MW-13	2/25/2014	800	NS	360	0.32	ND	ND	0.028
MW-13	3/26/2014	900	NS	400	0.27	ND	ND	0.037
MW-13	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-13	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-13	6/24/2014	NT	NT	NT	NT	NT	NT	NT

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ND = Non Detect

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Above COGCC Table 910-1 Concentration Level

Table 2 - Groundwater Analytical Summary
Inorganics
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	TDS (mg/L)	Chlorides (mg/L)	Sulfates (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)
	COGCC Table 910-1 Concentration Levels	<1.25 X Background	<1.25 X Background	<1.25 X Background	No COGCC Concentration Level Established			
MW-13	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-13	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-14	7/10/2013	950	NS	NS	1.40	0.023	0.63	0.0680
MW-14	7/30/2013	990	NS	380	0.93	ND	ND	0.0500
MW-14	8/28/2013	990	NS	410	0.80	ND	ND	0.0690
MW-14	9/17/2013	840	NS	360	0.74	ND	ND	0.0590
MW-14	10/29/2013	1000	NS	370	1.00	0.022	ND	0.052
MW-14	11/26/2013	480	NS	390	0.95	ND	ND	0.038
MW-14	12/17/2013	1000	NS	400	0.74	ND	0.23	0.023
MW-14	1/21/2014	970	NS	380	0.62	ND	ND	0.032
MW-14	2/25/2014	870	NS	360	0.59	ND	ND	0.011
MW-14	3/26/2014	920	NS	400	0.44	ND	ND	0.026
MW-14	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-14	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-14	6/24/2014	NT	NT	NT	NT	NT	NT	NT
MW-14	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-14	8/25/2014	NT	NT	NT	NT	NT	NT	NT
MW-15	7/10/2013	880	NS	NS	0.47	0.026	ND	ND
MW-15	7/30/2013	940	NS	380	0.42	ND	ND	ND
MW-15	8/28/2013	930	NS	380	0.49	ND	ND	0.0066
MW-15	9/17/2013	910	NS	350	0.45	ND	0	0.0160
MW-15	10/29/2013	920	NS	370	0.44	ND	ND	ND
MW-15	11/26/2013	NS	NS	NS	NS	NS	NS	NS
MW-15	12/18/2013	940	NS	370	0.39	ND	ND	ND
MW-15	1/20/2014	880	NS	360	0.39	ND	ND	0.0058
MW-15	2/25/2014	880	NS	360	0.38	ND	ND	ND
MW-15	3/26/2014	810	NS	410	0.37	ND	ND	ND
MW-15	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MW-15	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MW-15	6/24/2014	NT	NT	NT	NT	NT	NT	NT
MW-15	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MW-15	8/25/2014	NT	NT	NT	NT	NT	NT	NT
Black Sulfur Crk. UG	6/4/2012	770	10	300	NS	NS	NS	NS
Black Sulfur Crk. UPCREEK	2/28/2013	850	NS	370	0.27	ND	ND	0.022
Black Sulfur Crk. UPCREEK	3/29/2013	900	NS	380	0.044	ND	0.11	0.061
UPCREEK	4/26/2013	980	NS	470	0.064	0.027	0.14	0.14
UPCREEK	5/28/2013	850	NS	340	ND	ND	ND	0.03
UPCREEK	6/20/2013	840	NS	370	ND	ND	ND	0.02
UPCREEK	7/29/2013	800	NS	350	ND	ND	ND	0.01
UPCREEK	8/27/2013	770	NS	350	ND	ND	0.13	0.01
UPCREEK	9/16/2013	820	NS	350	ND	ND	ND	0.025
UPCREEK	10/28/2013	860	NS	380	0.037	ND	ND	0.069
UPCREEK	11/25/2013	780	NS	370	0.026	ND	0.12	0.045
UPCREEK	12/17/2013	860	NS	400	0.25	ND	ND	0.031
UPCREEK	1/20/2014	840	NS	360	0.31	ND	ND	0.027
UPCREEK	2/24/2014	800	NS	360	0.12	ND	ND	0.035
UPCREEK	3/25/2014	890	NS	410	0.14	ND	ND	0.031
UPCREEK	4/29/2014	NT	NT	NT	NT	NT	NT	NT

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Inorganics
Williams Black Sulphur Compressor Station

Sample Location	Sampling Date	TDS (mg/L)	Chlorides (mg/L)	Sulfates (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)
	COGCC Table 910-1 Concentration Levels	<1.25 X Background	<1.25 X Background	<1.25 X Background	No COGCC Concentration Level Established			
UPCREEK	7/28/2014	NT	NT	NT	NT	NT	NT	NT
UPCREEK	8/25/2014	NT	NT	NT	NT	NT	NT	NT
Black Sulfur Crk. DG	6/4/2012	770	10	310	NS	NS	NS	NS
Black Sulfur Crk. DWCREEK	2/28/2013	870	NS	380	0.26	ND	ND	0.038
Black Sulfur Crk. DWCREEK	3/29/2013	890	NS	380	0.049	ND	0.13	0.093
DWCREEK	4/26/2013	860	NS	440	0.110	0	0.14	0.12
DWCREEK	5/28/2013	830	NS	350	ND	ND	ND	0.05
DWCREEK	6/20/2013	850	NS	360	ND	ND	0.13	0.04
DWCREEK	7/29/2013	770	NS	350	ND	ND	ND	0.02
DWCREEK	8/27/2013	780	NS	350	ND	ND	0.11	0.02
DWCREEK	9/16/2013	820	NS	340	ND	ND	ND	0.04
DWCREEK	10/28/2013	850	NS	370	ND	ND	ND	0.078
DWCREEK	11/25/2013	820	NS	360	0.042	ND	0.13	0.068
DWCREEK	12/17/2013	860	NS	380	0.093	ND	ND	0.050
DWCREEK	1/20/2014	840	NS	340	0.320	ND	ND	0.037
DWCREEK	2/24/2014	810	NS	370	ND	ND	ND	0.041
DWCREEK	3/25/2014	900	NS	410	0.120	ND	ND	0.059
DWCREEK	4/29/2014	NT	NT	NT	NT	NT	NT	NT
DWCREEK	5/27/2014	NT	NT	NT	NT	NT	NT	NT
DWCREEK	6/23/2014	NT	NT	NT	NT	NT	NT	NT
DWCREEK	7/28/2014	NT	NT	NT	NT	NT	NT	NT
DWCREEK	8/25/2014	NT	NT	NT	NT	NT	NT	NT
Black Sulfur Crk. SP1	6/4/2012	780	10	300	NS	NS	NS	NS
Black Sulfur Crk. MIDDLECREEK	2/28/2013	880	ND	370	0.27	ND	ND	0.024
Black Sulfur Crk. MIDDLECREEK	3/29/2013	900	NS	370	0.044	ND	0.12	0.053
MIDCREEK	4/26/2013	740	NS	470	0.058	ND	0.12	0.15
MIDCREEK	5/28/2013	840	NS	350	ND	ND	ND	0.03
MIDCREEK	6/20/2013	840	NS	370	ND	ND	0.11	0.03
MIDCREEK	7/29/2013	810	NS	360	0.120	ND	ND	0.02
MIDCREEK	8/27/2013	800	NS	350	ND	ND	0.12	0.01
MIDCREEK	9/16/2013	800	NS	340	ND	ND	0.08	0.031
MIDCREEK	10/28/2013	860	NS	370	0.032	ND	0.09	0.068
MIDCREEK	11/25/2013	820	NS	360	0.031	ND	0.120	0.039
MIDCREEK	12/17/2013	910	NS	400	0.200	ND	ND	ND
MIDCREEK	1/20/2014	840	NS	340	0.32	ND	ND	0.031
MIDCREEK	2/24/2014	810	NS	360	0.11	ND	ND	0.033
MIDCREEK	3/25/2014	900	NS	410	0.12	ND	0.093	0.049
MIDCREEK	4/29/2014	NT	NT	NT	NT	NT	NT	NT
MIDCREEK	5/27/2014	NT	NT	NT	NT	NT	NT	NT
MIDCREEK	6/23/2014	NT	NT	NT	NT	NT	NT	NT
MIDCREEK	7/28/2014	NT	NT	NT	NT	NT	NT	NT
MIDCREEK	8/25/2014	NT	NT	NT	NT	NT	NT	NT

NS = Not sampled (Lab Analytical) mg/L - Milligrams per Liter

ND = Non Detect

NT = Not Tested (Field Analytical)

J= Analyte reported below laboratory reporting limit

Above COGCC Table 910-1 Concentration Level

Table 3 - Groundwater Field Measured Parameters
Williamd Black Sulphur Compressor Station

		Temperature	Conductivity	TDS	Dissolved Oxygen (DO)	pH	ORP	Product Levels	Water Levels
Sample Location	Sampling Date	°C	mS/cm	g/L	mg/L		mV	TOC (ft)	TOC (ft)
MW-1	6/15/2012	15.33	1.574	1.255	3.02	6.96	77.50	ND	23.80
MW-1	7/13/2012	13.10	1.421	1.196	1.89	7.54	-24.00	ND	23.19
MW-1	8/14/2012	12.24	1.474	1.269	2.39	7.52	-81.10	ND	23.21
MW-1	9/13/2012	12.38	1.384	1.185	4.16	7.53	34.80	ND	23.35
MW-1	1/30/2013	8.59	1.63	1.000	1.14	8.19	NT	ND	22.85
MW-1	2/28/2013	NT	NT	NT	NT	NT	NT	ND	NT
MW-1	3/29/2013	11.25	1.82	1.200	1.58	8.48	NT	ND	22.75
MW-1	4/26/2013	10.53	1.7	1.100	1.45	8.66	NT	ND	22.15
MW-1	5/28/2013	11.14	0.149	0.100	1.47	8.72	NT	ND	22.10
MW-1	6/20/2013	11.73	1.92	1.200	2.35	8.73	NT	ND	22.80
MW-1	7/29/2013	11.32	1.77	1.100	1.20	8.72	NT	ND	23.36
MW-1	8/27/2013	10.91	1.84	1.200	1.21	8.53	NT	ND	23.50
MW-1	9/17/2013	9.94	1.72	1.100	1.03	8.35	NT	ND	23.12
MW-1	10/29/2013	9.11	1.74	1.100	1.54	8.20	NT	ND	22.60
MW-1	11/25/2013	8.50	1.76	1.100	1.80	8.10	NT	ND	22.40
MW-1	12/17/2013	8.55	0.885	0.6	2.55	8.42	NT	ND	22.64
MW-1	1/21/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-1	2/25/2014	9.68	1.60	1.1	1.45	8.23	NT	ND	22.07
MW-1	3/26/2014	9.40	1.89	1.2	1.71	8.12	NT	ND	22.40
MW-1	4/29/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-1	5/27/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-1	6/24/2014	11.93	1.74	1.1	1.35	7.54	NT	ND	22.94
MW-1	7/28/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-1	8/25/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-2	6/15/2012	19.09	3.49	2.550	3.61	7.24	22.50	ND	23.70
MW-2	7/13/2012	12.08	2.924	2.478	2.67	7.84	-145.80	ND	21.73
MW-2	8/14/2012	14.09	3.341	2.741	3.16	8.24	-224.90	ND	21.80
MW-2	9/13/2012	12.97	2.853	2.462	2.82	7.73	-165.70	ND	21.83
MW-2	1/30/2013	9.08	3.72	2.400	0.72	8.61	NT	ND	21.45
MW-2	2/28/2013	9.90	3.68	2.400	0.82	7.58	NT	ND	21.35
MW-2	3/29/2013	11.37	4.33	2.800	0.84	8.63	NT	ND	21.29
MW-2	4/26/2013	10.99	3.71	2.400	0.91.	8.81	NT	ND	20.59
MW-2	5/28/2013	11.16	3.97	2.500	0.24	8.78	NT	ND	20.68
MW-2	6/20/2013	11.32	3.89	2.500	0.36	8.86	NT	ND	21.34
MW-2	7/30/2013	12.38	3.6	2.200	0.33	9.13	NT	ND	22.91
MW-2	8/28/2013	11.98	2.99	1.900	0.53	8.72	NT	ND	21.93
MW-2	9/17/2013	10.32	2.8	1.800	0.74	8.41	NT	ND	21.61
MW-2	10/29/2013	9.73	2.91	1.900	2.00	8.51	NT	ND	21.06
MW-2	11/26/2013	9.64	3.66	2.300	1.20	8.28	NT	ND	20.95
MW-2	12/18/2013	9.28	3.20	2.0	1.97	8.26	NT	ND	21.19
MW-2	1/21/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-2	2/25/2014	10.02	2.40	1.5	0.45	8.30	NT	ND	20.64
MW-2	3/26/2014	9.74	2.61	1.7	0.68	8.16	NT	ND	21.11
MW-2	4/29/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-2	5/27/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-2	6/24/2014	10.95	2.46	1.6	0.34	7.91	NT	ND	21.50
MW-2	7/28/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-2	8/25/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-3	6/15/2012	17.73	2.13	1.607	1.49	7.45	-42.30	ND	22.80
MW-3	7/13/2012	12.62	2.19	1.864	1.11	8.16	-166.80	ND	22.18
MW-3	8/14/2012	17.39	2.792	2.122	3.35	7.92	-188.70	ND	21.43
MW-3	9/13/2012	11.79	1.957	1.702	2.21	7.83	-100.60	ND	22.27
MW-3	1/30/2013	8.64	2.77	1.800	0.65	8.50	NT	ND	21.85
MW-3	2/28/2013	NT	NT	NT	NT	NT	NT	ND	NT
MW-3	3/29/2013	11.51	2.86	1.800	1.03	8.67	NT	ND	21.70
MW-3	4/26/2013	12.14	2.36	1.500	0.72	8.95	NT	ND	21.29
MW-3	5/28/2013	11.38	3.1	2.000	0.81	8.81	NT	ND	21.14
MW-3	6/20/2013	10.98	2.87	1.800	0.73	8.86	NT	ND	21.75
MW-3	7/30/2013	12.00	2.49	1.600	1.52	8.91	NT	ND	22.34
MW-3	8/28/2013	11.17	2.49	1.600	1.07	8.64	NT	ND	22.47
MW-3	9/17/2013	10.75	2.47	1.600	12.00	8.40	NT	ND	22.08
MW-3	10/26/2013	9.98	2.78	1.800	1.36	8.41	NT	ND	21.57
MW-3	11/26/2013	9.63	3.02	1.900	0.96	8.55	NT	ND	21.41
MW-3	12/18/2013	10.11	2.92	1.4	0.68	8.33	NT	ND	21.62
MW-3	1/21/2014	10.03	2.49	1.6	1.65	8.35	NT	ND	21.62
MW-3	2/25/2014	10.55	2.49	1.6	0.97	8.34	NT	ND	21.09
MW-3	3/26/2014	10.32	2.55	1.6	0.49	8.20	NT	ND	21.40
MW-3	4/29/2014	NT	NT	NT	NT	NT	NT	NT	NT

NS = Not sampled (Lab Analytical)
ND = Non Detect
NT = Not Tested (Field Analytical)

mV - Millivolts
oC - Dgress Celcius
mS/cm - millisiemens per centimeter
TDS - Total Disssolved Solids
g/L - grams per Liter
TOC - Top of Casing

ORP - Oxidation Reduction Potential

Table 3 - Groundwater Field Measured Parameters
Williamd Black Sulphur Compressor Station

		Temperature	Conductivity	TDS	Dissolved Oxygen (DO)	pH	ORP	Product Levels	Water Levels
Sample Location	Sampling Date	°C	mS/cm	g/L	mg/L		mV	TOC (ft)	TOC (ft)
MW-3	5/27/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-3	6/24/2014	11.74	1.99	1.3	0.20	7.85	NT	ND	21.91
MW-3	7/28/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-3	8/25/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-4	6/15/2012	23.06	2.35	1.577	3.92	7.20	45.70	ND	21.50
MW-4	7/13/2012	12.87	1.762	1.491	3.12	7.67	20.10	ND	21.83
MW-4	8/14/2012	18.30	2.276	1.692	2.26	7.80	-37.20	ND	21.87
MW-4	9/13/2012	10.34	1.678	1.515	8.64	7.59	234.30	ND	21.94
MW-4	1/30/2013	9.01	2.06	1.300	1.03	8.36	NT	ND	21.50
MW-4	2/28/2013	NT	NT	NT	NT	NT	NT	ND	NT
MW-4	3/29/2013	9.77	2.1	1.300	0.94	8.53	NT	ND	21.40
MW-4	4/26/2013	18.84	1.91	1.200	1.14	8.62	NT	ND	20.98
MW-4	05/58/2013	10.75	2.1	1.300	1.96	8.70	NT	ND	20.82
MW-4	6/20/2013	10.27	2	1.300	1.23	8.77	NT	ND	21.43
MW-4	7/29/2013	11.05	2.03	1.300	1.09	8.71	NT	ND	21.98
MW-4	8/27/2013	10.61	2.02	1.300	1.66	8.61	NT	ND	22.10
MW-4	9/16/2013	10.24	1.73	1.100	1.66	8.40	NT	ND	21.77
MW-4	10/28/2013	9.39	1.97	1.300	1.15	8.42	NT	ND	21.25
MW-4	11/25/2013	9.71	1.98	1.300	1.83	8.51	NT	ND	21.06
MW-4	12/17/2013	8.48	0.386	0.3	2.35	8.36	NT	ND	21.30
MW-4	1/20/2014	9.46	1.88	1.2	1.65	8.26	NT	ND	21.29
MW-4	2/24/2014	9.90	1.88	1.2	1.76	8.40	NT	ND	20.76
MW-4	3/25/2014	10.01	1.87	1.2	1.76	8.30	NT	ND	21.07
MW-4	4/29/2014	9.75	1.77	1.1	1.16	7.50	NT	ND	21.25
MW-4	5/27/2014	10.42	1.93	1.2	1.35	8.61	NT	ND	21.19
MW-4	6/23/2014	10.31	1.76	1.1	1.27	7.44	NT	ND	21.58
MW-4	7/28/2014	10.99	2.02	1.3	1.69	7.52	NT	ND	21.80
MW-4	8/25/2014	10.51	1.96	1.3	1.11	7.63	NT	ND	21.65
MW-5	6/15/2012	16.92	1.87	1.431	2.85	7.05	63.50	ND	19.30
MW-5	7/13/2012	13.91	1.766	1.457	2.72	7.49	24.50	ND	19.48
MW-5	8/14/2012	15.39	1.924	1.527	6.30	7.76	-35.30	ND	19.42
MW-5	9/13/2012	11.56	1.9	1.661	3.13	7.66	150.50	ND	19.56
MW-5	1/30/2013	9.46	2.46	1.600	1.37	8.66	NT	ND	19.10
MW-5	2/28/2013	10.05	2.19	1.400	3.07	7.51	NT	ND	19.50
MW-5	3/29/2013	10.35	2.21	1.400	2.21	8.58	NT	ND	19.02
MW-5	4/26/2013	11.55	2.31	1.500	1.62	8.68	NT	ND	18.60
MW-5	5/28/2013	10.52	0.34	0.200	1.27	8.81	NT	ND	18.44
MW-5	6/20/2013	10.70	1.65	1.100	1.34	8.75	NT	ND	19.04
MW-5	7/29/2013	10.67	2.66	1.700	1.75	8.80	NT	ND	19.56
MW-5	8/27/2013	10.82	2.61	1.700	1.46	8.57	NT	ND	19.09
MW-5	9/16/2013	10.92	1.316	1.700	2.63	1.63	NT	ND	19.39
MW-5	10/28/2013	10.07	1.362	0.900	1.24	8.34	NT	ND	18.86
MW-5	11/25/2013	9.65	0.326	0.300	2.57	8.34	NT	ND	18.66
MW-5	12/17/2013	9.46	2.47	1.6	1.45	8.47	NT	ND	18.89
MW-5	1/20/2014	9.77	2.45	1.0	1.92	8.40	NT	ND	18.92
MW-5	2/24/2014	10.21	2.74	1.8	1.29	8.52	NT	ND	18.38
MW-5	3/25/2014	10.54	3.18	2.0	1.64	8.25	NT	ND	18.69
MW-5	4/29/2014	9.67	3	1.9	1.08	7.58	NT	ND	18.89
MW-5	5/27/2014	11.57	3.18	2.0	1.19	8.73	NT	ND	18.79
MW-5	6/23/2014	10.39	2.87	1.8	1.27	7.66	NT	ND	19.18
MW-5	7/28/2014	14.22	1.205	0.8	2.13	7.85	NT	ND	19.42
MW-5	8/25/2014	10.57	2.83	1.8	0.93	7.85	NT	ND	19.26
MW-6	6/15/2012	17.59	4.31	3.100	3.94	7.45	49.80	ND	19.20

NS = Not sampled (Lab Analytical)
ND = Non Detect
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TOC - Top of Casing

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Table 3 - Groundwater Field Measured Parameters
Williamd Black Sulphur Compressor Station

		Temperature	Conductivity	TDS	Dissolved Oxygen (DO)	pH	ORP	Product Levels	Water Levels
Sample Location	Sampling Date	°C	mS/cm	g/L	mg/L		mV	TOC (ft)	TOC (ft)
MW-6	7/13/2012	13.15	3.474	2.918	2.82	7.70	1.50	ND	20.45
MW-6	8/14/2012	16.69	3.91	3.010	2.73	8.11	-38.70	ND	18.39
MW-6	9/13/2012	11.47	3.22	2.803	4.74	7.95	283.90	ND	18.55
MW-6	1/30/2013	9.82	3.83	2.500	1.06	8.83	NT	ND	18.09
MW-6	2/28/2013	7.82	3.09	2.000	1.46	7.72	NT	ND	18.50
MW-6	3/29/2013	10.71	3.33	2.600	1.98	8.78	NT	ND	18.01
MW-6	4/26/2013	10.25	3.81	2.400	1.34	8.78	NT	ND	17.64
MW-6	5/28/2013	10.75	3.89	2.500	1.11	8.93	NT	ND	17.44
MW-6	6/20/2013	11.74	3.91	2.500	1.20	8.93	NT	ND	18.04
MW-6	7/29/2013	10.58	3.93	2.500	1.38	8.89	NT	ND	18.56
MW-6	8/27/2013	10.65	3.79	2.400	0.98	8.79	NT	ND	18.66
MW-6	9/16/2013	10.88	2.55	1.600	1.50	8.54	NT	ND	18.35
MW-6	10/28/2013	10.22	3.54	0.300	1.87	8.52	NT	ND	17.88
MW-6	11/25/2013	9.45	3.82	2.400	1.63	8.47	NT	ND	17.65
MW-6	12/17/2013	9.96	3.86	2.500	1.65	8.49	NT	ND	17.89
MW-6	1/20/2014	9.65	3.89	2.500	1.37	8.31	NT	ND	17.89
MW-6	2/24/2014	10.35	3.74	2.400	1.66	8.34	NT	ND	17.40
MW-6	3/25/2014	10.24	3.68	2.400	1.98	8.18	NT	ND	17.65
MW-6	4/29/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-6	5/27/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-6	6/23/2013	10.88	3.07	2.0	1.29	7.96	NT	ND	18.20
MW-6	7/28/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-6	8/25/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-7	6/15/2012	16.32	2.418	1.884	14.83	7.18	16.70	ND	25.40
MW-7	7/13/2012	13.04	2.429	2.046	0.32	7.67	-133.30	ND	24.26
MW-7	8/14/2012	17.68	2.895	2.185	17.95	7.90	-114.90	ND	24.37
MW-7	9/13/2012	11.98	2.364	2.045	1.44	7.63	-107.20	ND	24.43
MW-7	1/30/2013	4.86	2.62	1.700	0.26	8.47	NS	ND	24.05
MW-7	2/28/2013	NT	NT	NT	NT	NT	NT	ND	NT
MW-7	3/29/2013	10.80	1.98	1.300	0.51	8.71	NT	ND	23.90
MW-7	4/26/2013	10.39	2.53	1.600	0.45	8.68	NT	ND	23.34
MW-7	5/28/2013	10.70	3.13	2.000	0.96	8.78	NT	ND	23.28
MW-7	6/20/2013	11.16	3.19	2.000	0.39	8.79	NT	ND	24.01
MW-7	7/30/2013	11.69	3.05	2.000	0.25	8.93	NT	ND	24.51
MW-7	8/28/2013	11.59	2.83	1.800	0.44	8.56	NT	ND	24.64
MW-7	9/17/2013	10.93	2.54	1.600	0.60	8.47	NT	ND	24.25
MW-7	10/29/2013	9.38	3.08	2.000	1.01	8.30	NT	ND	23.73
MW-7	11/26/2013	8.63	3.46	2.200	1.08	8.16	NT	ND	23.58
MW-7	12/18/2013	7.90	2.45	1.600	0.83	8.14	NT	ND	23.80
MW-7	1/21/2014	9.29	3.34	2.100	0.46	8.13	NT	ND	23.79
MW-7	2/25/2014	10.21	2.42	1.500	0.96	8.26	NT	ND	23.27
MW-7	3/26/2014	10.13	2.96	1.900	0.31	8.20	NT	ND	23.52
MW-7	4/29/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-7	5/27/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-7	6/24/2014	10.64	2.89	2.000	0.41	7.69	NT	ND	24.09
MW-7	7/28/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-7	8/25/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-8	7/10/2013	10.18	2.770	1.800	1.53	8.86	NT	ND	20.22
MW-8	7/29/2013	10.19	2.800	1.800	1.70	8.78	NT	ND	20.53
MW-8	8/27/2013	10.56	2.840	1.800	3.59	8.58	NT	ND	20.65
MW-8	9/16/2013	10.40	2.360	1.500	2.11	8.35	NT	ND	20.31
MW-8	10/28/2013	9.54	2.060	1.300	2.41	8.27	NT	ND	19.70
MW-8	11/26/2013	8.63	0.747	0.500	2.00	8.22	NT	ND	19.53
MW-8	12/18/2013	8.94	1.840	1.200	2.06	8.18	NT	ND	19.77
MW-8	1/21/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-8	2/24/2014	9.21	1.78	1.100	2.03	8.20	NT	ND	19.15
MW-8	3/25/2014	9.70	2.77	1.800	2.34	8.15	NT	ND	19.55
MW-8	4/29/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-8	5/27/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-8	6/24/2014	10.25	3.45	2.200	1.92	7.79	NT	ND	20.14
MW-8	7/28/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-8	8/25/2014	NT	NT	NT	NT	NT	NT	NT	NT

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mV - Millivolts
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Table 3 - Groundwater Field Measured Parameters
Williamd Black Sulphur Compressor Station

		Temperature	Conductivity	TDS	Dissolved Oxygen (DO)	pH	ORP	Product Levels	Water Levels
Sample Location	Sampling Date	°C	mS/cm	g/L	mg/L		mV	TOC (ft)	TOC (ft)
MW-9	7/10/2013	10.29	2.000	1.300	3.62	8.82	NT	ND	20.01
MW-9	7/29/2013	10.68	1.960	1.300	3.60	8.69	NT	ND	26.26
MW-9	8/27/2013	12.33	1.900	1.200	3.72	8.64	NT	ND	26.41
MW-9	9/16/2013	10.54	1.810	1.200	3.14	8.40	NT	ND	26.09
MW-9	10/28/2013	9.59	1.880	1.200	3.33	8.44	NT	ND	25.53
MW-9	11/25/2013	8.93	1.950	1.300	3.49	8.30	NT	ND	25.31
MW-9	12/18/2013	8.88	1.890	1.200	3.64	8.14	NT	ND	25.54
MW-9	1/21/2014	8.71	1.870	1.200	3.19	8.25	NT	ND	25.55
MW-9	2/24/2014	9.21	1.780	1.100	2.84	8.20	NT	ND	25.00
MW-9	3/25/2014	10.21	1.810	1.200	2.61	8.22	NT	ND	25.25
MW-9	4/29/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-9	5/27/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-9	6/24/2014	10.65	1.690	1.100	2.56	7.66	NT	ND	25.85
MW-9	7/28/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-9	8/25/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-10	7/10/2013	10.97	2.980	1.900	4.58	8.82	NT	ND	23.12
MW-10	7/29/2013	11.07	2.960	1.900	3.59	8.79	NT	ND	23.31
MW-10	8/27/2013	11.45	2.980	1.900	2.82	8.55	NT	ND	23.42
MW-10	9/16/2013	11.48	2.890	1.900	2.89	8.52	NT	ND	23.10
MW-10	10/28/2013	11.00	2.950	1.900	3.43	8.36	NT	ND	22.58
MW-10	11/25/2013	8.69	0.427	0.300	4.04	8.35	NT	ND	22.25
MW-10	12/18/2013	NT	NT	NT	NT	NT	NT	NT	NT
MW-10	1/21/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-10	2/24/2014	9.98	3.090	2.000	3.28	8.22	NT	ND	22.09
MW-10	3/25/2014	10.57	3.230	2.100	3.94	8.15	NT	ND	22.43
MW-10	4/29/2014	10.22	3.120	2.800	2.47	7.48	NT	ND	22.75
MW-10	5/27/2014	11.07	2.770	1.800	1.79	8.66	NT	ND	22.50
MW-10	6/23/2014	10.23	3.07	2.0	2.82	7.51	NT	ND	22.90
MW-10	7/28/2014	10.64	2.96	1.9	2.52	7.60	NT	ND	23.10
MW-10	8/25/2014	12.48	2.75	1.8	2.50	7.86	NT	ND	23.00
MW-11	7/10/2013	9.93	1.920	1.200	1.12	8.91	NT	ND	16.21
MW-11	7/30/2013	9.88	1.870	1.200	1.60	8.85	NT	ND	16.46
MW-11	8/28/2013	9.73	1.830	1.200	1.65	8.65	NT	ND	16.59
MW-11	9/17/2013	9.38	1.810	1.200	1.77	8.42	NT	ND	16.24
MW-11	12/18/2013	9.14	1.890	1.900	2.48	8.27	NT	ND	15.76
MW-11	10/29/2013	8.99	1.810	1.200	1.90	8.30	NT	ND	15.72
MW-11	11/26/2013	8.85	1.457	0.900	1.73	8.31	NT	ND	15.54
MW-11	1/21/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-11	2/25/2014	9.03	1.860	1.200	1.63	8.25	NT	ND	15.23
MW-11	3/26/2014	9.28	1.870	1.200	1.26	8.24	NT	ND	15.56
MW-11	4/29/2014	9.00	1.770	1.100	1.61	7.73	NT	ND	15.75
MW-11	5/27/2014	10.12	1.940	1.200	0.97	8.80	NT	ND	15.70
MW-11	6/23/2014	9.03	1.790	1.100	1.58	7.72	NT	ND	16.09
MW-11	7/28/2014	9.73	1.760	1.100	1.47	7.78	NT	ND	16.33
MW-11	8/25/2014	10.53	1.810	1.200	1.00	7.87	NT	ND	16.15
MW-12	7/10/2013	11.50	1.720	1.100	1.21	8.90	NT	ND	16.79
MW-12	7/30/2013	10.28	1.680	1.100	1.34	8.65	NT	ND	17.06
MW-12	8/28/2013	9.35	1.620	1.000	1.86	8.54	NT	ND	17.20
MW-12	9/17/2013	9.54	1.490	1.000	1.62	8.35	NT	ND	16.83
MW-12	10/29/2013	8.87	1.274	0.800	1.93	8.36	NT	ND	16.26
MW-12	11/26/2013	8.68	1.850	1.200	1.80	8.22	NT	ND	16.10
MW-12	12/18/2013	8.52	1.710	1.100	2.52	8.19	NT	ND	16.34
MW-12	1/21/2014	8.80	1.780	1.100	1.28	8.22	NT	ND	16.36
MW-12	2/25/2014	9.08	1.720	1.100	2.09	8.25	NT	ND	15.80
MW-12	3/26/2014	8.86	1.790	1.100	1.43	8.16	NT	ND	16.12
MW-12	4/29/2014	9.05	1.750	1.100	1.27	7.58	NT	ND	16.30
MW-12	5/27/2014	9.67	1.860	1.200	1.28	8.64	NT	ND	16.27
MW-12	6/23/2014	8.90	1.610	1.000	1.24	7.60	NT	ND	16.70
MW-12	7/28/2014	9.50	1.530	1.000	1.19	7.62	NT	ND	16.93
MW-12	8/25/2014	9.88	1.520	1.000	0.84	7.68	NT	ND	16.75

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Table 3 - Groundwater Field Measured Parameters
Williamd Black Sulphur Compressor Station

		Temperature	Conductivity	TDS	Dissolved Oxygen (DO)	pH	ORP	Product Levels	Water Levels
Sample Location	Sampling Date	°C	mS/cm	g/L	mg/L		mV	TOC (ft)	TOC (ft)
MW-13	7/10/2013	10.73	1.580	1.000	1.50	8.61	NT	ND	15.92
MW-13	7/30/2013	10.12	1.550	1.000	1.45	8.72	NT	ND	16.10
MW-13	8/28/2013	10.28	1.550	1.000	1.63	8.44	NT	ND	16.23
MW-13	9/17/2013	9.70	1.510	1.000	1.73	8.37	NT	ND	15.84
MW-13	10/29/2013	9.05	1.510	1.000	1.51	8.23	NT	ND	15.22
MW-13	11/26/2013	8.73	1.540	1.000	1.50	8.21	NT	ND	15.10
MW-13	12/17/2013	8.84	1.520	1.000	1.93	8.22	NT	ND	15.35
MW-13	1/21/2014	8.86	1.510	1.000	1.34	8.21	NT	ND	15.38
MW-13	2/25/2014	8.98	1.467	0.900	1.90	8.17	NT	ND	14.77
MW-13	3/26/2014	8.75	1.304	0.800	1.82	8.12	NT	ND	15.13
MW-13	4/29/2014	8.94	1.434	0.900	1.54	7.49	NT	ND	15.30
MW-13	5/27/2014	9.83	1.530	1.000	1.07	8.51	NT	ND	15.29
MW-13	6/24/2014	9.99	1.416	0.900	1.24	7.56	NT	ND	15.72
MW-13	7/28/2014	10.26	1.437	0.900	1.15	7.56	NT	ND	15.94
MW-13	8/25/2014	10.71	0.022	0.800	1.21	7.64	NT	ND	15.79
MW-14	7/10/2013	10.05	1.580	1.000	2.47	8.78	NT	ND	13.97
MW-14	7/30/2013	10.19	1.590	1.000	1.63	8.73	NT	ND	14.32
MW-14	8/28/2013	9.75	1.540	1.000	1.57	8.44	NT	ND	14.44
MW-14	9/17/2013	9.91	1.530	1.000	1.67	8.50	NT	ND	14.04
MW-14	10/29/2013	8.82	1.520	1.000	1.58	8.20	NT	ND	13.44
MW-14	11/26/2013	8.93	1.540	1.000	1.82	8.24	NT	ND	13.34
MW-14	12/17/2013	8.87	1.540	1.000	1.88	8.27	NT	ND	13.61
MW-14	1/21/2014	8.74	0.184	0.100	2.21	8.24	NT	ND	13.59
MW-14	2/25/2014	8.56	1.483	1.000	1.62	8.18	NT	ND	13.04
MW-14	3/26/2014	9.44	1.494	1.000	1.32	8.14	NT	ND	13.35
MW-14	4/29/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-14	5/27/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-14	6/24/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-14	7/28/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-14	8/25/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-15	7/10/2013	10.27	1.570	1.000	2.20	8.68	NT	ND	12.68
MW-15	7/30/2013	9.78	1.510	1.000	1.79	8.81	NT	ND	12.98
MW-15	8/28/2013	10.19	1.530	1.000	1.71	8.40	NT	ND	13.10
MW-15	9/17/2013	9.83	1.550	1.000	1.61	8.43	NT	ND	12.66
MW-15	10/29/2013	8.85	1.426	0.900	1.52	8.24	NT	ND	12.01
MW-15	11/25/2013	NT	NT	NT	NT	NT	NT	NT	NT
MW-15	12/18/2013	8.99	1.560	1.000	1.86	8.20	NT	ND	12.20
MW-15	1/20/2014	9.51	1.480	1.000	1.69	8.32	NT	ND	12.24
MW-15	2/25/2014	8.59	1.490	1.000	1.63	8.16	NT	ND	11.64
MW-15	3/26/2014	8.58	1.480	1.000	1.45	8.15	NT	ND	12.00
MW-15	4/29/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-15	5/27/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-15	6/24/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-15	7/28/2014	NT	NT	NT	NT	NT	NT	NT	NT
MW-15	8/25/2014	NT	NT	NT	NT	NT	NT	NT	NT
Black Sulfur Crk. UPCREEK	3/29/2013	13.02	1.42	0.900	9.26	8.80	NT	ND	NT
UPCREEK	4/26/2013	14.72	1.53	1.000	6.70	8.84	NT	ND	NT
UPCREEK	5/28/2013	9.13	1.33	0.900	9.81	9.01	NT	ND	NT
UPCREEK	6/20/2013	12.70	1.337	0.900	9.67	9.12	NT	ND	NT
UPCREEK	7/29/2013	15.73	1.305	0.800	6.34	9.17	NT	ND	NT
UPCREEK	8/27/2013	13.45	1.098	0.800	5.97	8.90	NT	ND	NT
UPCREEK	9/16/2013	12.24	1.379	0.900	6.17	8.70	NT	ND	NT
UPCREEK	10/28/2013	6.03	1.391	0.900	7.79	8.43	NT	ND	NT
UPCREEK	11/25/2013	3.98	1.354	0.900	7.64	8.56	NT	ND	NT
UPCREEK	12/17/2013	0.04	1.412	0.9	13.14	8.17	NT	ND	NT
UPCREEK	1/20/2014	0.16	1.38	0.9	11.35	8.27	NT	ND	NT
UPCREEK	2/24/2014	2.41	1.344	0.9	11.21	8.36	NT	ND	NT
UPCREEK	3/25/2014	2.16	1.48	1.0	9.99	8.27	NT	ND	NT
UPCREEK	4/29/2014	NT	NT	NT	NT	NT	NT	NT	NT
UPCREEK	5/27/2014	NT	NT	NT	NT	NT	NT	NT	NT
UPCREEK	6/23/2014	NT	NT	NT	NT	NT	NT	NT	NT
UPCREEK	7/28/2014	NT	NT	NT	NT	NT	NT	NT	NT

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Table 3 - Groundwater Field Measured Parameters
Williamd Black Sulphur Compressor Station

		Temperature	Conductivity	TDS	Dissolved Oxygen (DO)	pH	ORP	Product Levels	Water Levels
Sample Location	Sampling Date	°C	mS/cm	g/L	mg/L		mV	TOC (ft)	TOC (ft)
UPCREEK	8/25/2014	NT	NT	NT	NT	NT	NT	NT	NT
Black Sulfur Crk. DG	6/4/2012	NT	NT	NT	NT	NT	NT	ND	NT
Black Sulfur Crk. DWCREEK	2/28/2013	1.14	1.266	0.800	11.55	8.08	NT	ND	NT
Black Sulfur Crk. DWCREEK	3/29/2013	10.46	1.436	0.900	9.53	8.74	NT	ND	NT
DWCREEK	4/26/2013	12.06	1.489	1.000	5.87	8.77	NT	ND	NT
DWCREEK	5/28/2013	9.04	1.342	0.900	9.27	9.00	NT	ND	NT
DWCREEK	6/20/2013	10.46	1.946	0.900	9.17	9.04	NT	ND	NT
DWCREEK	7/29/2013	15.68	1.28	0.800	6.60	9.07	NT	ND	NT
DWCREEK	8/27/2013	14.41	1.27	0.800	7.19	8.92	NT	ND	NT
DWCREEK	9/16/2013	12.24	1.329	0.900	7.63	8.72	NT	ND	NT
DWCREEK	10/28/2013	5.40	1.394	0.900	8.98	8.30	NT	ND	NT
DWCREEK	11/25/2013	5.33	1.451	0.900	8.72	8.28	NT	ND	NT
DWCREEK	12/17/2013	0.10	1.421	0.9	12.86	8.18	NT	ND	NT
DWCREEK	1/20/2014	0.22	1.384	0.9	11.11	8.00	NT	ND	NT
DWCREEK	2/24/2014	2.74	1.352	0.9	11.30	8.22	NT	ND	NT
DWCREEK	3/25/2014	3.11	1.477	0.9	10.47	8.17	NT	ND	NT
DWCREEK	4/29/2014	NT	NT	NT	NT	NT	NT	NT	NT
DWCREEK	5/27/2014	NT	NT	NT	NT	NT	NT	NT	NT
DWCREEK	6/23/2014	NT	NT	NT	NT	NT	NT	NT	NT
DWCREEK	7/28/2014	NT	NT	NT	NT	NT	NT	NT	NT
DWCREEK	8/26/2014	NT	NT	NT	NT	NT	NT	NT	NT
Black Sulfur Crk. SP1	6/4/2012	NT	NT	NT	NT	NT	NT	ND	NT
Black Sulfur Crk. MIDDLECREEK	2/28/2013	0.73	1.245	0.800	11.82	8.08	NT	ND	NT
Black Sulfur Crk. MIDDLECREEK	3/29/2013	13.48	1.431	0.900	5.87	8.78	NT	ND	NT
MIDCREEK	4/26/2013	14.49	1.550	1.000	5.17	8.05	NT	ND	NT
MIDCREEK	5/28/2013	9.62	1.330	0.500	8.73	9.03	NT	ND	NT
MIDCREEK	6/20/2013	13.57	1.337	0.900	8.58	9.28	NT	ND	NT
MIDCREEK	7/29/2013	15.62	1.301	0.800	7.08	9.13	NT	ND	NT
MIDCREEK	8/27/2013	13.70	1.326	0.900	6.64	8.89	NT	ND	NT
MIDCREEK	9/16/2013	14.14	1.720	1.100	2.33	8.54	NT	ND	NT
MIDCREEK	10/26/2013	5.50	1.401	82.900	8.46	8.39	NT	ND	NT
MIDCREEK	11/25/2013	3.50	1.384	0.900	7.82	8.40	NT	ND	NT
MIDCREEK	12/17/2013	2.12	1.52	1.0	8.99	8.30	NT	ND	NT
MIDCREEK	1/20/2014	0.22	1.38	0.9	11.32	8.20	NT	ND	NT
MIDCREEK	2/24/2014	3.02	1.35	0.9	10.74	8.22	NT	ND	NT
MIDCREEK	3/25/2014	2.30	1.476	0.9	10.41	8.20	NT	ND	NT
MIDCREEK	4/29/2014	NT	NT	NT	NT	NT	NT	NT	NT
MIDCREEK	5/27/2014	NT	NT	NT	NT	NT	NT	NT	NT
MIDCREEK	6/23/2014	NT	NT	NT	NT	NT	NT	NT	NT
MIDCREEK	7/28/2014	NT	NT	NT	NT	NT	NT	NT	NT
MIDCREEK	8/25/2014	NT	NT	NT	NT	NT	NT	NT	NT

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Table 4 - Soil Analytical Data
Williams Black Sulphur Compressor Station

		Sample Location	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11
		Sample Depth	10 Feet	10 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet
		Date Sampled	5/30/12	5/30/12	5/30/12	5/30/12	5/30/12	5/30/12	5/30/12	5/30/12	6/5/12	6/5/12	6/5/12
Analyte	**Table 910-1 Concentration Levels**	**Units**											
Organic Compounds in Soil													
DRO	N/A	mg/kg	590	370	1,100	250	42	250	820	170	17	9.70	16
GRO	N/A	mg/kg	3,300	3,300	22,000	5,400	130	4,100	12,000	720	160	ND	ND
Total Petroleum Hydrocarbon (DRO+GRO)	500	mg/kg	3,890	3,670	23,100	5,650	172	4,350	12,820	890	177	9.70	16
Benzene	0.17	mg/kg	0.05	0.04	10.00	9.10	0.02	1.90	4.80	0.11	0.11	ND	ND
Ethylbenzene	100	mg/kg	2.30	3.30	38.00	14.00	0.13	4.50	11.00	0.93	0.47	ND	ND
Toluene	85	mg/kg	2.80	4.90	220.00	100.00	0.36	18.00	73.00	3.10	2.40	0.17	ND
Xylenes (Total)	175	mg/kg	37.00	74.00	440.00	160.00	1.90	66.00	130.00	12.00	7.60	0.43	ND
Acenaphthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Anthracene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)anthracene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(B)fluoranthene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(K)fluoranthene	2.2	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)pyrene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chrysene	22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dibenzo(A,H)anthracene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluoranthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluorene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Indeno(1,2,3-cd)pyrene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyrene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Inorganics in Soil													
Electrical Conductivity	<4 mmhos/cm or 2 x background	mmhos/cm	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium Absorption Ratio	<12	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
pH	6-9	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals in Soil													
Arsenic	0.39	mg/kg	2.7	4.4	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium LDNR	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium total	15,000	mg/kg	350	250	NS	NS	NS	NS	NS	NS	NS	NS	NS
Boron	2	mg/L	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	70	mg/kg	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (III)	120,000	mg/kg	19	31	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (VI)	23	mg/kg	19	31	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	3,100	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	400	mg/kg	7.2	13	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	23	mg/kg	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	1,600	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Selenium	390	mg/kg	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
Silver	390	mg/kg	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	23,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
PID Field Screening Results (ppm)			4,873	4,212	5,000	5,000	348	2,290	5,000	NS	890	612	0.3

ND - Non Detect
NS - Not Sampled
Above COGCC Table 910-1 Concentratoin Level
ppm - Parts per million
mmhos/cm - Millimhos per centimeter

Table 4 - Soil Analytical Data
Williams Black Sulphur Compressor Station

		Sample Location	BH12	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21
		Sample Depth	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet
		Date Sampled	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12
Analyte	**Table 910-1 Concentration Levels**	**Units**										
Organic Compounds in Soil												
DRO	N/A	mg/kg	29	13	8	13	14	7	13	17	ND	59
GRO	N/A	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,100
Total Petroleum Hydrocarbon (DRO+GRO)	500	mg/kg	29	13	8	13	14	7	13	17	0	1,159
Benzene	0.17	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.50
Ethylbenzene	100	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.90
Toluene	85	mg/kg	ND	ND	ND	0.06	ND	ND	ND	ND	ND	2.30
Xylenes (Total)	175	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	38.00
Acenaphthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Anthracene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)anthracene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(B)fluoranthene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(K)fluoranthene	2.2	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)pyrene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chrysene	22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dibenzo(A,H)anthracene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluoranthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluorene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Indeno(1,2,3-cd)pyrene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyrene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Inorganics in Soil												
Electrical Conductivity	<4 mmhos/cm or 2 x background	mmhos/cm	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium Absorption Ratio	<12	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
pH	6-9	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals in Soil												
Arsenic	0.39	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium LDNR	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium total	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Boron	2	mg/L	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	70	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (III)	120,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (VI)	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	3,100	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	400	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	1,600	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Selenium	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Silver	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	23,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field Screening Results (ppm)	N/A	N/A	6.2	8.9	0.6	6.2	0.8	0.6	0.2	0.6	0.2	4,067

ND - Non Detect
NS - Not Sampled
Above COGCC Table 910-1 Concentration Level
ppm - Parts per million

Table 4 - Soil Analytical Data
Williams Black Sulphur Compressor Station

Sample Location			CB BH01	CB BH02	CB BH03	CB BH04	B1/MW8	B2/MW9	B3/MW10	B4/MW11	B5/MW12	B6MW13	B7/MW14
Sample Depth			19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	15-22 Feet	20-27 Feet	20-22 Feet	10-12 Feet	17-19 Feet	12-17 Feet	15-17 Feet
Date Sampled			5/31/12	5/31/12	5/31/12	5/31/12	6/26/13	6/26/13	6/26/13	6/27/13	6/27/13	6/27/13	6/28/13
Analyte	**Table 910-1 Concentration Levels**	**Units**											
Organic Compounds in Soil													
DRO	N/A	mg/kg	9.70	9,600	66	280	10	10	10	25	28	10	37
GRO	N/A	mg/kg	ND	12,000	26	110	ND	ND	ND	ND	36	ND	ND
Total Petroleum Hydrocarbon (DRO+GRO)	500	mg/kg	9.70	21,600	92	390	10	10	10	25	64	10	37
Benzene	0.17	mg/kg	ND	6.00	0.02	0.04	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	100	mg/kg	0.03	37.00	ND	0.03	ND	ND	ND	ND	ND	ND	ND
Toluene	85	mg/kg	0.09	190.00	0.11	0.31	ND	ND	ND	ND	ND	ND	0.17
Xylenes (Total)	175	mg/kg	0.29	620.00	0.14	0.38	ND	ND	ND	ND	ND	ND	0.63
Acenaphthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Anthracene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)anthracene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(B)fluoranthene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(K)fluoranthene	2.2	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)pyrene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chrysene	22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dibenzo(A,H)anthracene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluoranthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluorene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Indeno(1,2,3-cd)pyrene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyrene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Inorganics in Soil													
Electrical Conductivity	<4 mmhos/cm or 2 x background	mhos/c	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium Absorption Ratio	<12	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
pH	6-9	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals in Soil													
Arsenic	0.39	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium LDNR	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium total	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Boron	2	mg/L	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	70	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (III)	120,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (VI)	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	3,100	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	400	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	1,600	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Selenium	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Silver	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	23,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field Screening Results (ppm)	N/A	N/A	22.5	4,620	205.6	NS	0.0	0.0	0.0	0.1	0.0	2.0	0.8

ND - Non Detect mg/kg - Milligrams per kilogram
NS - Not Sampled
Above COGCC Table 910-1 Concentration Level
ppm - Parts per million

Table 4 - Soil Analytical Data
Williams Black Sulphur Compressor Station

		Sample Location	B8/MW15	B1	B1	B1	B2	B2	B2	B2	B3	B3	B3
		Sample Depth	10-12 Feet	5-6 Feet	10-15 Feet	15-20 Feet	2-3 Feet	5-8 Feet	10-15 Feet	15-20 Feet	2-3 Feet	7-8 Feet	10-15 Feet
		Date Sampled	6/28/13	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14
Analyte	**Table 910-1 Concentration Levels**	**Units**											
Organic Compounds in Soil													
DRO	N/A	mg/kg	23	16	19	20	48	23	120	170	23	16	17
GRO	N/A	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Petroleum Hydrocarbon (DRO+GRO)	500	mg/kg	23	16	19	20	48	23	120	170	23	16	17
Benzene	0.17	mg/kg	ND	NS	0.058	ND	NS	NS	0.038	ND	NS	NS	ND
Ethylbenzene	100	mg/kg	ND	NS	0.16	ND	NS	NS	ND	ND	NS	NS	ND
Toluene	85	mg/kg	ND	NS	0.62	0.04	NS	NS	0.058	ND	NS	NS	ND
Xylenes (Total)	175	mg/kg	ND	NS	0.91	0.16	NS	NS	0.15	0.13	NS	NS	ND
Acenaphthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Anthracene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)anthracene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(B)fluoranthene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(K)fluoranthene	2.2	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)pyrene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chrysene	22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dibenzo(A,H)anthracene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluoranthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluorene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Indeno(1,2,3-cd)pyrene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyrene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Inorganics in Soil													
Electrical Conductivity	<4 mmhos/cm or 2 x background	mmhos/cm	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium Absorption Ratio	<12	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
pH	6-9	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals in Soil													
Arsenic	0.39	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium LDNR	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium total	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Boron	2	mg/L	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	70	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (III)	120,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (VI)	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	3,100	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	400	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	1,600	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Selenium	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Silver	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	23,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field Screening Results (ppm)	N/A	N/A	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ND - Non Detect mg/kg - Milligrams per kilogram
NS - Not Sampled
Above COGCC Table 910-1 Concentration Level
ppm - Parts per million

Table 4 - Soil Analytical Data
Williams Black Sulphur Compressor Station

		Sample Location	B3	B4	B4	B4	B4	B5	B5	B5	B5	B6	B6
		Sample Depth	15-20 Feet	2-3 Feet	5-10 Feet	10-15 Feet	15-20 Feet	2-3 Feet	5-10 Feet	10-15 Feet	15-20 Feet	2-3 Feet	5-10 Feet
		Date Sampled	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14
Analyte	**Table 910-1 Concentration Levels**	**Units**											
Organic Compounds in Soil													
DRO	N/A	mg/kg	18	54	21	17	20	42	350	70	350	110	130
GRO	N/A	mg/kg	ND	37.00	ND	ND	ND	98	3,200	1,300	13,000	ND	260
Total Petroleum Hydrocarbon (DRO+GRO)	500	mg/kg	18	91	21	17	20	140	3,550	1,370	13,350	110	390
Benzene	0.17	mg/kg	ND	NS	0.040	NS	ND	NS	0.260	NS	9	NS	NS
Ethylbenzene	100	mg/kg	0.088	NS	0.22	NS	ND	NS	8.00	NS	48	NS	NS
Toluene	85	mg/kg	0.230	NS	1.10	NS	ND	NS	11	NS	280	NS	NS
Xylenes (Total)	175	mg/kg	0.470	NS	2.20	NS	0.12	NS	130	NS	550	NS	NS
Acenaphthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Anthracene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)anthracene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(B)fluoranthene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(K)fluoranthene	2.2	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)pyrene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chrysene	22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dibenzo(A,H)anthracene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluoranthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluorene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Indeno(1,2,3-cd)pyrene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyrene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Inorganics in Soil													
Electrical Conductivity	<4 mmhos/cm or 2 x background	mmhos/cm	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium Absorption Ratio	<12	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
pH	6-9	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals in Soil													
Arsenic	0.39	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium LDNR	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium total	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Boron	2	mg/L	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	70	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (III)	120,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (VI)	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	3,100	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	400	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	1,600	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Selenium	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Silver	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	23,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field Screening Results (ppm)	N/A	N/A	0.0	0.0	0.0	0.0	0.0	0.0	865.0	143.0	1,043.0	0.0	200.0

ND - Non Detect
mg/kg - Milligrams per kilogram
NS - Not Sampled
Above COGCC Table 910-1 Concentration Level
ppm - Parts per million

Table 4 - Soil Analytical Data
Williams Black Sulphur Compressor Station

		Sample Location	B6	B6	B7	B7	B7	B7	B8	B8	B8	B8	B9
		Sample Depth	10-15 Feet	15-20 Feet	2-3 Feet	5-10 Feet	10-15 Feet	15-20 Feet	2-3 Feet	5-10 Feet	10-15 Feet	15-20 Feet	4-5 Feet
		Date Sampled	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14	5/27/14
Analyte	**Table 910-1 Concentration Levels**	**Units**											
Organic Compounds in Soil													
DRO	N/A	mg/kg	200	370	82	69	190	58	160	150	61	120	ND
GRO	N/A	mg/kg	650	6,000	700	500	260	1,700	100	350	1,400	1,300	ND
Total Petroleum Hydrocarbon (DRO+GRO)	500	mg/kg	850	6,370	782	569	450	1,758	260	500	1,461	1,420	ND
Benzene	0.17	mg/kg	ND	0.036	NS	NS	ND	NS	NS	NS	ND	ND	NS
Ethylbenzene	100	mg/kg	0.410	0.24	NS	NS	0.22	NS	NS	NS	0.320	1.50	NS
Toluene	85	mg/kg	0.720	1.10	NS	NS	0.40	NS	NS	NS	0.180	3.30	NS
Xylenes (Total)	175	mg/kg	5.800	2.50	NS	NS	3.20	NS	NS	NS	30	46	NS
Acenaphthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Anthracene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)anthracene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(B)fluoranthene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(K)fluoranthene	2.2	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)pyrene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chrysene	22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dibenzo(A,H)anthracene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluoranthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluorene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Indeno(1,2,3-cd)pyrene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyrene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Inorganics in Soil													
Electrical Conductivity	<4 mmhos/cm or 2 x background	mmhos/cm	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium Absorption Ratio	<12	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
pH	6-9	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals in Soil													
Arsenic	0.39	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium LDNR	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium total	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Boron	2	mg/L	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	70	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (III)	120,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (VI)	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	3,100	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	400	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	1,600	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Selenium	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Silver	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	23,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field Screening Results (ppm)	N/A	N/A	1,450.0	2971.0	92.0	878.0	2068.0	1,532.0	0.0	60.0	605.0	1,504.0	0.0

ND - Non Detect
mg/kg - Milligrams per kilogram
NS - Not Sampled
Above COGCC Table 910-1 Concentration Level
ppm - Parts per million

Table 4 - Soil Analytical Data
Williams Black Sulphur Compressor Station

		Sample Location	B9	B9	B9	B10	B10	B10	B10	B11	B11	B11	B11
		Sample Depth	5-10 Feet	10-15 Feet	15-20 Feet	4-5 Feet	5-10 Feet	10-15 Feet	15-20 Feet	4-5 Feet	5-10 Feet	10-15 Feet	15-20 Feet
		Date Sampled	5/27/14	5/27/14	5/27/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14
Analyte	**Table 910-1 Concentration Levels**	**Units**											
Organic Compounds in Soil													
DRO	N/A	mg/kg	ND	ND	ND	23	25	20	18	63	35	23	ND
GRO	N/A	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Petroleum Hydrocarbon (DRO+GRO)	500	mg/kg	ND	ND	ND	23	25	20	18	63	35	23	ND
Benzene	0.17	mg/kg	NS	ND	ND	NS	NS	ND	ND	NS	NS	ND	ND
Ethylbenzene	100	mg/kg	NS	ND	ND	NS	NS	ND	ND	NS	NS	ND	ND
Toluene	85	mg/kg	NS	ND	ND	NS	NS	ND	ND	NS	NS	ND	ND
Xylenes (Total)	175	mg/kg	NS	ND	ND	NS	NS	0.25	ND	NS	NS	ND	ND
Acenaphthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Anthracene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)anthracene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(B)fluoranthene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(K)fluoranthene	2.2	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)pyrene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chrysene	22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dibenzo(A,H)anthracene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluoranthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluorene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Indeno(1,2,3-cd)pyrene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyrene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Inorganics in Soil													
Electrical Conductivity	<4 mmhos/cm or 2 x background	mmhos/cm	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium Absorption Ratio	<12	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
pH	6-9	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals in Soil													
Arsenic	0.39	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium LDNR	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium total	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Boron	2	mg/L	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	70	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (III)	120,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (VI)	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	3,100	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	400	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	1,600	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Selenium	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Silver	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	23,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field Screening Results (ppm)	N/A	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ND - Non Detect
mg/kg - Milligrams per kilogram
NS - Not Sampled
Above COGCC Table 910-1 Concentration Level
ppm - Parts per million

Table 4 - Soil Analytical Data
Williams Black Sulphur Compressor Station

Sample Location			B12	B12	B12	B12	B13	B13	B13	B13	B14	B14	B14
Sample Depth			2-3 Feet	5-10 Feet	10-15 Feet	15-20 Feet	2-3 Feet	5-10 Feet	10-15 Feet	15-20 Feet	2-3 Feet	5-10 Feet	10-15 Feet
Date Sampled			5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14
Analyte	**Table 910-1 Concentration Levels**	**Units**											
Organic Compounds in Soil													
DRO	N/A	mg/kg	110	110	84	140	25	110	360	350	130	180	230
GRO	N/A	mg/kg	83	400	360	1,700	42	230	1,900	1,600	75	210	96
Total Petroleum Hydrocarbon (DRO+GRO)	500	mg/kg	193	510	444	1,840	97	340	2,260	1,950	205	390	320
Benzene	0.17	mg/kg	NS	ND	ND	NS	NS	ND	0.270	1.50	NS	ND	NS
Ethylbenzene	100	mg/kg	NS	ND	0.42	NS	NS	0.04	7	8.9	NS	0.18	NS
Toluene	85	mg/kg	NS	ND	0.66	NS	NS	0.21	15	50	NS	0.25	NS
Xylenes (Total)	175	mg/kg	NS	5.30	7.60	NS	NS	2.70	110	100	NS	5.8	NS
Acenaphthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Anthracene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)anthracene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(B)fluoranthene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(K)fluoranthene	2.2	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)pyrene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chrysene	22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dibenzo(A,H)anthracene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluoranthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluorene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Indeno(1,2,3-cd)pyrene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyrene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Inorganics in Soil													
Electrical Conductivity	<4 mmhos/cm or 2 x background	mmhos/cm	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium Absorption Ratio	<12	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
pH	6-9	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals in Soil													
Arsenic	0.39	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium LDNR	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium total	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Boron	2	mg/L	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	70	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (III)	120,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (VI)	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	3,100	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	400	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	1,600	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Selenium	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Silver	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	23,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field Screening Results (ppm)	N/A	N/A	0.0	743.0	1815.0	732.0	0.0	843.0	3,208.0	950.0	77.0	955.0	1,121.0

ND - Non Detect
mg/kg - Milligrams per kilogram
NS - Not Sampled
Above COGCC Table 910-1 Concentration Level
ppm - Parts per million

Table 4 - Soil Analytical Data
Williams Black Sulphur Compressor Station

		Sample Location	B14	B15	B15	B15	B15	B16	B16	B16	B17	B17	B17
		Sample Depth	15-20 Feet	3-4 Feet	5-10 Feet	10-15 Feet	15-20 Feet	5-10 Feet	10-15 Feet	15-20 Feet	2.5-3.5 Feet	5-10 Feet	10-15 Feet
		Date Sampled	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/29/14	5/29/14	5/29/14
Analyte	**Table 910-1 Concentration Levels**	**Units**											
Organic Compounds in Soil													
DRO	N/A	mg/kg	72	20	64	160	200	19	17	22	25	15	15
GRO	N/A	mg/kg	66	ND	590	770	1,800	58	ND	ND	ND	ND	ND
Total Petroleum Hydrocarbon (DRO+GRO)	500	mg/kg	138	20	654	930	2,000	77	17	22	25	15	15
Benzene	0.17	mg/kg	ND	NS	NS	ND	0.46	NS	ND	ND	NS	ND	ND
Ethylbenzene	100	mg/kg	0.08	NS	NS	ND	4.7	NS	ND	ND	NS	ND	ND
Toluene	85	mg/kg	0.22	NS	NS	98	13	NS	ND	ND	NS	ND	ND
Xylenes (Total)	175	mg/kg	1.30	NS	NS	13	58	NS	ND	ND	NS	ND	ND
Acenaphthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Anthracene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)anthracene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(B)fluoranthene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(K)fluoranthene	2.2	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)pyrene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chrysene	22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dibenzo(A,H)anthracene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluoranthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluorene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Indeno(1,2,3-cd)pyrene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyrene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Inorganics in Soil													
Electrical Conductivity	<4 mmhos/cm or 2 x background	mmhos/cm	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium Absorption Ratio	<12	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
pH	6-9	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals in Soil													
Arsenic	0.39	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium LDNR	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium total	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Boron	2	mg/L	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	70	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (III)	120,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (VI)	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	3,100	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	400	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	1,600	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Selenium	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Silver	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	23,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field Screening Results (ppm)	N/A	N/A	3,233.0	76.0	894.0	1491.0	2185.0	0.0	0.0	1.7	0.0	0.0	0.0

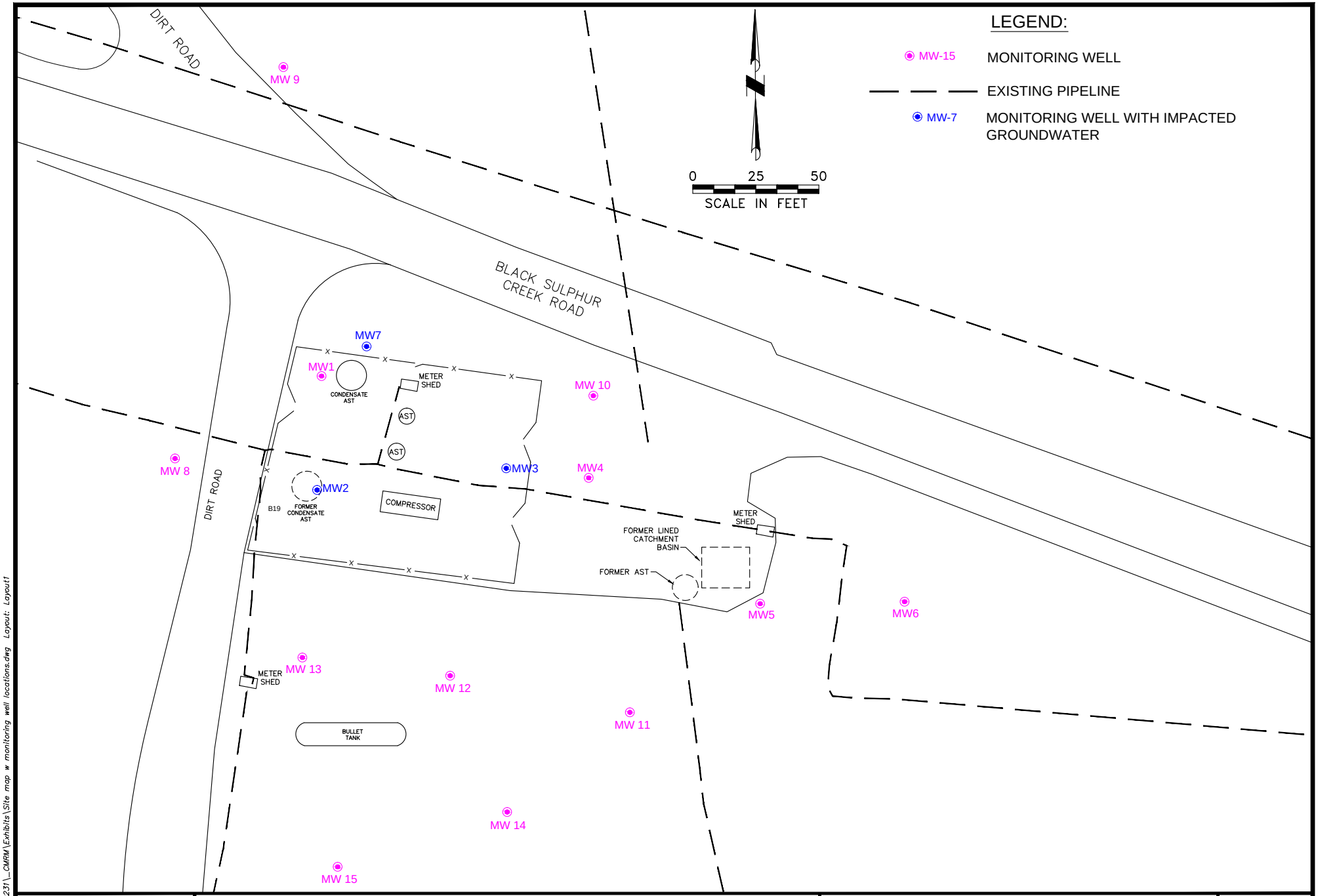
ND - Non Detect
mg/kg - Milligrams per kilogram
NS - Not Sampled
Above COGCC Table 910-1 Concentration Level
ppm - Parts per million

Table 4 - Soil Analytical Data
Williams Black Sulphur Compressor Station

Sample Location			B18	B18	B18	B18	B19	B19	B19	B19
Sample Depth			2.5-3.5 Feet	5-10 Feet	10-15 Feet	15-20 Feet	2-2.5 Feet	5-10 Feet	10-15 Feet	15-20 Feet
Date Sampled			5/29/14	5/29/14	5/29/14	5/29/14	5/29/14	5/29/14	5/29/14	5/29/14
Analyte	**Table 910-1 Concentration Levels**	**Units**								
Organic Compounds in Soil										
DRO	N/A	mg/kg	14	15	18	32	98	130	170	41
GRO	N/A	mg/kg	ND	ND	ND	390	ND	28	68	76
Total Petroleum Hydrocarbon (DRO+GRO)	500	mg/kg	14	15	ND	422	98	158	268	111
Benzene	0.17	mg/kg	NS	NS	ND	0.66	NS	NS	ND	ND
Ethylbenzene	100	mg/kg	NS	NS	ND	0.23	NS	NS	ND	ND
Toluene	85	mg/kg	NS	NS	0.05	6	NS	NS	0.075	ND
Xylenes (Total)	175	mg/kg	NS	NS	0.28	29	NS	NS	1.5	1
Acenaphthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Anthracene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)anthracene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(B)fluoranthene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(K)fluoranthene	2.2	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)pyrene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Chrysene	22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Dibenzo(A,H)anthracene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Fluoranthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Fluorene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Indeno(1,2,3-cd)pyrene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Pyrene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Inorganics in Soil										
Electrical Conductivity	<4 mmhos/cm or 2 x background	mmhos/cm	NS	NS	NS	NS	NS	NS	NS	NS
Sodium Absorption Ratio	<12	Unitless	NS	NS	NS	NS	NS	NS	NS	NS
pH	6-9	Unitless	NS	NS	NS	NS	NS	NS	NS	NS
Metals in Soil										
Arsenic	0.39	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Barium LDNR	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Barium total	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Boron	2	mg/L	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	70	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (III)	120,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (VI)	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Copper	3,100	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Lead	400	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	1,600	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Selenium	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Silver	390	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	23,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS
Field Screening Results (ppm)	N/A	N/A	0.0	0.0	23.8	348.0	0.0	155.0	3,466.0	731.0

ND - Non Detect
mg/kg - Milligrams per kilogram
NS - Not Sampled
Above COGCC Table 910-1 Concentration Level
ppm - Parts per million

FIGURES



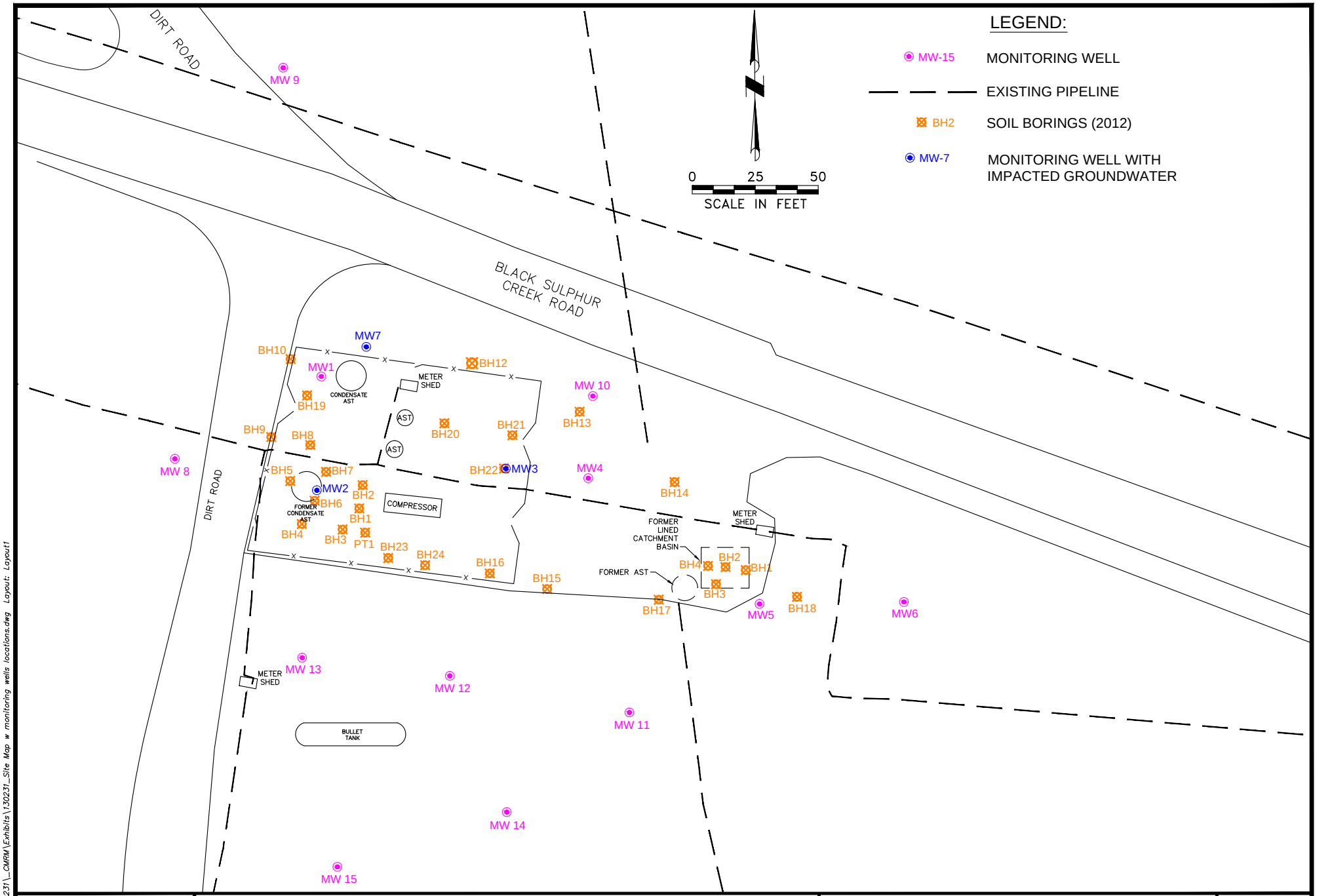
PROJECT NO:	013-0231
DRAWN BY:	KJT
DATE:	10.9.14

SITE MAP WITH MONITORING WELL LOCATIONS
BLACK SULPHUR COMPRESSOR STATION
WILLIAMS (BARGATH, LLC)
RIO BLANCO COUNTY, COLORADO

OLSSON ASSOCIATES
4690 Table Mountain Drive
Suite 200
Golden, CO 80403
TEL 303.237.2072
FAX 303.237.2659

FIGURE
1

F:\Projects\013-0231_CMRM\Exhibits\Site map w monitoring well locations.dwg Layout: Layout1



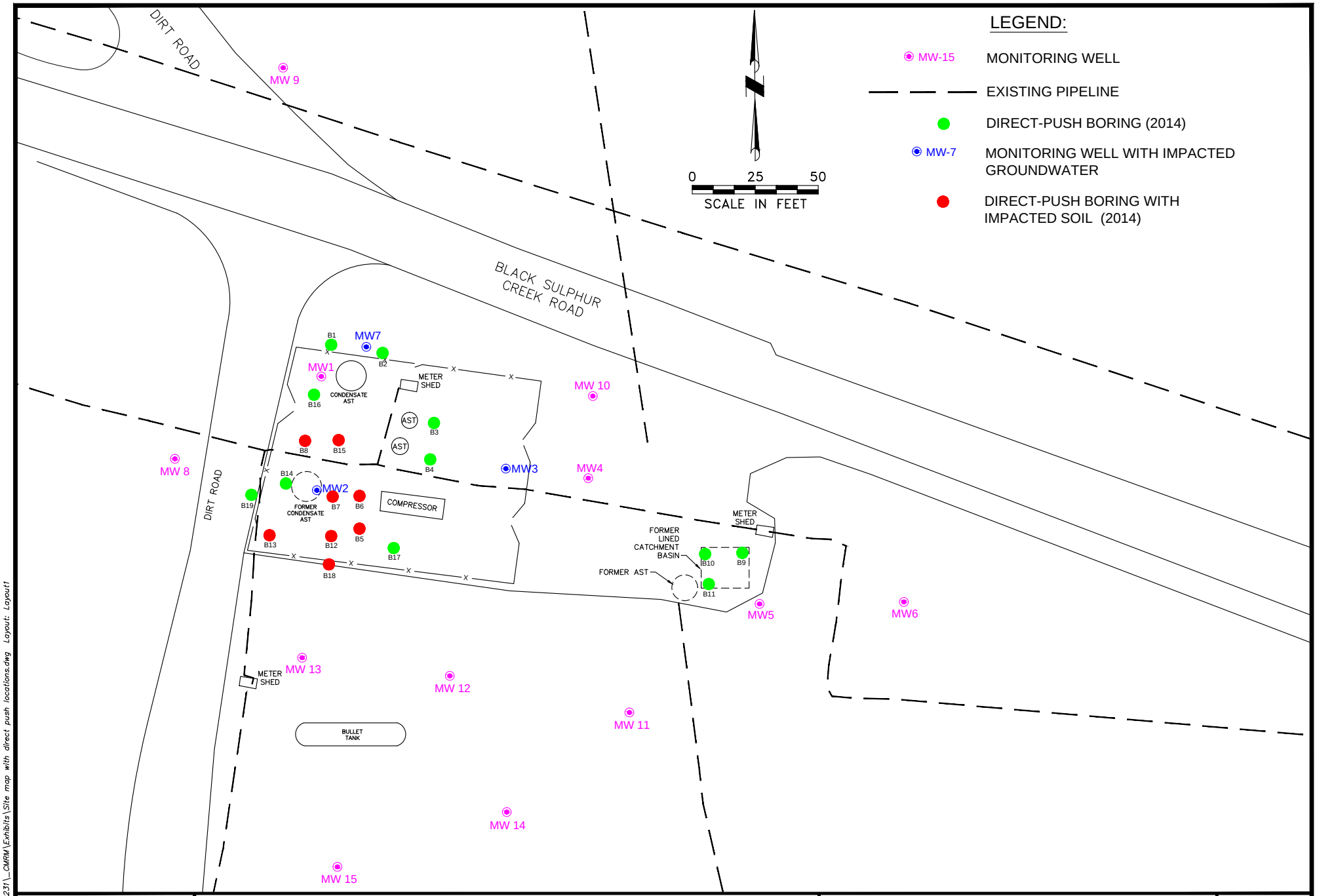
PROJECT NO:	013-0231
DRAWN BY:	KJT
DATE:	10.10.14

SITE MAP WITH INITIAL SITE CHARACTERIZATION BORINGS
BLACK SULPHUR COMPRESSOR STATION
WILLIAMS (BARGATH, LLC)
RIO BLANCO COUNTY, COLORADO

OLSSON ASSOCIATES
4690 Table Mountain Drive
Suite 200
Golden, CO 80403
TEL 303.237.2072
FAX 303.237.2659

FIGURE
2

F:\Projects\013-0231_CMRM\Exhibits\130231_Site Map w monitoring wells locations.dwg Layout: Layout1



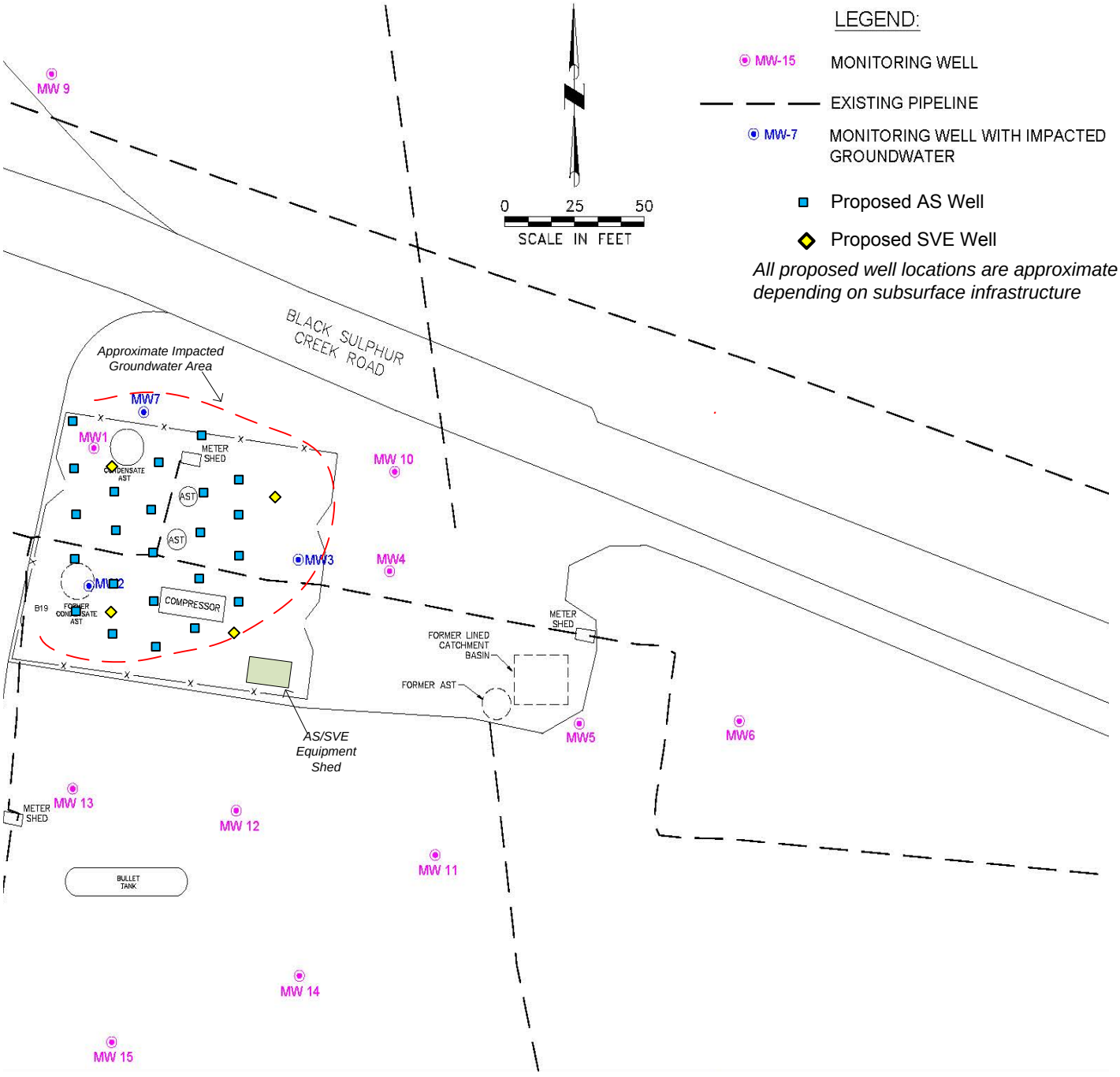
PROJECT NO:	013-0231
DRAWN BY:	KJT
DATE:	10.9.14

SITE MAP WITH MONITORING WELLS AND DIRECT-PUSH BORING LOCATIONS
BLACK SULPHUR COMPRESSOR STATION
WILLIAMS (BARGATH, LLC)
RIO BLANCO COUNTY, COLORADO

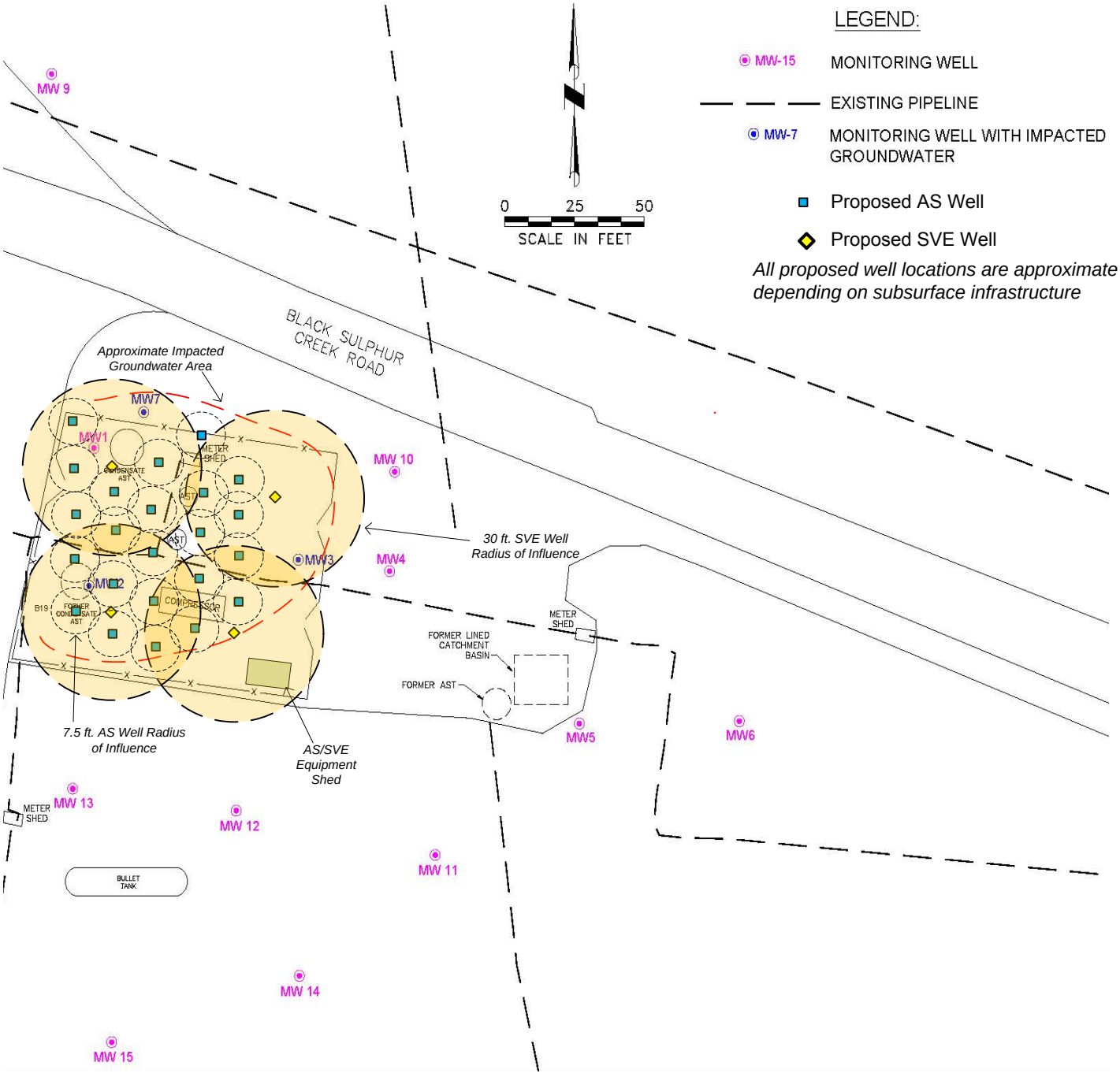
OLSSON ASSOCIATES
4690 Table Mountain Drive
Suite 200
Golden, CO 80403
TEL 303.237.2072
FAX 303.237.2659

FIGURE
3

F:\Projects\013-0231_CMRM\Exhibits\Site map with direct push locations.dwg Layout: Layout1



PROJECT NO: 013-0242	Proposed AS/SVE System Layout Black Sulphur Compressor Station Williams (Bargath, LLC)	OLSSON ASSOCIATES	4690 Table Mountain Drive Suite 200 Golden, CO 80403 TEL 303.237.2072 FAX 303.237.2659	FIGURE
DRAWN BY: KJT				4
DATE: 10/9/2014				



PROJECT NO: 013-0242	AS/SVE Target Remediation Area Black Sulphur Compressor Station Williams (Bargath,LLC)	OLSSON ASSOCIATES	4690 Table Mountain Drive Suite 200 Golden, CO 80403 TEL 303.237.2072 FAX 303.237.2659	FIGURE
DRAWN BY: KJT				5
DATE: 10.9.2014				

APPENDIX A

PILOT TEST DATA

SVE PILOT TEST DATA SHEET

Test No.:	1	Project Name / Location:	Williams Black Sulfur Compressor Station
Test Type:	SVE	Project Number:	013-0231
Test Date:	9/4/2014	Test Personnel:	K. Taylor, R. Stockton

Time	EXTRACTION WELL / BLOWER DATA						MONITOR POINT DATA				Comments:
	MW-3						***MW-4***	***MW-10***			
	FLOW		PID		VACUUM		R (ft) = ***32***	R (ft) = ***47.75***	R (ft) =	R (ft) =	
	Influent (scfm)	Discharge (scfm)	Influent (ppm)	Discharge (ppm)	Blower Inlet (in. Hg)	Wellhead (in. w.c.)	Wellhead Vac. ("w.c.)	Wellhead Vac. ("w.c.)	Wellhead Vac. ("w.c.)	Wellhead Vac. ("w.c.)	
Baseline											
1104	12	47	-	5.5	6	95	0.06	0.05			
1112	28	44	-	763	12	150	0.11	0.08			Sampled @ 1117 hrs.
1119	*	*	-	4900	*	*	0.17	0.14			* - Test stopped; Water in knockout tank and SVE exhaust.
	PID(begin)=										
	DTW(begin)=										
	PID(end)=										
	DTW(end)=										

SVE PILOT TEST DATA SHEET

Test No.:	2	Project Name / Location:	Williams Black Sulfur Compressor Station
Test Type:	SVE	Project Number:	013-0231
Test Date:	9/4/2014	Test Personnel:	K. Taylor, R. Stockton

Time	EXTRACTION WELL / BLOWER DATA						MONITOR POINT DATA				Comments:
	MW-4						***MW-3***	***MW-10***			
	FLOW		PID		VACUUM		R (ft) = ***32***	R (ft) = ***34.75***	R (ft) =	R (ft) =	
	Influent (scfm)	Discharge (scfm)	Influent (ppm)	Discharge (ppm)	Blower Inlet (in. Hg)	Wellhead (in. w.c.)	Wellhead Vac. ("w.c.)	Wellhead Vac. ("w.c.)	Wellhead Vac. ("w.c.)	Wellhead Vac. ("w.c.)	
Baseline											
1211	*	54	-	-	3	30	0	0			Full makeup air *- Gauge wet – not working
1214	*	54	-	2.0	3	30	0	0.02			
1219	*	22	-	2.3	4	50	0.055	0.03			Turned down makeup air
1222	*	12	-	1.5	4	54	0.07	0.06			
1240	*	10	-	1.4	4	52	0.04	0.055			
1247	*	*	-	2.3	**	80	**	**			** - Water accumulating, turned downed vacuum
1250	*	*	-	2.3	5	50	0.04	0.08			Stopped test
	PID(begin)=										
	DTW(begin)=										
	PID(end)=										
	DTW(end)=										

SVE PILOT TEST DATA SHEET

Test No.:	3	Project Name / Location:	Williams Black Sulfur Compressor Station
Test Type:	SVE	Project Number:	013-0231
Test Date:	9/4/2014	Test Personnel:	K. Taylor, R. Stockton

Time	EXTRACTION WELL / BLOWER DATA						MONITOR POINT DATA				Comments:
	MW1						***BH8*** R (ft) = ***30.25***	***MW-7*** R (ft) = ***23.5***	***MW3*** R (ft) = ***76.5***	***MW2*** (ft) = ***47.25***	
	FLOW		**PID**		**VACUUM**						
	Influent (scfm)	Discharge (scfm)	Influent (ppm)	Discharge (ppm)	Blower Inlet (in. Hg)	Wellhead (in. w.c.)	Wellhead Vac. ("w.c.)	Wellhead Vac. ("w.c.)	Wellhead Vac. ("w.c.)	Wellhead Vac. ("w.c.)	
Baseline											
1315	*	*	-	-	3	30	-	0.03	0.02	0	*Guages not working; taped off piezometers in the vicinity of MW2
1330	*	*	-	-	3	33	-	0.03	-	0.015	
1332	*	*	-	9	3	41	0.02	0.035	0.02	0.015	Turned down makeup air
1345	*	*	-	19	6	80	0.025	0.055	0.03	0.01	
1351	*	*	-	30	7	98	-	0.05	0.005	0.01	
1356	*	*	-	35	-	-	-	-	-	-	Stopped test
	PID(begin)=										
	DTW(begin)=										
	PID(end)=										
	DTW(end)=										

SVE PILOT TEST DATA SHEET

Test No.:	4	Project Name / Location:	Williams Black Sulfur Compressor Station
Test Type:	SVE	Project Number:	013-0231
Test Date:	9/4/2014	Test Personnel:	K. Taylor, R. Stockton

Time	EXTRACTION WELL / BLOWER DATA						MONITOR POINT DATA				
	MW2						***MW1*** R (ft) = ***47.25***	***BH4*** R (ft) = ***17.0***	***BH3*** R (ft) = ***21.5***	R (ft) =	
	FLOW		**PID**		**VACUUM**						
	Influent (scfm)	Discharge (scfm)	Influent (ppm)	Discharge (ppm)	Blower Inlet (in. Hg)	Wellhead (in. w.c.)	Wellhead Vac. ("w.c.)	Wellhead Vac. ("w.c.)	Wellhead Vac. ("w.c.)	Wellhead Vac. ("w.c.)	Comments:
Baseline											
1409	<10*	*	-	786	3	40	0.16	0.16	-		*Gauge intermittent
1418	10	*	-	1495	3	38	0.14	-	0.12		Switched monitoring from B13 to B5
1420	20	*	-	3180	4	60	0.16	-	0.24		
1430	30	*	-	3300	4	52	0.18	-	0.40		
1431	47	*	-	2000	6	82	0.22	-	0.70		
1438	47	*	-	3000	6	80	>0.25**	-	0.78		Sampled ** - reading over gauge rating
	PID(begin)=										
	DTW(begin)=										
	PID(end)=										
	DTW(end)=										

APPENDIX B

LABORATORY ANALYTICAL REPORT
PILOT TEST AIR SAMPLES

ANALYTICAL REPORT

Report Date: September 25, 2014

Kevin Taylor
Olson Associates
4690 Table Mountain Drive
Suite 200
Golden, CO 80403

Phone: (303) 237-2072
Fax: (303) 237-2659
E-mail: ktaylor@olssonassociates.com

Workorder: **34-1425460**
Project ID: 01/Black Sulphur Compressor St
Purchase Order: 01

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
MW3	1425460001	09/04/14	09/11/14	Black Sulphur Compre
MW2	1425460002	09/04/14	09/11/14	Black Sulphur Compre

ANALYTICAL REPORT

Workorder: 34-1425460
Client: Olsson Associates
Project Manager: Paul E. Pope

Analytical Results

Sample ID: **MW3** | Sampling Site: Black Sulphur Compre | Collected: 09/04/2014
Lab ID: 1425460001 | Media: Summa 6 Liter Canister | Received: 09/11/2014
Matrix: Air | Sampling Parameter: NA

Analysis Method - EPA TO-15

Preparation: Not Applicable
Analysis: EPA TO-15, Air | **Instrument ID:** 5972-W
Batch: IVOA/2684 (HBN: 135523) | **Percent Solid:** NA
Analyzed: 09/23/2014 15:08 | **Report Basis:** Wet

Analyte	ppb	ug/m³	MDL (ppb)	RL (ppb)	Dilution	Qual.
Benzene	**25000**	**79000**	150	500	1000	E
Toluene	**18000**	**69000**	150	500	1000	
Ethyl benzene	**3300**	**14000**	150	500	1000	
m,p-Xylene	**13000**	**57000**	150	500	1000	
o-Xylene	**1100**	**4600**	150	500	1000	
Total Petroleum Hydrocarbons	190000	**680000**	NA	NA	1000	J

Sample ID: **MW2** | Sampling Site: Black Sulphur Compre | Collected: 09/04/2014
Lab ID: 1425460002 | Media: Summa 6 Liter Canister | Received: 09/11/2014
Matrix: Air | Sampling Parameter: NA

Analysis Method - EPA TO-15

Preparation: Not Applicable
Analysis: EPA TO-15, Air | **Instrument ID:** 5972-W
Batch: IVOA/2684 (HBN: 135523) | **Percent Solid:** NA
Analyzed: 09/23/2014 15:44 | **Report Basis:** Wet

Analyte	ppb	ug/m³	MDL (ppb)	RL (ppb)	Dilution	Qual.
Benzene	**160000**	**500000**	150	500	1000	E
Toluene	**320000**	**1200000**	150	500	1000	E
Ethyl benzene	**15000**	**65000**	150	500	1000	
m,p-Xylene	**110000**	**470000**	150	500	1000	E
o-Xylene	**14000**	**61000**	150	500	1000	
Total Petroleum Hydrocarbons	4500000	**16000000**	NA	NA	1000	J

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA TO-15	/S/ Lisa M. Reid 09/25/2014 14:09	/S/ Thomas Bosch 09/25/2014 15:09

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1425460
Client: Olsson Associates
Project Manager: Paul E. Pope

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ACLASS (DoD ELAP)	ADE-1420	http://www.aclasscorp.com
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Florida (TNI)	E871067	http://www.dep.state.fl.us/labs/bars/sas/qa/
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:			
CPSC	ACLASS (ISO 17025, CPSC)	ADE-1420	http://www.aclasscorp.com
Soil, Dust, Paint ,Air	AIHA (ISO 17025, AIHA ELLAP and NLLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1425460

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA TO-15
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	IVOA/2684 (HBN: 135523)
		Prepared By:	NA	**Analyzed By:**	Lisa M. Reid

Blank

MB: 413407
Analyzed: 09/23/2014 12:10
Units: ppb

Analyte	Result	MDL	RL
Benzene	ND	0.15	0.500
Toluene	ND	0.15	0.500
Ethyl benzene	ND	0.15	0.500
m,p-Xylene	ND	0.15	0.500
o-Xylene	ND	0.15	0.500

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 413405
Analyzed: 09/23/2014 10:22
Dilution: 1
Units: ppb

LCSD: 413406
Analyzed: 09/23/2014 10:58
Dilution: 1
Units: ppb

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Benzene	10.0	10.0	100	64.1	127.3	11.0	110	9.64	0.0	25.0
Toluene	11.3	10.0	113	75.6	139.4	12.7	127	12.1	0.0	25.0
Ethyl benzene	11.0	10.0	110	75.9	148.5	12.0	120	8.53	0.0	25.0
m,p-Xylene	20.7	20.0	104	73.7	144.9	22.9	115	10.1	0.0	25.0
o-Xylene	10.4	10.0	104	74.7	147.4	11.6	116	11.4	0.0	25.0

Surrogate Recoveries

Surrogate	4-Bromofluorobenzene	
QC Limits	67.7	129.9
Units	ppb	

Lab ID	Result	Target	% Recovery
413405-LCS	18.6	20.0	92.8
413406-LCSD	19.1	20.0	95.4
413407-MB	16.4	20.0	81.8
1426227001	16.7	20.0	83.5
1426121001	16.4	20.0	82.2
1425234001	17.3	20.0	86.4
1425234002	15.9	20.0	79.6
1425460001	17.7	20.0	88.6
1425460002	22.6	20.0	113

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1425460

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA TO-15
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	IVOA/2684 (HBN: 135523)
		Prepared By:	NA	**Analyzed By:**	Lisa M. Reid

QC Data Approved and Reviewed by

Lisa M. Reid	Thomas Bosch	9/25/2014
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

APPENDIX C

AIR SPARGE
AND
SVE SYSTEM SPECIFICATIONS

AS/SVE SYSTEM

Process Technology Support, LLC

Serving The Environmental Remediation Industry

Specifications for A Rental Soil Vapor Extraction And Air Sparge Remediation System

PTS Rental System # 4

TABLE OF CONTENTS

APPENDICES

- System Drawings
- Major Equipment Specifications

1 SYSTEM DESCRIPTION

This document provides a summary description of a turnkey soil vapor extraction (SVE) and air sparge system fabricated by Process Technology Support, LLC.

1.1 SVE System

A summary of major equipment and instrumentation associated with SVE system is provided below. Blower performance calculations for standard conditions are provided in the Appendix under the SVE System Tab. Variations in actual blower performance from the values predicted on the performance chart will vary based on actual atmospheric pressure, inlet temperature, relative humidity, and other factors.

- One (1) Rietschle SAP 530 regenerative vacuum blower, direct-drive powered by a 8.7 HP, 3Ø, 230/460 vac, 60 Hz, TEFC motor, operating at 2900-3450 RPMS, producing 250 SCFM at 50" w.c. vacuum at site elevation (4600 ft. amsl).
- One (1) 55 gallon fluid moisture separator (KO Tank) with 30 gallon liquid storage capacity, with high level float switch (wired intrinsically safe), stillwell, and 3/4-inch drain valve.
- Two (2) vacuum gauges (0-100" w.c.), one at KO tank inlet before bleed air valve, and one at blower inlet after bleed air valve.
- One (1) differential pressure gauge (0-20" w.c.) across inline filter.
- Three (3) 3/8-inch sample ports, one on blower inlet piping before KO tank, one on blower inlet piping after KO tank, and one on blower discharge piping.
- One (1) venturi flow sensor with 0-350 scfm magnehelic flow indicator installed on blower inlet piping before bleed air inlet.
- One (1) discharge high temperature switchgage (32-300 deg. F) to monitor blower discharge temperature, interlocked to deactivate the blower if the setpoint is exceeded initially set at 200 Deg F, wired intrinsically safe).
- One (1) low vacuum switch (9-85" w.c. vacuum range) to monitor KO Tank inlet vacuum, interlocked to turn blower off it inlet vacuum drops below setpoint (initially set at 20"w.c. vacuum, wired intrinsically safe).
- One (1) 4-inch, schedule 40 PVC vapor extraction common header pipe connected to seven (7) 1 1/2-inch and two (2) 2-inch SVE extraction lines. Each individual SVE extraction line was supplied with the following;
    - 1 1/2-inch or 2-inch gate valve for flow control,
    - 1 1/2-inch or 2-inchventuri flow sensor with magnehelic flow indicator (7 lines at 0-40 scfm range, 2 lines at 0-100 scfm range)
    - 0-60" w.c. vacuum indicator,
    - 3/8-inch sample port, and
    - 2" flexible hose and fernco couplings to connect to subsurface piping.

Note: All SVE flow indicator gauges were calibrated to display flow in scfm at standard conditions of 14.73 psia and 70 deg Fahrenheit. If actual operating conditions at the flow meters vary from the specified calibration conditions, flow readings recorded at the gauge indicators should be corrected based on actual

operating pressure/vacuums and temperatures to obtain a corrected SCFM flow reading. Correction charts/equations for the flow sensors are provided in the Appendix under the Process Instrumentation Tab.

Caution!!! – The SVE flow indicators are not rated for exposure to moisture. Isolation valves provided on the venturi flow sensors should be closed off when not taking measurements to minimize potential for entrained moisture or condensation from collecting inside the gauges. Re-open valves when taking flow measurements.

1.2 Air Sparge System

A list of the major equipment associated with the sparge system is provided below. Blower performance calculations for standard conditions are provided in the Appendix under the Air Sparge System Tab. Variations in actual blower performance from the values predicted on the performance chart will vary based on actual atmospheric pressure, inlet temperature, relative humidity, and other factors.

- One (1) Rietschle DTA-140 blower, direct drive powered by a 10 HP, 3Ø, 208-230/460 vac, 60 Hz, TEFC motor, operating at 1725 RPM, producing 60 SCFM at 10 psig at site elevation (4600 ft. amsl).
- One (1) American Industrial shell and tube heat exchanger (Model ACA-3182-3) with 1/4 HP, 3 phase, 208-230/460 vac motor to cool the sparge blower process air (Enclosed in sheet metal ducting to minimize heat loss during winter and provide added building ventilation during the summer).
- One (1) pressure gauge (0-15 psi) to monitor blower outlet pressure.
- One (1) temperature gauge (50/400 Deg. F) to monitor blower outlet temperature.
- One (1) high pressure switch (3-30 psi) connected to blower outlet, interlocked to turn off the blower if the set point is exceeded (initially set at 13 psi, wired intrinsically safe).
- One (1) temperature switchgage (32-300 deg. F) to monitor air temperature at the heat exchanger outlet, interlocked to turn off the blower if the set point is exceeded (initially set at 140 Deg. F, wired intrinsically safe).
- One (1) pressure gauge (0-15 psi) located at the heat exchanger outlet.
- One (1) utility pressure port located at the heat exchanger outlet.
- A distribution header and manifold fabricated from 2-inch schedule 40 black steel piping feeding eleven (11) sparge injection lines divided into three zones. The injection lines consist of the following components:
  - 1-inch gate valve for flow control,
  - 0-15 psig pressure gauge to measure injection line pressure,
  - 1-inch venturi flow sensor and magnehelic flow gauge with (0-20 SCFM) to measure injection line flow, and
  - 1-inch flexible pressure hose and hose clamps for connection to subsurface piping.

Note: All Sparge flow indicator gauges were calibrated to display flow in scfm at standard conditions of 14.73 psia and 70 deg Fahrenheit. If actual operating conditions at the flow meters vary from the specified calibration conditions, flow readings recorded at the gauge indicators should be corrected based on actual operating pressure/vacuums and temperatures to obtain a corrected SCFM flow reading. Correction charts/equations for the flow sensors are provided in the Appendix under the Process Instrumentation Tab.

1.3 Equipment Enclosure and Electrical Power System

The SVE/Air sparge system equipment was supplied inside an 8-ft. wide x 14-ft. long pre-engineered wood frame enclosure with 7-ft., 4-inch high side walls and a partition wall to separate the equipment room from the control room. A summary of building construction details and associated electrical equipment is provided below.

- Wood frame construction with 2x4 studs on 24-inch centers and T1-11 exterior siding.
- Wood frame floor consisting of 2x4 floor joists positioned on 12-inch centers and covered with ¾-inch pressure treated plywood deck and supported on five (5) 4x4 pressure treated timbers.
- Roof construction with 2x4 studs on 16-inch centers, covered with ½-inch roof decking, 15 # roofing paper and 25 year asphalt shingles.
- Two (2) single 3 ft wide x 6 ft, 3 inch high, insulated, wood doors with lockable latches (keyed alike).
- R-13 fiberglass batt insulation installed between wall and ceiling framing.
- Interior layer of 5/8-inch Type X drywall taped and finished on walls and ceiling.
- One (1) 120 vac, ¼ Hp, XP, 12-inch diameter exhaust fan w/ OSHA guard and exterior shutter in equipment room, controlled by a remote bulb thermostat located in the control panel.
- Two (2) 18-inch tall x 20-inch wide wall vents with pest screen in equipment room, and one (1) 18” x 12” wall vent in control panel room.
- Two (2) Class 1, Div 2, 120 vac, 300 watt, overhead light fixtures in equipment room.
- One (1) 120 vac, 150 watt, overhead light fixture located in the control room (lights in both rooms are controlled by the light switch located in the control room).
- One (1) 240 vac, 1500W XP equipment room heater with integral thermostat.
- One (1) 120 vac, 500W control room heater with integral thermostat.
- One (1) 120 vac, 1/30 HP, 10-inch diameter exhaust fan with guard and exterior shutter in control room.

Remediation equipment located inside the enclosure was pre-wired to an interior control panel. The 208 vac, 3Ø power from the main disconnect (located at the building exterior) will feed through an electrical meter and into a 3-pole power terminal block at the main control panel for distribution to the individual electrical loads. The main control panel contains individual circuit breakers and motor controllers to provide short circuit protection for electrical loads consisting of the SVE motor, air sparge motor, heat exchanger motor, lighting, heaters, exhaust fans, control panel, and a GFI outlet. All electrical work was completed in accordance with NEC requirements for a Class 1, Division 2, Group D, hazardous environment in the equipment room, and for a non-classified environment in the control room.

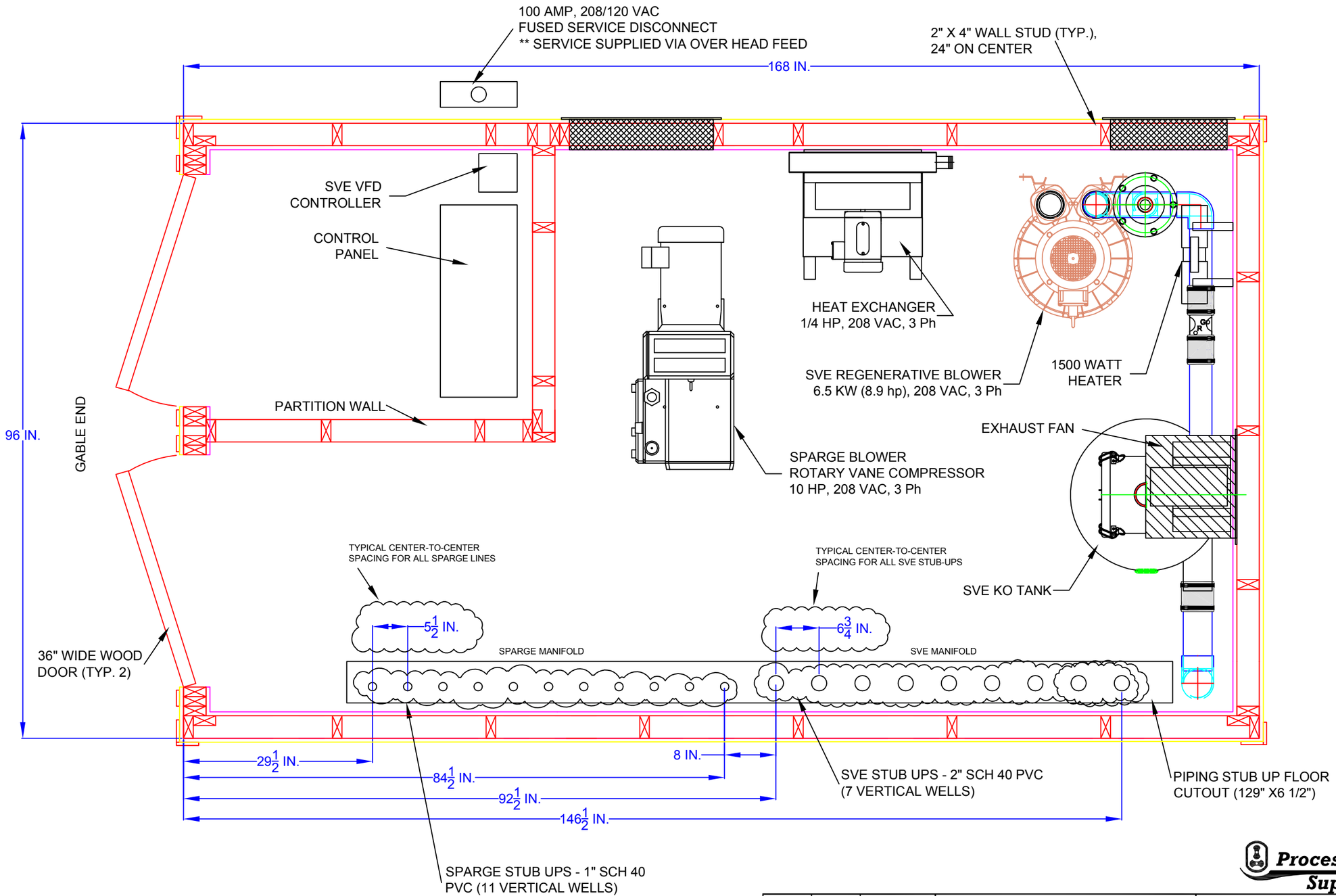
1.4 System Controls

Major control panel components include the following:

- UL Listed 508A/698A control panel.
- 42-inch tall x 30-inch wide x 12-inch deep NEMA 3R electrical control panel enclosure.
- Circuit breakers for blowers, heaters, exhaust fans, control power, bldg. lighting, and GFI outlet.
- Variable Frequency Drive (VFD) for SVE blower motor.
- Manual motor controllers for air sparge motor and heat exchanger motor.
- On/Off control power switch with green indicator light.
- Main power supply phase/voltage monitor relay.
- Main power supply surge arrester.
- 120 vac control relays.
- DL06 programmable logic controller (PLC), with 20 AC inputs, 16 relay outputs, and four (4) expansion slots.
- 6” monochrome touch screen for accessing PLC parameters and monitoring equipment runtimes and alarm status.
- Red common alarm indicator.
- Hand-Off-Auto (H-O-A) control switches for the SVE blower, sparge blower, heat exchanger, and sparge solenoids, with green run indicator lights for each.
- Reset Pushbutton.
- Two (2) Emergency stop mushroom head pushbuttons (one on control panel, and one in equipment room).
- Intrinsically safe barrier relays connecting the control panel to the equipment room switches and remote Emergency Stop pushbutton.
- Sensaphone 2000 auto-dialer

APPENDICES

- **System As-Built Drawings**
- **Major Equipment Specifications**



EQUIPMENT PLANVIEW AND PIPING STUB UPS
SCALE: 3/4" = 1'

Process Technology Support, LLC

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TJS	10/1/2014	SUBMITTAL

Process Technology Support, LLC
System # 4
Turnkey SVE/Air Sparge System

EQUIPMENT LAYOUT AND
PIPING STUB UP DETAILS

ACAD file: PTS_System_#_4_SYSLO.dwg
DWG. NO.: M1

EQUIPMENT LIST - SVE EXTRACTION LINE (TYP. 9)

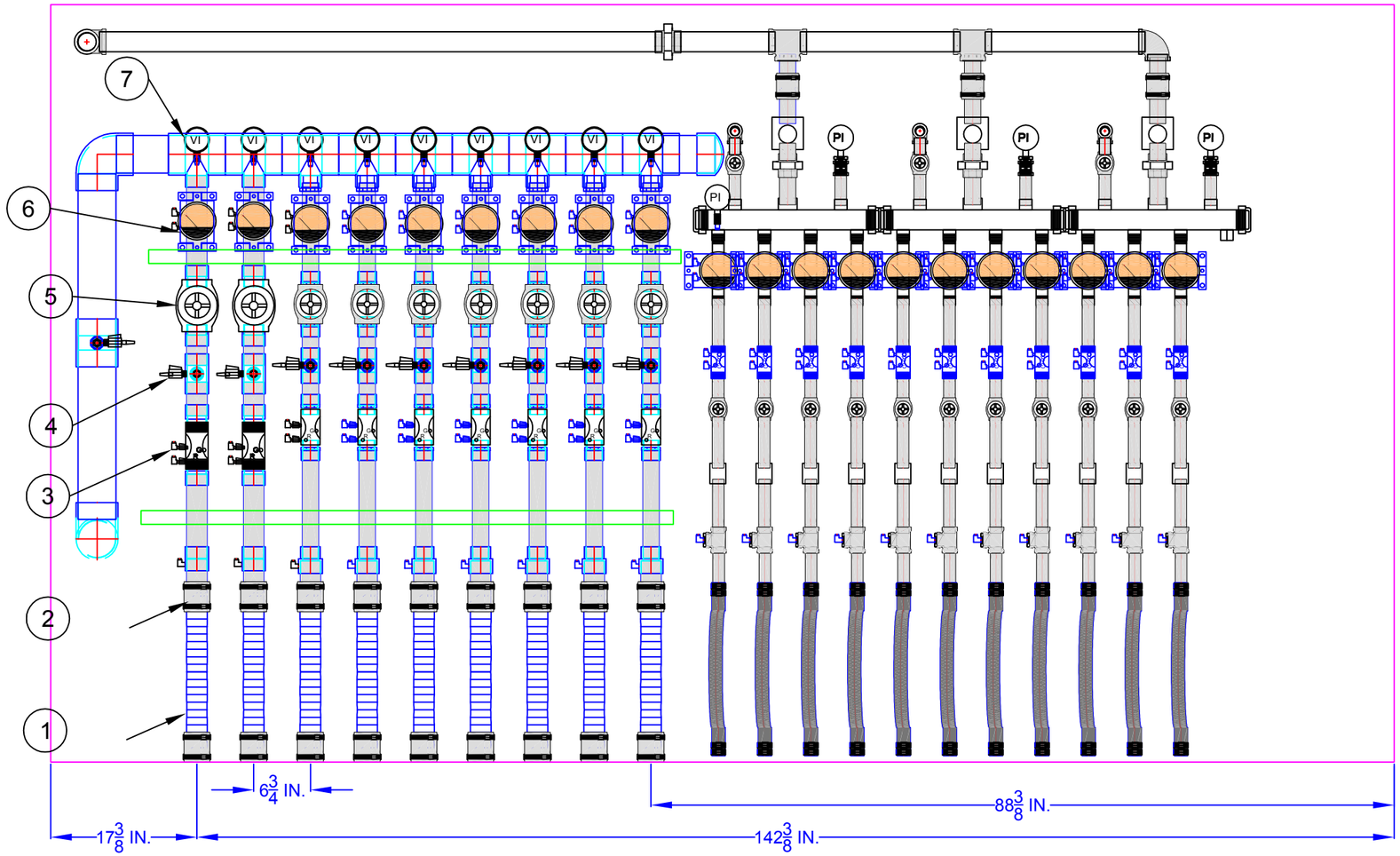
1) 2" FLEXIBLE VACUUM HOSE
2) VACUUM GAUGE CONNECTION (CONNECTED TO VACUUM GAUGE VIA IMPULSE LINE)
3) 1.5" MODEL 505 FLOW VENTURI (7 LINES) and 2" MODEL 685 VENTURI (2 LINES)
4) 3/8" SAMPLE PORT
5) 1 1/2" GATE VALVE
6) MAGNEHELIC FLOW GAUGE, 0-50 SCFM (7 LINES) and 0-100 SCFM (2 LINES)
7) VACUUM GAUGE, 0-60" W.C. (9 LINES)

EQUIPMENT LIST - SPARGE MANIFOLD HEADER (TYP. 3)

28) 1.5" SOLENOID VALVE (N.C.)
29) MANIFOLD PRESSURE GAUGE, 0-15 PSIG
30) 1" BLEED AIR VALVE (BLEED AIR LINE VENTED TO ATMOSPHERE)

EQUIPMENT LIST - SPARGE INJECTION LINES (TYP. 11)

31) SQ RT. MAGNEHELIC FLOW GAUGE, 0-20 SCFM RANGE
32) 1" GATE VALVE
33) 1" CHECK VALVE
34) PRESSURE GAUGE CONNECTION (CONNECTED TO PRESSURE GAUGE VIA IMPULSE LINE)
35) PRESSURE GAUGE, 0-15 PSIG
36) 1 3/8" FLEXIBLE PRESSURE HOSE



SVE & SPARGE MANIFOLD ELEVATIONS
SCALE: 3/4" = 1'

Process Technology Support, LLC

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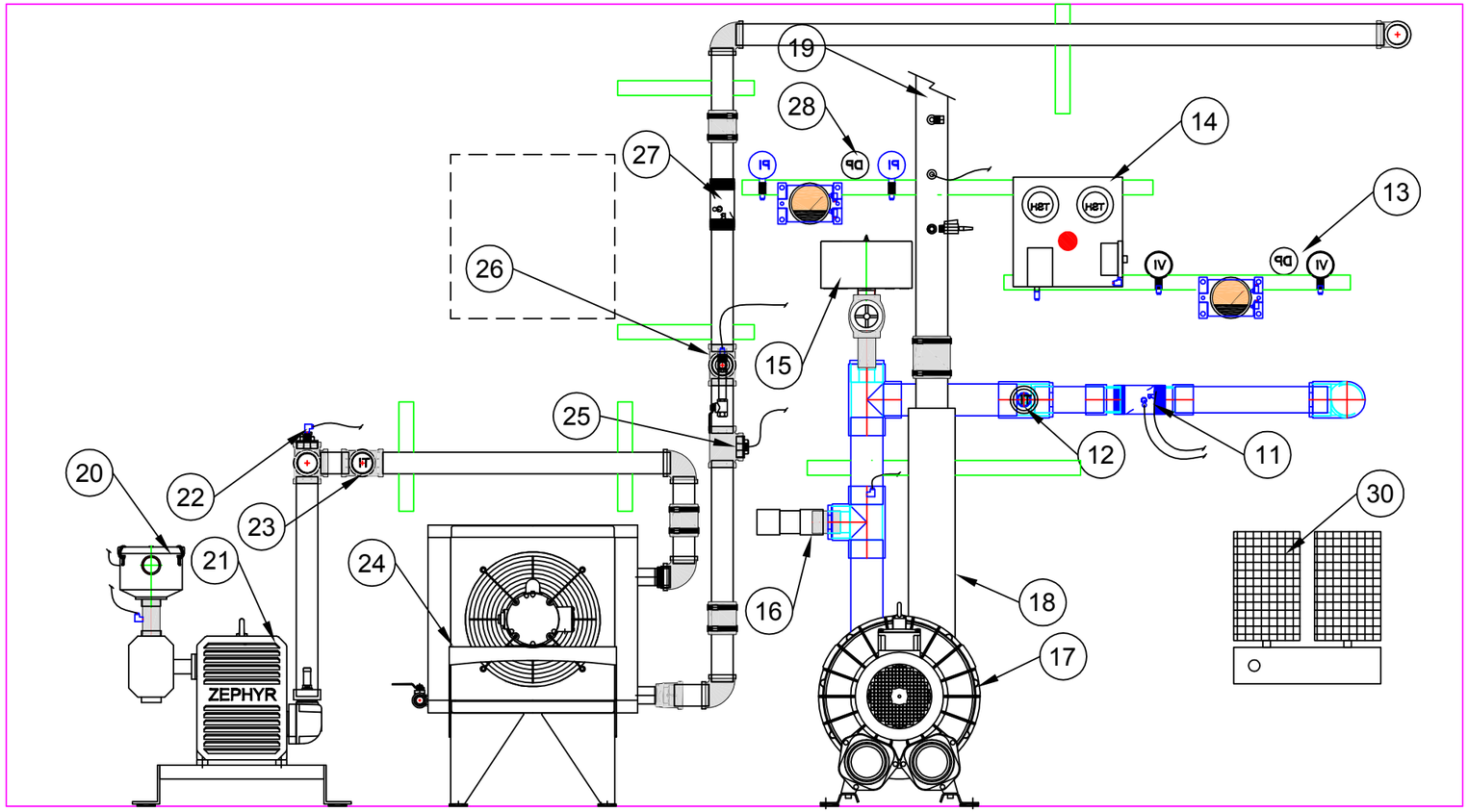
Process Technology Support, LLC
System # 4
Turnkey SVE/Air Sparge System

SVE AND SPARGE MANIFOLD ELEVATION VIEWS

ACAD file: PTS System # 4_SYSLO.dwg

DWG. NO.: M2



EQUIPMENT LIST - SVE SYSTEM

8) 55 GALLON KO TANK - INCLUDES CLEAR PVC STILLWELL WITH HIGH LEVEL FLOAT SWITCH, INTERNAL BALL FLOAT, AND 3/4" DRAIN PORT WITH GARDEN HOSE CONNECTION
9) 3" INLINE FILTER
10) 3/8" SAMPLE PORT
11) 2 1/2" TOTAL FLOW VENTURI
12) INLET TEMPERATURE GAUGE, -20/120 DEG. F
13) SVE SYSTEM GAUGES - INCLUDES KO TANK INLET VACUUM GAUGE (0-100" W.C.), INLINE FILTER D.P. GAUGE (0-20" W.C. D.P.), SVE TOTAL FLOW GAUGE (0-200 SCFM), AND BLOWER INLET VACUUM GAUGE (0-100" W.C.),
14) SVE/AIR SPARGE SWITCH BOX - INCLUDES SVE LOW VACUUM SWITCH, SVE DISCH. HIGH TEMPERATURE SWITCHGAGE, SPARGE HIGH PRESSURE SWITCH, AND SPARGE DISCH. HIGH TEMPERATURE SWITCHGAGE
15) BLEED AIR VALVE AND INLET FILTER/SILENCER
16) ADJUSTABLE VACUUM RELIEF VALVE (120" W.C. SETPOINT)
17) RIETSCHLE SAP 530 REGENERATIVE BLOWER. 6.5 KW, 208-230 VAC, 3 PHASE MOTOR.
18) 3" DISCHARGE SILENCER
19) 3" SVE EXHAUST STACK - INCLUDES 3/8" SAMPLE PORT, DISCHARGE TEMPERATURE PORT, SPARE 1/2" PORT, AND 3" RAIN CAP (PIPING VENTED TO BUILDING EXTERIOR THROUGH ROOF)

EQUIPMENT LIST - SPARGE SYSTEM

20) 1 1/2" INLET AIR FILTER
21) RIETSCHLE DTA-140 ROTARY VANE COMPRESSOR, 10 HP, 208-230 VAC, 3 PH MOTOR.
22) DISCHARGE PRESSURE PORT - TO CONNECT TO SPARGE DISCHARGE PRESSURE GAUGE AND HIGH PRESSURE SWITCH
23) DISCHARGE TEMPERATURE GAUGE, 50/400 DEG. F
24) AMERICAN INDUSTRIAL ACA SERIES HEAT EXCHANGER - INCLUDES INLET DUCTING AND EXTERIOR INLET/OUTLET VENT HOODS (NOT SHOWN)
25) HEAT EXCHANGER OUTLET TEMPERATURE PORT - TO CONNECT TO TEMPERATURE SWITCHGAGE (32-300 DEG. F RANGE)
26) OUTLET PRESSURE PORT - TO CONNECT TO HEAT EXCHANGER OUTLET PRESSURE GAUGE (0-15 PSIG) AND PRESSURIZED AIR CONNECTION
27) SPARGE SYSTEM GAUGES - INCLUDES HEAT EXCHANGER OUTLET PRESSURE GAUGE (0-15 PSI), INLINE FILTER D.P. GAUGE (0-20" W.C. D.P.), AND SPARGE DISCHARGE PRESSURE GAUGE (0-15 PSI)

EQUIPMENT LIST - MISCELLANEOUS

29) 12" XP BUILDING EXHAUST FAN
30) 208 VAC, 1500W XP BUILDING HEATER

SVE & SPARGE EQUIPMENT ELEVATIONS
SCALE: 3/4" = 1'

Process Technology Support, LLC

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System # 4
Turnkey SVE/Air Sparge System

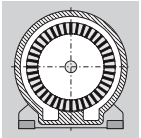
SVE AND SPARGE MANIFOLD
ELEVATION VIEWS

ACAD file: PTS System # 4_SYSL0.dwg
DWG. NO.: M3

Data

SVE BLOWER

Elmo Rietschle
A Gardner Denver Product

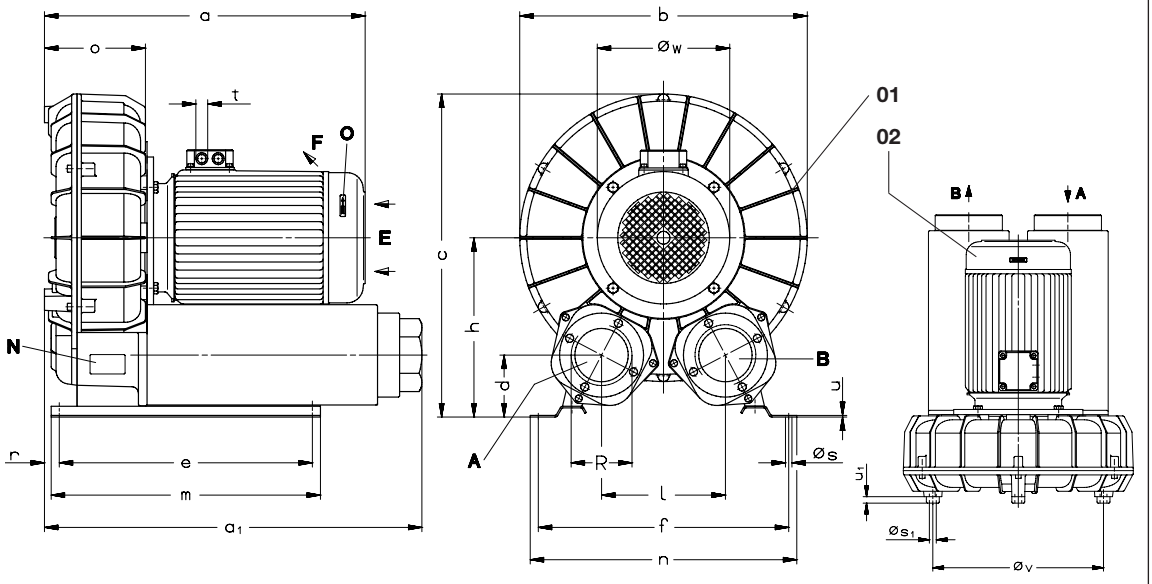


Side channel vacuum pumps | Bombas de vacío de canal lateral | Turbine latérale vide | Bombas de vácuo de canal lateral

SAP

BORA

- SAP 530
- SAP 710
- SAP 1060
- SAP 1500



01	Standard version	Versión estándar	Exécution standard	Versão padronizada
02	Vertical version	Versión vertical	Exécution vertical	Versão vertical
A	Vacuum connection	Conexión vacío	Raccord du vide	Conexão do vácuo
B	Exhaust	Escape	Refoulement	Exaustão
E	Cooling air entry	Entrada aire refrigerante	Entrée air refroidissement	Entrada do ar refrigerante
F	Cooling air exit	Salida aire refrigerante	Sortie air refroidissement	Saída do ar refrigerante
N	Data plate	Placa fecha	Etiquette caractéristique	Placa da data
O	Rotation arrow	Dirección de rotación	Flèche sens rotation	Direção da rotação

SAP		530			710			1060			1500	
[inches]	a	19.13	24.96	24.96	24.96	24.96	26.14	25.87	25.87	28.90	29.92	31.10
	a_1	23.66			27.83			28.74			29.80	
	b	18.54			21.02			21.02			21.02	
	c	22.13			24.29			24.29		23.86	23.86	
	d	4.45			5.20			5.06		4.61	4.61	
	e / f	18.50 / 15.59			18.50 / 18.35			18.50 / 18.35		14.17/16.93	14.17 / 16.93	
	h	12.83			13.78			13.78		13.35	13.35	
	m / n	19.69 / 16.77			19.69 / 19.53			19.69 / 19.53		15.75/19.69	15.75 / 19.69	
	l	7.13			9.06			9.06			9.06	
	o	7.56			7.64			8.86			10.28	
	r	1.97			1.97			2.28		7.19	8.23	
	øs / $øs_1$	0.43 / M 10			0.43 / M 10			0.43 / M 10		0.43 / -	0.43 / -	
	t	M 20 x 1.5	M 32 x 1.5		M 32 x 1.5			M 32 x 1,5		M 40 x 1,5	M 40 x 1,5	
	u	0.16			0.16			0.16			0.24	
	u_1	1.18			0.98			0.98			-	
	øv	15.43			17.99			17.99			-	
	øw	8.62	9.69	9.69	9.69			9.69		12.24	12.24	12.24
	R	3“ NPT			4“ NPT			4“ NPT			DN 125	
ZRK		80 (05)			100 (05)			100 (05)			-	
ZBS	50 Hz	80	80	80	100	100	100	100	100	100	2 x 100	2 x 100
	60 Hz	80	80	80	100	100	100	100	100	100	2 x 100	2 x 100
ZVF		100 (71)			#			#			-	
ZGD		80 (06)			100 (06)			100 (06)			-	
ZFP		216 (52)			-			-			-	
ZMS		#			#			#			#	
ZWS		131 (10)			-			-			-	

	Accessories	Accesorios	Accessoires	Acessórios
ZRK	Non return valve	Válvula retención	Clapet anti-retour	Válvula sem retorno
ZBS	Vacuum limitation valve	Válvula limitación vacío	Limiteur de dépression	Válvula de limitação do vácuo
ZVF	Vacuum tight suction filter	Filtro succión hermético	Filtre d‘aspiration étanche	Filtro de sucção à prova de vácuo
ZGD	Additional silencer	Silenciador adicional	Silencieux complémentaire	Silenciador adicional
ZFP	Dust separator	Separador de polvo	Filtre séparateur étanche	Separador de poeira
ZMS	Motor starter	Arranque motor	Disjoncteur moteur	Arranque do motor
ZWS	Change over valve	Válvula conmutadora	Inverseur de débit	Permuta de válvula

Models **SAP / 5.5 kw** and larger have an additional cooling fan situated between the motor and blower housing.
Los modelos **SAP / 5.5 kw** y superiores cuentan con un ventilador de refrigeración adicional situado entre el motor y la caja de la soplante.
A partir de la **SAP / 5.5 kw**, un ventilateur complémentaire est inséré entre le moteur et le corps de la turbine.
Os modelos a partir do **SAP / 5.5 kw** têm uma ventoínha de refrigeração adicional colocada entre o motor e o corpo do ventilador.

DA 545/3

3.1.2002

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Fax 410 - 712 - 4148
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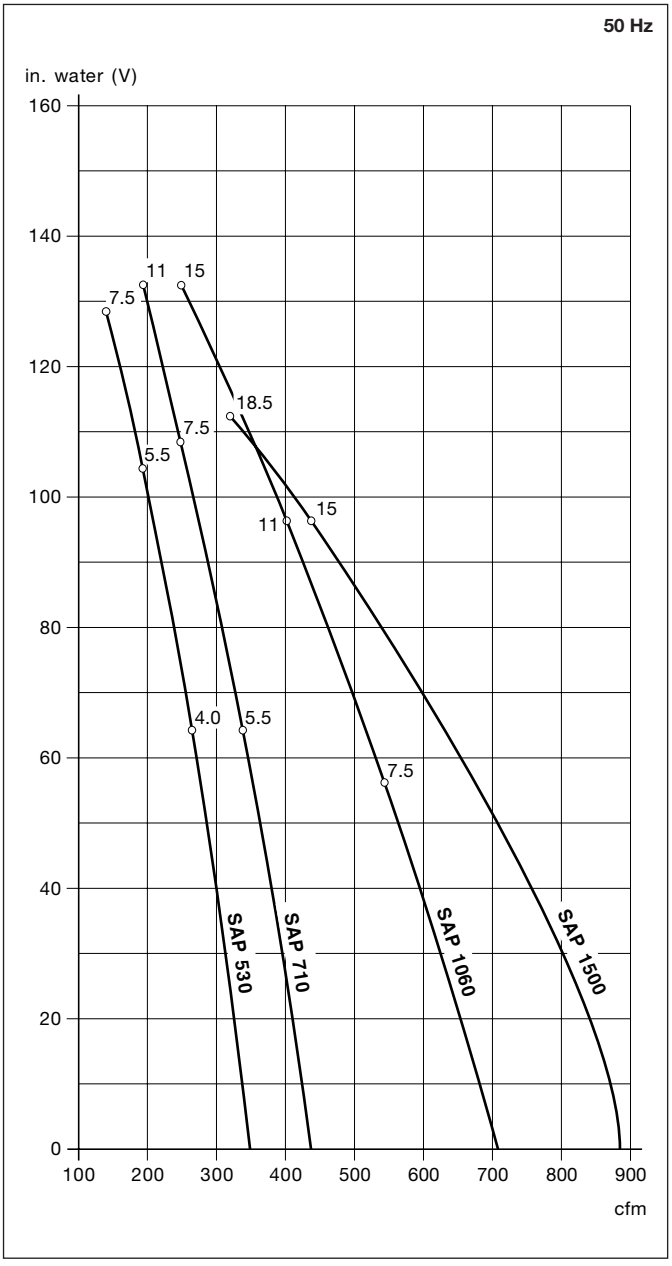
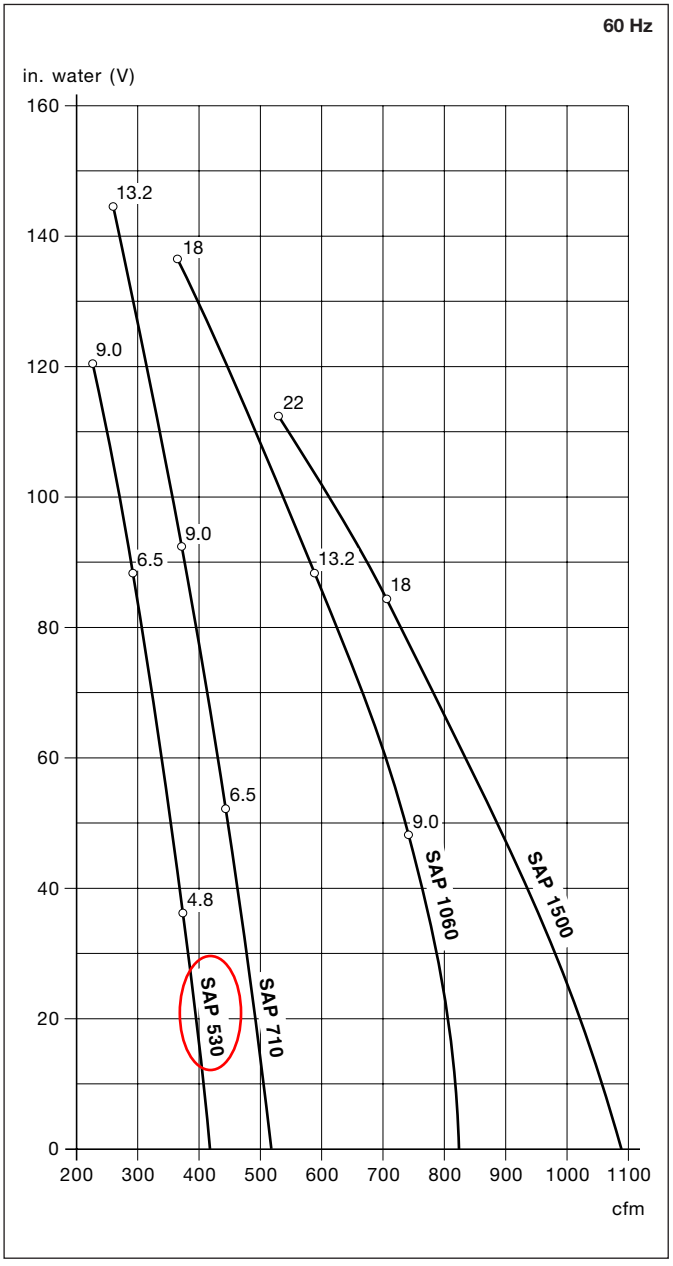
www.vacuumpumps.com

SAP		530			710			1060			1500	
cfm	50 Hz	347			436			706			883	
	60 Hz	418			518			824			1089	
in. water (V)	50 Hz	64.2	104	128	64.2	108	132	56.2	96.4	132•	96.4	112
	60 Hz	36.1	88.3	120	52.2	92.3	145	48.2	88.3	137•	84.3	112
3~	50 Hz	200-255/346-440V										346-440V
	60 Hz	200-277/346-480V										346-480V
kw	50 Hz	4.0	5.5	7.5	5.5	7.5	11.0	7.5	11.0	15	15	18,5
	60 Hz	4.8	6.5	9.0	6.5	9.0	13.2	9.0	13.2	18	18	22
A	50 Hz	19.0/11.0	23.5/13.5	29.5/17.0	23.5/13.5	29.5/17.0	48.5/28.0	29.5/17.0	48.5/28.0	57-71/33-41		43
	60 Hz	19.0/11.0	28.0/16.0	33.0/19.0	28.0/16.0	33.0/19.0	52.0/30.0	33.0/19.0	52.0/30.0	66-61/38-35		43
rpm	50 Hz	2850										
	60 Hz	3450										
dB(A)	50 Hz	72	75	76	76	76	76	79,5	80	80,5	78,5	79
	60 Hz	75	79	80	80	80	80	83	84	84	82	83
lbs		146	191	194	245	262	276	269	283	392	421	443

cfm	Capacity	Capacidad	Débit	Capacidade
in. water	Pressure difference	Diferencia de presión	Différence surpression	Pressão diferencial
V	Vacuum operation	Operación vacío	Fonction dépression	Operação do vácuo
3~	Motor version	Versión motor	Exécution moteur	Versão do motor
kw	Motor rating	Datos motor	Puissance moteur	Potência do motor
A	Full load amperage	Amperaje de plena carga	Intensité absorbée	Amperagem da carga total
rpm	Speed	Velocidad	Vitesse rotation	Velocidade
dB(A)	Average noise level (Discharge connected to a pipeline)	Nivel de ruido medio (Descarga conectada a tubería)	Niveau sonore moyen (Refoulement au travers d'un tuyau	Nível médio de ruído (Descarga ligada a uma tubulação)
lbs	Weight	Peso	Poids	Peso





The curves have a tolerance of ±10% and are based on inlet conditions at 68°F and a barometric pressure of 29.92“ HgA./ Las curvas tienen una tolerancia del ± 10 % y trabajan con condiciones de entrada de 68°F y una presión de retroceso de 1 bar (abs.)./ Les courbes (tolérance ±10%) sont établies pour de l'air aspiré à 68°F et une pression au refoulement de 29.92“ HgA./ As curvas têm uma tolerância de ±10% e estão relacionadas com as condições de admissão a 68°F e uma contra-pressão de 29.92“ HgA.

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AIR SPARGE BLOWER

Data

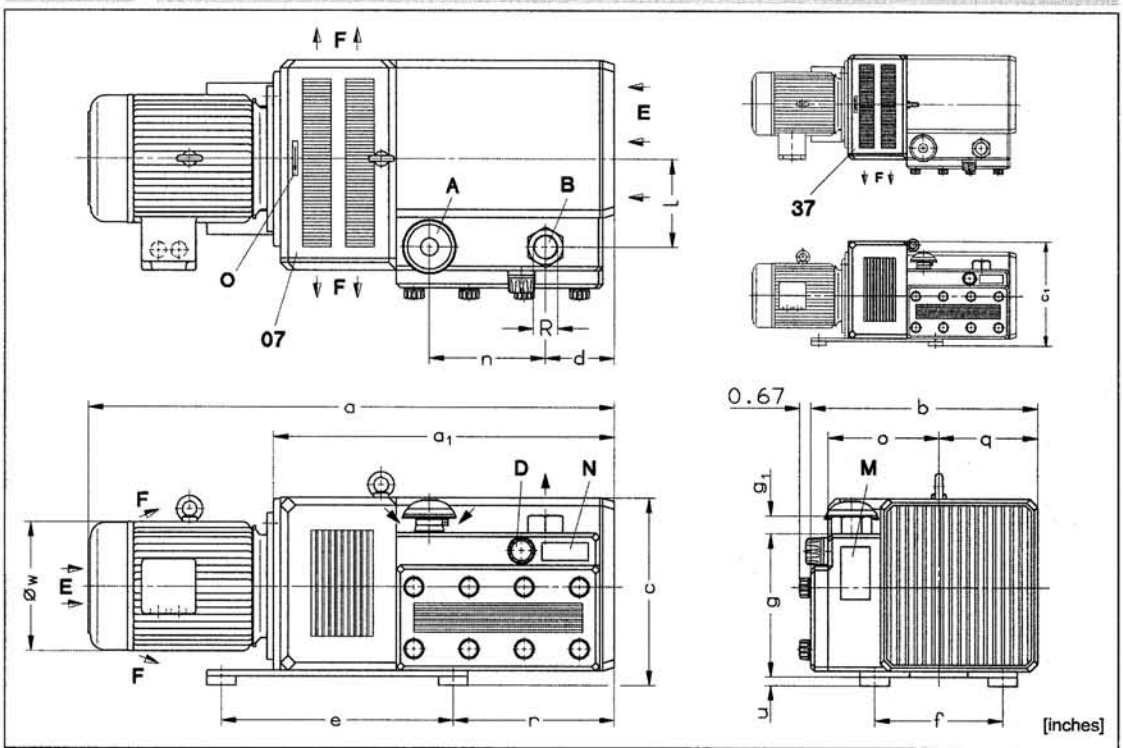
Rietschle

Compressors | Compresores | Compresseurs | Compressores

DTA

DRUVAC

DTA 40
DTA 50
DTA 60
DTA 80
DTA 100
DTA 140



(07)	Two side cooling air exit	Salida bilateral aire refrigerante	Sortie air refroidissement bi-côté	Saída bilateral do ar refrigerante
(37)	One side cooling air exit	Salida unilateral de aire refrigerante	Sortie air refroidissement mono-côté	Saída unilateral do ar refrigerante
A	Suction	Succión	Aspiration	Sucção
B	Pressure connection	Conexión presión	Raccord surpression	Conexão da pressão
D	Pressure regulating valve	Válvula reguladora de presión	Valve de réglage pression	Válvula de regulagem da pressão
E	Cooling air entry	Entrada aire refrigerante	Entrée air refroidissement	Entrada do ar refrigerante
F	Cooling air exit	Salida aire refrigerante	Sortie air refroidissement	Saída do ar refrigerante
M	Greasing label	Rótulo engrase	Etiquette graissage	Rótulo da lubrificação
N	Data plate	Placa fecha	Etiquette caractéristique	Placa da data
O	Rotation arrow	Dirección de rotación	Flèche sens rotation	Direção da rotação

DTA			40		50		60		80		100		140	
kw		50 Hz	1.85	2.2	2.2	3.0	2.2	3.0	3.0	4.0	4.0	5.5	5.5	7.5
hp		60 Hz	3.0	5.0	5.0		5.0		5.0	7.5	7.5	10	10	15
[inches]	a	50 Hz	26.50	28.50	28.50		30.35		30.35	31.02	34.25	38.39	38.39	
		60 Hz	28.59	29.32	29.32		31.96		31.96	34.73	37.96	39.28	39.28	42.94
	a (1~)	60 Hz	29.94	-	-		34.10		34.10	-	-		-	
	a_1	50 Hz	15.39	15.79	15.79		18.43		18.43		21.65	22.44	22.44	
		60 Hz	16.02		16.02		18.66		18.66	19.17	22.40		22.40	23.03
	b		11.65		11.65		15.28		15.28		15.28		15.28	
	c		10.24		10.24		12.60		12.60		12.60		12.60	
	c_1		-		-		14.41		14.41		14.41		14.41	
	d		1.97		1.97		3.03		3.03		3.35		3.35	
	e		12.60		12.60		15.75		15.75		15.75		15.75	
	f		6.30		6.30		8.27		8.27		8.27		8.27	
	g / g_1		7.83 / 0.98		7.83 / 0.98		9.80 / 1.18		9.80 / 1.18		9.80 / 1.18		9.80 / 1.18	
	l		4.76		4.76		5.87		5.87		6.10		6.10	
	n		5.59		5.59		5.75		5.75		7.95		7.95	
	o		5.67		5.67		7.48		7.48		7.48		7.48	
	q		5.16		5.16		6.69		6.69		6.69		6.69	
	r		6.18		6.18		6.54		6.54		9.76		9.76	
	u		0.79		0.79		0.59		0.59		0.59		0.59	
	øw	50 Hz	7.72		7.72		7.72		7.72	8.66	8.66	9.69	9.69	
		60 Hz	7.19	8.49	8.49		8.49		8.49	10.34	10.34		10.34	11.47
			8.49	-	-		8.91		8.91	-	-		-	
	R		3/4" NPT		3/4" NPT		1" NPT		1" NPT		1 1/4" NPT		1 1/4" NPT	

DA 355

2.10.96

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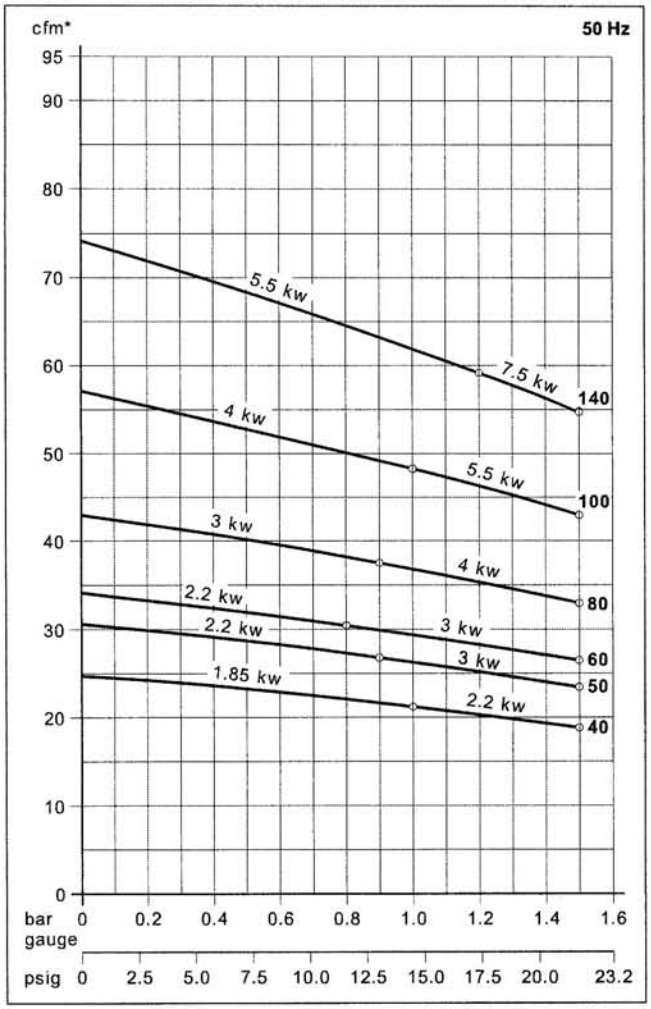
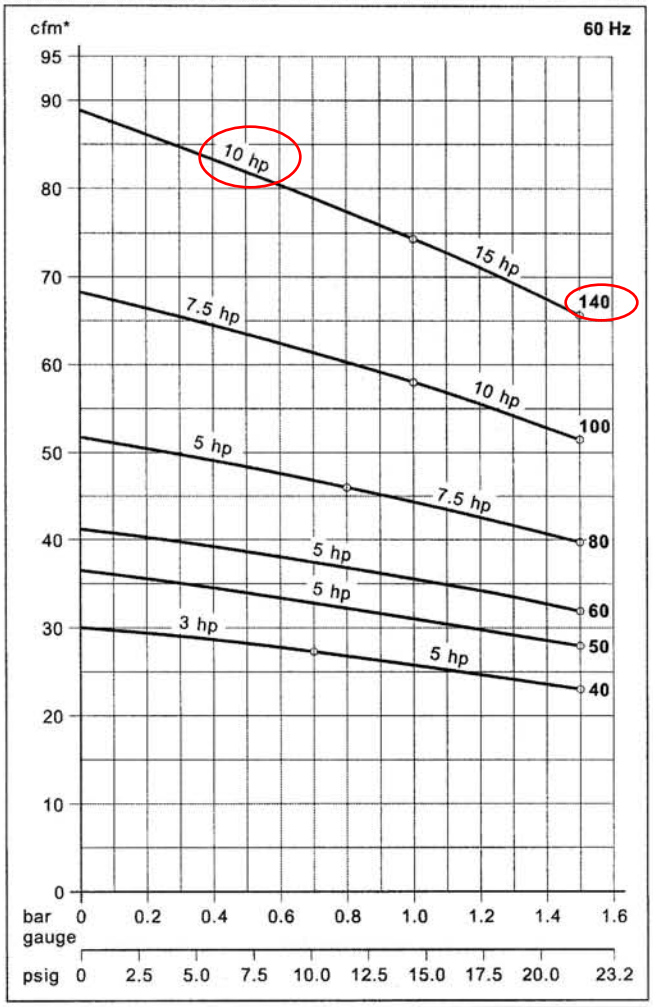
DTA		40		50		60		80		100		140	
cfm	50 Hz	24.7		30.6		34.1		43.0		57.1		74.2	
	60 Hz	30.0		36.5		41.2		51.8		68.3		88.9	
psig	50 Hz	14.5	21.8	13.1	21.8	10.2	21.8	13.1	21.8	14.5	21.8	17.4	21.8
	60 Hz	10.2	21.8	21.8		21.8		11.6	21.8	14.5	21.8	13.1	21.8
3~	50 Hz	230/400V ± 10%										400/690V ± 10%	
	60 Hz	208-230/460V ± 10%											
1~	60 Hz	115/208-230V – 10%		-		230V ± 10%				-			
kw	50 Hz	1.85	2.2	2.2	3.0	2.2	3.0	3.0	4.0	4.0	5.5	5.5	7.5
hp	60 Hz	3.0	5.0	5.0		5.0		5.0	7.5	7.5	10	10	15
A (3~)	50 Hz	8.2/4.7	8.5/4.9	8.5/4.9	11.5/6.6	10.0/5.9	11.4/6.6	12.2/7.1	15.0/8.8	15.0/8.8	12.0/6.9	12.0/6.9	16.5/9.5
	60 Hz	8.5-8.2/4.1	15-13.2/6.6	15-13.2/6.6		15-13.2/6.6		15-13.2/6.6	21.5-20/10	21.5-20/10	28-26/13	28-26/13	38.7-38/19
A (1~)	60 Hz	28/15.5-14	-	-		23		23	-	-		-	
rpm	50 Hz	1450											
	60 Hz	1740											
dB(A)	50 Hz	69		71		72		74		76		78	
	60 Hz	71		73		74		76		78		80	
lbs (3~)	50 Hz	128	132	141	150	190	198	214	232	236	276	298	353
	60 Hz	160	167	176		225		240	283	287	280	302	402
lbs (1~)	60 Hz	179	-	-		251		266	-	-		-	

ZRK	20 (03)	20 (03)	25 (03)	25 (03)	32 (03)	32 (03)
ZAF	20 (50)	20 (50)	25 (50)	25 (50)	32 (50)	32 (50)

cfm	Capacity	Capacidad	Volume engendré	Capacidade
psig	Excess pressure	Exceso de presión	Surpression	Pressão excessiva
3~	Motor version	Versión motor	Exécution moteur	Versão do motor
kw / hp	Motor rating	Datos motor	Puissance moteur	Potência do motor
A	Full load amperage	Amperaje de plena carga	Intensité absorbée	Amperagem da carga total
rpm	Speed	Velocidad	Vitesse rotation	Velocidade
dB(A)	Average noise level	Nivel de ruido medio	Niveau sonore moyen	Nível médio de ruído
lbs	Weight	Peso	Poids	Peso
	Accessories	Accesorios	Accessoires	Acessórios
ZRK	Non return valve	Válvula retención	Clapet anti-retour	Válvula sem retorno
ZAF	Suction filter	Filtro succión	Filtre d'aspiration	Filtro de sucção
ZMS	Motor starter	Arranque motor	Disjoncteur moteur	Arranque do motor



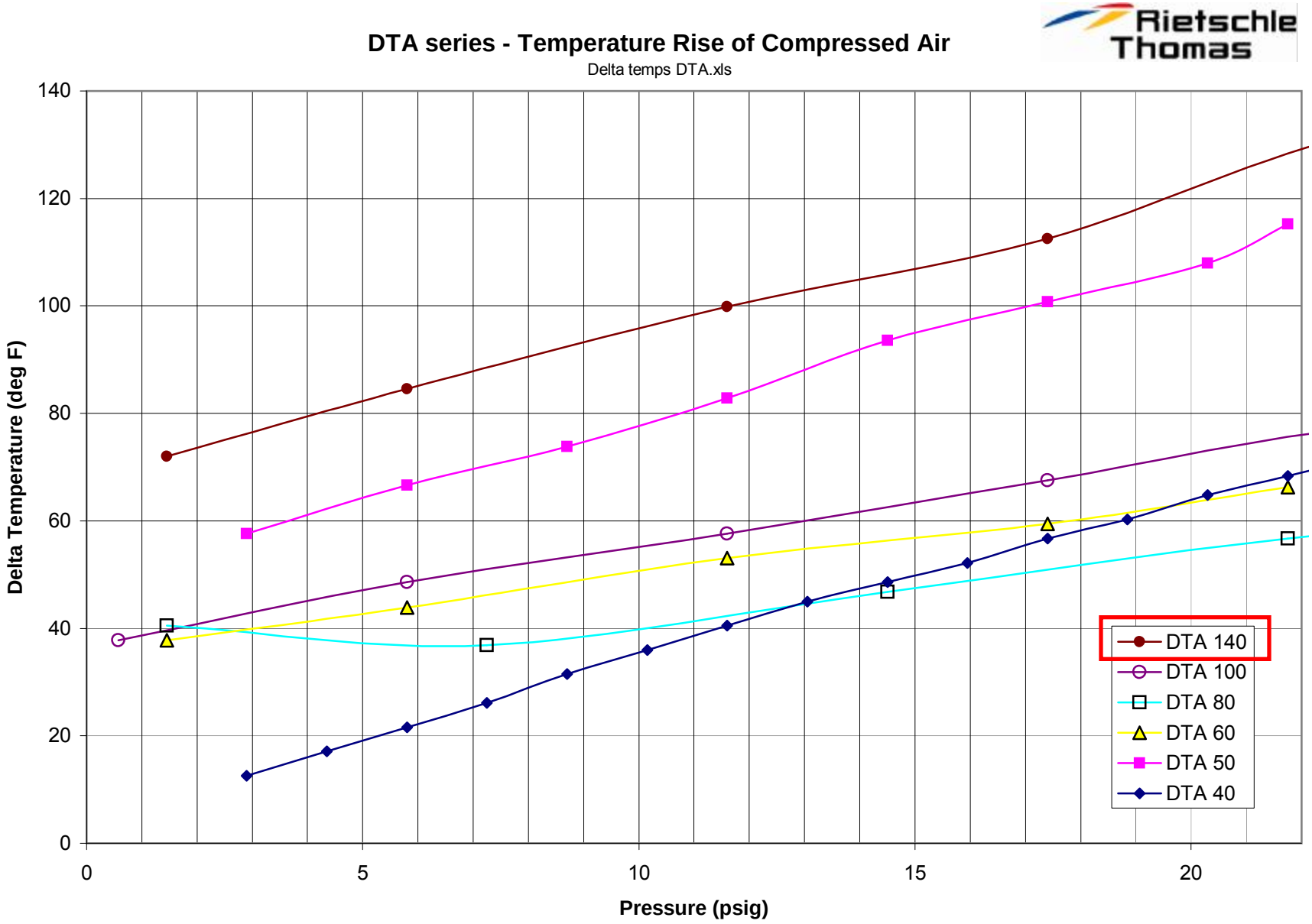


* Capacity refers to free air at 1 standard atmosphere and 20° C (68° F)./ La capacidad se refiere al aire libre a 1 atmosfera estandár de presión y a 20° C (68° F) de temperatura./ Le débit est mesuré à l'atmosphère de 1 bar (abs.) à 20° C (68° F)./ A capacidade refere-se ao ar livre a uma atmosfera padrão 1 e a 20° C (68° F).

Curves and tables refer to compressor at normal operating temperature./ Las curvas y las tablas se refieran al compresor a la temperatura normal de operación./ Les courbes et tableaux sont établies, compresseur à température de functionnement./ As curvas e tabelas referem-se ao compressor a temperatura normal de operação.

Technical information is subject to change without notice!/ La información técnica está sujeta a cambios sin previo aviso!/ Sous réserve de modification technique./ A informação técnica está sujeita a mudança sem aviso prévio!

The listed values for a, ø w and full load amperage may vary because of different motor manufacturers./ Los valores listados para a, ø w y para el amperaje de carga completa pueden variar para distintos fabicantes de motores./ Les dimensions a et ø w ainsi que l'ampérage peuvent différer des données indiquées ci-dessus, selon le fabricant du moteur./ Como variam os fabricantes de motores, poderá haver variação dos valores indicados para a, ø w e para uma amperagem da carga total.



SPARGE HEAT EXCHANGER

American Industrial Heat Transfer Inc.®

Manufacturer of Quality Heat Exchangers

ACA SERIES

AIR COOLED

AFTERCOOLERS

For Compressed Gas or Vapor

- Computer Selection.
- Low pressure drop available.
- Standard ports NPT, optional ANSI flange.
- Operating temperature of 400° F & pressure of 150PSI.
- Custom designs to fit your needs.
- Cools: Air, Compressors, Blowers, Steam vapors, Pneumatic systems, Vapor recovery systems etc...

note: AIHTI reserves the right to make reasonable design changes without notice.

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ACA Series *construction*

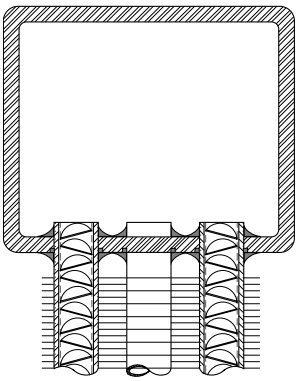
ACA - 3181 through ACA - 4362

Brazed Core Construction

Air coolers are an essential part of any compressed air system, by cooling the air, and condensing water vapor into a liquid state for removal. When air is compressed, the compression induces heat into both the air and the water entrained in the air.
The American Industrial ACA series heat exchanger cools air with air, making it a simple inexpensive way to cool when compared to other water-cooled or refrigerant cooled systems. The unique compact brazed fin/tube design provides efficient cooling and low maintenance under the warmest environmental conditions. By using an ACA series air-cooled after cooler, machine tools will recieve cooler dryer air, provide longer trouble free life, experience less down time, and be cost effective to operate on a continuous basis.

SUPERIOR COOLING FINS

Copper tubes are mechanically bonded to highly efficient aluminum cooling fins. Die-formed fin collars provide a durable precision fit for maximum heat transfer. Custom fin design forces air to become turbulent and carry heat away more efficiently than old flat fin designs.



TANKS

State-of-the-art high temperature brazing method insures permanent bond and positive contact of tube to manifold, eliminating leaks and providing maximum service life.

CONSTRUCTION MATERIALS & RATINGS

Standard Construction Materials		Standard Unit Ratings	
Tubes	Copper	Operating Pressure	150 psig
Fins	Aluminum	Operating Temperature	400 °F
Cabinet & Pipes	Steel	Consult factory for optional materials and ratings.	
Fan Guard	Zinc Plated Steel		
Manifolds	Steel		

note: AIHTI reserves the right to make reasonable design changes without notice.

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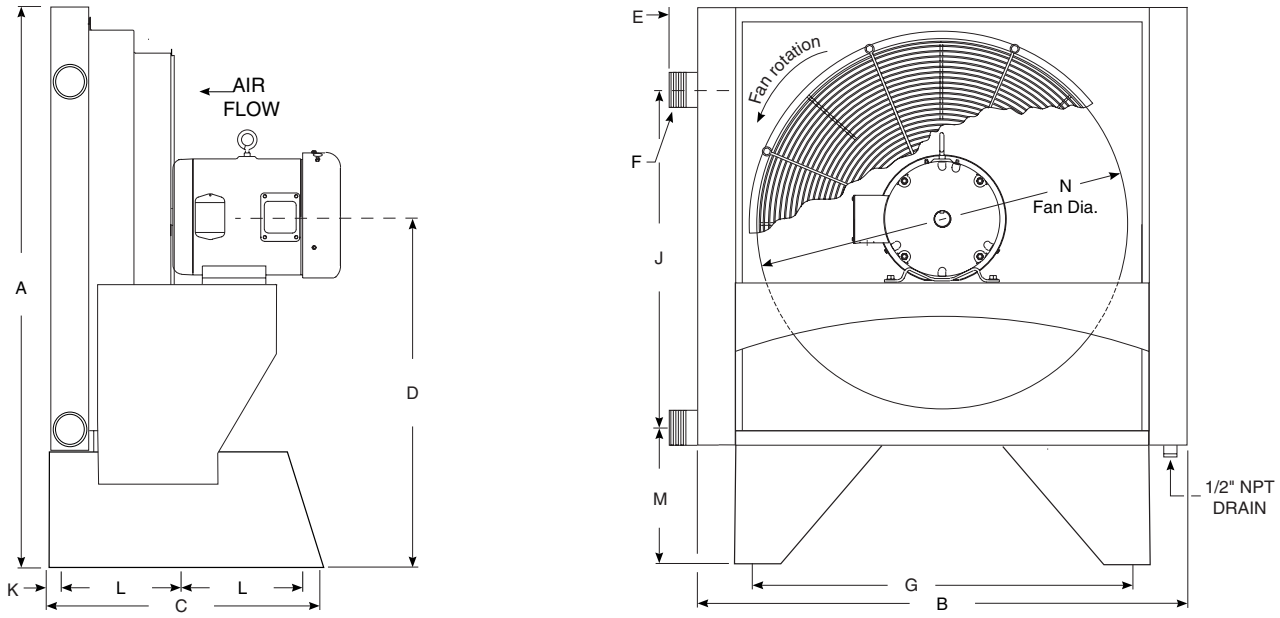
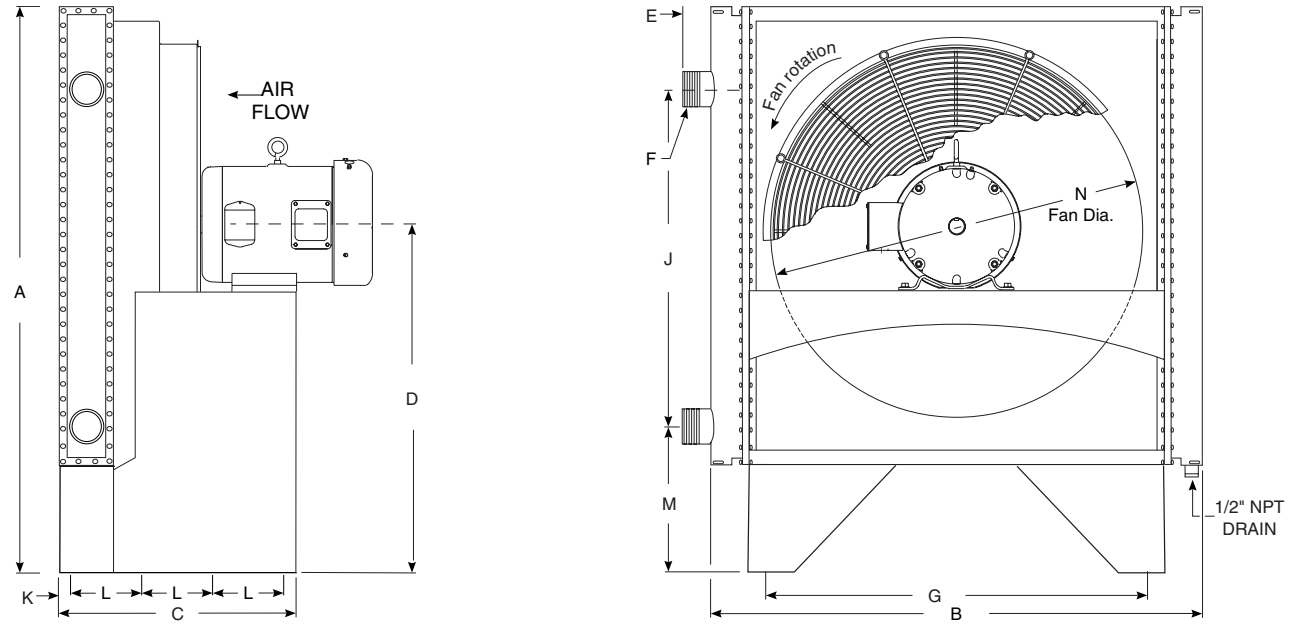


ACA - 3182 through ACA - 4362



ACA - 6302 through ACA - 6602

DIMENSIONS (inches)												
Model	A	B	C	D	E	F NPT	G	J	K	L	M	N
ACA - 3182	30.6	23.0	19.8	20.25	2.5	1.5	16.3	12.98	1.5	8.38	11.93	14.0
ACA - 3242	36.6	29.0	19.8	23.25	2.5	1.5	22.3	17.48	1.5	8.38	11.93	22.0
ACA - 3302	42.6	35.0	19.8	26.25	2.5	2.0	28.3	21.75	1.5	8.38	12.15	28.0
ACA - 4302	42.6	36.0	19.8	26.25	2.5	2.5	28.3	21.55	1.5	8.38	12.35	28.0
ACA - 6302	42.6	38.8	19.8	26.25	2.5	3.0	28.3	21.07	1.5	8.38	12.98	28.0
ACA - 3362	48.6	41.0	19.8	29.25	2.5	2.0	34.3	26.25	1.5	8.38	12.15	32.0
ACA - 4362	48.6	42.0	19.8	29.25	2.5	2.5	34.4	26.05	1.5	8.38	12.35	32.0
ACA - 6362	48.5	43.9	19.8	29.25	2.5	3.0	34.3	26.0	1.5	8.38	12.7	32.0
ACA - 6422	54.5	50.8	27.36	32.25	2.5	4.0	40.3	29.4	2.0	6.75	13.3	36.0
ACA - 6482	60.6	56.8	27.36	35.25	2.5	4.0	46.3	34.1	2.0	6.75	13.3	42.0
ACA - 6542	66.6	62.8	28.83	38.25	2.5	4.0	52.3	38.6	2.0	6.75	13.3	48.0
ACA - 6602	72.4	67.9	30.6	41.25	2.5	4.0	58.3	43.05	2.0	6.75	13.3	48.0

note: AIHTI reserves the right to make reasonable design changes without notice.

ACA Series *motor data*

ELECTRIC MOTOR DATA

Model	Horse Power	Phase	Hz	Volts	RPM	NEMA Frame	Enclosure Type	Full Load Amperes	Service Factor	Thermal Overload
ACA- 3181/2- 1	.25	1	60-50	115/230 - 90/190	1725-1440	48	TEFC	3.2/1.6/2.8-1.4	1.15	NO
ACA- 3181/2 -3	.25	3	60-50	208 - 230/460 - 190/380	1725-1440	48	TEFC	1.3/.65/1.1-.55	1.15	NO
ACA- 3241/2 -1	.25	1	60-50	115/230 - 90/190	1140-950	56	TEFC	6.8/3.1-3.4	1.15	NO
ACA- 3241/2 -3	.25	3	60-50	208 - 230/460 - 190/380	1140-950	56	TEFC	1.7/2.0/1.0	1.15	NO
ACA- 3301/2 -1	.5	1	60-50	115/230 - 90/190	1140-950	56	TEFC	9.6/4.7-4.8/10.4/5.2	1.15	NO
ACA- 3301/2 -3	.5	3	60-50	208 - 230/460 - 190/380	1140-950	56	TEFC	2.4-2.7/1.35-2.5/1.25	1.15	NO
ACA- 4301/2 -1	.5	1	60-50	115/230 - 90/190	1140-950	56	TEFC	9.6/4.7-4.8/10.4/5.2	1.15	NO
ACA- 4301/2 -3	.5	3	60-50	208 - 230/460 - 190/380	1140-950	56	TEFC	2.4-2.7/1.35-2.5/1.25	1.15	NO
ACA- 6301/2 -3	1.0	3	60-50	208 - 230/460 - 190/380	1140-950	56	TEFC	4/2-3.7/1.85	1.15	NO
ACA- 3361/2 -3	1.0	3	60-50	208 - 230/460 - 190/380	1140-950	56	TEFC	4/2-3.7/1.85	1.15	NO
ACA- 4361/2- 3	1.0	3	60-50	208 - 230/460 - 190/380	1140-950	56	TEFC	4/2-3.7/1.85	1.15	NO
ACA- 6361/2 -3	3.0	3	60-50	208 - 230/460 - 190/380	1725-1440	182T	TEFC	8.4-6.8/3.4	1.15	NO
ACA- 6421/2 -3	5.0	3	60-50	208 - 230/460 - 190/380	1140-950	213T	TEFC	8.2-7.6/3.8	1.15	NO
ACA- 6481/2 -3	5.0	3	60-50	208 - 230/460 - 190/380	1140-950	213T	TEFC	14.0/7.0	1.15	NO
ACA- 6541/2 -3	7.5	3	60-50	208 - 230/460 - 190/380	1140-950	254T	TEFC	20.4/10.2	1.15	NO
ACA- 6601/2 -3	10	3	60-50	208 - 230/460 - 190/380	1140-950	256T	TEFC	28.0/14.0	1.15	NO

ELECTRIC MOTOR NOTES:

1) Motor electrical ratings are an approximate guide and may vary between motor manufacturers. Consult ratings on motor data plate prior to installation and operation.

2) Explosion proof, high temperature, severe duty, chemical, IEC, Canadian Standards Association, and Underwriters Laboratory recognized motors are available upon request.

3) American Industrial reserves the right to enact changes to motor brand, type and ratings regarding horsepower, RPM,FLA,and service factor for standard products without notice. All specific requirements will be honored without change.

4) Fan rotation is clockwise when facing the motor shaft.

5) The above motors contain factory lubricated shielded ball bearings (no additional lubrication is required).

6) **Abbreviation Index**
TEFC.....Totally Enclosed, Fan Cooled
EXP.....Explosion Proof

CLASS I,DIV.1, GROUP D or CLASS II,DIV.2, GROUP F & G EXPLOSION PROOF MOTOR DATA

Model	Horse Power	Phase	Hz	Volts	RPM	NEMA Frame	Enclosure Type	Full Load Amperes	Service Factor	Thermal Overload
ACA- 3181/2 -1	.25	1	60	115/230	1725	48	EXP	5.8/2.8	1.0	YES
ACA- 3181/2 -3	.25	3	60	208-230/460	1725	48	EXP	1.4-1.3/.65	1.0	YES
ACA- 3241/2 -3	.33	1	60	115/230	1140	56	EXP	7.8/3.5	1.0	YES
ACA- 3241/2 -1	.33	3	60	208-230/460	1140	56	EXP	1.18-1.6/8	1.0	YES
ACA- 3301/2 -3	.75	1	60	115/230	1140	56	EXP	9.4/4.8	1.0	YES
ACA- 3301/2 -1	.75	3	60	208-230/460	1140	56	EXP	2.5-2.4/1.2	1.0	YES
ACA- 4301/2 -3	.75	1	60	115/230	1140	56	EXP	9.4/4.8	1.0	YES
ACA- 4301/2 -1	.75	3	60	208-230/460	1140	56	EXP	2.5-2.4/1.2	1.0	YES
ACA- 6301/2 -1	1.0	3	60	230/460	1140	56	EXP	3.8/1.9	1.0	YES
ACA- 3361/2 -3	1.0	3	60	230/460	1140	56	EXP	3.8/1.9	1.0	YES
ACA- 4361/2 -3	1.0	3	60	230/460	1140	56	EXP	3.8/1.9	1.15	YES
ACA- 6361/2 -3	3	3	60	230/460	1725	182	EXP	8.8/4.4	1.15	YES
ACA- 6421/2 -3	5	3	60	230/460	1160	215	EXP	15.0-13.8/6.9	1.15	YES
ACA- 6481/2 -3	5	3	60	230/460	1160	215	EXP	15.0-13.8/6.9	1.15	YES
ACA- 6541/2 -3	7.5	3	60	230/460	1160	256	EXP	21.6-20.4/10.2	1.15	YES
ACA- 6601/2 -3	10	3	60	230/460	1160	256	EXP	29-26/13	1.15	YES

NOTE: Basic electric drive units are supplied with one of the corresponding above listed motors.

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575 VOLT ELECTRIC MOTOR DATA

Model	Horse Power	Phase	Hz	Volts	RPM	NEMA Frame	Enclosure Type	Full Load Amperes	Service Factor	Thermal Overload
ACA- 3181/2 -5	1/3	3	60	575	1725	56	TEFC	.52 .56	1.15	NO
ACA- 3241/2 -5	1/3	3	60	575	1140	56	TEFC	.52 .56	1.15	NO
ACA- 3301/2 -5	1/2	3	60	575	1140	56	TEFC	1.08	1.15	NO
ACA- 4301/2 -5	1/2	3	60	575	1140	56	TEFC	1.08	1.15	NO
ACA- 6301/2 -5	1	3	60	575	1140	56	TEFC	1.6	1.15	NO
ACA- 3361/2 -5	1	3	60	575	1140	56	TEFC	1.6	1.15	NO
ACA- 4361/2 -5	1	3	60	575	1140	56	TEFC	1.6	1.15	NO
ACA- 6361/2 -5	3	3	60	575	1725	182T	TEFC	3.3	1.15	NO
ACA- 6421/2 -5	5	3	60	575	1140	213T	TEFC	5.9	1.15	NO
ACA- 6481/2 -5	5	3	60	575	1140	213T	TEFC	5.9	1.15	NO
ACA- 6541/2 -5	7.5	3	60	575	1140	254T	TEFC	8.0	1.15	NO
ACA- 6601/2 -5	10	3	60	575	1140	256T	TEFC	10.5	1.15	NO

COMMON DATA

Model	Air Flow		Sound Level	Weight		Serviceable
	CFM	m^3/s	dB(A) @ 7ft	w/ motor	w/o motor	Core
ACA-3181/2	1550	0.731	72	131	111	NO
ACA-3241/2	2900	1.36	76	154	134	NO
ACA-3301/2	4450	2.10	76	184	160	NO
ACA-4301/2	4450	2.10	76	211	187	NO
ACA-6301/2	4450	2.10	76	343	305	YES
ACA-3361/2	6350	2.99	79	243	205	NO
ACA-4361/2	6350	2.99	79	289	251	NO
ACA-6361/2	10500	4.95	91	402	342	YES
ACA-6421/2	14300	6.75	87	636	443	YES
ACA-6481/2	18700	8.82	88	753	560	YES
ACA-6541/2	23350	11.02	91	938	691	YES
ACA-6601/2	29300	13.83	91	1104	835	YES

NOTES:

TEFC = Totally Enclosed, Fan Cooled

To estimate the sound level at distances other than 7 feet (2.1 meters) from the cooler, add 6 db for each halving of distance, or sub-stract 6 db for each doubling of the distance.

Example:
The Sound Level of the ACA-3181/2 is 72 dB at 7ft. At 3.5ft (7ft x 0.5 = 3.5ft) the sound level is 66 dB (72dB - 6dB = 66dB). At 14ft (7ft x 2 = 14ft) the sound level is 78dB (72dB + 6dB = 78dB).

Pressure Drop Graphs (see page 220)

Each graph represents a specific pressure drop at differing flow rates and inlet pressures. The four graphs for each model series size represents the more popular milestone pressure differentials commonly applied.

To use the graphs for selection purposes follw the steps below.

1) Locate the operating pressure at the bottom of the desired pressure drop chart.
2) Locate the flow rate in SCFM at the left end of the chart.
3) Follow the "Pressure" line vertically and the "Flow" line horizontally until they cross, note the location.
4) The curve on, or closest above will be exact or less pressure drop than requested and suitable for the application.
5) There may be several units shown above the intersection point, all of which will produce less than the desired pressure drop at the required flow.

Example: Application 3 Low Pressure Blower

Flow = 76 SCFM
Operating pressure = 2 PSIG
Initial selection from graph page 215 = ACA-3302
Desired pressure drop = 5" H2O or less. (USE the "Pressure Drop 5" H20" curves page 220)
From the pressure drop graph, page 220. Acceptable choice - ACA-3302 is on the line, ACA-3242 is well below the line. The ACA-3302 meets the pressure drop requirement, but exceeds the capacity requirement. However, even though the ACA-3242 exceeds 5" of water pressure drop, other considerations should be made prior to selection such as unit physical size, cost, availability, and port size.

CATALYTIC OXIDATION UNIT

FALCO 300 SPECIFICATIONS

The FALCO 300 electric catalytic oxidizer treats air streams contaminated with volatile organic compounds. The catalyst provides VOC destruction efficiencies up to 99.5%. Operation, including startup, is fully automatic. Control system accurately regulates input loading and temperatures. The controls adjust a FALCO Vapor Control Valve (VCV) to maintain safe maximum input concentrations. Automatic shutdown results if temperatures exceed limits.

A spiral plate heat exchanger provides efficient heat recovery and a bypass valve allows for adjustment of heat recovery. Low heat recovery enables operation at high vapor concentration. High heat recovery minimizes energy use during operation at low input vapor concentration. At 780 ppmv (Gasoline) and 300 scfm, sufficient heat is recovered to preheat the inflow without supplementary electric energy.

The FALCO 300 has a massive catalyst volume for its rated capacity, providing longer life and poison resistance than monolith type catalysts. If necessary, the catalyst can be replaced on site in one hour.

FM C US APPROVED

- **CAPACITY** — 100-350 scfm
- **MAXIMUM INPUT LOADING** — 250 lb/day petroleum hydrocarbons @ 350 scfm
- **VAPOR CONTROL** — FALCO Vapor Control Valve (VCV)
- **CATALYST DESTRUCTION EFFICIENCY** — Up to 99.5%
- **CATALYST TEMPERATURE RANGE** — 330-620ºC (626-1148ºF)
- **CATALYST** — Packed bed 2.5 cubic feet. Platinum and Palladium on 1/8" ceramic beads standard. Optional catalyst for chlorinated solvents
- **HEAT EXCHANGER** — 304 Stainless steel spiral plate. 73% thermal efficiency @ 300 scfm (adjustable)
- **HEATER (Electric)** — 27 kW, Solid state switching (SCR power control) with high limit
- **CONSTRUCTION** — Stainless steel and aluminum
- **WEIGHT** — 830 lb. with flame arrestor
- **DIMENSIONS** — 73" high (excluding 5' stack) X 70" long X 29" wide
Fits in the back of a pick-up truck
- **POWER REQUIREMENTS** — Heater 3Ø:
56 amp @ 208 VAC (20.3 kW) *or* 65 amp @ 240 VAC (27 kW)
Optional:
33 amp @ 480 VAC (27 kW) *or* 38 amp @ 415 VAC (27 kW)
Heater 1Ø:
56.5 @ 240 VAC (13.5 kW)

Controls: 120 VAC, 60 Hz
Optional: 120 VAC, 50 Hz
- **APPROVALS** — Factory Mutual Approved for use in Class 1, Div 2, Group D, T2C Hazardous locations extending up to 41" above the ground.
South Coast Air Quality Management District (SCAQMD) Certified Equipment Permit.

FALMOUTH PRODUCTS P.O. BOX 541 FALMOUTH, MA 02541
Phone 508 548 6686
sales@falmouthproducts.com

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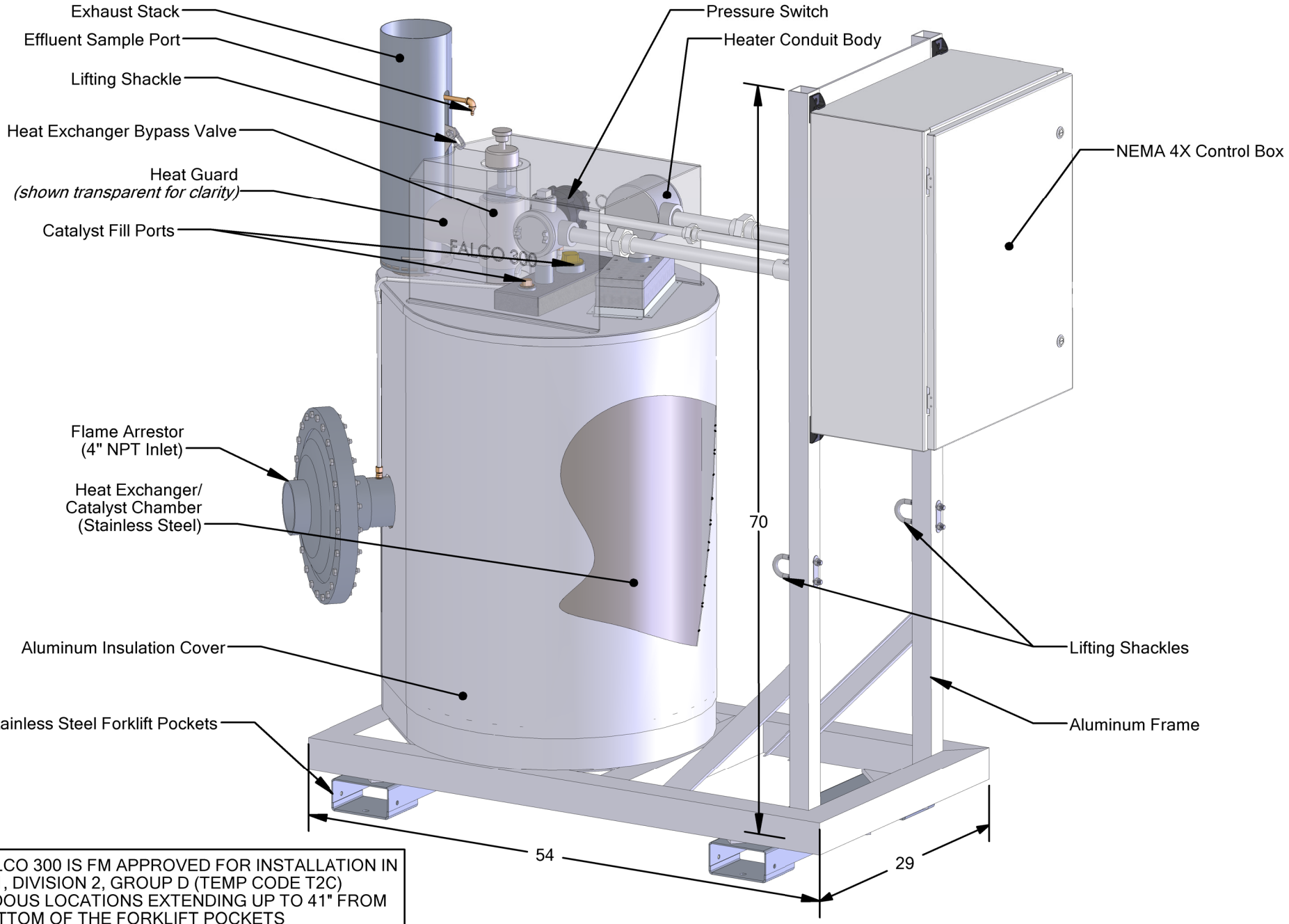

THE FALCO 300 IS FM APPROVED FOR INSTALLATION IN CLASS 1, DIVISION 2, GROUP D (TEMP CODE T2C) HAZARDOUS LOCATIONS EXTENDING UP TO 41" FROM THE BOTTOM OF THE FORKLIFT POCKETS

FIGURE 1: FALCO 300 - MAJOR COMPONENTS

REV 8-12-13

FALCO 300 SPECIFICATIONS

CAPACITY	100-350 CFM
MAXIMUM INPUT LOADING	250 lb/day petroleum hydrocarbons @ 350 cfm
DESTRUCTION EFFICIENCY	Up to 99.5%
CATALYST TEMPERATURE RANGE	330-620ºC (626-1148ºF)
CATALYST	Packed bed 2.5 cubic feet. Platinum and palladium on 1/8" ceramic beads is standard. Other catalysts are available
HEAT EXCHANGER	304 stainless steel spiral plate. 73% efficient at 300 scfm. Manually adjusted heat exchanger bypass valve (hot side).
HEATER (Electric)	Nine 3,000 watt cartridge heaters arranged in Delta. 56 amp @ 208 volts (20.3 kW) / 64.6 amp @ 240 volts (27 kW) Optional: 38 amp @ 415 volts (27 kW), heaters in Wye configuration Optional: 32.5 amp @ 480 volts (27 kW) Optional: Single Phase, 56.3 amp @ 240 volts (13.5 kW)
HEATER CONTROL	Yokogawa UT32A temperature controller cycles 80 amp SCR power control All three legs switched. Zero cross. 80 amp semiconductor fuses. High limit control with contactor to break all three phases.
VAPOR CONTROL	Vapor Control Valve (VCV) is proportionally controlled by three temperature controllers. The VCV is installed in series on vacuum side of extraction blower and simultaneously controls both dilution air and vapors based on catalyst temperature. Solenoid valve for rapid introduction of dilution air.
CONTROLS	120 VAC. 3 amp max. Yokogawa series UT32A temperature controllers. Proportional control of SCR power control and Vapor Control Valve.
WEIGHT	850 lb. Without flame arrestor.
STACK	6" stainless steel tube. One five-foot length of 6" Type B Gas vent pipe is supplied.
CONSTRUCTION	Stainless steel and aluminum
APPROXIMATE PRESSURE DROP (HOT) (INCLUDING FLAME ARRESTOR)	34" H2O @ 300 scfm with heat exchanger bypass closed 30" H2O @ 300 scfm with heat exchanger bypass open
FLAME ARRESTOR PRESSURE DROP	2" H20
DIMENSIONS	73" high (excluding 5' stack) X 70" long X 29" wide
POWER REQUIREMENTS	3 phase 208-240 Volt standard, optional 3 phase 480 Volt optional 3 phase 415 Volt, optional 1 phase 240 Volt
ELECTRICAL ENCLOSURE	Aluminum (NEMA 4X)
APPROVALS	FM approved (US and Canada) for installation in Class I, Division 2, Group D, (Temp Code T2C) hazardous locations extending up to 41 inches from the bottom of the frame. Portions of the oxidizer located outside of this area are only suitable for unclassified / non-hazardous locations.