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NC DENR
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Instructions:

- **Prepare one form for each individually monitored unit.**
- **Please type or print legibly.**
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

Golder Associates NC, Inc. on behalf of Red Rock Disposal, LLC

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: David Y. Reedy II, P.G. Phone: (336) 852-4903

E-mail: dreedy@golder.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Red Rock Landfill	7130 New Landfill Dr Holly Springs, NC 27540	92-28	.0500	September 29, 2014

Environmental Status: (Check all that apply)

☐ Initial/Background Monitoring ☒ Detection Monitoring ☐ Assessment Monitoring ☐ Corrective Action

Type of data submitted: (Check all that apply)

☒ Groundwater monitoring data from monitoring wells
☐ Groundwater monitoring data from private water supply wells
☐ Leachate monitoring data
☒ Surface water monitoring data
☐ Methane gas monitoring data
☐ Corrective action data (specify) _____
☐ Other(specify) _____

Notification attached?

☐ No. No groundwater or surface water standards were exceeded.
☒ Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
☐ Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

David Y. Reedy II, P.G. — Facility Representative Name (Print)

Senior Hydrogeologist — Title

(336) 852-4903 — (Area Code) Telephone Number

Signature

12-10-14 — Date

Affix NC Licensed/ Professional Geologist Seal

NORTH CAROLINA LICENSED SEAL 1963 GEOLOGIST DAVID YATES REEDY II

12-10-14

Golder Associates NC, Inc., 5B Oak Branch Drive, Greensboro, NC 27407

Facility Representative Address

C-2862

NC PE Firm License Number (if applicable effective May 1, 2009)

Revised 6/2009

SECOND SEMI-ANNUAL 2014 SAMPLING EVENT

Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28

Wake County, North Carolina

Submitted To:

Red Rock Disposal, LLC
7130 New Landfill Drive
Holly Springs, NC 27540

Submitted By: Golder Associates NC, Inc.
5B Oak Branch Drive
Greensboro, NC 27407 USA

December 2014 **0739-603514.100**

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December 10, 2014 0739-603514.100

Ms. Jaclynne Drummond
North Carolina Department of Environment & Natural Resources
Division of Waste Management - Solid Waste Section
2090 US Highway 70
Swannanoa, NC 28778
828-296-4706

RE: WATER QUALITY MONITORING REPORT, SECOND SEMI-ANNUAL 2014 SAMPLING EVENT
RED ROCK DISPOSAL, LLC C&D LANDFILL, PERMIT NO. 92-28
WAKE COUNTY, NORTH CAROLINA

Dear Jackie:

On behalf of Red Rock Disposal, LLC, a subsidiary of Waste Industries USA, Inc., Golder Associates NC, Inc. is submitting the enclosed *Water Quality Monitoring Report,* which documents the results of the September 29, 2014, compliance monitoring event at the above-referenced facility. Red Rock Disposal, LLC monitors groundwater at this facility for parameters listed in Title 15A NCAC 13B.0544 of the North Carolina Solid Waste Management Rules (NCSWMR). Surface water monitoring point SW-3 was dry during this event and was not monitored.

As presented, two NC Appendix I inorganic constituents (barium, chromium, cobalt, lead, silver, vanadium, and zinc) were detected at concentrations above their respective Solid Waste Section Limits (SWSL) in samples from one or more downgradient monitoring wells during the September 2014 monitoring event. The concentrations of barium (MW-3 and MW-6T), chromium (MW-5), cobalt (MW-5), silver (MW-14), and vanadium (MW-3) exceeded their respective groundwater standards during this event. Statistical analyses were performed to determine the source of the above-standard exceedances. The concentrations were statistically determined to represent background conditions and are considered to be naturally occurring except as noted. The concentrations of barium in samples from MW-3 and MW-6T, chromium in the sample from MW-5, and silver in the sample from MW-14 were determined to be statistically significant increases (SSIs) over background.

To further evaluate the SSIs, samples from MW-3 and MW-6T were analyzed for dissolved barium. The dissolved barium concentration for the sample from MW-6T was below the statistically determined background concentration. The dissolved barium concentration for the sample from MW-3 was lower than the total barium concentration, but above the statistically determined background concentration. These data support that there may be a turbidity bias for metals concentrations from these samples. Moreover, sample results from background well MW-10 show a similar increasing trend in barium concentrations that are seen in MW-3 and MW-6T, which supports that increasing barium may be naturally occurring. Additionally, the absence of leachate indicators (i.e., detections of volatile organic constituents or trend for field parameter indicators) for samples from wells MW-3 and MW-6T do not support a leachate release from the facility. Therefore, future barium results will continue to be monitored and no further action is warranted at this time.

Samples from MW-5 and MW-14 were re-analyzed for total chromium and total silver, respectively, to verify the original concentrations and evaluate the SSIs. After re-analysis, the chromium concentration in the sample from MW-5 was confirmed, but silver was not detected during the re-analysis of the sample from MW-14. Further, the concentration of dissolved chromium was below the SWSL, NC 2L Standard, and statistical background concentration in the sample from MW-5, and dissolved silver was not detected in the sample from MW-14. These data along with turbidity values above 10 nephelometric turbidity units

(NTUs) support that there may be a turbidity bias for metal concentrations from these samples. Therefore, based on these additional data, no further action is warranted for these concentrations.

Vanadium was also detected at estimated concentrations below the SWSL, but above the NC 2L Standard in the samples from MW-4, MW-5, and MW-14. No further action is needed as concentrations are estimated. Purge rates during future sampling events may be lowered to minimize the potential for turbidity bias for metals concentrations.

Indicator parameters chloride, iron, manganese, and total dissolved solids were detected at concentrations in samples from one or more downgradient monitoring wells above their respective NC 2L Standards during this event, as they have been during previous events. These concentrations are generally consistent with historical data and appear to be representative of naturally-occurring conditions based on concentrations in upgradient wells and other background data; therefore, no further action is required.

No NC Appendix I organic constituents were detected above SWSLs in samples from downgradient monitoring wells during the April 2014 monitoring event. Additionally, no NC Appendix I constituents were detected in surface water monitoring points at concentrations above applicable surface water standards.

Based on these results, Red Rock Disposal, LLC will continue monitoring this facility in accordance with the requirements of the Detection Monitoring Program for Construction & Demolition Landfills as outlined in Title 15A NCAC 13B.0544. The next event is tentatively scheduled for March 2015. Should you have any questions or need further assistance, please contact the undersigned at 336-852-4903.

Sincerely,
GOLDER ASSOCIATES NC, INC.

David "Dusty" Y. Reedy II, P.G.
Senior Hydrogeologist

Rachel P. Kirkman, P.G.
Associate and Senior Consultant

Enclosure

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1.0 INTRODUCTION

This report summarizes the monitoring results from the September 29, 2014, groundwater and surface water sampling and analysis event at the Red Rock Disposal, LLC Construction & Demolition (C&D) Landfill (Red Rock Landfill) in Wake County, North Carolina (NC) in accordance with Title 15A of the North Carolina Administrative Code (NCAC) Subchapter 13B.0544. The Red Rock Landfill, an active C&D landfill, is owned and operated by Red Rock Disposal, LLC, a subsidiary of Waste Industries USA, Inc. (Waste Industries), under Permit No. 92-28 issued by the NC Department of Environment and Natural Resources (DENR).

1.1 Site Description and Background

The location of the facility is shown on the inlay on Drawing 1. Red Rock Landfill is located in southwestern Wake County, approximately 5 miles southwest of Holly Springs, NC. Access to the site is from New Landfill Drive, located off Rex Road to the north of the site.

There are three streams that traverse the site, which drain into the Shearon Harris Reservoir, located to the southwest of the site. One stream is the Jim Branch that flows southwesterly along the southeastern portion of the property boundary. A second stream is an unnamed intermittent tributary of the Jim Branch, which flows southeasterly across a portion of the northern property boundary. A third stream is another unnamed tributary of the Jim Branch that flows southerly across a portion of the southern property boundary. The locations of these surface water features are shown on Drawing 1.

Based on the topography as shown on Drawing 1, topographic surface elevations at the facility range from elevations of approximately 250 feet above mean sea level (AMSL) near the southeastern portion of the site near the Jim Branch, to 298 feet AMSL near the northeastern property boundary along Rex Road. The site is surrounded predominantly by wooded or agricultural properties, along with a nearby rock quarry. NC-designated game lands border portions of the site to the west. A Duke Energy Progress power line easement cuts through the southern portion of the site.

1.2 Compliance Monitoring History

Groundwater monitoring at the facility was initiated in October 2001 after approval of G.N. Richardson & Associates' Water Quality Monitoring Plan (WQMP) for Phase I, by the NC DENR, which included MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, and MW-10. Four additional wells (MW-11, MW-12, MW-13, and MW-14) were installed in August 2003. Compliance sampling of these four monitoring wells was initiated during the September 2008 sampling event, associated with construction activities for Phase 1C-2. Monitoring wells MW-1 and MW-9 were decommissioned during site construction activities in early 2008, and MW-13 was decommissioned in May 2011 during site construction activities.

The facility's current monitoring network is comprised of 8 monitoring wells (MW-2T, MW-3, MW-4, MW-5, MW-6T, MW-10, MW-11, and MW-14), which monitor the uppermost aquifer beneath the facility. Well MW-10 is the facility's upgradient background monitoring well. Monitoring wells MW-2T and MW-6T are replacement wells for MW-2 and MW-6, which were decommissioned. Wells MW-11 and MW-14 are located hydraulically upgradient with respect to Phase 1C-2. Well MW-12 remains for the collection of water levels only.

In addition to the groundwater monitoring points, the facility's monitoring network includes two downstream surface water sampling points, SW-2 and SW-3. Upstream surface water monitoring point SW-1 no longer exists due to site construction activities. Point SW-2 is located along an unnamed tributary of Jim Branch, which is downstream of the waste area. Point SW-3 is located along Jim Branch, downstream of the facility. These points are sampled in conjunction with the groundwater monitoring wells in accordance with the facility's permit and WQMP.

1.3 Hydrogeologic Setting

Geologically, the facility is located within the Deep River basin and Durham sub-basin of the Triassic Basin in the Piedmont Physiographic Province of NC (NCGS 1985). Generally, the Triassic Basin consists of Lower Mesozoic sedimentary and igneous rocks that filled rift basins. The Durham sub-basin contains conglomerates, fanglomerates, sandstones, and mudstones. More specifically, all three Deep River sub-basins contain a middle clay-shale and mudstone interval approximately 50 to 400 meters thick, which is evident by the red shale present at the site, in addition to the presence of conglomerates and sandstones. The Deep River basin is bounded on the east by the Jonesboro fault system and is intruded by intersecting north and northwest-striking diabase dikes (Olsen, et al. 1991).

The uppermost groundwater beneath the facility is present in a shallow, unconfined aquifer comprised of saprolite, partially weathered rock (PWR), and conglomerate bedrock. Groundwater occurs at depths varying widely from approximately 2 feet below grade to more than 30 feet below grade across the site. Groundwater depths average approximately 3 to 10 feet below grade along the perimeter downgradient boundary, and approximately 5 to 25 feet below grade to the north along the upgradient northern perimeter boundary.

Depth-to-water measurements obtained during the September 2014 monitoring event and summarized in Table 1 were used to prepare a groundwater surface contour map presented on Drawing 1.

Surface water and groundwater at the site generally flows to the south and southeast toward Jim Branch, located along the southeastern portion of the site. The Jim Branch flows toward the southwest into the Shearon Harris Reservoir, located approximately ¾ of a mile from the site. Groundwater beneath the site flows in three distinguishable and vertically interconnected hydrogeologic units; saprolite, PWR, and

bedrock (GNR 2003). The groundwater contour map and interpreted flow directions are consistent with previously submitted interpretations for this facility.

Based on the September 2014 groundwater contour map, the hydraulic gradient in the shallow aquifer underlying the site as measured along the conceptual flow path shown on the contour map was calculated to be approximately 0.03 feet per foot. Groundwater velocities were calculated using a hydraulic conductivity of $7.45E^{-04}$ centimeters per second, which is the average of the hydraulic conductivities for each of the hydrogeologic units present at the facility (GNR 2003). The estimated effective porosity of the shallow aquifer is 0.10 (GNR 2003).

Using the above values, the estimated rate of groundwater flow for the uppermost aquifer beneath the facility was calculated using the following modified Darcy equation:

$$V_{gw} = Ki/n_e$$

where V_{gw} = average linear velocity (feet/year), K = hydraulic conductivity (feet/year), i = horizontal hydraulic gradient, and n_e = effective porosity.

The average estimated linear groundwater flow velocity under the waste management unit is approximately 235 feet/year, which is generally consistent with previous estimates (Table 2). The range of groundwater flow is expected to vary depending on the hydrogeologic unit in which it occurs. The linear velocity equation above makes the simplified assumptions of a homogeneous and isotropic aquifer. Therefore, this equation represents a likely average value for the uppermost aquifer and does not account for heterogeneous and/or anisotropic conditions that may be present in the uppermost aquifer at the facility.

2.0 FIELD PROGRAM, MONITORING RESULTS, AND DISCUSSION

Field activities conducted as part of the September 2014 sampling event are discussed in the following sections.

2.1 Visual Inspection Program

In order to detect a potential release at the earliest indication, the visual inspection program is used at the Red Rock C&D Landfill by the sampling personnel. This program includes physical indicators such as potential water table mounding beneath the waste management unit, physical examination of any stresses in biological communities, unexplained changes in soil characteristics, and any other change to the environment due to the waste management unit. During the September 2014 compliance monitoring event, no physical indicators of a potential release were observed in the waste management areas by the sampling personnel.

2.2 Well Network and Groundwater Elevation Measurements

The current groundwater monitoring network at the facility consists of 8 wells. Available monitoring well construction information for site monitoring wells is summarized on Table 3 and the well locations are shown on Drawing 1. The well locations were selected to yield groundwater samples representative of the conditions in the uppermost aquifer underlying the facility, and to monitor for potential releases from the landfill unit. Two downstream (SW-2 and SW-3) surface water monitoring points are also monitored.

Monitoring well MW-10 is the facility's background well, and is located hydraulically upgradient to sidegradient of the waste disposal area. Monitoring wells MW-2T, MW-3, MW-4, MW-5, and MW-6T are located downgradient of the waste disposal area and represent the facility's downgradient compliance wells. Monitoring wells MW-11 and MW-14 are compliance wells installed to monitor Phase 1C-2. The well locations yield groundwater samples representative of the conditions in the uppermost aquifer underlying the facility and monitor for potential releases from the landfill unit.

Depth-to-water measurements were recorded to the nearest 0.01 foot prior to and during groundwater purging and sampling activities. The respective groundwater level elevations for this event are presented in Table 1. The historical water level data are also shown on this table.

As presented, recent groundwater elevation data for the current monitoring well network indicate that the hydraulic head level in the uppermost aquifer beneath the facility is fairly consistent, with temporal variation from the long-term average limited to approximately 5-14 feet (plus or minus). However, several historical groundwater elevation readings appear to be anomalous and are not considered representative of site hydrogeologic conditions. The range in fluctuation (excluding anomalous data and decommissioned wells) appears to be greatest in MW-10, which is the upgradient well, located in a groundwater recharge area. The range in fluctuation in compliance wells MW-3, MW-4, MW-5, and MW-6T, which are located near groundwater discharge areas, is much less, presumably due to the stabilizing effect of the hydraulic discharge boundary.

2.3 September 2014 Monitoring Event

Personnel from Golder visited the facility on September 29, 2014, to purge and sample the 8 monitoring wells and to sample surface water monitoring points SW-2 and SW-3. Depth-to-water measurements were obtained from the network monitoring wells to the nearest 0.01 foot using an electronic water level indicator prior to purging the wells. Surface water monitoring point SW-3 was dry during this event and was not sampled.

All monitoring wells were purged using dedicated bladder pumps. Low-flow micropurge procedures were used during the purging and sampling of all wells. Measurements of pH, specific conductivity, temperature, turbidity, dissolved oxygen, and oxidation reduction potential were recorded using field-calibrated instruments on approximately 3 to 5-minute intervals, depending on the purge rate. In general,

the purge rate for each well was matched to the yield of the monitoring well, as determined by continuously monitoring the depth-to-water, up to a maximum purge rate of 500 milliliters per minute. Purging was continued until stabilization was indicated by the water quality parameters.

Prior to sampling, the laboratory-supplied sample containers were prepared. Each sample container was labeled with the sample identification number, sampling personnel, date and time of sample collection, project name and number, and requested chemical analyses.

The required groundwater samples were collected directly from the bladder pump discharge lines in the labeled, laboratory-supplied, pre-preserved sample containers after purging was completed based on stabilization of all water quality parameters. After collection, the samples were placed in a cooler on ice, under chain-of-custody control. Copies of the sampling logs are presented in Appendix A. Included in each log is a description of the sampling equipment, sampling method and location, field observations, and water quality measurements.

The surface water samples were collected from the stream flow, by lowering a decontaminated polyethylene dipper into the stream flow with the opening facing away from the current to minimize sample-induced turbidity. The collected water was then poured from the dipper into the sample containers, taking care to prevent the overflow of the sample containers. Measurements of temperature, pH, specific conductivity, turbidity, dissolved oxygen, and oxygen reduction potential were measured directly from the stream and recorded during the collection of the surface water samples.

After collection, the surface water samples were placed in a cooler on ice, under chain-of-custody control. Copies of the sampling logs are presented as Appendix A. Included in each log is a description of the sampling equipment, sampling location, sampling method, field observations, and water-quality measurements.

2.4 Laboratory Analysis Program

The September 29, 2014, groundwater and surface water samples were submitted to Environmental Conservation Laboratories, Inc. (ENCO) of Cary, NC under chain-of-custody control for analysis. As presented, groundwater samples at the facility were analyzed for NC Appendix I constituents, the indicator parameters as specified in the Title 15A NCAC 13B.0544 of the Solid Waste Management Rules, and tetrahydrofuran. Surface water samples were also analyzed for the NC Appendix I constituents plus tetrahydrofuran. Groundwater and surface water samples were received at the laboratory on September 30, 2014, in good condition and properly preserved.

2.5 September 2014 Sampling Results

Analytical results for the September 2014 groundwater samples are summarized in Tables 4 and 5 with available historical data. Historical results for surface water samples are summarized in Tables 6 and 7.

The laboratory certificates-of-analysis, chain-of-custody form, and laboratory data reviews for the sampling event are included as Appendix B.

As presented, two NC Appendix I inorganic constituents (barium, chromium, cobalt, lead, silver, vanadium, and zinc) were detected at concentrations above their respective Solid Waste Section Limits (SWSL) in samples from one or more downgradient monitoring wells during the September 2014 monitoring event. Four NC Appendix I inorganic constituents (arsenic, barium, chromium) were detected at concentrations above their respective Solid Waste Section Limits (SWSL) in samples from one or more downstream surface water monitoring points during the event. No NC Appendix I organic constituents were detected above their respective SWSLs in groundwater or surface water samples.

3.0 LABORATORY AND FIELD QA/QC

A field blank was collected by Golder personnel as part of the September 2014 groundwater sampling event. In addition to the field blank, a laboratory-prepared trip blank accompanied the volatile sample containers to and from the laboratory. ENCO analyzed the field blank for NC Appendix I constituents plus indicator metals and the trip blank for NC Appendix I volatile organic compounds. Reviews of the laboratory data were performed by Golder personnel (included in Appendix B). Method blanks are also included in the laboratory QA/QC procedures.

Thallium was detected at an estimated concentration and tetrahydrofuran was detected at a quantified concentration in the field blank during this event. Antimony was also detected in one of the method blanks. Based on Golder's review, the concentrations of antimony in samples from MW-2T, MW-5, and SW-2, and the concentrations of thallium in samples from MW-2T, MW-3, MW-4, MW-11, MW-14, and SW-2 are considered to be blank-qualified.

4.0 DATA EVALUATION

The results of the data evaluations are presented in the following sections.

4.1 North Carolina Groundwater and Surface Water Standard Comparisons

As presented, the concentrations of barium (MW-3 and MW-4T), chromium (MW-5), cobalt (MW-5), silver (MW-14), and vanadium (MW-3) exceeded their respective groundwater standards during this event. The barium concentrations are similar to recent sampling events and are interpreted to represent background conditions as described below. The concentrations of chromium, cobalt, and silver appear to be biased high due by entrained sediment, as indicated by analytical results for dissolved chromium for the sample from MW-5 and dissolved silver for the sample from MW-14. Vanadium was also detected at estimated concentrations below the SWSL, but above the NC 2L Standard in the samples from MW-4, MW-5, and MW-14. No further action is needed as concentrations are estimated.

As presented in Table 4, several indicator parameters (chloride, iron, manganese, and total dissolved solids) were detected at concentrations above their respective NC 2L Standards during this event in samples from upgradient and/or downgradient wells. These concentrations are generally consistent with historical data and appear to be representative of naturally-occurring conditions based on concentrations in upgradient wells and other background data. As presented in Table 6, no NC Appendix I constituents were detected above applicable surface water standards in surface water monitoring points during the September 2014 sampling event.

4.2 Statistical Evaluations

As presented above, five NC Appendix I inorganic constituent (barium, chromium, cobalt, silver, and vanadium) were detected above the SWSLs and respective groundwater standards in samples from one or more downgradient monitoring wells during this sampling event. To determine the source of these above-standard detections, the concentrations were statistically compared to background concentrations. The statistical worksheets and summary table are presented as Appendix C.

Based on these analyses, the concentrations of barium in samples from MW-3 and MW-6T, chromium in the sample from MW-5, and silver in the sample from MW-14 were determined to be statistically significant. The samples from MW-5 and MW-14 were re-analyzed for total chromium and total silver, respectively, to verify the original concentrations. After re-analysis, the chromium concentration in the sample from MW-5 was confirmed, but silver was not detected during the re-analysis of the sample from MW-14. Further, the dissolved concentration of chromium was below the SWSL and NC 2L Standard in the sample from MW-5 and dissolved silver was not detected in the sample from MW-14. Therefore, based on these additional data, no further action is warranted. The dissolved barium concentration for the sample from MW-6T was below the statistically determined background concentration. The dissolved barium concentration for the sample from MW-3 was lower than the total barium concentration, but above the statistically determined background concentration. These data support that there may be a turbidity bias for metals concentrations from these samples. Moreover, sample results from background well MW-10 show a similar increasing trend in barium concentrations that are seen in MW-3 and MW-6T, which supports that the increasing barium may be naturally occurring. Additionally, the absence of leachate indicators (i.e., detections of volatile organic constituents or trend for field parameter indicators) for samples from wells MW-3 and MW-6T do not support a leachate release from the facility. Therefore, future barium results will continue to be monitored and no further action is warranted at this time.

5.0 SUMMARY

Based on the results summarized herein, Red Rock Disposal, LLC, is in compliance with respect to water quality monitoring requirements and will continue monitoring the uppermost aquifer beneath this facility in accordance with the requirements of the Detection Monitoring Program for Construction & Demolition Landfills as outlined in Title 15A NCAC 13B.0544. Purge rates will be lowered as necessary during future

sampling events to help minimize turbidity in samples to help minimize the bias for metals results due to entrained sediment. The next sampling event is tentatively scheduled for March 2015.

6.0 REFERENCES

HGL (The Hutchinson Group, Ltd.), Murrysville, PA, various monitoring well, piezometer construction records and boring logs, July-October 2000.

GNR (G.N. Richardson & Associates, Inc.), Raleigh, NC, *Groundwater and Surface Water Monitoring Reports*, November 2001 through October 2006, and *Water Quality Monitoring Plans,* May 2001 and October 2003.

NCGS (North Carolina Geologic Survey), 1985. Geologic Map of North Carolina.

Olsen et al. (Olsen, Paul E., Froelich, Albert J., Daniels, David L., Smoot, Joseph P., Gore, Pamela J.W.), Rift Basins of Early Mesozoic Age, in Horton, J.W., Jr., and Zullo, V.A., eds., The Geology of the Carolinas: The University of Tennessee Press, 1991, pp. 142-170.

USGS (Heath, Ralph C.), Basic Ground-Water Hydrology, Water Supply Paper 2220, for U.S. Department of Interior and U.S.G.S., 1983.

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TABLES

TABLE 1

Summary of Historical Groundwater Elevation Data
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

	Monitoring Well																					
	MW-2T*		MW-3		MW-4		MW-5		MW-6T*		MW-7		MW-8		MW-10**		MW-11		MW-12		MW-14	
TOC Elevation (ft AMSL)	281.19		261.80		254.10		254.47		289.21		302.36		286.62		301.16		310.77		314.83		301.20	
Date	Elevation (ft AMSL)	DTW (ft)	Elevation (ft AMSL)	DTW (ft)	Elevation (ft AMSL)	DTW (ft)	Elevation (ft AMSL)	DTW (ft)	Elevation (ft AMSL)	DTW (ft)	Elevation (ft AMSL)	DTW (ft)	Elevation (ft AMSL)	DTW (ft)	Elevation (ft AMSL)	DTW (ft)	Elevation (ft AMSL)	DTW (ft)	Elevation (ft AMSL)	DTW (ft)	Elevation (ft AMSL)	DTW (ft)
11/30/2000	NI	NI	248.38	13.42	241.87	12.23	251.28	3.19	NI	NI	288.67	13.69	258.15	28.47	283.86	17.30	NI	NI	NI	NI	NI	NI
1/10/2001	NI	NI	248.23	13.57	249.18	4.92	251.48	2.99	NI	NI	287.84	14.52	258.07	28.55	283.53	17.63	NI	NI	NI	NI	NI	NI
2/13/2001	NI	NI	248.66	13.14	251.48	2.62	251.87	2.60	NI	NI	289.39	12.97	264.94	21.68	283.28	17.88	NI	NI	NI	NI	NI	NI
4/9/2001	NI	NI	249.95	11.85	251.24	2.86	251.49	2.98	NI	NI	298.81	3.55	257.76	28.86	285.13	16.03	NI	NI	NI	NI	NI	NI
4/26/2001	NI	NI	249.57	12.23	250.10	4.00	251.76	2.71	NI	NI	294.38	7.98	257.67	28.95	284.56	16.60	NI	NI	NI	NI	NI	NI
6/11/2002	255.03	26.16	248.33	13.47	246.57	7.53	247.22	7.25	269.74	19.47	--	--	--	--	286.80	14.36	NI	NI	NI	NI	NI	NI
11/1/2002	254.99	26.20	248.35	13.45	251.61	2.49	251.85	2.62	270.41	18.80	--	--	--	--	285.63	15.53	NI	NI	NI	NI	NI	NI
3/6/2003	256.87	24.32	252.85	8.95	251.91	2.19	251.98	2.49	271.68	17.53	--	--	--	--	290.06	11.10	NI	NI	NI	NI	NI	NI
9/9/2003	256.21	24.98	250.19	11.61	251.36	2.74	251.19	3.28	275.07	14.14	--	--	--	--	287.74	13.42	280.77	30.00	299.71	15.12	291.03	10.17
9/23/2003	237.32	43.87	249.92	11.88	250.86	3.24	250.82	3.65	275.24	13.97	--	--	--	--	--	--	--	--	--	--	--	--
3/11/2004	257.22	23.97	252.61	9.19	251.73	2.37	251.81	2.66	277.64	11.57	--	--	--	--	290.45	10.71	--	--	--	--	--	--
9/23/2004	257.62	23.57	250.98	10.82	251.57	2.53	251.44	3.03	275.73	13.48	--	--	--	--	290.13	11.03	--	--	--	--	--	--
3/10/2005	257.31	23.88	252.19	9.61	251.88	2.22	251.99	2.48	275.37	13.84	--	--	--	--	290.88	10.28	--	--	--	--	--	--
9/22/2005	255.82	25.37	248.26	13.54	247.45	6.65	246.83	7.64	--	--	--	--	--	--	289.94	11.22	--	--	--	--	--	--
3/6/2006	256.17	25.02	250.29	11.51	250.61	3.49	250.59	3.88	274.96	14.25	--	--	--	--	291.63	9.53	--	--	--	--	--	--
9/19/2006	257.19	24.00	248.77	13.03	248.53	5.57	250.47	4.00	277.26	11.95	--	--	--	--	290.83	10.33	--	--	--	--	--	--
3/20/2007	266.28	14.91	251.80	10.00	251.30	2.80	251.05	3.42	275.79	13.42	--	--	--	--	293.25	7.91	289.81	20.96	300.53	14.30	290.12	11.08
9/27/2007	256.52	24.67	247.78	14.02	247.31	6.79	248.56	5.91	277.70	11.51	293.42	8.94	--	--	289.87	11.29	283.46	27.31	300.39	14.44	286.50	14.70
3/25/2008	255.94	25.25	249.68	12.12	251.79	2.31	252.27	2.20	274.91	14.30	298.75	3.61	266.67	19.95	290.19	10.97	288.16	22.61	295.82	19.01	285.98	15.22
9/29-30/2008	256.98	24.21	248.02	13.78	250.08	4.02	251.99	2.48	275.85	13.36	292.83	9.53	267.24	19.38	288.81	12.35	282.62	28.15	296.81	18.02	286.67	14.53
3/30-31/2009	256.60	24.59	251.61	10.19	251.74	2.36	252.04	2.43	275.29	13.92	301.86	0.50	266.52	20.10	292.66	8.50	287.02	23.75	297.31	17.52	290.13	11.07
9/29-30/2009	257.10	24.09	248.08	13.72	249.28	4.82	250.97	3.50	276.94	12.27	--	--	--	--	289.98	11.18	283.57	27.20	299.23	15.60	286.97	14.23
3/30-31/2010	257.12	24.07	251.50	10.30	251.54	2.56	251.89	2.58	275.62	13.59	300.57	1.79	268.15	18.47	294.24	6.92	290.05	20.72	301.74	13.09	290.48	10.72
9/29-30/2010	257.10	24.09	248.22	13.58	251.44	2.66	252.28	2.19	277.90	11.31	293.07	9.29	267.15	19.47	293.24	7.92	289.05	21.72	300.74	14.09	287.34	13.86
4/6-4/7/2011	255.19	26.00	248.70	13.10	251.28	2.82	251.72	2.75	275.31	13.90	290.51	11.85	267.01	19.61	289.45	11.71	290.04	20.73	299.02	15.81	287.45	13.75
9/28/2011	258.15	23.04	247.76	14.04	249.11	4.99	251.92	2.55	277.30	11.91	290.16	12.20	266.62	20.00	288.22	12.94	284.80	25.97	298.59	16.24	286.09	15.11
3/28/2012	257.68	23.51	250.72	11.08	251.48	2.62	251.98	2.49	276.30	12.91	296.79	5.57	265.57	21.05	291.30	9.86	290.36	20.41	298.51	16.32	288.34	12.86
9/26/2012	257.60	23.59	248.80	13.00	250.10	4.00	250.35	4.12	278.13	11.08	290.24	12.12	265.71	20.91	288.71	12.45	287.05	23.72	298.31	16.52	286.38	14.82
4/1/2013	255.48	25.71	249.48	12.32	251.45	2.65	251.82	2.65	277.43	11.78	289.71	12.65	264.71	21.91	289.81	11.35	291.05	19.72	297.51	17.32	285.31	15.89
9/25/2013	258.19	23.00	249.13	12.67	251.16	2.94	251.87	2.60	279.53	9.68	291.54	10.82	264.89	21.73	290.14	11.02	286.53	24.24	299.48	15.35	288.55	12.65
4/1/2014	257.99	23.20	253.44	8.36	251.51	2.59	252.22	2.25	279.23	9.98	299.76	2.60	264.99	21.63	294.26	6.90	291.53	19.24	303.71	11.12	289.60	11.60
9/29/2014	257.90	23.29	249.10	12.70	250.20	3.90	249.05	5.42	281.22	7.99	291.88	10.48	266.47	20.15	290.21	10.95	286.03	24.74	302.30	12.53	287.90	13.30
MEAN	*256.43*	*24.76*	*249.73*	*12.07*	*250.27*	*3.83*	*251.13*	*3.34*	*276.06*	*13.15*	*293.69*	*8.67*	*264.35*	*22.27*	*289.32*	*11.84*	*287.17*	*23.60*	*299.39*	*15.44*	*287.93*	*13.27*
MAXIMUM	*266.28*	*43.87*	*253.44*	*14.04*	*251.91*	*12.23*	*252.28*	*7.64*	*281.22*	*19.47*	*301.86*	*14.52*	*268.15*	*28.95*	*294.26*	*17.88*	*291.53*	*30.00*	*303.71*	*19.01*	*291.03*	*15.89*
MINIMUM	*237.32*	*14.91*	*247.76*	*8.36*	*241.87*	*2.19*	*246.83*	*2.19*	*269.74*	*7.99*	*287.84*	*0.50*	*257.67*	*18.47*	*283.28*	*6.90*	*280.77*	*19.24*	*295.82*	*11.12*	*285.31*	*10.17*

Notes:
1. ft AMSL = feet above mean sea level.
2. -- = not measured or no data
3. TOC = top of casing
4. NI = not installed
5. MW = monitoring well
6. TOC and Water Elevation Data for dates prior to March 2007 from historical G.N. Richardson & Associates, Inc. *Ground and Surface Water Monitoring Reports* .
7. *MW-2T and MW-6T are replacement well installations for MW-2 and MW-6, respectively.
8. **TOC Elevation for MW-10 is listed as both 296.35 feet AMSL in the Hutchinson Group, Ltd. data and 301.16 feet AMSL in the Richardson data from the same sampling periods. The latest TOC elevation is used for this table.
9. It appears that MW-2T,MW-6T,and MW-10 were re-surveyed by G.N. Richardson & Associates, Inc. The TOC data from the most recent reports are used in this table.
10. Water level data for MW-2T from 9/23/2003 and 3/20/2007 and for MW-4 from 11/3/2000 appear to be anomalous and were not included in the mean, maximum, and minimum groundwater calculations.
11. Wells MW-1 and MW-9 were decomissioned in 2008 during site construction activities.
12. The elevations for MW-2T are unchanged since the inner casing was replaced after well was damaged.
13. Approval was received from NCDENR on 3-3-11 to monitor MW-12 for water levels only and to decommission MW-13 (decommissioned on 5-2-11).

TABLE 2

Summary of Estimated Horizontal Flow Velocities
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

September 2014							
Gradient Calculation Segment	**Flow Direction**	**Gradient Segment Length (feet)**	**Gradient Segment Elevations (feet)**	**Horizontal Gradient, i (feet)**	**Effective Porosity, n_e**	**Hydraulic Conductivity, K (cm/sec)**	**Velocity, V_{gw} (feet/year)**
i_1	SE	494	300 280	0.0405	0.1	0.000745	312.07
i_2	SSE	1316	300 260	0.0304	0.1	0.000745	234.29
i_3	SSE	1948	290 250	0.0205	0.1	0.000745	158.28

Notes:

1. Horizontal velocities based on the modified Darcy equation $V_{gw} = Ki/n_e$.
2. Values for K and n_e were based on mean values for MW-1, MW-3, MW-5 and MW-10 and hydrogeologic data collected by G.N. Richardson & Associates, Inc. Values for n_e also based on typical effective porosities for similar hydrogeologic conditions as discussed in the 1983 U.S. Dept of Interior and U.S.G.S. publication *Basic Ground-Water Hydrology, Water-Supply Paper 2220,* by Ralph C. Heath.

TABLE 3

Summary of Well Construction Information
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Well Identification	Construction Date	Coordinates		Ground Surface Elevation (ft AMSL)	Measuring Point Elevation (ft AMSL)	Well Diameter (inches)	Well Depth (feet)	Screened Interval (ft bgs)	Screened Interval (ft AMSL)	Depth to Bedrock (ft bgs)	Geology of Screened Interval	Well Status
		Northing	Easting									
MW-2T	9/29/2001	673949.63	2029330.92	--	281.19	2	82	--	--	--	--	Active
MW-3	10/19/2000	673404.42	2029314.22	257.5	261.80	2	31.5	17-27	240.5-230.5	5.00	Bedrock	Active
MW-4	10/11/2000	673139.11	2030104.02	251.76	254.10	2	17	5-15	246.76-236.76	6.00	PWR/Bedrock	Active
MW-5	10/12/2000	673672.17	2030685.82	252.04	254.47	2	15.5	4-14	248.04-238.04	11.00	Saprolite	Active
MW-6T	10/29/2001	676625.91	2030732.10	287.38	289.21	2	45	35-45	252.38-242.38	10.00	Bedrock	Active
MW-7	10/17/2000	676615.29	2030029.53	300.14	302.36	2	20.5	8-18	292.14-282.14	10.30	PWR/Bedrock	Water Levels Only
MW-8	10/18/2000	676615.29	2030029.53	283.58	286.62	2	33.5	23-33	260.58-250.58	33.50	Saprolite	Water Levels Only
MW-10	10/18/2000	677194.05	2031353.05	--	301.16	2	34	11-31	--	17.00	Saprolite/PWR/Bedrock	Active
MW-11	8/12/2003	677194.05	2031353.05	308.17	310.77	2	50	40-50	268.17-258.17	12.00	Bedrock	Active
MW-12	8/11/2003	675723.77	2029012.40	312.04	314.83	2	28.5	17-27	295.04-285.04	8.00	Bedrock	Water Levels Only
MW-14	8/12/2003	674749.52	2028576.82	298.24	301.20	2	32	22-32	276.24-266.24	8.00	Bedrock	Active

Notes:
1. ft AMSL= feet above mean sea level
2. ft BGS= feet below ground surface
3. NA= not drilled to auger refusal
4. -- = no data available
5. PWR = partially weathered rock
6. Unless otherwise noted, well construction information given by G.N. Richardson & Associates, Inc. & The Hutchinson Group, Ltd. hydrogeologic data, including previous *Groundwater Monitoring Reports* and May 2001 and Oct 2003 *Water Quality Monitoring Plans.*
7. MW-2T & MW-6T are replacement wells for MW-2 and MW-6 and have been included as part of the monitoring well network since the April 2001 sampling event.
8. Well depths for MW-2T, MW-3, MW-4, MW-5, and MW-10 were based on Golder's March 2007 field measurements.
9. The elevation for the top of casing of MW-2T remains unchanged since the inner casing was replaced after well was damaged.
10. Approval was received from NCDENR on 3-3-11 to monitor MW-12 for water levels only and to decommission MW-13 (decommissioned on 5-2-11).
11. Northing and easting coordinates were taken based on locations as determined in AutoCAD.

TABLE 4

Summary of Groundwater Monitoring Results
Detected Constituents
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituents/Parameters	Reporting Units	Sample Date	MDL	SWS Reporting Limit	Upgradient Compliance Wells		Downgradient Compliance Wells												Blanks
					MW-1	MW-10	MW-2	MW-2T*	MW-3	MW-4	MW-5	MW-6	MW-6T*	MW-9	MW-11	MW-12	MW-13	MW-14	
Antimony	ug/L	10/31/01	--	30	ND	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	ND
SWS GPS = 1 ug/L	ug/L	06/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EPA MCL = 6 ug/L	ug/L	11/01/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/11/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/10/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/22/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/19/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/21/07	--	6	--	ND	--	**1.09 J**	ND	ND	0.60 J	--	ND	--	--	--	--	--	ND
	ug/L	09/28/07	--	6	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	6	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	ND	ND	ND
	ug/L	09/29/08	--	6	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/09	--	6	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/09	--	6	--	ND	--	ND	0.0950 J	0.132 J	0.0950 J	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/10	--	6	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/10	--	6	--	ND	--	ND	ND	ND	0.220 J	--	ND	--	ND	ND	ND	ND	ND
	ug/L	04/06/11	--	6	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	6	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	6	--	ND	--	0.404 J	0.390 J	ND	0.821 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	6	--	ND	--	ND	ND	ND	0.344 J	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	6	--	ND	--	ND	ND	ND	0.740 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	6	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	6	--	ND	--	ND	ND	ND	0.882 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	0.220	6	--	ND	--	0.401 B	ND	ND	1.27 B	--	ND	--	ND	--	--	ND	0.421 J
Arsenic	ug/L	10/31/01	--	10	ND	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	ND
NC 2L = 10 ug/L	ug/L	06/11/02	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
EPA MCL =10 ug/L	ug/L	11/01/02	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/03	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/03	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/11/04	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/04	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/10/05	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/22/05	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/06	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/19/06	--	10	--	ND	--	ND	ND	ND	ND	--	**17**	--	--	--	--	--	ND
	ug/L	03/21/07	--	10	--	ND	--	ND	ND	4.8 J	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/28/07	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	10	--	ND	--	ND	ND	2.7 J	ND	--	ND	--	ND	--	ND	ND	ND
	ug/L	09/29/08	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/09	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/09	--	10	--	2.89 J	--	4.61 J	6.02 J	ND	4.20 J	--	8.65 J	--	ND	5.06 J	ND	ND	ND
	ug/L	03/30/10	--	10	--	ND	--	ND	ND	3.21 J	3.04 J	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/10	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	**16.2**	ND	ND
	ug/L	04/06/11	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	3.35 J	ND
	ug/L	09/28/11	--	10	--	ND	--	ND	ND	6.37 B	ND	--	ND	--	3.13 B	--	--	ND	4.13 J
	ug/L	03/28/12	--	10	--	ND	--	ND	7.54 J	ND	ND	--	6.72 J	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	3.89 J
	ug/L	04/01/13	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	10	--	ND	--	8.05 J	ND	ND	ND	--	ND	--	6.11 J	--	--	ND	ND
	ug/L	04/01/14	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	5.40	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
Barium	ug/L	10/31/01	--	500	**909**	--	**1410**	--	**1650**	**922**	ND	ND	--	--	--	--	--	--	ND
NC 2L = 700 ug/L	ug/L	06/11/02	--	500	ND	ND	--	646	**1547**	ND	ND	--	**837**	--	--	--	--	--	ND
EPA MCL = 2000 ug/L	ug/L	11/01/02	--	500	ND	ND	--	ND	**1733**	ND	ND	--	**787**	--	--	--	--	--	ND
	ug/L	03/06/03	--	500	ND	ND	--	535	**1939**	ND	ND	--	**936**	--	--	--	--	--	ND
	ug/L	09/23/03	--	500	**1046**	ND	--	ND	**2090**	ND	ND	--	**1066**	--	--	--	--	--	ND
	ug/L	03/11/04	--	500	**752**	**707**	--	ND	**1881**	ND	ND	--	**966**	--	--	--	--	--	ND
	ug/L	09/23/04	--	500	--	ND	--	ND	**1830**	ND	ND	--	**977**	--	--	--	--	--	ND
	ug/L	03/10/05	--	500	--	**872**	--	ND	**2129**	ND	ND	--	**1164**	--	--	--	--	--	ND
	ug/L	09/22/05	--	500	--	ND	--	ND	**1871**	ND	ND	--	**1018**	--	--	--	--	--	ND
	ug/L	03/06/06	--	500	--	590	--	ND	**1838**	ND	ND	--	**1458**	--	--	--	--	--	ND
	ug/L	09/19/06	--	500	--	ND	--	ND	**2090**	ND	ND	--	**1787**	--	--	--	--	--	ND
	ug/L	03/21/07	--	100	--	**901**	--	61.8 J	**2080**	24.7 J	226	--	**1700**	--	--	--	--	--	0.30 J
	ug/L	09/28/07	--	100	--	488	--	59.1 J	**1930**	286	238	--	**1800**	--	--	--	--	--	0.30 J
	ug/L	03/25/08	--	100	--	**710**	--	61.5 J	**2010**	37.6 J	91.0 J	--	**1470**	--	318	--	124	335	0.30 J
	ug/L	09/29/08	--	100	--	**1040**	--	42.6 J	**2090**	33.6 J	108	--	**1880**	--	25.3 J	**1010**	180	75.9 J	ND
	ug/L	03/30/09	--	100	--	**999**	--	41.5 J	**1950**	32.5 J	67.0 J	--	**1950**	--	23.9 J	329	77.4 J	61.4 J	ND
	ug/L	09/29/09	--	100	--	**1100**	--	40.1 J	**1920**	46.4 J	107	--	**2180**	--	53.8 J	**858**	173	97.2 J	ND
	ug/L	03/30/10	--	100	--	**1120**	--	40.4 J	**1810**	31.3 J	151	--	**1880**	--	16.0 J	553	106	86.7 J	ND
	ug/L	09/29/10	--	100	--	**892**	--	30.4 J	**1770**	28.4 J	103	--	**1420**	--	13.4 J	561	**1050**	57.2 J	ND
	ug/L	09/29/10	--	100	--	--	--	--	--	--	--	--	--	--	--	--	87.4 J	--	ND
	ug/L	04/06/11	--	100	--	**1080**	--	41.2 J	**2020**	37.4 J	186	--	**2040**	--	16.3 J	--	--	68.5 J	ND
	ug/L	09/28/11	--	100	--	**1410**	--	36.3 J	**2060**	33.2 J	137	--	**2230**	--	16.0 J	--	--	69.5 J	ND
	ug/L	03/28/12	--	100	--	**974**	--	39.7 J	**2100**	19.4 J	125	--	**2250**	--	15.4 J	--	--	70.7 J	ND
	ug/L	09/26/12	--	100	--	**1350**	--	38.0 J	**2080**	18.0 J	95.9 J	--	**2420**	--	14.9 J	--	--	66.6 J	ND
	ug/L	04/01/13	--	100	--	**1120**	--	41.8 J	**2030**	19.8 J	110	--	**2280**	--	15.1 J	--	--	76.8 J	1.16 J
	ug/L	09/25/13	--	100	--	**1180**	--	33.7 J	**2080**	17.4 J	92.3 J	--	**2390**	--	17.7 J	--	--	71.3 J	ND
	ug/L	04/01/14	--	100	--	**996**	--	38.7 J	**2120**	17.6 J	78.2 J	--	**2370**	--	16.4 J	--	--	72.6 J	1.29 J
	ug/L	09/29/14	1.00	100	--	**1410**	--	34.2 J	**2230**	18.4 J	137	--	**2540**	--	18.6 J	--	--	70.6 J	ND
(Dissolved)	ug/L	09/29/14	1.00	100	--	--	--	--	**2150**	--	--	--	**2410**	--	--	--	--	--	--
Beryllium	ug/L	10/31/01	--	2	ND	--	ND	--	ND	**4**	ND	ND	--	--	--	--	--	--	ND
SWS GPS = 4 ug/L	ug/L	06/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EPA MCL = 4 ug/L	ug/L	11/01/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/11/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/10/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/22/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/19/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/21/07	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/28/07	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	ND	ND	ND
	ug/L	09/29/08	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	0.1 J
	ug/L	03/30/09	--	1	--	ND	--	ND	ND	0.12 J	ND	--	ND	--	ND	ND	0.20 J	ND	ND
	ug/L	09/29/09	--	1	--	ND	--	ND	ND	0.109 B	0.437 B	--	ND	--	ND	ND	0.464 B	ND	0.133 J
	ug/L	03/30/10	--	1	--	ND	--	ND	ND	0.137 J	0.291 J	--	ND	--	ND	ND	0.317 J	ND	ND
	ug/L	09/29/10	--	1	--	ND	--	ND	ND	0.216 J	0.640 J	--	ND	--	ND	ND	2.45	ND	ND
	ug/L	09/29/10	--	1	--	--	--	--	--	--	--	--	--	--	--	--	0.223 J	--	ND
	ug/L	04/06/11	--	1	--	ND	--	ND	ND	0.174 J	1.29	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	1	--	ND	--	ND	ND	0.127 J	0.212 J	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	1	--	ND	--	ND	ND	0.118 J	0.187 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	1	--	ND	--	ND	ND	ND	0.294 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	1	--	ND	--	ND	ND	0.101 J	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	0.100	1	--	ND	--	ND	ND	ND	0.434 J	--	ND	--	ND	--	--	ND	ND

Golder Associates

TABLE 4

Summary of Groundwater Monitoring Results
Detected Constituents
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituents/Parameters	Reporting Units	Sample Date	MDL	SWS Reporting Limit	Upgradient Compliance Wells		Downgradient Compliance Wells												Blanks
					MW-1	MW-10	MW-2	MW-2T*	MW-3	MW-4	MW-5	MW-6	MW-6T*	MW-9	MW-11	MW-12	MW-13	MW-14	
Cadmium	ug/L	10/31/01	--	1	ND	--	ND	--	ND	ND	ND	ND	--	--	--	--	--	--	ND
NC 2L = 2 ug/L	ug/L	06/11/02	--	1	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
EPA MCL = 5 ug/L	ug/L	11/01/02	--	1	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/03	--	1	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/03	--	1	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/11/04	--	1	ND	ND	--	**7**	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/04	--	1	--	ND	--	1	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/10/05	--	1	--	ND	--	**3**	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/22/05	--	1	--	ND	--	**7**	ND	ND	ND	--	2	--	--	--	--	--	ND
	ug/L	03/06/06	--	1	--	ND	--	1	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/19/06	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/21/07	--	1	--	ND	--	0.80 J	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/28/07	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	ND	ND	ND
	ug/L	09/29/08	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/09	--	1	--	0.17 J	--	0.29 J	ND	ND	0.22 J	--	ND	--	ND	ND	0.10 J	ND	ND
	ug/L	09/29/09	--	1	--	ND	--	ND	ND	0.585 J	0.658 J	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/10	--	1	--	ND	--	ND	ND	ND	0.760 J	--	ND	--	ND	0.431 J	ND	ND	ND
	ug/L	09/29/10	--	1	--	ND	--	ND	ND	ND	1.07	--	ND	--	ND	ND	ND	ND	ND
	ug/L	04/06/11	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	1	--	ND	--	ND	ND	1.41	0.410 J	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	1	--	ND	--	ND	ND	0.504 J	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	1	--	ND	--	0.462 J	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	0.360	1	--	ND	--	ND	ND	ND	0.948 J	--	ND	--	ND	--	--	ND	ND
Chromium	ug/L	10/31/01	--	10	ND	--	ND	--	ND	ND	ND	ND	--	--	--	--	--	--	ND
NC 2L = 10 ug/L	ug/L	06/11/02	--	10	ND	ND	--	**58**	ND	**29**	ND	--	ND	--	--	--	--	--	ND
EPA MCL = 100 ug/L	ug/L	11/01/02	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/03	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/03	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/11/04	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/04	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/10/05	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/22/05	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/06	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/19/06	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/21/07	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/28/07	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	10	--	ND	--	ND	ND	3.8 J	ND	--	ND	--	2.8 J	--	6.5 J	ND	ND
	ug/L	09/29/08	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	3.1 J	ND	ND
	ug/L	03/30/09	--	10	--	ND	--	0.7 J	ND	1.2 J	ND	--	1.3 J	--	ND	ND	ND	ND	ND
	ug/L	09/29/09	--	10	--	1.91 J	--	1.21 J	3.69 J	2.34 J	2.40 J	--	3.91 J	--	2.45 J	2.95 J	2.89 J	1.28 J	ND
	ug/L	03/30/10	--	10	--	ND	--	1.95 J	ND	2.05 J	1.68 J	--	1.52 J	--	ND	3.90 J	ND	1.08 J	ND
	ug/L	09/29/10	--	10	--	ND	--	ND	2.60 J	1.32 J	1.89 J	--	ND	--	ND	3.76 J	**11.5**	ND	ND
	ug/L	09/29/10	--	10	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND
	ug/L	04/06/11	--	10	--	ND	--	ND	5.62 J	1.06 J	4.89 J	--	2.84 J	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	10	--	1.19 J	--	1.28 J	**26.4**	1.62 J	7.72 J	--	4.70 J	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	10	--	ND	--	ND	3.84 J	ND	**12.0**	--	2.48 J	--	ND	--	--	ND	ND
(Verification Event)	ug/L	05/23/12	--	10	--	--	--	--	--	--	6.49 J	--	--	--	--	--	--	--	ND
	ug/L	09/26/12	--	10	--	ND	--	ND	3.87 J	ND	5.11 J	--	3.09 J	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	10	--	ND	--	1.81 J	2.50 J	ND	4.17 J	--	1.71 J	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	10	--	9.01 J	--	ND	ND	ND	5.07 J	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	10	--	ND	--	ND	2.43 J	ND	3.43 J	--	2.18 J	--	ND	--	--	ND	ND
	ug/L	09/29/14	1.40	10	--	ND	--	ND	2.88 J	ND	**90.9**	--	2.44 J	--	ND	--	--	ND	ND
(Dissolved)	ug/L	09/29/14	1.40	10	--	--	--	--	--	--	1.60	--	--	--	--	--	--	--	--
Cobalt	ug/L	10/31/01	--	10	ND	--	ND	--	ND	ND	ND	ND	--	--	--	--	--	--	ND
SWS GPS = 1 ug/L	ug/L	06/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
No EPA MCL	ug/L	11/01/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/11/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/10/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/22/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/19/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/21/07	--	10	--	ND	--	ND	ND	3.1 J	**30.7**	--	ND	--	--	--	--	--	ND
	ug/L	09/28/07	--	10	--	ND	--	ND	ND	3.0 J	**21.1**	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	10	--	ND	--	ND	ND	3.3 J	**2.9 J**	--	ND	--	**3.4 J**	--	**2.4 J**	**3.8 J**	ND
	ug/L	09/29/08	--	10	--	ND	--	ND	ND	7.1 J	**20.5**	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/09	--	10	--	ND	--	ND	ND	1.6 J	**1.1 J**	--	0.7 J	--	ND	0.8 J	**2.3 J**	ND	ND
	ug/L	09/29/09	--	10	--	ND	--	ND	ND	16.1	**9.24 J**	--	ND	--	ND	**2.15 J**	**2.03 J**	ND	ND
	ug/L	03/30/10	--	10	--	ND	--	ND	ND	ND	**2.43 J**	--	ND	--	ND	**1.47 J**	**2.33 J**	ND	ND
	ug/L	09/29/10	--	10	--	ND	--	ND	**1.15 J**	ND	**2.12 J**	--	ND	--	ND	**1.11 J**	**9.38 J**	ND	ND
	ug/L	04/06/11	--	10	--	ND	--	ND	ND	ND	**8.19 J**	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	10	--	ND	--	ND	ND	ND	**2.44 J**	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	10	--	ND	--	ND	ND	ND	**1.77 J**	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	1.10	10	--	ND	--	ND	ND	ND	**20.9**	--	ND	--	ND	--	--	ND	ND
Copper	ug/L	10/31/01	--	200	ND	--	ND	--	ND	ND	ND	ND	--	--	--	--	--	--	ND
NC 2L = 1000 ug/L	ug/L	06/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EPA MCL = 1300 ug/L#	ug/L	11/01/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/11/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/10/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/22/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/19/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/21/07	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	0.60 J
	ug/L	09/27/07	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	52.4	--	ND	ND	0.60 J
	ug/L	09/29/08	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	2.50 J	ND	ND
	ug/L	03/30/09	--	10	--	ND	--	ND	ND	1.24 B	ND	--	ND	--	1.14 B	ND	1.38 B	ND	1.39 J
	ug/L	09/29/09	--	10	--	ND	--	ND	ND	3.00 J	ND	--	ND	--	4.19 J	ND	5.57 J	ND	ND
	ug/L	03/30/10	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/10	--	10	--	ND	--	ND	ND	ND	2.81 J	--	ND	--	ND	ND	8.76 J	ND	ND
	ug/L	04/06/11	--	10	--	ND	--	2.80 B	ND	2.02 B	3.37 B	--	ND	--	ND	--	--	ND	2.07 J
	ug/L	09/28/11	--	10	--	ND	--	ND	ND	3.29 J	4.44 J	--	ND	--	ND	--	--	1.65 J	ND
	ug/L	03/28/12	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	10	--	ND	--	ND	ND	2.19 J	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	10	--	ND	--	3.19 J	ND	ND	3.25 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	1.60	10	--	ND	--	ND	ND	ND	4.54 J	--	ND	--	ND	--	--	ND	ND

TABLE 4

Summary of Groundwater Monitoring Results
Detected Constituents
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituents/Parameters	Reporting Units	Sample Date	MDL	SWS Reporting Limit	Upgradient Compliance Wells		Downgradient Compliance Wells												Blanks
					MW-1	MW-10	MW-2	MW-2T*	MW-3	MW-4	MW-5	MW-6	MW-6T*	MW-9	MW-11	MW-12	MW-13	MW-14	
Lead	ug/L	10/31/01	--	10	ND	--	ND	--	ND	14	ND	ND	--	--	--	--	--	--	ND
NC 2L = 15 ug/L	ug/L	06/11/02	--	10	ND	ND	--	ND	ND	**17**	ND	--	ND	--	--	--	--	--	ND
EPA MCL = 15 ug/L#	ug/L	11/01/02	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/03	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/03	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/11/04	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/04	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/10/05	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/22/05	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/06	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/19/06	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/21/07	--	10	--	ND	--	ND	2.4 B	ND	6.0 B	--	ND	--	--	--	--	--	2.7 J
	ug/L	09/28/07	--	10	--	ND	--	ND	ND	**15.9**	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	**58.1**	--	4.6 J	**15.5**	ND
	ug/L	09/29/08	--	10	--	ND	--	ND	ND	2.3 J	ND	--	ND	--	ND	ND	5.9 J	ND	ND
	ug/L	03/30/09	--	10	--	2.6 J	--	ND	ND	1.9 J	3.0 J	--	2.2 J	--	ND	1.7 J	1.8 J	ND	ND
	ug/L	09/29/09	--	10	--	ND	--	ND	ND	2.74 J	ND	--	ND	--	3.66 J	ND	5.25 J	ND	ND
	ug/L	03/30/10	--	10	--	ND	--	**51.7**	ND	2.95 J	2.03 J	--	ND	--	ND	2.56 J	3.10 J	2.70 J	ND
	ug/L	09/29/10	--	10	--	ND	--	**35.3**	ND	ND	ND	--	ND	--	ND	3.07 J	**56.7**	ND	ND
	ug/L	09/29/10	--	10	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND
	ug/L	04/06/11	--	10	--	ND	--	7.29 J	ND	ND	ND	--	ND	--	ND	--	--	2.09 J	ND
	ug/L	09/28/11	--	10	--	ND	--	**16.5**	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	10	--	ND	--	**18.4**	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	10	--	1.96 J	--	4.77 J	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	10	--	ND	--	2.59 J	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	10	--	ND	--	14.1	ND	2.30 J	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	10	--	ND	--	11.8	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	2.10	10	--	ND	--	12.6	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
Mercury	ug/L	10/31/01	--	0.5	ND	--	ND	--	ND	ND	ND	ND	--	--	--	--	--	--	ND
NC 2L = 1 ug/L	ug/L	06/11/02	--	1	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
EPA MCL = 2 ug/L	ug/L	11/01/02	--	1	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/03	--	1	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/03	--	1	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/11/04	--	0.5	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/04	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/10/05	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/22/05	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/06	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/19/06	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/21/07	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/27/07	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	0.16 J	--	--	0.59	ND
	ug/L	09/29/08	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/09	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/09	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/10	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/10	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	04/06/11	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	0.170	0.2	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
Nickel	ug/L	10/31/01	--	50	ND	--	ND	--	ND	ND	ND	ND	--	--	--	--	--	--	ND
NC 2L = 100 ug/L	ug/L	06/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
No EPA MCL	ug/L	11/01/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/11/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/10/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/22/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/19/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/21/07	--	50	--	ND	--	ND	ND	ND	2.3 J	--	ND	--	--	--	--	--	ND
	ug/L	09/28/07	--	50	--	ND	--	ND	ND	ND	5.3 J	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	50	--	ND	--	2.9 J	ND	ND	ND	--	ND	--	ND	--	2.7 J	ND	ND
	ug/L	09/29/08	--	50	--	ND	--	1.9 J	ND	ND	ND	--	ND	--	ND	7.7 J	3.7 J	ND	ND
	ug/L	03/30/09	--	50	--	0.7 B	--	0.8 B	1.6 B	1.1 B	1.2 B	--	1.2 B	--	0.6 B	2.7 B	0.8 B	ND	0.6 J
	ug/L	09/29/09	--	50	--	2.10 J	--	ND	8.99 J	4.62 J	5.42 J	--	6.39 J	--	5.35 J	9.92 J	3.14 J	ND	ND
	ug/L	03/30/10	--	50	--	ND	--	2.88 J	2.42 J	ND	4.08 J	--	2.63 J	--	ND	8.42 J	ND	ND	ND
	ug/L	09/29/10	--	50	--	ND	--	ND	48.1 J	ND	8.26 J	--	ND	--	ND	5.18 J	ND	ND	ND
	ug/L	04/06/11	--	50	--	ND	--	ND	91.5	ND	32.2 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	50	--	ND	--	2.89 J	18.8 J	2.43 J	76.6	--	2.78 J	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	50	--	ND	--	2.85 J	4.66 J	ND	7.90 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	50	--	ND	--	ND	3.37 J	ND	13.8 J	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	50	--	ND	--	ND	3.66 J	ND	3.06 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	50	--	8.60 J	--	ND	3.72 J	ND	5.12 J	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	50	--	ND	--	1.99 J	3.01 J	1.86 J	1.88 J	--	1.95 J	--	ND	--	--	ND	ND
	ug/L	09/29/14	1.80	50	--	ND	--	ND	3.07 J	ND	42.4 J	--	ND	--	ND	--	--	ND	ND
Selenium	ug/L	10/31/01	--	20	ND	--	ND	--	ND	ND	ND	ND	--	--	--	--	--	--	ND
NC 2L = 20 ug/L	ug/L	06/11/02	--	20	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
EPA MCL = 50 ug/L	ug/L	11/01/02	--	20	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/03	--	20	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/03	--	20	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/11/04	--	20	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/04	--	20	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/10/05	--	20	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/22/05	--	20	--	ND	--	ND	**22**	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/06	--	20	--	ND	--	ND	**22**	ND	ND	--	**23**	--	--	--	--	--	ND
	ug/L	09/19/06	--	20	--	ND	--	ND	**29**	ND	ND	--	**47**	--	--	--	--	--	ND
	ug/L	03/21/07	--	10	--	ND	--	ND	ND	3.2 B	ND	--	ND	--	--	--	--	--	2.5 J
	ug/L	09/28/07	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	ND	ND	ND
	ug/L	09/29/08	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/09	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/09	--	10	--	ND	--	ND	ND	2.87 J	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/10	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/10	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	04/06/11	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	10	--	2.83 (ND) B	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	3.32 (ND) J
	ug/L	09/26/12	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	5.00	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND

TABLE 4

Summary of Groundwater Monitoring Results
Detected Constituents
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituents/Parameters	Reporting Units	Sample Date	MDL	SWS Reporting Limit	Upgradient Compliance Wells		Downgradient Compliance Wells												Blanks
					MW-1	MW-10	MW-2	MW-2T*	MW-3	MW-4	MW-5	MW-6	MW-6T*	MW-9	MW-11	MW-12	MW-13	MW-14	
Silver	ug/L	10/31/01	--	10	ND	--	ND	--	ND	ND	ND	ND	--	--	--	--	--	--	ND
NC 2L= 20 ug/L	ug/L	06/11/02	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
EPA MCL = 100 ug/L	ug/L	11/01/02	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/03	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/03	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/11/04	--	10	ND	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/23/04	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/10/05	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/22/05	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/06/06	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/19/06	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/21/07	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/27/07	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	2.3 J	--	--	--	ND
	ug/L	09/29/08	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/09	--	10	--	1.3 J	--	1.5 J	3.6 J	ND	1.5 J	--	4.3 J	--	ND	1.4 J	ND	1.4 J	ND
	ug/L	09/29/09	--	10	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/10	--	10	--	ND	--	ND	2.96 J	ND	2.27 J	--	5.62 J	--	ND	ND	ND	ND	ND
	ug/L	09/29/10	--	10	--	ND	--	ND	2.17 J	ND	ND	--	4.10 J	--	ND	ND	ND	ND	ND
	ug/L	04/06/11	--	10	--	ND	--	ND	1.92 J	ND	ND	--	7.15 J	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	10	--	ND	--	5.83 J	ND	ND	ND	--	**54.5** (16.5)	--	10.6	--	--	ND	ND
	ug/L	03/28/12	--	10	--	ND	--	ND	2.80 J	ND	1.92 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	10	--	ND	--	ND	3.16 J	ND	ND	--	7.51 J	--	2.64 J	--	--	ND	ND
	ug/L	04/01/13	--	10	--	ND	--	ND	ND	ND	ND	--	2.61 J	--	4.21 J	--	--	ND	ND
	ug/L	09/25/13	--	10	--	ND	--	2.23 J	2.09 J	ND	ND	--	**30.5**	--	2.20 J	--	--	ND	ND
	ug/L	04/01/14	--	10	--	ND	--	ND	2.20 J	2.05 J	ND	--	2.37 J	--	ND	--	--	ND	ND
	ug/L	09/29/14	1.90	10	--	ND	--	4.28 J	ND	ND	3.30 J	--	1.95 J	--	ND	--	--	**70.4**	ND
(Dissolved)	ug/L	09/29/14	1.90	10	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--
Thallium	ug/L	10/31/01	--	10	ND	--	ND	--	ND	ND	ND	ND	--	--	--	--	--	--	ND
SWS GPS = 0.28 ug/L	ug/L	06/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EPA MCL = 2 ug/L	ug/L	11/01/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/11/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/10/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/22/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/19/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/21/07	--	5.5	--	ND	--	ND	ND	ND	0.132 J	--	ND	--	--	--	--	--	ND
	ug/L	09/28/07	--	5.5	--	0.042 B	--	0.043 B	0.045 B	0.101 B	0.072 B	--	ND	--	--	--	--	--	0.066 J
	ug/L	03/25/08	--	5.5	--	ND	--	ND	ND	0.046 J	0.066 J	--	ND	--	0.175 J	--	0.050 J	0.106 J	ND
	ug/L	09/29/08	--	5.5	--	ND	--	0.057 B	0.041 B	0.052 B	0.063 B	--	ND	--	0.042 B	ND	0.052 B	ND	0.062 J
	ug/L	03/30/09	--	5.5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/09	--	5.5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	0.125 J
	ug/L	03/30/10	--	5.5	--	ND	--	ND	ND	0.116 J	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/10	--	5.5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	04/06/11	--	5.5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	5.5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	5.5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	5.5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	5.5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	5.5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	5.5	--	0.121 J	--	**0.371 J**	0.134 J	**0.357 J**	ND	--	ND	--	0.199 J	--	--	0.147 J	ND
	ug/L	09/29/14	0.110	6	--	0.148 B	--	0.966 B	0.404 B	1.18 B	ND	--	ND	--	0.260 B	--	--	0.227 B	0.253 J
Vanadium	ug/L	10/31/01	--	40	ND	--	ND	--	**50**	ND	ND	ND	--	--	--	--	--	--	ND
SWS GPS = 0.3 ug/L	ug/L	06/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
No EPA MCL	ug/L	11/01/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/11/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/10/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/22/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/19/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/21/07	--	25	--	ND	--	**17.4 J**	**22.9 J**	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/28/07	--	25	--	ND	--	**3.2 J**	**29.6**	**23.2 J**	ND	--	ND	--	--	--	--	--	ND
	ug/L	03/25/08	--	25	--	ND	--	**3.6 J**	**25.5**	**1.7 J**	ND	--	ND	--	**72.9**	--	**3.9 J**	**31.8**	ND
	ug/L	09/29/08	--	25	--	ND	--	ND	**24.6 J**	ND	ND	--	ND	--	ND	ND	**5.7 J**	**8.1 J**	ND
	ug/L	03/30/09	--	25	--	ND	--	**2.3 J**	**41.3**	**3.4 J**	ND	--	ND	--	**0.8 J**	**0.8 J**	**2.2 J**	**9.5 J**	ND
	ug/L	09/29/09	--	25	--	ND	--	ND	**35.1**	**4.94 J**	ND	--	ND	--	**5.71 J**	**1.57 J**	**7.54 J**	**12.9 J**	ND
	ug/L	03/30/10	--	25	--	ND	--	ND	**30.3**	**3.60 J**	ND	--	ND	--	ND	**3.19 J**	**3.90 J**	**11.5 J**	ND
	ug/L	09/29/10	--	25	--	ND	--	ND	**23.3 J**	**4.85 J**	**2.47 J**	--	ND	--	ND	**1.70 J**	**59.9**	**9.73 J**	ND
	ug/L	09/29/10	--	25	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	ND
	ug/L	04/06/11	--	25	--	ND	--	ND	**28.0**	**4.24 J**	ND	--	ND	--	ND	--	--	**11.1 J**	ND
	ug/L	09/28/11	--	25	--	ND	--	ND	**34.4**	**4.59 J**	ND	--	ND	--	ND	--	--	**10.3 J**	ND
	ug/L	03/28/12	--	25	--	ND	--	ND	**25.1**	**2.41 J**	ND	--	ND	--	ND	--	--	**10.3 J**	ND
	ug/L	09/26/12	--	25	--	ND	--	ND	**22.0 J**	**1.95 J**	ND	--	ND	--	ND	--	--	**9.75 J**	ND
	ug/L	04/01/13	--	25	--	ND	--	ND	**24.8 J**	**2.09 J**	ND	--	ND	--	ND	--	--	**9.99 J**	ND
	ug/L	09/25/13	--	25	--	ND	--	ND	**25.2**	**2.39 J**	ND	--	ND	--	ND	--	--	**9.72 J**	ND
	ug/L	04/01/14	--	25	--	ND	--	ND	**23.1 J**	**2.21 J**	ND	--	ND	--	ND	--	--	**9.33 J**	ND
	ug/L	09/29/14	1.40	25	--	ND	--	ND	**26.3**	**1.96 J**	**2.81 J**	--	ND	--	ND	--	--	**10.1 J**	ND
Zinc	ug/L	10/31/01	--	20	ND	--	22	--	ND	21	ND	ND	--	--	--	--	--	--	ND
NC 2L = 1000 ug/L	ug/L	06/11/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EPA MCL = 5000 ug/L*	ug/L	11/01/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/11/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/23/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/10/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/22/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/06/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	09/19/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	ug/L	03/21/07	--	10	--	ND	--	3.1 B	5.9 J	4.5 B	49.8	--	ND	--	--	--	--	--	1.1 J
	ug/L	09/28/07	--	10	--	2.3 J	--	ND	4.8 J	41.4	17.6	--	54.3	--	--	--	--	--	ND
	ug/L	03/25/08	--	10	--	2.1 B	--	9.9 B	1.6 B	10.9 B	9.1 B	--	ND	--	78.6	--	23.5	58.6	2.8 J
	ug/L	09/29/08	--	10	--	ND	--	4.3 J	ND	9.3 J	9.7 J	--	5.6 J	--	ND	12.6	15.7	ND	ND
	ug/L	03/30/09	--	10	--	ND	--	3.8 J	7.0 J	9.2 J	ND	--	ND	--	ND	7.3 J	5.2 J	ND	ND
	ug/L	09/29/09	--	10	--	5.13 B	--	6.49 B	10.1 B	23.5	18.8 B	--	4.26 B	--	16.4 B	20.9 B	20.3 B	13.4 B	4.60 J
	ug/L	03/30/10	--	10	--	ND	--	11.1	6.52 J	6.87 J	4.92 J	--	ND	--	ND	23.7	16.5	13.5	ND
	ug/L	09/29/10	--	10	--	ND	--	4.47 J	10.2	8.62 J	5.64 J	--	ND	--	ND	14.1	52.8	8.48 J	ND
	ug/L	04/06/11	--	10	--	ND	--	7.32 J	6.32 J	5.17 J	9.91 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	10	--	ND	--	ND	13.6	12.3	17.5	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	10	--	ND	--	6.10 J	13.7	ND	5.76 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	10	--	ND	--	5.70 J	8.44 J	ND	7.55 J	--	4.44 J	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	10	--	ND	--	8.82 J	8.34 J	ND	5.34 J	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	10	--	ND	--	ND	6.25 J	ND	5.48 J	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	10	--	ND	--	7.22 J	8.26 J	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	3.80	10	--	ND	--	ND	8.34 J	4.13 J	24.6	--	ND	--	ND	--	--	8.84 J	ND

TABLE 4

Summary of Groundwater Monitoring Results
Detected Constituents
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituents/Parameters	Reporting Units	Sample Date	MDL	SWS Reporting Limit	Upgradient Compliance Wells		Downgradient Compliance Wells												Blanks
					MW-1	MW-10	MW-2	MW-2T*	MW-3	MW-4	MW-5	MW-6	MW-6T*	MW-9	MW-11	MW-12	MW-13	MW-14	
Iron	ug/L	03/21/07	--	300	--	20 J	--	26 J	ND	813	4820	--	ND	--	--	--	--	--	ND
NC 2L = 300 ug/L	ug/L	09/28/07	--	300	--	170 J	--	39 J	ND	21800	436	--	ND	--	--	--	--	--	--
EPA MCL = 300 ug/L*	ug/L	03/25/08	--	300	--	242 J	--	ND	ND	3470	162 J	--	ND	--	27900	--	2990	13200	ND
	ug/L	09/29/08	--	300	--	144 J	--	267 J	ND	8780	5390	--	480	--	575	1050	5020	141 J	ND
	ug/L	03/30/09	--	300	--	141 J	--	107 J	ND	2240	150 J	--	1030	--	574	367	1120	ND	ND
	ug/L	09/29/09	--	300	--	457	--	247 J	156 J	7100	1750	--	1510	--	2400	1420	4310	1230	23.4 J
	ug/L	03/30/10	--	300	--	79.7 J	--	644	104 J	2250	200 J	--	959	--	170 J	1060	1430	745	ND
	ug/L	09/29/10	--	300	--	23.0 J	--	196 J	220 J	2210	175 J	--	590	--	115 J	768	42100	80.1 J	ND
	ug/L	09/29/10	--	300	--	--	--	--	--	--	--	--	--	--	--	--	97.7 J	--	ND
	ug/L	04/06/11	--	300	--	27.9 J	--	113 J	211 J	2260	96.8 J	--	990	--	112 J	--	--	82.8 J	ND
	ug/L	09/28/11	--	300	--	36.4 J	--	363	1620	2290	116 J	--	1080	--	79.2 J	--	--	31.3 J	ND
	ug/L	03/28/12	--	300	--	34.7 J	--	94.1 J	292 J	742	117 J	--	1010	--	39.0 J	--	--	50.0 J	ND
	ug/L	09/26/12	--	300	--	30.0 J	--	107 J	1800	599	143 J	--	1110	--	70.6 J	--	--	25.5 J	ND
	ug/L	04/01/13	--	300	--	64.5 J	--	58.0 J	376	677	54.6 J	--	1020	--	41.7 J	--	--	51.4 J	ND
	ug/L	09/25/13	--	300	--	95.5 J	--	566	605	665	65.3 J	--	1020	--	72.2 J	--	--	30.1 J	ND
	ug/L	04/01/14	--	300	--	ND	--	87.8 J	264 J	735	65.0 J	--	980	--	58.4 J	--	--	44.6 J	ND
	ug/L	09/29/14	22.0	300	--	ND	--	636	690	761	2150	--	1040	--	92.0 J	--	--	1950	ND
Manganese	ug/L	03/21/07	--	50	--	166	--	141	16.8 J	743	3540	--	1370	--	--	--	--	--	ND
NC 2L = 50 ug/L	ug/L	09/28/07	--	50	--	251	--	36.0 J	33.7 J	498	2040	--	1580	--	--	--	--	--	--
EPA MCL = 50 ug/L*	ug/L	03/25/08	--	50	--	508	--	11.6 J	ND	337	122	--	80.5	--	877	--	89.2	1620	ND
	ug/L	09/29/08	--	50	--	1050	--	146	ND	1390	1920	--	1170	--	125	1510	139	58.1	ND
	ug/L	03/30/09	--	50	--	215	--	115	ND	239	116	--	1640	--	108	390	81.7	3.6 J	ND
	ug/L	09/29/09	--	50	--	1130	--	185	6.27 J	2270	1350	--	1860	--	180	1070	145	121	ND
	ug/L	03/30/10	--	50	--	144	--	197	4.01 J	39.4 J	237	--	1430	--	74.2	553	92.4	229	ND
	ug/L	09/29/10	--	50	--	913	--	94.2	22.3 J	108	429	--	1090	--	72.9	480	468	29.5 J	1.12 J
	ug/L	09/29/10	--	50	--	--	--	--	--	--	--	--	--	--	--	--	68.9		ND
	ug/L	04/06/11	--	50	--	377	--	104	20.2 J	26.9 J	1190	--	1590	--	76.5	--	--	17.8 J	ND
	ug/L	09/28/11	--	50	--	1550	--	182	34.1 J	130	316	--	1710	--	72.4	--	--	13.3 J	ND
	ug/L	03/28/12	--	50	--	470	--	88.4	15.3 J	35.2 J	205	--	1650	--	37.2 J	--	--	14.7 J	ND
	ug/L	09/26/12	--	50	--	1430	--	81.1	55.8	44.0 J	103	--	1760	--	76.3	--	--	7.07 J	ND
	ug/L	04/01/13	--	50	--	255	--	110	32.2 J	11.9 J	57.9	--	1690	--	33.3 J	--	--	9.57 J	ND
	ug/L	09/25/13	--	50	--	1030	--	160	41.1 J	23.6 J	76.6	--	1670	--	99.1	--	--	7.31 J	ND
	ug/L	04/01/14	--	50	--	118	--	121	14.1 J	9.51 J	31.8 J	--	1730	--	30.2 J	--	--	10.2 J	ND
	ug/L	09/29/14	1.10	50	--	1530	--	180	18.1 J	23.0 J	2520	--	1770	--	98.4	--	--	42.2 J	ND
Acetone	ug/L	03/21/07	--	100	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
NC 2L = 6000 ug/L	ug/L	09/28/07	--	100	--	ND	--	2.8 B	ND	ND	ND	--	ND	--	--	--	--	--	5.2 J
No EPA MCL	ug/L	03/25/08	--	100	--	ND	--	ND	ND	3.0 J	3.2 J	--	ND	--	ND	--	ND	ND	ND
	ug/L	09/29/08	--	100	--	2.7 B	--	2.8 B	ND	ND	ND	--	4.4 B	--	ND	4.7 B	4.9 B	ND	3.5 J
	ug/L	03/30/09	--	100	--	ND	--	ND	ND	ND	ND	--	ND	--	4.2 J	ND	ND	ND	ND
	ug/L	09/29/09	--	100	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/10	--	100	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/10	--	100	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	04/06/11	--	100	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	100	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	100	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	100	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	100	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	100	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	100	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	1.2	100	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
Chloroform	ug/L	03/21/07	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
NC2L = 70 ug/L	ug/L	09/27/07	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
EPA MCL = 80 ug/L	ug/L	03/25/08	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/29/08	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/09	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	0.57 J	ND	ND	ND
	ug/L	09/29/09	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/10	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/10	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	04/06/11	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	0.18	5	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
Chloromethane	ug/L	03/21/07	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
NC 2L = 3 ug/L	ug/L	09/27/07	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
No EPA MCL	ug/L	03/25/08	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/29/08	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/09	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/09	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/10	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/10	--	1	--	0.58 B	--	ND	ND	ND	ND	--	0.57 B	--	ND	0.50 B	ND	ND	0.44 J
	ug/L	04/06/11	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	0.13	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
Toluene	ug/L	03/21/07	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
NC2L = 600 ug/L	ug/L	09/27/07	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
EPA MCL = 1000 ug/L	ug/L	03/25/08	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	--	--	--	--	ND
	ug/L	09/29/08	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	03/30/09	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/09	--	1	--	0.63 J	--	ND	0.51 J	ND	ND	--	0.81 J	--	0.94 J	0.56 J	ND	0.45 J	ND
	ug/L	03/30/10	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	09/29/10	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND
	ug/L	04/06/11	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/28/11	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	03/28/12	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	1	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	0.14	1	--	ND	--	ND	0.45 J	ND	ND	--	ND	--	ND	--	--	ND	ND
Tetrahydrofuran	ug/L	04/06/11	--	--	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
No NC 2L	ug/L	09/28/11	--	--	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
No EPA MCL	ug/L	03/28/12	--	--	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/26/12	--	--	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/13	--	--	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/25/13	--	--	--	ND	--	ND	ND	ND	2.4	--	ND	--	ND	--	--	ND	ND
	ug/L	04/01/14	--	--	--	ND	--	ND	ND	ND	ND	--	ND	--	ND	--	--	ND	ND
	ug/L	09/29/14	0.80	--	--	ND	--	ND	ND	ND	10	--	ND	--	ND	--	--	ND	1.7
Chloride	mg/L	03/21/07	--	--	--	1000	--	1500	2100	15	290	--	2000	--	--	--	--	--	ND
NC2L = 250 mg/L	mg/L	09/28/07	--	--	--	170	--	430	1600	14	210	--	1700	--	--	--	--	--	0.53 J
EPA MCL = 250 mg/L*	mg/L	03/25/08	--	--	--	230	--	490	1500	3.5 J	330	--	1600	--	7.9	--	2.2 J	18	ND
	mg/L	09/29/08	--	--	--	320	--	530	1700	4.0 J	170	--	1700	--	11	1500	10	20	ND
	mg/L	03/30/09	--	--	--	ND	--	460	1600	6.5	400	--	1800	--	9.4	500	5.2	16	ND
	mg/L	09/29/09	--	--	--	330	--	490	1500	7.1	390	--	1900	--	10	1300	9.5	21	ND
	mg/L	03/30/10	--	--	--	480	--	510	1600	6.4	960	--	1900	--	11	880	13	21	ND
	mg/L	09/29/10	--	--	--	310	--	450	1600	7.3	360	--	1900	--	11	840	25	20	ND
	mg/L	04/06/11	--	--	--	340	--	470	1500	5.4 B	660	--	1900	--	11	--	--	22	1.9
	mg/L	09/28/11	--	--	--	460	--	490	1500	5.5 B	570	--	1900	--	10	--	--	24	1.6 J
	mg/L	03/28/12	--	--	--	330	--	520	1600	5.8 B	770	--	2100	--	11	--	--	28	1.2
	mg/L	09/26/12	--	--	--	480	--	500	1500	6.4 B	900	--	2100	--	11	--	--	30	1.5
	mg/L	04/01/13	--	--	--	330	--	480	1600	6.9 B	820	--	1900	--	11	--	--	36	1.6
	mg/L	09/25/13	--	--	--	420	--	510	1700	6.2	1400	--	2100	--	11	--	--	37	ND
	mg/L	04/01/14	--	--	--	440	--	500	1600	5.0	1500	--	2100	--	11	--	--	35	ND
	mg/L	09/29/14	110	--	--	460	--	490	1700	5.6	1200	--	2100	--	11	--	--	30	ND

TABLE 4

Summary of Groundwater Monitoring Results
Detected Constituents
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituents/Parameters	Reporting Units	Sample Date	MDL	SWS Reporting Limit	Upgradient Compliance Wells		Downgradient Compliance Wells												Blanks
					MW-1	MW-10	MW-2	MW-2T*	MW-3	MW-4	MW-5	MW-6	MW-6T*	MW-9	MW-11	MW-12	MW-13	MW-14	
Total Dissolved Solids	mg/L	03/21/07	--	--	--	860	--	**1100**	**3400**	64	590	--	**3100**	--	--	--	--	--	ND
NC2L = 1000 mg/L	mg/L	09/28/07	--	--	--	490	--	**1200**	**3100**	**1400**	480	--	**3200**	--	--	--	--	--	--
No EPA MCL	mg/L	03/25/08	--	--	--	620	--	**1200**	**3400**	120	830	--	**3400**	--	510	--	94	340	ND
	mg/L	09/29/08	--	--	--	850	--	**1300**	**3400**	100	450	--	**3500**	--	380	**2900**	180	330	ND
	mg/L	03/30/09	--	--	--	910	--	**1200**	**3300**	90	930	--	**3700**	--	290	**1000**	54	260	ND
	mg/L	09/29/09	--	--	--	930	--	**1300**	**3300**	150	930	--	**3900**	--	360	**2600**	200	340	ND
	mg/L	03/30/10	--	--	--	**1200**	--	**1300**	**3500**	160	**2100**	--	**4000**	--	350	**1800**	150	320	ND
	mg/L	09/29/10	--	--	--	850	--	**1300**	**3500**	140	920	--	**4000**	--	340	**1800**	930	330	ND
	mg/L	04/06/11	--	--	--	870	--	**1200**	**3300**	120	**1600**	--	**4100**	--	320	--	--	310	ND
	mg/L	09/28/11	--	--	--	**1200**	--	**1200**	**3300**	120	**1300**	--	**4000**	--	320	--	--	300	ND
	mg/L	03/28/12	--	--	--	890	--	**1200**	**3200**	82	**1600**	--	**3900**	--	340	--	--	360	ND
	mg/L	09/26/12	--	--	--	**1100**	--	**1200**	**3100**	28	**1900**	--	**4300**	--	350	--	--	340	ND
	mg/L	04/01/13	--	--	--	**1100**	--	**1200**	**3300**	66	**1800**	--	**4200**	--	320	--	--	360	ND
	mg/L	09/25/13	--	--	--	**1000**	--	**1200**	**3300**	74	**2800**	--	**4700**	--	320	--	--	350	ND
	mg/L	04/01/14	--	--	--	**1200**	--	**1200**	**3600**	74	**3000**	--	**4300**	--	340	--	--	320	ND
	mg/L	09/29/14	10	--	--	**1100**	--	**1200**	**3400**	86	**2800**	--	**4300**	--	340	--	--	340	ND
Sulfate	mg/L	03/21/07	--	--	--	15	--	38	7.3 B	10	45	--	9.7	--	--	--	--	--	1.7 J
NC2L = 250 mg/L	mg/L	09/28/07	--	250	--	13 J	--	40 J	32 J	8.0 J	58 J	--	25 J	--	--	--	--	--	--
No EPA MCL	mg/L	03/25/08	--	250	--	12 J	--	35 J	7.2 J	8.7 J	86 J	--	11 J	--	ND	--	15 J	12 J	ND
	mg/L	09/29/08	--	250	--	11 J	--	53 J	6.0 J	6.3 J	52 J	--	10 J	--	2.4 J	9.2 J	16 J	12 J	ND
	mg/L	03/30/09	--	250	--	14 J	--	43 J	5.9 J	8.1 J	58 J	--	10 J	--	2.6 J	16 J	15 J	12 J	ND
	mg/L	09/29/09	--	250	--	11 J	--	46 J	5.5 J	8.2 J	59 J	--	11 J	--	2.5 J	11 J	16 J	12 J	ND
	mg/L	03/30/10	--	250	--	16 J	--	45 J	5.0 J	7.4 J	86 J	--	13 J	--	2.7 J	20 J	18 J	12 J	ND
	mg/L	09/29/10	--	250	--	11 J	--	48 J	4.7 J	6.2 J	36 J	--	15 J	--	2.5 J	18 J	12 J	12 J	ND
	mg/L	04/06/11	--	250	--	9.9 J	--	51 J	4.7 J	7.0 J	140 J	--	16 J	--	3.4 J	--	--	12 J	ND
	mg/L	09/28/11	--	250	--	9.3 J	--	56 J	4.3 J	5.0 J	84 J	--	16 J	--	2.9 J	--	--	13 J	ND
	mg/L	03/28/12	--	250	--	12 J	--	58 J	4.1 J	6.9 J	90 J	--	16 J	--	3.8 J	--	--	13 J	ND
	mg/L	09/26/12	--	250	--	9.1 J	--	5.3 J	4.1 J	6.2 J	93 J	--	11 J	--	4.6 J	--	--	12 J	ND
	mg/L	04/01/13	--	250	--	13 J	--	51 J	4.2 J	8.4 J	110 J	--	18 J	--	5.1 J	--	--	12 J	ND
	mg/L	09/25/13	--	250	--	11 J	--	56 J	3.9 B	7.9 J	110 J	--	12 J	--	7.7 J	--	--	12 J	1.5 J
	mg/L	04/01/14	--	250	--	14 J	--	50 J	4.2 J	9.8 J	110 J	--	11 J	--	13 J	--	--	11 J	ND
	ug/L	09/29/14	2.9	250	--	9.5 J	--	53 J	4.9 J	9.4 J	95 J	--	12 J	--	13 J	--	--	12 J	ND
Total Alkalinity	mg/L	03/21/07	--	--	--	120	--	320	270	31	22	--	310	--	--	--	--	--	ND
No NC 2L	mg/L	09/28/07	--	--	--	180	--	340	350	ND	15	--	320	--	--	--	--	--	--
No EPA MCL	mg/L	03/25/08	--	--	--	190	--	240	250	24	86	--	210	--	240	--	10 J	130	ND
	mg/L	09/29/08	--	--	--	140	--	240	230	40	25	--	220	--	240	78	17	130	ND
	mg/L	03/30/09	--	--	--	220	--	230	220	41	120	--	220	--	200	40	ND	110	ND
	mg/L	09/29/09	--	--	--	160	--	210	220	38	57	--	230	--	200	68	24	110	ND
	mg/L	03/30/10	--	--	--	290	--	210	220	32	140	--	220	--	210	36	13 J	110	ND
	mg/L	09/29/10	--	--	--	250	--	310	330	37	34	--	330	--	300	45	ND	220	ND
	mg/L	04/06/11	--	--	--	210	--	290	330	29	49	--	340	--	290	--	--	220	ND
	mg/L	09/28/11	--	--	--	270	--	320	310	32	73	--	320	--	280	--	--	220	ND
	mg/L	03/28/12	--	--	--	310	--	300	310	25	84	--	350	--	290	--	--	240	ND
	mg/L	09/26/12	--	--	--	270	--	290	310	38	140	--	350	--	300	--	--	230	ND
	mg/L	04/01/13	--	--	--	340	--	300	300	21	89	--	320	--	290	--	--	220	ND
	mg/L	09/25/13	--	--	--	290	--	310	310	24	240	--	340	--	280	--	--	230	ND
	mg/L	04/01/14	--	--	--	350	--	260	330	36	230	--	310	--	210	--	--	210	ND
	mg/L	09/29/14	70	--	--	260	--	330	370	34	270	--	370	--	300	--	--	240	ND

Notes:
mg/L = milligrams per liter
ug/L = micrograms per liter
ND = Not detected at the stated reporting limit
J = Estimated value
-- = no data
= EPA Action Level
* = EPA Secondary MCL
Blanks = field, trip, and method blanks
Bolded = Concentrations above the current NC 2L Groundwater Standards or Solid Waste Section Groundwater Protection Standards (SWS GPS) have been bolded.
Shaded = Concentrations above the current EPA Maximum Contaminate Level (MCL) have been shaded.
SWS Reporting Limit = NCPQL or lab-specific reporting limit prior to 2007 and NCSWSL starting on 01/18/07

1) MW-2T & MW-6T are replacement wells for MW-2 and MW-6 and have been included as part of the monitoring well network following the April 2001 sampling event.
2) MW-2T, MW-3, MW-4, MW-5, MW-6T and MW-10 have comprised the current monitoring well network since the Sept. 2004 event.
3) MW-10 is the facility's background well.
4) MW-1 was removed from the site for cell construction and was decomissioned following the March 2004 sampling event according to G.N. Richardson & Associates, Inc. WQMP Oct. 2003.
5) Non-compliance (pre-waste) data from upgradient wells MW-11, MW-12 and MW-14 were collected in March 2008 to supplement the background data pool for statistical analysis.
6) Monitoring wells MW-12 and MW-13 were not sampled beginning with the April 2011 event per NCDENR approval to decommission MW-13 and collect water levels only for MW-12.
7) Re-analyses results are reported in parentheses.
8) The following dilutions were noted for the September 2014 event: Chloride at 10X (MW-2T, MW-10), 25X (MW-3), and 50X (MW-6T); Total Alkalinity at 5X (MW-2T, MW-3, MW-6T, & MW-10,) at 2X (MW-11 & MW-14).

TABLE 5

Summary of Field Parameters from Monitoring Wells
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring	Reporting	Sample	Upgradient		Downgradient Compliance Wells								
Constituents/Parameters	Units	Date	MW-1	MW-10	MW-2T*	MW-3	MW-4	MW-5	MW-6T*	MW-11	MW-12	MW-13	MW-14
pH (field)	S.U.	10/31/01	--	--	--	--	--	--	--	--	--	--	--
	S.U.	06/11/02	7.00	7.00	6.30	6.80	5.50	5.80	7.10	--	--	--	--
	S.U.	11/01/02	7.30	6.90	7.10	7.10	5.20	5.00	7.40	--	--	--	--
	S.U.	03/06/03	7.50	5.90	6.90	7.00	5.40	5.10	7.30	--	--	--	--
	S.U.	09/23/03	6.70	6.10	7.40	6.90	5.20	4.50	7.30	--	--	--	--
	S.U.	03/11/04	6.60	6.70	7.00	6.70	5.30	4.70	7.40	--	--	--	--
	S.U.	09/23/04	--	6.60	7.20	6.80	5.80	5.30	7.20	--	--	--	--
	S.U.	03/10/05	--	6.40	7.30	6.90	6.00	5.60	7.20	--	--	--	--
	S.U.	09/22/05	--	6.60	7.60	7.00	5.90	6.70	7.20	--	--	--	--
	S.U.	03/06/06	--	6.60	7.60	6.80	5.50	5.30	7.00	--	--	--	--
	S.U.	09/19/06	--	6.70	7.40	7.00	5.90	5.10	7.10	--	--	--	--
	S.U.	03/21/07	--	5.63	7.08	7.24	6.95	7.83	6.86	--	--	--	--
	S.U.	09/28/07	--	6.18	7.15	7.14	6.43	7.50	6.92	--	--	--	--
	S.U.	03/25/08	--	6.75	7.62	7.19	5.70	6.43	7.51	8.25	--	5.60	9.08
	S.U.	09/29/08	--	6.63	7.30	6.89	5.55	5.50	7.11	7.26	5.84	5.19	6.77
	S.U.	03/30/09	--	6.57	7.38	7.03	5.74	6.51	6.93	7.25	5.71	5.08	7.02
	S.U.	09/29/09	--	6.77	7.16	6.65	5.15	5.55	6.98	6.92	5.43	4.95	6.75
	S.U.	03/30/10	--	6.40	7.17	6.73	5.53	6.26	6.83	7.23	5.73	4.97	6.61
	S.U.	09/29/10	--	6.70	7.16	7.01	10.37	7.03	6.86	7.08	5.74	5.11	6.96
	S.U.	04/06/11	--	6.66	6.84	6.88	5.42	5.74	6.60	7.35	--	--	6.83
	S.U.	09/28/11	--	6.65	7.19	6.98	5.38	6.45	7.02	7.35	--	--	7.07
	S.U.	03/28/12	--	6.55	7.02	7.00	5.15	6.09	6.77	7.45	--	--	6.94
(Verification Event)	S.U.	05/23/12	--	--	--	--	--	6.28	--	--	--	--	--
	S.U.	09/26/12	--	6.75	7.52	7.21	5.19	6.50	7.01	7.66	--	--	6.90
	S.U.	04/01/13	--	6.65	6.91	7.10	5.70	6.53	6.83	7.50	--	--	7.07
	S.U.	09/25/13	--	6.75	7.23	6.95	5.61	6.51	6.85	7.56	--	--	7.05
	S.U.	04/01/14	--	6.37	6.93	6.75	5.69	6.37	6.59	7.39	--	--	7.00
	S.U.	09/29/14	--	6.16	7.09	6.73	5.80	6.43	6.93	7.04	--	--	6.57
Specific Conductance	uS/cm	10/31/01	--	--	--	--	--	--	--	--	--	--	--
(lab prior to 9/19/06 event)	uS/cm	06/11/02	2300	620	2200	4300	270	810	3700	--	--	--	--
	uS/cm	11/01/02	2000	796	1820	4000	114	254	4000	--	--	--	--
	uS/cm	03/06/03	2240	253	1804	5170	141	458	3770	--	--	--	--
	uS/cm	09/23/03	4059	622	1692	3088	141	247	3015	--	--	--	--
	uS/cm	03/11/04	5078	1464	2250	5310	208	944	4050	--	--	--	--
	uS/cm	09/23/04	--	995	2410	5220	124	525	4050	--	--	--	--
	uS/cm	03/10/05	--	1382	1876	4073	184	938	3091	--	--	--	--
	uS/cm	09/22/05	--	997	1968	4040	190	2860	3850	--	--	--	--
	uS/cm	03/06/06	--	1170	1963	4610	140	894	4150	--	--	--	--
	uS/cm	09/19/06	--	1378	2170	4850	158	698	4700	--	--	--	--
	uS/cm	03/21/07	--	1870	2470	6480	101	1320	6320	--	--	--	--
	uS/cm	09/28/07	--	1080	2260	5760	175	1060	6080	--	--	--	--
	uS/cm	03/25/08	--	1191	2313	5786	113	1703	5892	652	--	86	552
	uS/cm	09/29/08	--	1700	2380	5450	129	920	5590	556	5140	125	462
	uS/cm	03/30/09	--	1950	2301	5369	146	1826	6126	557	1995	98	473
	uS/cm	09/29/09	--	1760	1989	4445	132	1451	6767	490	4113	113	432
	uS/cm	03/30/10	--	2284	2407	5599	122	3649	6633	580	3127	150	531
	uS/cm	09/29/10	--	1666	2227	5229	142	1761	6238	607	3661	173	564
	uS/cm	04/06/11	--	1696	2392	5602	115	2763	6716	580	--	--	533
	uS/cm	09/28/11	--	2020	2401	5404	101	4829	6644	564	--	--	538
	uS/cm	03/28/12	--	1455	2283	4757	91	2378	6275	525	--	--	486
(Verification Event)	uS/cm	05/23/12	--	--	--	--	--	4844	--	--	--	--	--
	uS/cm	09/26/12	--	1793	2148	4802	109	5341	6897	512	--	--	498
	uS/cm	04/01/13	--	1669	2031	4624	87	2463	5981	498	--	--	492
	uS/cm	09/25/13	--	2030	2460	5630	114	5590	7400	590	--	--	600
	uS/cm	04/01/14	--	2273	2535	6014	142	5334	7594	668	--	--	86
	uS/cm	09/29/14	--	2102	2484	5776	190	5904	7507	648	--	--	623
Temperature	Celsius	10/31/01	--	--	--	--	--	--	--	--	--	--	--
(lab prior to 9/19/06 event)	Celsius	06/11/02	17.0	16.0	16.0	15.0	16.0	15.0	19.0	--	--	--	--
	Celsius	11/01/02	16.0	17.0	17.0	17.0	15.0	15.0	17.0	--	--	--	--
	Celsius	03/06/03	16.0	12.0	16.0	13.0	12.0	11.0	16.0	--	--	--	--
	Celsius	09/23/03	22.0	19.0	17.0	19.0	21.0	20.0	20.0	--	--	--	--
	Celsius	03/11/04	12.0	13.0	16.0	12.0	11.0	10.0	14.0	--	--	--	--
	Celsius	09/23/04	--	19.0	18.0	19.0	20.0	20.0	21.0	--	--	--	--
	Celsius	03/10/05	--	12.0	16.0	12.0	9.0	10.0	13.0	--	--	--	--
	Celsius	09/22/05	--	20.0	20.0	19.0	20.0	20.0	22.0	--	--	--	--
	Celsius	03/06/06	--	14.0	17.0	14.0	13.0	13.0	15.0	--	--	--	--
	Celsius	09/19/06	--	19.0	18.0	19.0	19.0	21.0	20.0	--	--	--	--
	Celsius	03/21/07	--	12.8	15.9	13.2	11.9	11.2	12.7	--	--	--	--
	Celsius	09/28/07	--	21.98	21.32	20.78	20.61	22.75	26.35	--	--	--	--
	Celsius	03/25/08	--	14.64	17.46	13.42	12.30	12.14	16.00	16.06	--	13.46	14.76
	Celsius	09/29/08	--	18.30	19.84	17.88	19.18	20.38	21.48	20.60	18.94	22.97	19.91
	Celsius	03/30/09	--	15.41	16.99	14.13	10.85	10.89	16.73	15.64	15.65	14.15	15.57
	Celsius	09/29/09	--	16.92	16.69	15.82	18.90	19.31	22.71	20.81	19.18	21.91	18.08
	Celsius	03/30/10	--	16.46	15.89	14.05	14.70	13.32	18.05	14.24	17.66	15.87	16.38
	Celsius	09/29/10	--	17.37	18.19	18.66	20.65	20.00	18.70	17.45	18.15	20.60	17.92
	Celsius	04/06/11	--	14.67	17.24	16.85	13.54	12.63	14.99	17.21	--	--	15.40
	Celsius	09/28/11	--	18.17	20.98	18.99	19.91	19.73	19.71	18.97	--	--	18.77
	Celsius	03/28/12	--	14.85	18.91	15.44	15.12	14.27	17.95	17.62	--	--	16.05
(Verification Event)	Celsius	05/23/12	--	--	--	--	--	16.50	--	--	--	--	--
	Celsius	09/26/12	--	17.96	19.55	18.34	20.06	19.54	22.62	19.18	--	--	18.62
	Celsius	04/01/13	--	14.87	18.10	16.11	12.86	12.75	16.87	17.03	--	--	15.62
	Celsius	09/25/13	--	17.1	18.6	17.6	18.7	18.5	18.9	17.6	--	--	17.3
	Celsius	04/01/14	--	14.1	18.0	15.7	12.9	12.2	16.8	17.9	--	--	16.4
	Celsius	09/29/14	--	17.5	18.6	17.3	18.3	18.3	18.7	17.9	--	--	17.3
Turbidity (field)	NTU	03/21/07	--	124	135	106	154	342	97	--	--	--	--
	NTU	09/28/07	--	0	0	0	>1000	0	189	--	--	--	--
	NTU	03/25/08	--	10.1	9.02	1.31	49.8	5.55	1.46	>1000	--	447	>1000
	NTU	09/29/08	--	6.21	62.2	5.09	50.5	12.6	3.6	26.7	31.9	65.9	6.86
	NTU	03/30/09	--	5.74	11.4	2.92	35.5	8.32	1.18	28.8	6.15	19.3	1.20
	NTU	09/29/09	--	36.5	14.4	32.7	98.1	20.1	57.2	139	55.4	146	92.0
	NTU	03/30/10	--	2.94	26.9	2.30	46.3	2.53	3.92	7.75	47.7	56.3	33.6
	NTU	09/29/10	--	1.84	4.50	0	58.8	3.58	3.91	8.65	34.7	669	2.20
	NTU	04/06/11	--	0.49	1.78	4.24	41.5	3.08	0.98	1.76	--	--	1.61
	NTU	09/28/11	--	3.37	7.98	44.5	61.5	3.34	10.7	8.95	--	--	6.99
	NTU	03/28/12	--	7.99	4.66	4.63	15.1	0.88	1.71	1.26	--	--	1.75
	NTU	05/23/12	--	--	--	--	--	10.2	--	--	--	--	--
	NTU	09/26/12	--	1.25	1.92	20.8	16.0	6.18	2.03	3.04	--	--	1.63
	NTU	04/01/13	--	2.70	1.43	8.87	15.2	1.09	1.32	1.65	--	--	2.03
	NTU	09/25/13	--	5.46	4.61	10.3	18.1	3.33	8.79	5.65	--	--	3.81
	NTU	04/01/14	--	1.79	2.04	5.19	17.5	1.42	0.98	2.24	--	669	1.99
	NTU	09/29/14	--	0.46	2.27	7.31	12.2	24.9	1.70	1.14	--	669	14.4
ORP (field)	millivolts	03/21/07	--	--	--	--	--	--	--	--	--	--	--
	millivolts	09/28/07	--	--	--	--	--	--	--	--	--	--	--
	millivolts	03/25/08	--	73.8	72	145.2	164.4	152.4	97.2	--	--	--	--
	millivolts	09/29/08	--	85	-178	84	10	50	-5	-240	24	-77	78
	millivolts	03/30/09	--	124.9	-27.0	132.9	182.1	140.3	-30.1	-77.7	136.6	194.2	94.4
	millivolts	09/29/09	--	17.6	-14.2	62.0	44.1	28.3	-81.9	-92.7	25.7	-8.3	53.1
	millivolts	03/30/10	--	149.5	-69.5	138.6	119.5	86.2	-84.2	-89.3	93.2	148.1	64.2
	millivolts	09/29/10	--	83	-33.8	-323.1	-335.1	-288.3	-38.8	-48.4	104.2	185.0	49.5
	millivolts	04/06/11	--	82.6	-4.0	81.0	170.3	147.3	0.5	-23.7	--	--	87.6
	millivolts	09/28/11	--	31.4	-63.9	28.6	139.3	51.7	-79.2	-127.9	--	--	15.6
	millivolts	03/28/12	--	111.7	-72.7	57.1	97.7	73.2	-27.7	-156.6	--	--	-36.5
(Verification Event)	millivolts	05/23/12	--	--	--	--	--	31.1	--	--	--	--	--
	millivolts	09/26/12	--	119.9	-95.5	-87.3	-40.1	-55.2	-100.0	-160.7	--	--	-29.7
	millivolts	04/01/13	--	39.2	-37.4	7.5	59.4	8.0	-48.3	-85.3	--	--	5.1
	millivolts	09/25/13	--	137.2	-89.3	102.4	184.2	164.0	-18.1	-89.1	--	--	74.5
	millivolts	04/01/14	--	152.6	-140.2	81.3	115.8	84.2	-55.7	-118.8	--	--	82.7
	millivolts	09/29/14	--	114.5	-114.0	61.1	176.4	143.6	-50.4	-78.9	--	--	88.3

TABLE 5

Summary of Field Parameters from Monitoring Wells
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring	Reporting	Sample	Upgradient		Downgradient Compliance Wells								
Constituents/Parameters	Units	Date	MW-1	MW-10	MW-2T*	MW-3	MW-4	MW-5	MW-6T*	MW-11	MW-12	MW-13	MW-14
Dissolved Oxygen (field)	mg/L	03/21/07	--	--	--	--	--	--	--	--	--	--	--
	mg/L	09/28/07	--	--	--	--	--	--	--	--	--	--	--
	mg/L	03/25/08	--	0.79	7.24	8.32	1.99	3.09	4.62	--	--	--	--
	mg/L	09/29/08	--	0.89	0.69	6.03	3.12	1.10	1.02	0.62	1.61	5.05	4.45
	mg/L	03/30/09	--	0.71	1.22	4.89	2.79	2.60	0.59	0.56	3.04	1.39	4.09
	mg/L	09/29/09	--	1.87	1.70	2.18	1.53	1.60	2.57	1.35	1.10	2.49	4.01
	mg/L	03/30/10	--	1.39	0.84	4.00	2.09	2.72	2.07	0.99	2.44	2.44	4.03
	mg/L	09/29/10	--	0.60	0.39	1.90	0.75	3.03	1.13	0.22	0.96	1.33	4.18
	mg/L	04/06/11	--	1.62	0.75	5.35	2.79	3.62	1.77	0.47	--	--	4.37
	mg/L	09/28/11	--	2.08	0.67	1.52	0.86	2.13	4.38	1.12	--	--	3.09
	mg/L	03/28/12	--	1.00	0.32	3.71	0.79	2.61	1.30	0.21	--	--	3.85
(Verification Event)	mg/L	05/23/12	--	--	--	--	--	1.56	--	--	--	--	--
	mg/L	09/26/12	--	0.57	0.21	0.36	0.76	1.04	2.13	0.21	--	--	2.64
	mg/L	04/01/13	--	1.01	0.48	4.73	3.15	4.73	2.27	1.50	--	--	3.66
	mg/L	09/25/13	--	0.68	0.28	1.57	0.71	0.86	0.83	0.26	--	--	2.82
	mg/L	04/01/14	--	0.78	0.32	3.04	3.74	4.11	1.24	1.55	--	--	7.86
	mg/L	09/29/14	--	1.57	0.67	1.76	1.76	1.11	1.46	0.68	--	--	4.66

Notes:
S.U. = Standard Units
NTU = Nephelometric Turbidity Units
uS/cm = microsiemens per centimeter
mg/L = milligrams per liter
mV = Millivolts
-- = no data

1) MW-2T, MW-3, MW-4, MW-5, MW-6T and MW-10 have comprised the current monitoring well network since the Sept. 2004 event.
2) MW-10 is the facility's background well.
3) MW-1 was removed from the site for cell construction and was decomissioned following the March 2004 sampling event according to G.N. Richardson & Associates, Inc. WQMP Oct. 2003.
4) Non-compliance (pre-waste) data from upgradient wells MW-11, MW-12 and MW-14 were collected in March 2008 to supplement the background data pool for statistical analysis.
5) Monitoring wells MW-12 and MW-13 were not sampled beginning with the April 2011 event per NCDENR approval to decommission MW-13 and collect water levels only for MW-12.
6) The pH value for the sample from MW-4 for the September 2010 event is considered suspect based on historical data.

TABLE 6

Summary of Surface Water Monitoring Results
Detected Constituents
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituent/Parameter	Reporting Units	Sample Date	MDL	SWS Reporting Limit	Upstream		Downstream				Blanks	
					SW-1		SW-2		SW-3			
Antimony	ug/L	03/21/07	--	6	ND		ND		ND		ND	
No SW Standard	ug/L	09/28/07	--	--	Dry		Dry		Dry		--	
	ug/L	03/26/08	--	6	Dry		ND		ND		ND	
	ug/L	09/29/08	--	6	--		ND		ND		ND	
	ug/L	03/30/09	--	6	--		0.70	J	ND		ND	
	ug/L	09/30/09	--	--	--		Dry		Dry		--	
	ug/L	03/30/10	--	6	--		ND		ND		ND	
	ug/L	09/29/10	--	6	--		ND		ND		ND	
	ug/L	04/06/11	--	6	--		0.266	J	ND		ND	
	ug/L	09/28/11	--	6	--		ND		ND		ND	
	ug/L	03/28/12	--	6	--		0.225	J	ND		ND	
	ug/L	09/26/12	--	6	--		ND		Dry		ND	
	ug/L	04/01/13	--	6	--		ND		ND		ND	
	ug/L	09/25/13	--	6	--		ND		ND		ND	
	ug/L	04/01/14	--	6	--		ND		ND		ND	
	ug/L	09/29/14	0.220	6	--		0.541	B	Dry		0.421	J
Arsenic	ug/L	06/11/02	--	10	Dry		ND		ND		ND	
SW Standard = 50 ug/L	ug/L	11/01/02	--	10	ND		ND		ND		ND	
	ug/L	03/06/03	--	10	ND		ND		ND		ND	
	ug/L	09/23/03	--	10	ND		ND		ND		ND	
	ug/L	03/11/04	--	10	Dry		ND		ND		ND	
	ug/L	09/23/04	--	10	--		ND		ND		ND	
	ug/L	03/10/05	--	10	--		ND		ND		ND	
	ug/L	09/22/05	--	10	--		ND		ND		ND	
	ug/L	03/06/06	--	10	--		ND		ND		ND	
	ug/L	09/19/06	--	10	--		ND		ND		ND	
	ug/L	03/21/07	--	10	ND		ND		ND		ND	
	ug/L	09/28/07	--	--	Dry		Dry		Dry		--	
	ug/L	03/26/08	--	10	--		ND		2.4	J	ND	
	ug/L	09/29/08	--	10	--		ND		ND		ND	
	ug/L	03/30/09	--	10	--		ND		ND		ND	
	ug/L	09/30/09	--	--	--		Dry		Dry		--	
	ug/L	03/30/10	--	10	--		4.16	J	ND		ND	
	ug/L	09/29/10	--	10	--		3.21	J	ND		ND	
	ug/L	04/06/11	--	10	--		ND		ND		ND	
	ug/L	09/28/11	--	10	--		7.58	B	4.80	B	4.13	J
	ug/L	03/28/12	--	10	--		2.81	J	ND		ND	
	ug/L	09/26/12	--	10	--		7.28	B	Dry		3.89	J
	ug/L	04/01/13	--	10	--		ND		ND		ND	
	ug/L	09/25/13	--	10	--		5.93	J	8.47	J	ND	
	ug/L	04/01/14	--	10	--		ND		ND		ND	
	ug/L	09/29/14	5.40	10	--		14.3		Dry		ND	
Barium	ug/L	06/11/02	--	500	Dry		ND		ND		ND	
No SW Standard	ug/L	11/01/02	--	500	ND		ND		ND		ND	
	ug/L	03/06/03	--	500	ND		ND		ND		ND	
	ug/L	09/23/03	--	500	ND		ND		ND		ND	
	ug/L	03/11/04	--	500	Dry		ND		ND		ND	
	ug/L	09/23/04	--	500	--		ND		ND		ND	
	ug/L	03/10/05	--	500	--		ND		ND		ND	
	ug/L	09/22/05	--	500	--		ND		ND		ND	
	ug/L	03/06/06	--	500	--		ND		ND		ND	
	ug/L	09/19/06	--	500	--		ND		ND		ND	
	ug/L	03/21/07	--	100	86.5	J	67.8	J	78.9	J	0.30	J
	ug/L	09/28/07	--	--	Dry		Dry		Dry		0.30	J
	ug/L	03/26/08	--	100	--		500		64.8	J	0.30	J
	ug/L	09/29/08	--	100	--		136		48.5	J	ND	
	ug/L	03/30/09	--	100	--		205		54.8	J	ND	
	ug/L	09/30/09	--	--	--		Dry		Dry		--	
	ug/L	03/30/10	--	100	--		147		32.9	J	ND	
	ug/L	09/29/10	--	100	--		107		69.9	J	ND	
	ug/L	04/06/11	--	100	--		113		84.4	J	ND	
	ug/L	09/28/11	--	100	--		146		118		ND	
	ug/L	03/28/12	--	100	--		133		87.0	J	ND	
	ug/L	09/26/12	--	100	--		169		Dry		ND	
	ug/L	04/01/13	--	100	--		74.1	J	75.7	J	1.16	J
	ug/L	09/25/13	--	100	--		55.5	J	68.5	J	ND	
	ug/L	04/01/14	--	100	--		163		75.7	J	1.29	J
	ug/L	09/29/14	1.00	100	--		180		Dry		ND	

TABLE 6

Summary of Surface Water Monitoring Results
Detected Constituents
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituent/Parameter	Reporting Units	Sample Date	MDL	SWS Reporting Limit	Upstream	Downstream		Blanks
					SW-1	SW-2	SW-3	
Beryllium	ug/L	03/21/07	--	1	ND	ND	ND	ND
SW Standard = 6.5 ug/L	ug/L	09/28/07	--	--	Dry	Dry	Dry	--
	ug/L	03/26/08	--	1	Dry	ND	ND	ND
	ug/L	09/29/08	--	1	--	ND	ND	0.1 J
	ug/L	03/30/09	--	1	--	0.28 J	0.08 J	ND
	ug/L	09/30/09	--	--	--	Dry	Dry	--
	ug/L	03/30/10	--	1	--	0.298 J	ND	ND
	ug/L	09/29/10	--	1	--	0.278 J	0.131 J	ND
	ug/L	04/06/11	--	1	--	0.212 J	0.140 J	ND
	ug/L	09/28/11	--	1	--	0.227 J	ND	ND
	ug/L	03/28/12	--	1	--	0.379 J	0.168 J	ND
	ug/L	09/26/12	--	1	--	0.633 J	Dry	ND
	ug/L	04/01/13	--	1	--	ND	ND	ND
	ug/L	09/25/13	--	1	--	ND	ND	ND
	ug/L	04/01/14	--	1	--	0.345 J	ND	ND
	ug/L	09/29/14	0.100	1	--	ND	Dry	ND
Cadmium	ug/L	06/11/02	--	1	Dry	ND	ND	ND
SW Standard = 2 ug/L*	ug/L	11/01/02	--	1	ND	ND	ND	ND
	ug/L	03/06/03	--	1	ND	ND	ND	ND
	ug/L	09/23/03	--	1	ND	ND	ND	ND
	ug/L	03/11/04	--	1	Dry	ND	ND	ND
	ug/L	09/23/04	--	1	--	ND	ND	ND
	ug/L	03/10/05	--	1	--	ND	ND	ND
	ug/L	09/22/05	--	1	--	ND	ND	ND
	ug/L	03/06/06	--	1	--	ND	ND	ND
	ug/L	09/19/06	--	1	--	ND	ND	ND
	ug/L	03/21/07	--	1	ND	ND	ND	ND
	ug/L	09/28/07	--	--	Dry	Dry	Dry	--
	ug/L	03/26/08	--	1	Dry	ND	ND	ND
	ug/L	09/29/08	--	1	--	ND	ND	ND
	ug/L	03/30/09	--	1	--	0.51 J	0.13 J	ND
	ug/L	09/30/09	--	--	--	Dry	Dry	--
	ug/L	03/30/10	--	1	--	ND	ND	ND
	ug/L	09/29/10	--	1	--	ND	ND	ND
	ug/L	04/06/11	--	1	--	ND	ND	ND
	ug/L	09/28/11	--	1	--	ND	ND	ND
	ug/L	03/28/12	--	1	--	ND	ND	ND
	ug/L	09/26/12	--	1	--	ND	Dry	ND
	ug/L	04/01/13	--	1	--	ND	ND	ND
	ug/L	09/25/13	--	1	--	ND	ND	ND
	ug/L	04/01/14	--	1	--	ND	ND	ND
	ug/L	09/29/14	0.360	1	--	ND	Dry	ND
Chromium	ug/L	06/11/02	--	10	Dry	234	ND	ND
SW Standard = 50 ug/L	ug/L	11/01/02	--	10	ND	ND	ND	ND
	ug/L	03/06/03	--	10	ND	ND	ND	ND
	ug/L	09/23/03	--	10	ND	ND	ND	ND
	ug/L	03/11/04	--	10	Dry	ND	ND	ND
	ug/L	09/23/04	--	10	--	ND	ND	ND
	ug/L	03/10/05	--	10	--	ND	ND	ND
	ug/L	09/22/05	--	10	--	ND	ND	ND
	ug/L	03/06/06	--	10	--	ND	ND	ND
	ug/L	09/19/06	--	10	--	ND	ND	ND
	ug/L	03/21/07	--	10	ND	ND	ND	ND
	ug/L	09/28/07	--	--	Dry	Dry	Dry	--
	ug/L	03/26/08	--	10	--	10.0	ND	ND
	ug/L	09/29/08	--	10	--	ND	ND	ND
	ug/L	03/30/09	--	10	--	4.2 J	1.0 J	ND
	ug/L	09/30/09	--	--	--	Dry	Dry	--
	ug/L	03/30/10	--	10	--	2.97 J	ND	ND
	ug/L	09/29/10	--	10	--	2.64 J	1.47 J	ND
	ug/L	04/06/11	--	10	--	3.94 J	1.31 J	ND
	ug/L	09/28/11	--	10	--	5.15 J	4.32 J	ND
	ug/L	03/28/12	--	10	--	4.84 J	ND	ND
	ug/L	09/26/12	--	10	--	9.73 J	Dry	ND
	ug/L	04/01/13	--	10	--	1.48 J	ND	ND
	ug/L	09/25/13	--	10	--	2.64 J	2.65 J	ND
	ug/L	04/01/14	--	10	--	8.34 J	3.72 J	ND
	ug/L	09/29/14	1.40	10	--	14.2	Dry	ND

TABLE 6

Summary of Surface Water Monitoring Results
Detected Constituents
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituent/Parameter	Reporting Units	Sample Date	MDL	SWS Reporting Limit	Upstream		Downstream				Blanks	
					SW-1		SW-2		SW-3			
Cobalt	ug/L	03/21/07	--	10	ND		ND		ND		ND	
No SW Standard	ug/L	09/28/07	--	--	Dry		Dry		Dry		--	
	ug/L	03/26/08	--	10	--		8.9	J	2.6	J	ND	
	ug/L	09/29/08	--	10	--		ND		ND		ND	
	ug/L	03/30/09	--	10	--		3.6	J	0.6	J	ND	
	ug/L	09/30/09	--	--	--		Dry		Dry		--	
	ug/L	03/30/10	--	10	--		2.37	J	ND		ND	
	ug/L	09/29/10	--	10	--		2.01	J	1.36	J	ND	
	ug/L	04/06/11	--	10	--		1.93	J	1.58	J	ND	
	ug/L	09/28/11	--	10	--		1.85	J	3.58	J	ND	
	ug/L	03/28/12	--	10	--		2.54	J	1.55	J	ND	
	ug/L	09/26/12	--	10	--		2.77	J	Dry		ND	
	ug/L	04/01/13	--	10	--		ND		ND		ND	
	ug/L	09/25/13	--	10	--		ND		ND		ND	
	ug/L	04/01/14	--	10	--		2.55	J	ND		ND	
	ug/L	09/29/14	1.10	10	--		3.81	J	Dry		ND	
Copper	ug/L	03/21/07	--	10	ND		ND		ND		0.60	J
SW Standard = 7 ug/L*	ug/L	09/28/07	--	--	Dry		Dry		Dry		--	
	ug/L	03/26/08	--	10	--		ND		0.90	B	0.60	J
	ug/L	09/29/08	--	10	--		ND		ND		ND	
	ug/L	03/30/09	--	10	--		2.02	B	2.05	B	1.39	J
	ug/L	09/30/09	--	--	--		Dry		Dry		--	
	ug/L	03/30/10	--	10	--		2.05	J	ND		ND	
	ug/L	09/29/10	--	10	--		2.19	J	2.31	J	ND	
	ug/L	04/06/11	--	10	--		3.82	B	2.46	B	2.07	J
	ug/L	09/28/11	--	10	--		3.29	J	5.21	J	ND	
	ug/L	03/28/12	--	10	--		3.83	J	ND		ND	
	ug/L	09/26/12	--	10	--		7.86	J	Dry		ND	
	ug/L	04/01/13	--	10	--		2.90	J	2.25	J	ND	
	ug/L	09/25/13	--	10	--		1.71	J	2.12	J	ND	
	ug/L	04/01/14	--	10	--		5.40	J	2.85	J	ND	
	ug/L	09/29/14	1.60	10	--		ND		Dry		ND	
Lead	ug/L	06/11/02	--	10	Dry		14		ND		ND	
SW Standard = 25 ug/L*	ug/L	11/01/02	--	10	ND		11		ND		ND	
	ug/L	03/06/03	--	10	ND		ND		ND		ND	
	ug/L	09/23/03	--	10	ND		15		ND		ND	
	ug/L	03/11/04	--	10	Dry		14		ND		ND	
	ug/L	09/23/04	--	10	--		ND		ND		ND	
	ug/L	03/10/05	--	10	--		ND		ND		ND	
	ug/L	09/22/05	--	10	--		ND		23		ND	
	ug/L	03/06/06	--	10	--		ND		ND		ND	
	ug/L	09/19/06	--	10	--		ND		ND		ND	
	ug/L	03/21/07	--	10	5.4	B	3.4	B	2.2	B	2.7	J
	ug/L	09/28/07	--	--	Dry		Dry		Dry		--	
	ug/L	03/26/08	--	10	--		29.4		ND		ND	
	ug/L	09/29/08	--	10	--		2.6	J	ND		ND	
	ug/L	03/30/09	--	10	--		8.0	J	3.5	J	ND	
	ug/L	09/30/09	--	--	--		Dry		Dry		--	
	ug/L	03/30/10	--	10	--		12.6		3.17	J	ND	
	ug/L	09/29/10	--	10	--		6.17	J	4.38	J	ND	
	ug/L	04/06/11	--	10	--		6.75	J	4.03	J	ND	
	ug/L	09/28/11	--	10	--		10.5		ND		ND	
	ug/L	03/28/12	--	10	--		9.18	J	3.44	J	ND	
	ug/L	09/26/12	--	10	--		15.5		Dry		ND	
	ug/L	04/01/13	--	10	--		ND		ND		ND	
	ug/L	09/25/13	--	10	--		ND		ND		ND	
	ug/L	04/01/14	--	10	--		16.1		3.14	J	ND	
	ug/L	09/29/14	2.10	10	--		ND		Dry		ND	

TABLE 6

Summary of Surface Water Monitoring Results
Detected Constituents
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituent/Parameter	Reporting Units	Sample Date	MDL	SWS Reporting Limit	Upstream	Downstream		Blanks	
					SW-1	SW-2	SW-3		
Nickel	ug/L	03/21/07	--	50	ND	ND	ND	ND	
SW Standard = 88 ug/L*	ug/L	09/28/07	--	--	Dry	Dry	Dry	--	
	ug/L	03/26/08	--	50	Dry	ND	ND	ND	
	ug/L	09/29/08	--	50	--	1.8 J	ND	ND	
	ug/L	03/30/09	--	50	--	4.8 J	1.2 B	0.6	J
	ug/L	09/30/09	--	--	--	Dry	Dry	--	
	ug/L	03/30/10	--	50	--	ND	ND	ND	
	ug/L	09/29/10	--	50	--	ND	ND	ND	
	ug/L	04/06/11	--	50	--	ND	ND	ND	
	ug/L	09/28/11	--	50	--	1.91 J	2.75 J	ND	
	ug/L	03/28/12	--	50	--	ND	ND	ND	
	ug/L	09/26/12	--	50	--	2.36 J	Dry	ND	
	ug/L	04/01/13	--	50	--	ND	ND	ND	
	ug/L	09/25/13	--	50	--	ND	ND	ND	
	ug/L	04/01/14	--	50	--	2.53 J	2.13 J	ND	
	ug/L	09/29/14	1.80	50	--	ND	Dry	ND	
Selenium	ug/L	06/11/02	--	20	Dry	ND	ND	ND	
SW Standard = 5 ug/L	ug/L	11/01/02	--	20	ND	ND	ND	ND	
	ug/L	03/06/03	--	20	ND	ND	ND	ND	
	ug/L	09/23/03	--	20	ND	ND	ND	ND	
	ug/L	03/11/04	--	20	Dry	ND	ND	ND	
	ug/L	09/23/04	--	20	--	ND	ND	ND	
	ug/L	03/10/05	--	20	--	ND	ND	ND	
	ug/L	09/22/05	--	20	--	ND	ND	ND	
	ug/L	03/06/06	--	20	--	ND	ND	ND	
	ug/L	09/19/06	--	20	--	ND	ND	ND	
	ug/L	03/21/07	--	10	ND	2.9 B	ND	2.5	J
	ug/L	09/28/07	--	--	Dry	Dry	Dry	--	
	ug/L	03/26/08	--	10	--	ND	ND	ND	
	ug/L	09/29/08	--	10	--	ND	ND	ND	
	ug/L	03/30/09	--	10	--	ND	ND	ND	
	ug/L	09/30/09	--	--	--	Dry	Dry	--	
	ug/L	03/30/10	--	10	--	ND	ND	ND	
	ug/L	09/29/10	--	10	--	ND	ND	ND	
	ug/L	04/06/11	--	10	--	ND	ND	ND	
	ug/L	09/28/11	--	10	--	ND	ND	ND	
	ug/L	03/28/12	--	10	--	ND	ND	3.32	J
	ug/L	09/26/12	--	10	--	ND	Dry	ND	
	ug/L	04/01/13	--	10	--	ND	ND	ND	
	ug/L	09/25/13	--	10	--	ND	ND	ND	
	ug/L	04/01/14	--	10	--	ND	ND	ND	
	ug/L	09/29/14	5.00	10	--	ND	Dry	ND	
Silver	ug/L	06/11/02	--	10	Dry	ND	ND	ND	
SW Standard = 0.06 ug/L *	ug/L	11/01/02	--	10	ND	ND	ND	ND	
	ug/L	03/06/03	--	10	ND	ND	ND	ND	
	ug/L	09/23/03	--	10	ND	ND	ND	ND	
	ug/L	03/11/04	--	10	Dry	ND	ND	ND	
	ug/L	09/23/04	--	10	--	ND	ND	ND	
	ug/L	03/10/05	--	10	--	ND	ND	ND	
	ug/L	09/22/05	--	10	--	ND	ND	ND	
	ug/L	03/06/06	--	10	--	ND	ND	ND	
	ug/L	09/19/06	--	10	--	ND	ND	ND	
	ug/L	03/21/07	--	10	ND	ND	ND	ND	
	ug/L	09/28/07	--	--	Dry	Dry	Dry	--	
	ug/L	03/26/08	--	10	Dry	ND	ND	ND	
	ug/L	09/29/08	--	10	--	ND	ND	ND	
	ug/L	03/30/09	--	10	--	1.0 J	ND	ND	
	ug/L	09/30/09	--	--	--	Dry	Dry	--	
	ug/L	03/30/10	--	10	--	ND	ND	ND	
	ug/L	09/29/10	--	10	--	ND	ND	ND	
	ug/L	04/06/11	--	10	--	ND	ND	ND	
	ug/L	09/28/11	--	10	--	ND	ND	ND	
	ug/L	03/28/12	--	10	--	ND	ND	ND	
	ug/L	09/26/12	--	10	--	ND	Dry	ND	
	ug/L	04/01/13	--	10	--	ND	ND	ND	
	ug/L	09/25/13	--	10	--	ND	ND	ND	
	ug/L	04/01/14	--	10	--	ND	ND	ND	
	ug/L	09/29/14	1.90	10	--	ND	Dry	ND	

TABLE 6

Summary of Surface Water Monitoring Results
Detected Constituents
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituent/Parameter	Reporting Units	Sample Date	MDL	SWS Reporting Limit	Upstream		Downstream				Blanks	
					SW-1		SW-2		SW-3			
Thallium	ug/L	03/21/07	--	5.5	ND		ND		ND		ND	
No SW Standard	ug/L	09/28/07	--	5.5	Dry		Dry		Dry		--	
	ug/L	03/26/08	--	5.5	--		0.159	J	0.046	J	ND	
	ug/L	09/29/08	--	5.5	--		0.050	B	ND		0.062	J
	ug/L	03/30/09	--	5.5	--		ND		ND		ND	
	ug/L	09/30/09	--	--	--		Dry		Dry		--	
	ug/L	03/30/10	--	5.5	--		ND		ND		ND	
	ug/L	09/29/10	--	5.5	--		ND		ND		ND	
	ug/L	04/06/11	--	5.5	--		ND		ND		ND	
	ug/L	09/28/11	--	5.5	--		ND		ND		ND	
	ug/L	03/28/12	--	5.5	--		ND		ND		ND	
	ug/L	09/26/12	--	5.5	--		ND		Dry		ND	
	ug/L	04/01/13	--	5.5	--		ND		ND		ND	
	ug/L	09/25/13	--	5.5	--		ND		ND		ND	
	ug/L	04/01/14	--	5.5	--		0.175	J	ND		ND	
	ug/L	09/29/14	0.110	5.5	--		0.162	B	Dry		0.253	J
Vanadium	ug/L	03/21/07	--	25	ND		1.1	J	1.8	J	ND	
No SW Standard	ug/L	09/28/07	--	--	Dry		Dry		Dry		--	
	ug/L	03/26/08	--	25	--		44.9		1.4	J	ND	
	ug/L	09/29/08	--	25	--		ND		ND		ND	
	ug/L	03/30/09	--	25	--		12.7	J	3.9	J	ND	
	ug/L	09/30/09	--	--	--		Dry		Dry		--	
	ug/L	03/30/10	--	25	--		15.1	J	1.96	J	ND	
	ug/L	09/29/10	--	25	--		12.6	J	6.54	J	ND	
	ug/L	04/06/11	--	25	--		13.1	J	4.07	J	ND	
	ug/L	09/28/11	--	25	--		18.0	J	7.24	J	ND	
	ug/L	03/28/12	--	25	--		26.1		3.41	J	ND	
	ug/L	09/26/12	--	25	--		42.0		Dry		ND	
	ug/L	04/01/13	--	25	--		3.87	J	3.03	J	ND	
	ug/L	09/25/13	--	25	--		3.78	J	3.95	J	ND	
	ug/L	04/01/14	--	25	--		38.2		8.80	J	ND	
	ug/L	09/29/14	1.40	25	--		13.7	J	Dry		ND	
Zinc	ug/L	03/21/07	--	10	6.7	J	4.9	B	8.4	J	1.1	J
SW Standard = 50 ug/L*	ug/L	09/28/07	--	--	Dry		Dry		Dry		--	
	ug/L	03/26/08	--	10	--		73.2		15.1		2.8	J
	ug/L	09/29/08	--	10	--		36.3		11.8		ND	
	ug/L	03/30/09	--	10	--		236		9.0	J	ND	
	ug/L	09/30/09	--	--	--		Dry		Dry		--	
	ug/L	03/30/10	--	10	--		30.6		15.6		ND	
	ug/L	09/29/10	--	10	--		17.5		11.9		ND	
	ug/L	04/06/11	--	10	--		19.4		7.82	J	ND	
	ug/L	09/28/11	--	10	--		20.0		10.6		ND	
	ug/L	03/28/12	--	10	--		22.5		9.60	J	ND	
	ug/L	09/26/12	--	10	--		26.7		Dry		ND	
	ug/L	04/01/13	--	10	--		5.17	J	9.35	J	ND	
	ug/L	09/25/13	--	10	--		5.19	J	5.87	J	ND	
	ug/L	04/01/14	--	10	--		22.8		8.27	J	ND	
	ug/L	09/29/14	3.80	10	--		7.74	J	Dry		ND	
Acetone	ug/L	03/21/07	--	100	ND		ND		ND		ND	
SW Standard = 2000 ug/L	ug/L	03/26/08	--	100	--		9.2	J	6.7	J	ND	
	ug/L	09/29/08	--	100	--		11	J	ND		3.5	J
	ug/L	03/30/09	--	100	--		29	J	ND		ND	
	ug/L	09/30/09	--	--	--		Dry		Dry		--	
	ug/L	03/30/10	--	100	--		ND		ND		ND	
	ug/L	09/29/10	--	100	--		ND		ND		ND	
	ug/L	04/06/11	--	100	--		4.3	J	ND		ND	
	ug/L	09/28/11	--	100	--		ND		37	J	ND	
	ug/L	03/28/12	--	100	--		ND		8.7	J	ND	
	ug/L	09/26/12	--	100	--		ND		Dry		ND	
	ug/L	04/01/13	--	100	--		ND		ND		ND	
	ug/L	09/25/13	--	100	--		ND		ND		ND	
	ug/L	04/01/14	--	100	--		ND		ND		ND	
	ug/L	09/29/14	1.2	100	--		12	J	Dry		ND	

TABLE 6

Summary of Surface Water Monitoring Results
Detected Constituents
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituent/Parameter	Reporting Units	Sample Date	MDL	SWS Reporting Limit	Upstream	Downstream		Blanks
					SW-1	SW-2	SW-3	
Chloromethane	ug/L	03/21/07	--	1	ND	ND	ND	ND
No SW Standard	ug/L	03/26/08	--	1	Dry	ND	ND	ND
	ug/L	09/29/08	--	1	--	ND	ND	ND
	ug/L	03/30/09	--	1	--	ND	ND	ND
	ug/L	03/30/10	--	1	--	ND	ND	ND
	ug/L	09/29/10	--	1	--	0.56 B	0.76 B	0.44 J
	ug/L	04/06/11	--	1	--	ND	ND	ND
	ug/L	09/28/11	--	1	--	ND	ND	ND
	ug/L	03/28/12	--	1	--	ND	ND	ND
	ug/L	09/26/12	--	1	--	ND	Dry	ND
	ug/L	04/01/13	--	1	--	ND	ND	ND
	ug/L	09/25/13	--	1	--	ND	ND	ND
	ug/L	04/01/14	--	1	--	ND	ND	ND
	ug/L	09/29/14	0.13	1	--	ND	Dry	ND
2-Butanone	ug/L	03/21/07	--	100	ND	ND	ND	ND
SW Standard = 160,000 ug/L	ug/L	03/26/08	--	100	Dry	ND	ND	ND
	ug/L	09/29/08	--	100	--	ND	ND	ND
	ug/L	03/30/09	--	100	--	26 J	ND	ND
	ug/L	09/30/09	--	--	--	Dry	Dry	--
	ug/L	03/30/10	--	100	--	ND	ND	ND
	ug/L	09/29/10	--	100	--	ND	ND	ND
	ug/L	04/06/11	--	100	--	ND	ND	ND
	ug/L	09/28/11	--	100	--	ND	4.9 J	ND
	ug/L	03/28/12	--	100	--	ND	ND	ND
	ug/L	09/26/12	--	100	--	ND	Dry	ND
	ug/L	04/01/13	--	100	--	ND	ND	ND
	ug/L	09/25/13	--	100	--	ND	ND	ND
	ug/L	04/01/14	--	100	--	ND	ND	ND
	ug/L	09/29/14	1.3	100	--	ND	Dry	ND

Notes:
mg/L = milligrams per liter
ug/L = micrograms per liter
S.U. = Standard Units
NTU = Nephelometric Turbidity Units
ND = Not detected at the stated reporting limit
uS/cm= microsiemens per centimeter
mV = Millivolts
J = Estimated value
-- = no data
SW Standard = Surface Water Standard based on Class C Freshwater Aquatic Life Classification
Shaded = Concentrations above applicable Surface Water Standards
Blanks = field, trip and method blanks
1) The previous SW-1 location was in a wetland area that had been removed from the site for landfill expansion following the March 2004 sampling event. During the March 2007 sampling event, SW-1 was relocated. Due to construction activities prior to the March 2008 sampling event, no upstream surface monitoring point is available to sample.
2) Surface Water Standards based on Class C Freshwater Aquatic Life classification for the Jim Branch in the Cape Fear basin per 15A NCAC 2B.
*SW Standards for Cd, Pb, and Ni are Narrative Standards per 2B .0211
*SW Stanadards for Cu, Ag, and Zn are Action Level Standards per 2B .0211
SWS Reporting Limit = NCPQL or lab-specific reporting limit prior to 2007 and NCSWSL starting on 01/18/07

TABLE 7

Summary of Field Parameters from Surface Water Monitoring Points
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituent/Parameter	Reporting Units	Sample Date	SWS Reporting Limit	Upstream	Downstream		Blanks
				SW-1	SW-2	SW-3	
pH (field)	S.U.	06/11/02	--	Dry	7.70	6.50	--
	S.U.	11/01/02	--	5.20	6.10	7.00	--
	S.U.	03/06/03	--	5.00	6.00	5.80	--
	S.U.	09/23/03	--	5.10	5.20	5.10	--
	S.U.	03/11/04	--	Dry	6.30	6.40	--
	S.U.	09/23/04	--	--	6.70	6.80	--
	S.U.	03/10/05	--	--	6.60	7.20	--
	S.U.	09/22/05	--	--	7.60	7.20	--
	S.U.	03/06/06	--	--	7.60	4.80	--
	S.U.	09/19/06	--	--	7.00	6.90	--
	S.U.	03/21/07	--	7.74	8.63	6.68	--
	S.U.	09/28/07	--	Dry	Dry	Dry	--
	S.U.	03/26/08	--	--	7.52	6.11	--
	S.U.	09/29/08	--	--	7.52	6.99	--
	S.U.	03/30/09	--	--	7.60	6.68	--
	S.U.	09/30/09	--	--	Dry	Dry	--
	S.U.	03/30/10	--	--	7.63	6.17	--
	S.U.	09/29/10	--	--	10.68	10.78	--
	S.U.	04/06/11	--	--	7.68	5.68	--
	S.U.	09/28/11	--	--	7.98	6.37	--
	S.U.	03/28/12	--	--	7.46	6.40	--
	S.U.	09/26/12	--	--	8.78	Dry	--
	S.U.	04/01/13	--	--	7.31	6.16	--
	S.U.	09/25/13	--	--	8.23	7.11	--
	S.U.	04/01/14	--	--	7.84	6.42	--
	S.U.	09/29/14	--	--	7.54	Dry	--
Specific Conductance (lab prior to 9/19/06 event)	uS/cm	06/11/02	--	Dry	140	120	--
	uS/cm	11/01/02	--	59	105	155	--
	uS/cm	03/06/03	--	35	82	90	--
	uS/cm	09/23/03	--	55	116	128	--
	uS/cm	03/11/04	--	Dry	16	114	--
	uS/cm	09/23/04	--	--	138	112	--
	uS/cm	03/10/05	--	--	108	222	--
	uS/cm	09/22/05	--	--	166	300	--
	uS/cm	03/06/06	--	--	162	295	--
	uS/cm	09/19/06	--	--	160	170	--
	uS/cm	03/21/07	--	85	153	285	--
	uS/cm	09/28/07	--	Dry	Dry	Dry	--
	uS/cm	03/26/08	--	--	779	195	--
	uS/cm	09/29/08	--	--	261	190	--
	uS/cm	03/30/09	--	--	585	127	--
	uS/cm	09/30/09	--	--	Dry	Dry	--
	uS/cm	03/30/10	--	--	235	222	--
	uS/cm	09/29/10	--	--	70	85	--
	uS/cm	04/06/11	--	--	478	219	--
	uS/cm	09/28/11	--	--	206	216	--
	uS/cm	03/28/12	--	--	162	208	--
	uS/cm	09/26/12	--	--	57	Dry	--
	uS/cm	04/01/13	--	--	200	210	--
	uS/cm	09/25/13	--	--	205	291	--
	uS/cm	04/01/14	--	--	232	269	--
	uS/cm	09/29/14	--	--	1864	Dry	--

TABLE 7

Summary of Field Parameters from Surface Water Monitoring Points
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituent/Parameter	Reporting Units	Sample Date	SWS Reporting Limit	Upstream	Downstream		Blanks
				SW-1	SW-2	SW-3	
Temperature	Celsius	06/11/02	--	Dry	20.0	21.0	--
(lab prior to 9/19/06 event)	Celsius	11/01/02	--	13.0	11.0	11.0	--
	Celsius	03/06/03	--	14.0	13.0	13.0	--
	Celsius	09/23/03	--	22.0	22.0	21.0	--
	Celsius	03/11/04	--	Dry	8.0	8.0	--
	Celsius	09/23/04	--	--	20.0	18.0	--
	Celsius	03/10/05	--	--	7.0	6.0	--
	Celsius	09/22/05	--	--	24.0	23.0	--
	Celsius	03/06/06	--	--	13.0	11.0	--
	Celsius	09/19/06	--	--	23.0	21.0	--
	Celsius	03/21/07	--	13.4	11.7	12.4	--
	Celsius	09/28/07	--	Dry	Dry	Dry	--
	Celsius	03/26/08	--	--	7.42	10.5	--
	Celsius	09/29/08	--	--	21.66	19.59	--
	Celsius	03/30/09	--	--	17.30	11.04	--
	Celsius	09/30/09	--	--	Dry	Dry	--
	Celsius	03/30/10	--	--	14.44	17.35	--
	Celsius	09/29/10	--	--	21.30	21.41	--
	Celsius	04/06/11	--	--	13.61	9.56	--
	Celsius	09/28/11	--	--	22.77	24.10	--
	Celsius	03/28/12	--	--	15.66	21.20	--
	Celsius	09/26/12	--	--	17.94	Dry	--
	Celsius	04/01/13	--	--	13.71	19.26	--
	Celsius	09/25/13	--	--	16.6	18.6	--
	Celsius	04/01/14	--	--	12.4	16.7	--
	Celsius	09/29/14	--	--	17.5	Dry	--
Turbidity (field)	NTU	03/21/07	--	133	146	183	--
	NTU	09/28/07	--	Dry	Dry	Dry	--
	NTU	03/26/08	--	--	>1000	446	--
	NTU	09/29/08	--	--	151	22.7	--
	NTU	03/30/09	--	--	407	57.7	--
	NTU	09/30/09	--	--	Dry	Dry	--
	NTU	03/30/10	--	--	403	35.7	--
	NTU	09/29/10	--	--	225	291	--
	NTU	04/06/11	--	--	191	46.6	--
	NTU	09/28/11	--	--	484	115	--
	NTU	03/28/12	--	--	331	77.5	--
	NTU	09/26/12	--	--	682	Dry	--
	NTU	04/01/13	--	--	61.7	56.0	--
	NTU	09/25/13	--	--	47.7	66.3	--
	NTU	04/01/14	--	--	624	129	--
	NTU	09/29/14	--	--	83.2	Dry	--

TABLE 7

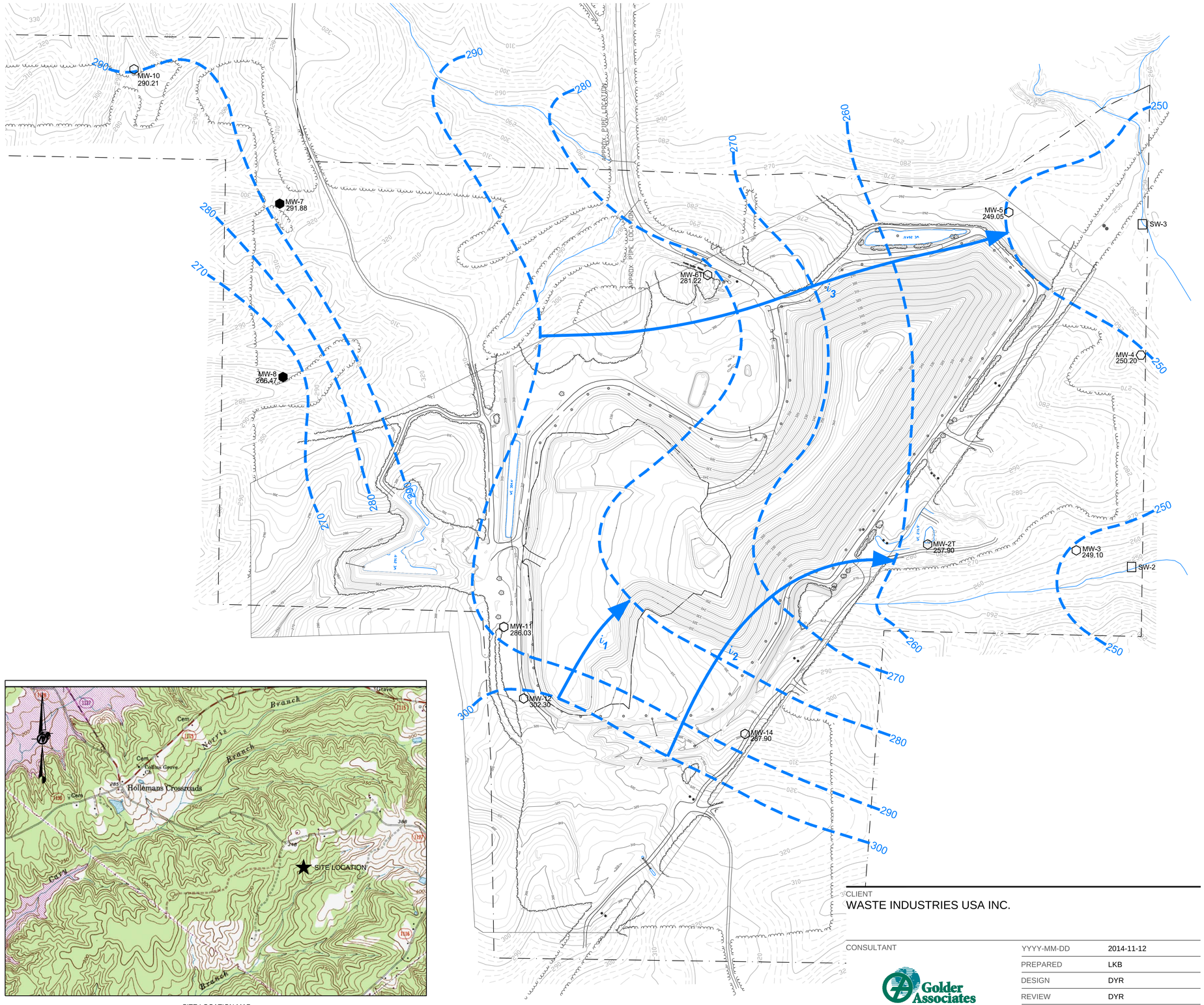
Summary of Field Parameters from Surface Water Monitoring Points
Red Rock Disposal, LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

Detected Monitoring Constituent/Parameter	Reporting Units	Sample Date	SWS Reporting Limit	Upstream	Downstream		Blanks
				SW-1	SW-2	SW-3	
Oxidation Reduction Potential (field)	millivolts	03/21/07	--	155	67	114	--
	millivolts	09/28/07	--	Dry	Dry	Dry	--
	millivolts	03/26/08	--	--	118.7	132.8	--
	millivolts	09/29/08	--	--	76	29	--
	millivolts	03/30/09	--	--	53.4	81.6	--
	millivolts	09/30/09	--	--	Dry	Dry	--
	millivolts	03/30/10	--	--	74.8	115.3	--
	millivolts	09/29/10	--	--	-368.9	-356.4	--
	millivolts	04/06/11	--	--	87.0	150.2	--
	millivolts	09/28/11	--	--	43.7	102	--
	millivolts	03/28/12	--	--	28.3	58.1	--
	millivolts	09/26/12	--	--	-49.0	Dry	--
	millivolts	04/01/13	--	--	-17.4	48.4	--
	millivolts	09/25/13	--	--	46.9	111.1	--
	millivolts	04/01/14	--	--	71.3	46.7	--
	millivolts	09/29/14	--	--	-105.2	Dry	--
Dissolved Oxygen (field)	mg/L	03/21/07	--	9.5	10.3	9.9	--
	mg/L	09/28/07	--	Dry	Dry	Dry	--
	mg/L	03/26/08	--	--	10.36	5.16	--
	mg/L	09/29/08	--	--	9.09	6.79	--
	mg/L	03/30/09	--	--	7.98	10.30	--
	mg/L	09/30/09	--	--	Dry	Dry	--
	mg/L	03/30/10	--	--	8.93	9.71	--
	mg/L	09/29/10	--	--	8.93	8.77	--
	mg/L	04/06/11	--	--	10.17	7.25	--
	mg/L	09/28/11	--	--	4.36	3.62	--
	mg/L	03/28/12	--	--	8.82	5.52	--
	mg/L	09/26/12	--	--	6.71	Dry	--
	mg/L	04/01/13	--	--	7.54	8.67	--
	mg/L	09/25/13	--	--	6.59	7.47	--
	mg/L	04/01/14	--	--	7.49	7.86	--
	mg/L	09/29/14	--	--	1.84	Dry	--

Notes:
S.U. = Standard Units
NTU = Nephelometric Turbidity Units
uS/cm = microsiemens per centimeter
mg/L = milligramer per liter
mV = Millivolts
-- = no data

1) The previous SW-1 location was in a wetland area that had been removed from the site for landfill expansion following the March 2004 sampling event. During the March 2007 sampling event, SW-1 was relocated. Due to construction activities prior to March 2008 sampling event, no upstream surface monitoring point is available to sample.

DRAWING



SITE LOCATION MAP
(DRAWING IS NOT TO SCALE)

LEGEND

10 FT. CONTOUR INTERVAL	
2 FT. CONTOUR INTERVAL	
FACILITY BOUNDARY	
TREELINE	
EXISTING ROAD	
STREAM	
GROUNDWATER SURFACE 10 FT. CONTOURS	250
APPROXIMATE GROUNDWATER FLOW SEGMENT USED TO CALCULATE GRADIENT	i_1
GROUNDWATER MONITORING WELL WITH GROUNDWATER ELEVATION	MW-2T 257.90
SURFACE WATER MONITORING POINT	SW-3
NON-COMPLIANCE WELL (WATER LEVELS ONLY)	MW-7
NOT MEASURED	NM

NOTES

1. TOPOGRAPHIC CONTOUR INTERVAL = 2 FEET
2. GROUNDWATER SURFACE CONTOUR INTERVAL = 10 FEET
3. GROUNDWATER ELEVATIONS MEASURED ON SEPTEMBER 29, 2014.
4. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATA, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL GROUNDWATER CONDITIONS.
5. GROUNDWATER CONTOUR LINES SHOW THE WATER TABLE SHAPE AND ELEVATION. THESE CONTOURS ARE INFERRED LINES FOLLOWING THE GROUNDWATER SURFACE AT A CONSTANT ELEVATION ABOVE SEA LEVEL. THE GROUNDWATER FLOW DIRECTION IS GENERALLY PERPENDICULAR TO THE GROUNDWATER SURFACE CONTOURS, SIMILAR TO THE RELATIONSHIP BETWEEN SURFACE WATER FLOW AND TOPOGRAPHIC CONTOURS.
6. GRID COORDINATES REFERENCE NC STATE PLANE SYSTEM (NAD 1983)
7. ELEVATION REFERENCE U.S.G.S VERTICAL DATUM (MSL).
8. OVERALL SITE TOPOGRAPHY PREPARED BY SURVEYING SOLUTIONS P.C., BASED ON AERIAL PHOTOGRAPHY DATED JANUARY 20, 2014.
9. THE FACILITY BOUNDARY SHOWN REFERENCES DRAWING TITLED, "BOUNDARY SURVEY FOR WASTE INDUSTRIES." PREPARED BY SURVEY SOLUTIONS, P.C. DATED 12/27/00, SCALE 1" = 400'. (G.N. RICHARDSON & ASSOCIATES, INC SEPTEMBER 2006)
10. GROUNDWATER CONTOURS IN THE VICINITY OF MW-7 AND MW-8 WERE CONSTRUCTED BASED ON HISTORICAL DATA.
11. WELL MW-13 WAS DECOMMISSIONED BY RSG ON MAY 2, 2011.

0 200 400
SCALE FEET

CLIENT
WASTE INDUSTRIES USA INC.

CONSULTANT
Golder Associates
GOLDER ASSOCIATES NC. INC.

YYYY-MM-DD	2014-11-12
PREPARED	LKB
DESIGN	DYR
REVIEW	DYR
APPROVED	RPK

PROJECT
RED ROCK DISPOSAL, LLC CONSTRUCTION DEMOLITION LANDFILL, PERMIT NO. 92-28
WAKE COUNTY, NC

TITLE
GROUNDWATER CONTOUR MAP
SEPTEMBER 29, 2014

PROJECT No.	PHASE	Rev.	TITLE
0739603514	100	0	DRAWING 1

Path: \\greensboro\CAD\Projects\0739603514 - WI - Red Rock\ENVIRONMENTAL\ | File Name: 0739603514 (11-12-14).dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
0 1 in

APPENDIX A

GROUNDWATER, SURFACE WATER, AND LEACHATE SAMPLING LOGS

DATE: 9-29-14

Golder Associates

GROUNDWATER SAMPLING LOG

Project Name: *Red Rock* **Project No./Phase No.:** *0739603514*

Well ID: MW-2T **Sampler(s):** A. Stoddard, D. Childress

Well Diameter: 2 inches **Initial Depth to Water:** 23.29 feet

Depth to Bottom: 81.34 feet **Water Column Thickness:** 58.05 feet

Pumping Rate: 150 mL/min. **System Volume:** 1000 mL

Well Location: South of Landfill next to sed pond

Equipment: *YSI ProPlus, Hach 2100Q turbidimeter, WL meter, dedicated bladder pump*

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O_2 (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1156	7.09	2.296	8.65	5.05	20.5	85.4	24.02
1201	6.88	2.331	5.57	0.96	18.7	-66.4	24.78
1206	6.81	2.600	3.85	0.67	18.6	-146.2	25.21
1211	7.09	2.559	2.96	0.64	18.6	-121.4	26.04
1216	7.10	2.500	1.67	0.61	18.6	-117.8	27.23
1221	7.09	2.484	2.27	0.67	18.6	-114.0	27.32
			sampled @ 1221				

Comments (weather conditions, color, type of sample, purge-water management, etc.):
70's, cloudy, calm

Signature: [signature] **Date:** 9-29-14

QA/QC Sign Off: Rachel Kuhn **Date:** 11-19-14

DATE: 9-29-14

Golder Associates

GROUNDWATER SAMPLING LOG

Project Name: *Red Rock* **Project No./Phase No.:** *0739603514*

Well ID: MW-3 **Sampler(s):** A. Stoddard, D. Childress

Well Diameter: 2 inches **Initial Depth to Water:** ~~23.29~~ AS feet 12.70

Depth to Bottom: 31.50 feet **Water Column Thickness:** 18.80 feet

Pumping Rate: 150 mL/min. **System Volume:** 1000 mL

Well Location: S of LF along access trail

Equipment: *YSI ProPlus, Hach 2100Q turbidimeter, WL meter,* portable ~~*dedicated*~~ *bladder pump*

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O_2 (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1233	7.17	5.645	8.66	4.08	20.2	37.6	12.81
1238	6.90	5.781	9.67	2.73	18.1	43.8	13.21
1243	6.75	5.770	9.19	1.74	17.4	56.6	14.56
1248	6.73	5.769	7.77	1.72	17.4	59.9	15.16
1253	6.73	5.776	7.31	1.76	17.3	61.1	15.71
			sampled @ 1253				

Comments (weather conditions, color, type of sample, purge-water management, etc.):
70's, cloudy, slight breeze

Signature: [signature] **Date:** 9-29-14

QA/QC Sign Off: Raeme Kin **Date:** 11-19-14

DATE: 9-29-14

Golder Associates

GROUNDWATER SAMPLING LOG

Project Name: *Red Rock* **Project No./Phase No.:** *0739603514*

Well ID: MW-4 **Sampler(s):** A. Stoddard, D. Childress

Well Diameter: 2 inches **Initial Depth to Water:** 3.90 feet

Depth to Bottom: 17.34 feet **Water Column Thickness:** 13.44 feet

Pumping Rate: 150 mL/min. **System Volume:** 1000 mL

Well Location: South of Landfill

Equipment: *YSI ProPlus, Hach 2100Q turbidimeter, WL meter, dedicated bladder pump*

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O_2 (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1640	7.51	0.244	18.5	3.17	18.1	129.0	4.96
1644	6.68	0.220	19.3	1.86	18.2	124.7	5.13
1648	6.21	0.206	17.0	1.68	18.2	148.2	5.68
1652	5.87	0.194	14.1	1.75	18.3	169.5	6.18
1656	5.81	0.191	13.6	1.80	18.3	174.9	6.33
1700	5.80	0.190	12.2	1.76	18.3	176.4	6.41
		Sampled @ 1700					

Comments (weather conditions, color, type of sample, purge-water management, etc.):
CLO's, cloudy, calm, raining

Signature: Anna Stoddard **Date:** 9-24-14

QA/QC Sign Off: Rachel Tan **Date:** 11-19-14

Golder Associates

DATE: 9-29-14

GROUNDWATER SAMPLING LOG

Project Name: Red Rock
Project / Phase No.: 0739603574
Well ID: MW-5 (MS|MSD)
Sampler(s): A. Stockland, D. Childress
Well Diameter: 2 inches
Initial Depth to Water: 5.42 feet
Depth to Bottom: 16.35 feet
Water Column Thickness: 10.93 feet
Pumping Rate: 200 mL/min.
System Volume: 1000 mL
Well Location: SE of LF off access Road
Equipment: Water Level Meter, ~~Portable Bladder Pump~~, dedicated bladder pump
Hach Turbidimeter, ~~YSI 600 / YSI 556~~ YSI Pro Plus

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O_2 (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)
1559	6.60	5.739	34.5	2.39	18.8	80.9	7.01
1604	6.46	6.006	27.2	1.09	18.3	126.3	7.50
1609	6.44	5.942	26.3	1.08	18.3	138.7	7.63
1614	6.43	5.904	24.9	1.11	18.3	143.6	7.75
		sampled @ 1614					

Comments (weather conditions, color, type of sample, purge-water management, etc.):
Weather: 60's, cloudy, calm, raining

~~Fe^{2+} =~~ AB

Signature: [signature] **Date:** 9-29-14

QA/QC Sign Off: Rachel Kim **Date:** 11-19-14

DATE: 9-29-14

Golder Associates

GROUNDWATER SAMPLING LOG

Project Name: *Red Rock* **Project No./Phase No.:** *0739603514*

Well ID: MW-60T **Sampler(s):** A. Stoddard, D. Childress

Well Diameter: 2 inches **Initial Depth to Water:** 7.99 feet

Depth to Bottom: 58.58 feet **Water Column Thickness:** 50.59 feet

Pumping Rate: 200 mL/min. **System Volume:** 1000 mL

Well Location: Next to scale house

Equipment: *YSI ProPlus, Hach 2100Q turbidimeter, WL meter, dedicated bladder pump*

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O_2 (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1455	7.71	7.328	6.23	4.24	20.2	-23.5	8.51
1500	7.19	7.637	4.81	1.70	18.9	-55.7	8.98
1505	6.98	7.570	3.31	1.42	18.7	-49.6	9.27
1510	6.94	7.515	2.44	1.41	18.7	-49.8	9.55
1515	6.93	7.507	1.70	1.46	18.7	-50.4	9.68
		sampled @ 1515					

Comments (weather conditions, color, type of sample, purge-water management, etc.):
60's, cloudy, calm, raining

Signature: [signature] **Date:** 9-29-14

QA/QC Sign Off: Rachel Tait **Date:** 11-19-14

DATE: 9-29-14

Golder Associates

GROUNDWATER SAMPLING LOG

Project Name: *Red Rock*
Project No./Phase No.: *0739603514*
Well ID: MW-10
Sampler(s): A. Stoddard, D. Childress
Well Diameter: 2 inches
Initial Depth to Water: 10.95 feet
Depth to Bottom: 31.23 feet
Water Column Thickness: 20.28 feet
Pumping Rate: 150 mL/min.
System Volume: 1000 mL
Well Location: North of Landfill Along Access Road
Equipment: *YSI ProPlus, Hach 2100Q turbidimeter, WL meter, dedicated bladder pump*

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O_2 (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
0955	6.33	2.108	0.19	3.31	17.8	207.2	12.41
1001	6.23	2.109	0.35	2.56	17.6	162.4	12.58
1007	6.20	2.110	0.61	1.83	17.5	131.5	12.67
1013	6.15	2.104	0.25	1.64	17.5	123.0	12.78
1019	6.15	2.105	0.24	1.60	17.5	115.7	12.80
1025	6.16	2.102	0.46	1.57	17.5	114.5	12.82
		Sampled @ 1025					

Comments (weather conditions, color, type of sample, purge-water management, etc.):
60's, cloudy, calm

Signature: [signature] **Date:** 9-29-14

QA/QC Sign Off: [signature] **Date:** 11-19-14

DATE: 9-29-14

Golder Associates

GROUNDWATER SAMPLING LOG

Project Name: *Red Rock* **Project No./Phase No.:** *0739603514*

Well ID: MW-11 **Sampler(s):** A. Stoddard, D. Childress

Well Diameter: 2 inches **Initial Depth to Water:** 24.74 feet

Depth to Bottom: 52.90 feet **Water Column Thickness:** 28.16 feet

Pumping Rate: 200 mL/min. **System Volume:** 1000 mL

Well Location: North of landfill Along Perimeter Road

Equipment: *YSI ProPlus, Hach 2100Q turbidimeter, WL meter, dedicated bladder pump*

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O_2 (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1049	7.37	0.655	3.20	3.30	18.5	-10.1	25.64
1053	7.29	0.652	1.38	1.43	18.1	-64.8	25.80
1057	7.08	0.651	1.36	0.75	17.9	-75.7	26.71
1101	7.07	0.649	1.07	0.71	18.0	-77.5	26.83
1105	7.04	0.648	0.14	0.68	17.9	-78.9	27.23
		Sampled @ 1105					

Comments (weather conditions, color, type of sample, purge-water management, etc.):
100's, cloudy, calm

Signature: [signature] **Date:** 9-25-14

QA/QC Sign Off: [signature] **Date:** 11-19-14

DATE: 9-29-14

Golder Associates

GROUNDWATER SAMPLING LOG

Project Name: *Red Rock* **Project No./Phase No.:** *0739603514*

Well ID: MW-14 **Sampler(s):** A. Stoddard, D. Childress

Well Diameter: 2 inches **Initial Depth to Water:** 13.30 feet

Depth to Bottom: 35.19 feet **Water Column Thickness:** 21.89 feet

Pumping Rate: 200 mL/min. **System Volume:** 1000 mL

Well Location: SW of Landfill Along Perimeter Road

Equipment: *YSI ProPlus, Hach 2100Q turbidimeter, WL meter, dedicated bladder pump*

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O_2 (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1125	7.40	0.623	20.3	7.11	17.9	57.1	14.21
1129	6.92	0.625	85.2	4.79	17.4	64.7	14.55
1133	6.64	0.624	33.7	4.58	17.3	82.0	14.92
1137	6.57	0.623	19.8	4.61	17.3	86.5	15.10
1141	6.57	0.623	14.4	4.66	17.3	88.3	15.35
			sampled @ 1141				

Comments (weather conditions, color, type of sample, purge-water management, etc.):
70's, cloudy, calm

Signature: [signature] **Date:** 9-29-14

QA/QC Sign Off: Rachel [signature] **Date:** 11-19-14

Golder Associates

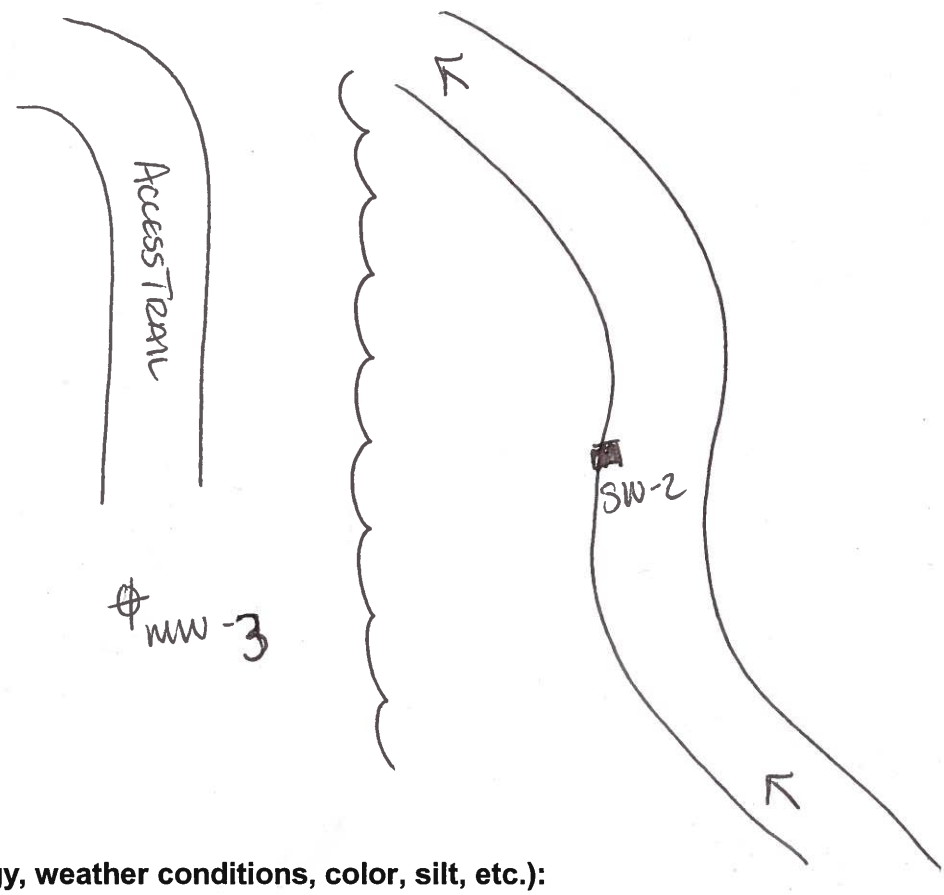
DATE: 9-29-14

SURFACE WATER SAMPLING LOG

Project Name: Red Rock **Project No./Phase No.:** 0739603514
Sample ID: SW - 2 **Sampler(s):** A. Stoddard, D. Childress
Sampling Location: STREAM NEAR MW-3
Equipment: *YSI ProPlus, Hach 2100Q Turbidimeter*

Time	1305
pH s.u.	7.54
Cond. mS/cm	1.864
Turb. ntu	83.2
Dis. O_2 mg/L	1.84
Temp. °C	17.5
ORP mv	-105.2

Surface Water Sampling Location Sketch



Comments (sample methodology, weather conditions, color, silt, etc.):
70's, cloudy, calm

Signature: Teresa Stoddard **Date:** 9-29-14

QA/QC Sign Off: Raquel Xavier **Date:** 11-19-14

Golder Associates

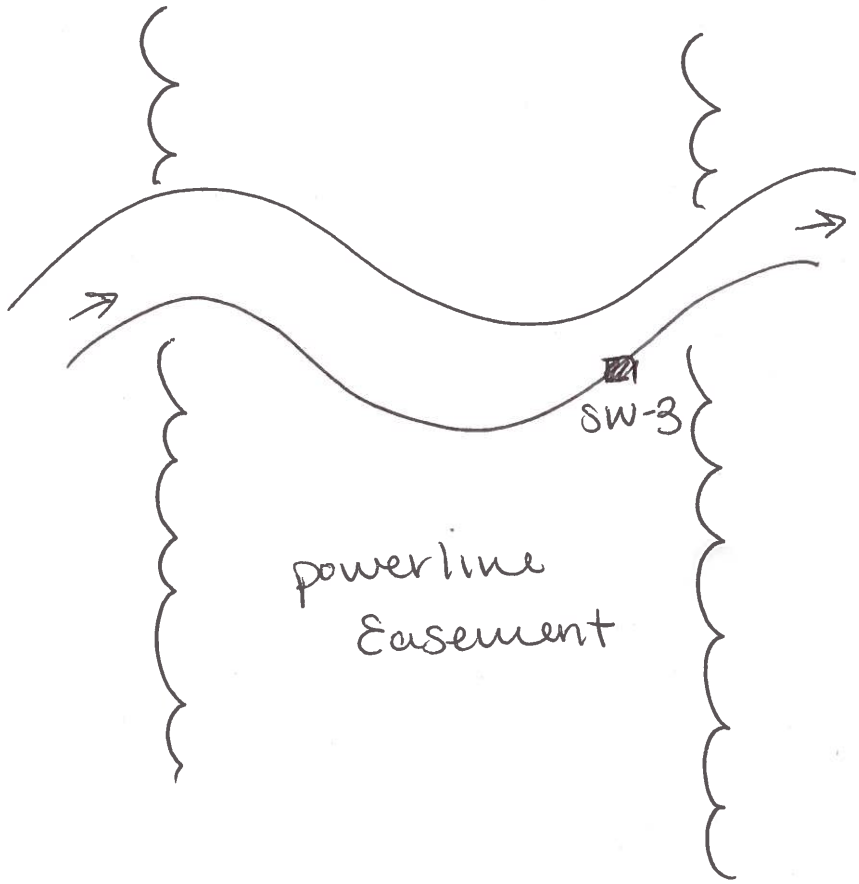
DATE: 9-29-14

SURFACE WATER SAMPLING LOG

Project Name: Red Rock
Project No./Phase No.: 0739603514
Sample ID: SW-3
Sampler(s): A. Stoddard, D. Childress
Sampling Location: Creek along powerline easement
Equipment: YSI ProPlus, Hach 2100Q Turbidimeter

Time	1340
pH s.u.	—
Cond. mS/cm	—
Turb. ntu	—
Dis. O_2 mg/L	—
Temp. °C	—
ORP mv	—

Surface Water Sampling Location Sketch



Comments (sample methodology, weather conditions, color, silt, etc.):
70's cloudy, calm NO Flow, not sampled

Signature: [signature] **Date:** 9-29-14

QA/QC Sign Off: [signature] **Date:** 11-19-14

APPENDIX B

SEPTEMBER 2014 GROUNDWATER AND SURFACE WATER CERTIFICATES-OF-ANALYSIS, CHAIN-OF-CUSTODY FORMS AND LABORATORY DATA REVIEWS

Environmental Conservation Laboratories, Inc.
102-A Woodwinds Industrial Court
Cary NC, 27511
Phone: 919.467.3090 FAX: 919.467.3515
www.encolabs.com

Monday, November 24, 2014

Golder Associates, Inc. (GO007)

Attn: Dusty Reedy

5B Oak Branch Drive

Greensboro, NC 27407

RE: Laboratory Results for
Project Number: 0739-603514.100, Project Name/Desc: WI- Red Rock
ENCO Workorder(s): C412436

Dear Dusty Reedy,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Tuesday, September 30, 2014.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

The analytical results contained in this report are in compliance with NELAC standards, except as noted in the project narrative. This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Unless otherwise noted, all analyses were performed at ENCO Cary. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Stephanie Franz

Project Manager

Enclosure(s)

The total number of pages in this report, including this page is 71.

PROJECT NARRATIVE

Date: 24 November 2014
Client: Golder Associates, Inc. (GO007)
Project: WI- Red Rock
Lab ID: C412436

Overview

This report is an amendment to the original report dated 14 October 2014 for this work order. This report was revise, at the client's request to add additional analyses and confirm the concentrations of others.

Environmental Conservation Laboratories, Inc. (ENCO) analyzed all submitted samples in accordance with the methods referenced in the laboratory report. Any particular difficulties encountered during sample handling by ENCO are discussed in the QC Remarks section below.

Quality Control Samples

The spike recoveries of 1,1-Dichloroethene and Trichloroethene were outside of control limits for the 8260B MS and MSD samples. The QC batch was approved based on acceptable LCS recovery of these analytes.

Antimony was detected in the 6020A Method Blank at a low-level concentration (less than half of the MRL) Detections of this element should be considered estimated if the concentration in the associated sample is not greater than ten times that of the detection in the Method Blank. The spike recoveries of Iron, Manganese, Mercury, Silver, and Thallium were outside of control limits for the MS, MSD, and/or Post Spike samples. The QC batches were approved based on acceptable LCS recovery of these elements.

Quality Control Remarks

No Comments

Other Comments

At the client's request, samples MW-3 and MW-6T were analyzed for Dissolved Barium. MW-14 was reprepped and reanalyzed for Total Silver and the analysis for Dissolved Silver was added to the sample. Total Chromium was confirmed and the Dissolved Chromium analysis was added to MW-14.

The concentration of Total Chromium in sample MW-5 was confirmed by reprep and reanalysis of the sample. Sample MW-14 was reprepped and reanalyzed for Total Silver; however, the concentration did not confirm, possibly due to Silver's propensity to precipitate out of solution over time. At the client's request, only the original concentrations are reported.

All samples received under this work order arrived in acceptable conditions. The samples were not checked for residual chlorine, as it is not required. Sample SW-3 was not submitted for analysis, as there was no flow at the time of collection.

The analytical data presented in this report are consistent with the methods as referenced in the analytical report. Any exceptions or deviations are noted in the QC remarks section of this narrative or in the Flags/Notes and Definitions section of the report.

Released By:
Environmental Conservation Laboratories, Inc.

Stephanie Franz
Project Manager

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SAMPLE SUMMARY/LABORATORY CHRONICLE

Client ID: 9228-MW2T **Lab ID: C412436-01** **Sampled: 09/29/14 12:21** **Received: 09/30/14 15:55**

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 14:53
EPA 310.2	10/13/14	10/02/14 07:11	10/2/2014 08:36
EPA 6010C	03/28/15	10/02/14 10:22	10/3/2014 12:52
EPA 6020A	03/28/15	10/01/14 11:56	10/3/2014 12:28
EPA 7470A	10/27/14	10/07/14 14:06	10/9/2014 13:39
EPA 8260B	10/13/14	10/02/14 13:18	10/3/2014 01:48
SM 2540C-1997	10/06/14	10/02/14 14:45	10/2/2014 14:45

Client ID: 9228-MW2T **Lab ID: C412436-01RE1** **Sampled: 09/29/14 12:21** **Received: 09/30/14 15:55**

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 15:10

Client ID: 9228-MW3 **Lab ID: C412436-02** **Sampled: 09/29/14 12:53** **Received: 09/30/14 15:55**

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 15:27
EPA 310.2	10/13/14	10/02/14 07:11	10/2/2014 08:37
EPA 6010C	03/28/15	10/02/14 10:22	10/3/2014 12:55
EPA 6010C	03/28/15	11/20/14 09:17	11/21/2014 12:29
EPA 6020A	03/28/15	10/01/14 11:56	10/3/2014 12:31
EPA 7470A	10/27/14	10/07/14 14:06	10/9/2014 13:41
EPA 8260B	10/13/14	10/02/14 13:18	10/3/2014 02:17
SM 2540C-1997	10/06/14	10/02/14 14:45	10/2/2014 14:45

Client ID: 9228-MW3 **Lab ID: C412436-02RE1** **Sampled: 09/29/14 12:53** **Received: 09/30/14 15:55**

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 15:44

Client ID: 9228-MW4 **Lab ID: C412436-03** **Sampled: 09/29/14 17:00** **Received: 09/30/14 15:55**

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 16:01
EPA 310.2	10/13/14	10/02/14 07:11	10/2/2014 08:38
EPA 6010C	03/28/15	10/02/14 10:22	10/3/2014 12:57
EPA 6020A	03/28/15	10/01/14 11:56	10/3/2014 12:35
EPA 7470A	10/27/14	10/07/14 14:06	10/9/2014 13:43
EPA 8260B	10/13/14	10/02/14 13:18	10/3/2014 02:46
SM 2540C-1997	10/06/14	10/02/14 14:45	10/2/2014 14:45

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Client ID: 9228-MW5 (ms/msd)	Lab ID: C412436-04	Sampled: 09/29/14 16:14	Received: 09/30/14 15:55

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 11:11
EPA 310.2	10/13/14	10/02/14 07:11	10/2/2014 08:25
EPA 6010C	03/28/15	10/02/14 10:22	10/3/2014 11:36
EPA 6010C	03/28/15	11/20/14 09:17	11/21/2014 12:32
EPA 6020A	03/28/15	10/01/14 11:56	10/3/2014 12:09
EPA 7470A	10/27/14	10/07/14 14:06	10/9/2014 13:05
EPA 8260B	10/13/14	10/02/14 13:18	10/3/2014 01:19
SM 2540C-1997	10/06/14	10/02/14 14:45	10/2/2014 14:45

Client ID: 9228-MW5 (ms/msd)	Lab ID: C412436-04RE1	Sampled: 09/29/14 16:14	Received: 09/30/14 15:55

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 11:28

Client ID: 9228-MW6T	Lab ID: C412436-05	Sampled: 09/29/14 15:15	Received: 09/30/14 15:55

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 16:18
EPA 310.2	10/13/14	10/02/14 07:11	10/2/2014 08:39
EPA 6010C	03/28/15	10/02/14 10:22	10/3/2014 13:00
EPA 6010C	03/28/15	11/20/14 09:17	11/21/2014 12:35
EPA 6020A	03/28/15	10/01/14 11:56	10/3/2014 12:51
EPA 7470A	10/27/14	10/07/14 14:06	10/9/2014 13:46
EPA 8260B	10/13/14	10/02/14 13:18	10/3/2014 03:15
SM 2540C-1997	10/06/14	10/02/14 14:45	10/2/2014 14:45

Client ID: 9228-MW6T	Lab ID: C412436-05RE1	Sampled: 09/29/14 15:15	Received: 09/30/14 15:55

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 17:09

Client ID: 9228-MW10	Lab ID: C412436-06	Sampled: 09/29/14 10:25	Received: 09/30/14 15:55

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 17:26
EPA 310.2	10/13/14	10/02/14 07:11	10/2/2014 08:40
EPA 6010C	03/28/15	10/02/14 10:22	10/3/2014 13:03
EPA 6020A	03/28/15	10/01/14 11:56	10/3/2014 12:55
EPA 7470A	10/27/14	10/07/14 14:06	10/9/2014 13:53
EPA 8260B	10/13/14	10/02/14 13:18	10/3/2014 03:45
SM 2540C-1997	10/06/14	10/02/14 14:45	10/2/2014 14:45

Client ID: 9228-MW10	Lab ID: C412436-06RE1	Sampled: 09/29/14 10:25	Received: 09/30/14 15:55

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 17:43

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Client ID: 9228-MW11	Lab ID: C412436-07	Sampled: 09/29/14 11:05	Received: 09/30/14 15:55

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 18:00
EPA 310.2	10/13/14	10/02/14 07:11	10/2/2014 08:40
EPA 6010C	03/28/15	10/02/14 10:22	10/3/2014 13:06
EPA 6020A	03/28/15	10/01/14 11:56	10/3/2014 12:58
EPA 7470A	10/27/14	10/07/14 14:06	10/9/2014 13:55
EPA 8260B	10/13/14	10/02/14 13:18	10/3/2014 04:14
SM 2540C-1997	10/06/14	10/02/14 14:45	10/2/2014 14:45

Client ID: 9228-MW14	Lab ID: C412436-08	Sampled: 09/29/14 11:41	Received: 09/30/14 15:55

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	10/27/14	10/02/14 08:57	10/2/2014 18:17
EPA 310.2	10/13/14	10/02/14 07:11	10/2/2014 08:41
EPA 6010C	03/28/15	10/02/14 10:22	10/3/2014 13:08
EPA 6010C	03/28/15	11/20/14 09:17	11/21/2014 12:38
EPA 6020A	03/28/15	10/01/14 11:56	10/3/2014 13:02
EPA 7470A	10/27/14	10/07/14 14:06	10/9/2014 13:57
EPA 8260B	10/13/14	10/02/14 13:18	10/3/2014 04:44
SM 2540C-1997	10/06/14	10/02/14 14:45	10/2/2014 14:45

Client ID: 9228-MW14	Lab ID: C412436-08RE1	Sampled: 09/29/14 11:41	Received: 09/30/14 15:55

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010C	03/28/15	11/19/14 11:25	11/20/2014 12:23

Client ID: 9228-SW2	Lab ID: C412436-09	Sampled: 09/29/14 13:05	Received: 09/30/14 15:55

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010C	03/28/15	10/02/14 10:22	10/3/2014 13:11
EPA 6020A	03/28/15	10/01/14 11:56	10/3/2014 13:05
EPA 8260B	10/13/14	10/02/14 13:18	10/3/2014 05:13

Client ID: 9228-Field Blank	Lab ID: C412436-10	Sampled: 09/29/14 17:05	Received: 09/30/14 15:55

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010C	03/28/15	10/02/14 10:22	10/3/2014 13:13
EPA 6020A	03/28/15	10/01/14 11:56	10/3/2014 13:09
EPA 7470A	10/27/14	10/07/14 14:06	10/9/2014 13:59
EPA 8260B	10/13/14	10/02/14 13:18	10/3/2014 08:44

Client ID: 9228-Trip Blank	Lab ID: C412436-11	Sampled: 09/29/14 10:25	Received: 09/30/14 15:55

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 8260B	10/13/14	10/02/14 13:18	10/3/2014 09:13

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NORTH CAROLINA SWS SAMPLE DETECTION SUMMARY

Client ID: 9228-MW2T **Lab ID: C412436-01**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Antimony - Total	0.401	JB	1	0.220	2.00	6	ug/L	EPA 6020A	J-01
Barium - Total	34.2	J	1	1.00	10.0	100	ug/L	EPA 6010C	
Iron - Total	636		1	22.0	50.0	300	ug/L	EPA 6010C	
Lead - Total	12.6		1	2.10	10.0	10	ug/L	EPA 6010C	
Manganese - Total	180		1	1.10	10.0	50	ug/L	EPA 6010C	
Silver - Total	4.28	J	1	1.90	10.0	10	ug/L	EPA 6010C	
Sulfate as SO4	53000	J	1	2900	5000	250000	ug/L	EPA 300.0	
Thallium - Total	0.966	J	1	0.110	1.00	5.5	ug/L	EPA 6020A	
Total Alkalinity as CaCO3	330000	D	5	70000	75000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	1200000		1	10000	10000	NE	ug/L	SM 2540C-1997	

Client ID: 9228-MW2T **Lab ID: C412436-01RE1**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Chloride	490000	D	10	22000	50000	NE	ug/L	EPA 300.0	

Client ID: 9228-MW3 **Lab ID: C412436-02**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Barium - Dissolved	2150		1	1.00	10.0	100	ug/L	EPA 6010C	
Barium - Total	2230		1	1.00	10.0	100	ug/L	EPA 6010C	
Chromium - Total	2.88	J	1	1.40	10.0	10	ug/L	EPA 6010C	
Iron - Total	690		1	22.0	50.0	300	ug/L	EPA 6010C	
Manganese - Total	18.1	J	1	1.10	10.0	50	ug/L	EPA 6010C	
Nickel - Total	3.07	J	1	1.80	10.0	50	ug/L	EPA 6010C	
Sulfate as SO4	4900	J	1	2900	5000	250000	ug/L	EPA 300.0	
Thallium - Total	0.404	J	1	0.110	1.00	5.5	ug/L	EPA 6020A	
Toluene	0.45	J	1	0.14	1.0	1	ug/L	EPA 8260B	
Total Alkalinity as CaCO3	370000	D	5	70000	75000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	3400000		1	10000	10000	NE	ug/L	SM 2540C-1997	
Vanadium - Total	26.3		1	1.40	10.0	25	ug/L	EPA 6010C	
Zinc - Total	8.34	J	1	3.80	10.0	10	ug/L	EPA 6010C	

Client ID: 9228-MW3 **Lab ID: C412436-02RE1**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Chloride	1700000	D	25	54000	120000	NE	ug/L	EPA 300.0	

Client ID: 9228-MW4 **Lab ID: C412436-03**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Barium - Total	18.4	J	1	1.00	10.0	100	ug/L	EPA 6010C	
Chloride	5600		1	2200	5000	NE	ug/L	EPA 300.0	
Iron - Total	761		1	22.0	50.0	300	ug/L	EPA 6010C	
Manganese - Total	23.0	J	1	1.10	10.0	50	ug/L	EPA 6010C	
Sulfate as SO4	9400	J	1	2900	5000	250000	ug/L	EPA 300.0	
Thallium - Total	1.18	J	1	0.110	1.00	5.5	ug/L	EPA 6020A	
Total Alkalinity as CaCO3	34000		1	14000	15000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	86000		1	10000	10000	NE	ug/L	SM 2540C-1997	
Vanadium - Total	1.96	J	1	1.40	10.0	25	ug/L	EPA 6010C	
Zinc - Total	4.13	J	1	3.80	10.0	10	ug/L	EPA 6010C	

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Client ID: 9228-MW5 (ms/msd) **Lab ID: C412436-04**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Antimony - Total	1.27	JB	1	0.220	2.00	6	ug/L	EPA 6020A	J-01
Barium - Total	137		1	1.00	10.0	100	ug/L	EPA 6010C	
Beryllium - Total	0.434	J	1	0.100	1.00	1	ug/L	EPA 6010C	
Cadmium - Total	0.948	J	1	0.360	1.00	1	ug/L	EPA 6010C	
Chromium - Total	90.9		1	1.40	10.0	10	ug/L	EPA 6010C	
Chromium - Dissolved	1.60	J	1	1.00	10.0	10	ug/L	EPA 6010C	
Cobalt - Total	20.9		1	1.10	10.0	10	ug/L	EPA 6010C	
Copper - Total	4.54	J	1	1.60	10.0	10	ug/L	EPA 6010C	
Iron - Total	2150		1	22.0	50.0	300	ug/L	EPA 6010C	
Manganese - Total	2520		1	1.10	10.0	50	ug/L	EPA 6010C	
Nickel - Total	42.4	J	1	1.80	10.0	50	ug/L	EPA 6010C	
Silver - Total	3.30	J	1	1.90	10.0	10	ug/L	EPA 6010C	
Sulfate as SO4	95000	J	1	5800	10000	250000	ug/L	EPA 300.0	
Tetrahydrofuran	10		1	0.80	1.0	NE	ug/L	EPA 8260B	
Total Alkalinity as CaCO3	270000		1	28000	30000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	2800000		1	10000	10000	NE	ug/L	SM 2540C-1997	
Vanadium - Total	2.81	J	1	1.40	10.0	25	ug/L	EPA 6010C	
Zinc - Total	24.6		1	3.80	10.0	10	ug/L	EPA 6010C	

Client ID: 9228-MW5 (ms/msd) **Lab ID: C412436-04RE1**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Chloride	1200000		1	87000	200000	NE	ug/L	EPA 300.0	

Client ID: 9228-MW6T **Lab ID: C412436-05**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Barium - Dissolved	2410		1	1.00	10.0	100	ug/L	EPA 6010C	
Barium - Total	2540		1	1.00	10.0	100	ug/L	EPA 6010C	
Chromium - Total	2.44	J	1	1.40	10.0	10	ug/L	EPA 6010C	
Iron - Total	1040		1	22.0	50.0	300	ug/L	EPA 6010C	
Manganese - Total	1770		1	1.10	10.0	50	ug/L	EPA 6010C	
Silver - Total	1.95	J	1	1.90	10.0	10	ug/L	EPA 6010C	
Sulfate as SO4	12000	J	1	2900	5000	250000	ug/L	EPA 300.0	
Total Alkalinity as CaCO3	370000	D	5	70000	75000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	4300000		1	10000	10000	NE	ug/L	SM 2540C-1997	

Client ID: 9228-MW6T **Lab ID: C412436-05RE1**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Chloride	2100000	D	50	110000	250000	NE	ug/L	EPA 300.0	

Client ID: 9228-MW10 **Lab ID: C412436-06**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Barium - Total	1410		1	1.00	10.0	100	ug/L	EPA 6010C	
Manganese - Total	1530		1	1.10	10.0	50	ug/L	EPA 6010C	
Sulfate as SO4	9500	J	1	2900	5000	250000	ug/L	EPA 300.0	
Thallium - Total	0.148	J	1	0.110	1.00	5.5	ug/L	EPA 6020A	
Total Alkalinity as CaCO3	260000	D	5	70000	75000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	1100000		1	10000	10000	NE	ug/L	SM 2540C-1997	

Client ID: 9228-MW10 **Lab ID: C412436-06RE1**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Chloride	460000	D	10	22000	50000	NE	ug/L	EPA 300.0	

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Client ID: 9228-MW11 **Lab ID: C412436-07**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Barium - Total	18.6	J	1	1.00	10.0	100	ug/L	EPA 6010C	
Chloride	11000		1	2200	5000	NE	ug/L	EPA 300.0	
Iron - Total	92.0	J	1	22.0	50.0	300	ug/L	EPA 6010C	
Manganese - Total	98.4		1	1.10	10.0	50	ug/L	EPA 6010C	
Sulfate as SO4	13000	J	1	2900	5000	250000	ug/L	EPA 300.0	
Thallium - Total	0.260	J	1	0.110	1.00	5.5	ug/L	EPA 6020A	
Total Alkalinity as CaCO3	300000	D	2	28000	30000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	340000		1	10000	10000	NE	ug/L	SM 2540C-1997	

Client ID: 9228-MW14 **Lab ID: C412436-08**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Barium - Total	70.6	J	1	1.00	10.0	100	ug/L	EPA 6010C	
Chloride	30000		1	2200	5000	NE	ug/L	EPA 300.0	
Iron - Total	1950		1	22.0	50.0	300	ug/L	EPA 6010C	
Manganese - Total	42.2	J	1	1.10	10.0	50	ug/L	EPA 6010C	
Sulfate as SO4	12000	J	1	2900	5000	250000	ug/L	EPA 300.0	
Thallium - Total	0.227	J	1	0.110	1.00	5.5	ug/L	EPA 6020A	
Total Alkalinity as CaCO3	240000	D	2	28000	30000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	340000		1	10000	10000	NE	ug/L	SM 2540C-1997	
Vanadium - Total	10.1	J	1	1.40	10.0	25	ug/L	EPA 6010C	
Zinc - Total	8.84	J	1	3.80	10.0	10	ug/L	EPA 6010C	

Client ID: 9228-SW2 **Lab ID: C412436-09**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Acetone	12	J	1	1.2	5.0	100	ug/L	EPA 8260B	
Antimony - Total	0.541	JB	1	0.220	2.00	6	ug/L	EPA 6020A	J-01
Arsenic - Total	14.3		1	5.40	10.0	10	ug/L	EPA 6010C	
Barium - Total	180		1	1.00	10.0	100	ug/L	EPA 6010C	
Chromium - Total	14.2		1	1.40	10.0	10	ug/L	EPA 6010C	
Cobalt - Total	3.81	J	1	1.10	10.0	10	ug/L	EPA 6010C	
Thallium - Total	0.162	J	1	0.110	1.00	5.5	ug/L	EPA 6020A	
Vanadium - Total	13.7	J	1	1.40	10.0	25	ug/L	EPA 6010C	
Zinc - Total	7.74	J	1	3.80	10.0	10	ug/L	EPA 6010C	

Client ID: 9228-Field Blank **Lab ID: C412436-10**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Tetrahydrofuran	1.7		1	0.80	1.0	NE	ug/L	EPA 8260B	
Thallium - Total	0.253	J	1	0.110	1.00	5.5	ug/L	EPA 6020A	

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ANALYTICAL RESULTS

Description: 9228-MW2T
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-01
Sampled: 09/29/14 12:21
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.17	U	ug/L	1	0.17	1.0	5	EPA 8260B	10/03/14 01:48	MSZ	
1,1,1-Trichloroethane [71-55-6] ^	0.12	U	ug/L	1	0.12	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.28	U	ug/L	1	0.28	1.0	3	EPA 8260B	10/03/14 01:48	MSZ	
1,1,2-Trichloroethane [79-00-5] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
1,1-Dichloroethane [75-34-3] ^	0.13	U	ug/L	1	0.13	1.0	5	EPA 8260B	10/03/14 01:48	MSZ	
1,1-Dichloroethene [75-35-4] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 01:48	MSZ	
1,2,3-Trichloropropane [96-18-4] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	10/03/14 01:48	MSZ	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
1,2-Dichlorobenzene [95-50-1] ^	0.19	U	ug/L	1	0.19	1.0	5	EPA 8260B	10/03/14 01:48	MSZ	
1,2-Dichloroethane [107-06-2] ^	0.21	U	ug/L	1	0.21	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
1,2-Dichloropropane [78-87-5] ^	0.10	U	ug/L	1	0.10	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
1,4-Dichlorobenzene [106-46-7] ^	0.19	U	ug/L	1	0.19	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	10/03/14 01:48	MSZ	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	10/03/14 01:48	MSZ	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	10/03/14 01:48	MSZ	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	10/03/14 01:48	MSZ	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	10/03/14 01:48	MSZ	
Benzene [71-43-2] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
Bromochloromethane [74-97-5] ^	0.48	U	ug/L	1	0.48	1.0	3	EPA 8260B	10/03/14 01:48	MSZ	
Bromodichloromethane [75-27-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
Bromoform [75-25-2] ^	0.22	U	ug/L	1	0.22	1.0	3	EPA 8260B	10/03/14 01:48	MSZ	
Bromomethane [74-83-9] ^	0.14	U	ug/L	1	0.14	1.0	10	EPA 8260B	10/03/14 01:48	MSZ	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	10/03/14 01:48	MSZ	
Carbon tetrachloride [56-23-5] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
Chlorobenzene [108-90-7] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 01:48	MSZ	
Chloroethane [75-00-3] ^	0.23	U	ug/L	1	0.23	1.0	10	EPA 8260B	10/03/14 01:48	MSZ	
Chloroform [67-66-3] ^	0.18	U	ug/L	1	0.18	1.0	5	EPA 8260B	10/03/14 01:48	MSZ	
Chloromethane [74-87-3] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
cis-1,2-Dichloroethene [156-59-2] ^	0.15	U	ug/L	1	0.15	1.0	5	EPA 8260B	10/03/14 01:48	MSZ	
cis-1,3-Dichloropropene [10061-01-5] ^	0.20	U	ug/L	1	0.20	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
Dibromochloromethane [124-48-1] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 01:48	MSZ	
Dibromomethane [74-95-3] ^	0.27	U	ug/L	1	0.27	1.0	10	EPA 8260B	10/03/14 01:48	MSZ	
Ethylbenzene [100-41-4] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	10/03/14 01:48	MSZ	
Methylene chloride [75-09-2] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
Styrene [100-42-5] ^	0.11	U	ug/L	1	0.11	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
Tetrachloroethene [127-18-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0		EPA 8260B	10/03/14 01:48	MSZ	
Toluene [108-88-3] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
trans-1,2-Dichloroethene [156-60-5] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 01:48	MSZ	
trans-1,3-Dichloropropene [10061-02-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	10/03/14 01:48	MSZ	

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Description: 9228-MW2T	**Lab Sample ID:** C412436-01	**Received:** 09/30/14 15:55
Matrix: Ground Water	**Sampled:** 09/29/14 12:21	**Work Order:** C412436
Project: WI- Red Rock	**Sampled By:** A. Stoddard	

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Trichloroethene [79-01-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
Trichlorofluoromethane [75-69-4] ^	0.24	U	ug/L	1	0.24	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	10/03/14 01:48	MSZ	
Vinyl chloride [75-01-4] ^	0.32	U	ug/L	1	0.32	1.0	1	EPA 8260B	10/03/14 01:48	MSZ	
Xylenes (Total) [1330-20-7] ^	0.45	U	ug/L	1	0.45	3.0	5	EPA 8260B	10/03/14 01:48	MSZ	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*54*	*1*	*50.0*	*108 %*	*53-136*	*4J02026*	*EPA 8260B*	*10/03/14 01:48*	*MSZ*	
Dibromofluoromethane	*56*	*1*	*50.0*	*113 %*	*67-129*	*4J02026*	*EPA 8260B*	*10/03/14 01:48*	*MSZ*	
Toluene-d8	*56*	*1*	*50.0*	*112 %*	*59-134*	*4J02026*	*EPA 8260B*	*10/03/14 01:48*	*MSZ*	

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Description:	9228-MW2T	**Lab Sample ID:**	C412436-01	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 12:21	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	10/09/14 13:39	T1D	

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Description: 9228-MW2T
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-01
Sampled: 09/29/14 12:21
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	**0.401**	JB	ug/L	1	0.220	2.00	6	EPA 6020A	10/03/14 12:28	VLO	J-01
Arsenic [7440-38-2] ^	5.40	U	ug/L	1	5.40	10.0	10	EPA 6010C	10/03/14 12:52	JDH	
Barium [7440-39-3] ^	**34.2**	J	ug/L	1	1.00	10.0	100	EPA 6010C	10/03/14 12:52	JDH	
Beryllium [7440-41-7] ^	0.100	U	ug/L	1	0.100	1.00	1	EPA 6010C	10/03/14 12:52	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	10/03/14 12:52	JDH	
Chromium [7440-47-3] ^	1.40	U	ug/L	1	1.40	10.0	10	EPA 6010C	10/03/14 12:52	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	10/03/14 12:52	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	10/03/14 12:52	JDH	
Iron [7439-89-6] ^	**636**		ug/L	1	22.0	50.0	300	EPA 6010C	10/03/14 12:52	JDH	
Lead [7439-92-1] ^	**12.6**		ug/L	1	2.10	10.0	10	EPA 6010C	10/03/14 12:52	JDH	
Manganese [7439-96-5] ^	**180**		ug/L	1	1.10	10.0	50	EPA 6010C	10/03/14 12:52	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	10/03/14 12:52	JDH	
Selenium [7782-49-2] ^	5.00	U	ug/L	1	5.00	10.0	10	EPA 6010C	10/03/14 12:52	JDH	
Silver [7440-22-4] ^	**4.28**	J	ug/L	1	1.90	10.0	10	EPA 6010C	10/03/14 12:52	JDH	
Thallium [7440-28-0] ^	**0.966**	J	ug/L	1	0.110	1.00	5.5	EPA 6020A	10/03/14 12:28	VLO	
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	10/03/14 12:52	JDH	
Zinc [7440-66-6] ^	3.80	U	ug/L	1	3.80	10.0	10	EPA 6010C	10/03/14 12:52	JDH	

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Description: 9228-MW2T
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-01
Sampled: 09/29/14 12:21
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chloride [16887-00-6] ^	**490000**	D	ug/L	10	22000	50000	NE	EPA 300.0	10/02/14 15:10	CV	
Sulfate as SO4 [14808-79-8] ^	**53000**	J	ug/L	1	2900	5000	250000	EPA 300.0	10/02/14 14:53	CV	
Total Alkalinity as CaCO3 [471-34-1] ^	**330000**	D	ug/L	5	70000	75000	NE	EPA 310.2	10/02/14 08:36	c1v	
Total Dissolved Solids^	**1200000**		ug/L	1	10000	10000	NE	SM 2540C-1997	10/02/14 14:45	MMR	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

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Description: 9228-MW3 | **Lab Sample ID:** C412436-02 | **Received:** 09/30/14 15:55

Matrix: Ground Water | **Sampled:** 09/29/14 12:53 | **Work Order:** C412436

Project: WI- Red Rock | **Sampled By:** A. Stoddard

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.17	U	ug/L	1	0.17	1.0	5	EPA 8260B	10/03/14 02:17	MSZ	
1,1,1-Trichloroethane [71-55-6] ^	0.12	U	ug/L	1	0.12	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.28	U	ug/L	1	0.28	1.0	3	EPA 8260B	10/03/14 02:17	MSZ	
1,1,2-Trichloroethane [79-00-5] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
1,1-Dichloroethane [75-34-3] ^	0.13	U	ug/L	1	0.13	1.0	5	EPA 8260B	10/03/14 02:17	MSZ	
1,1-Dichloroethene [75-35-4] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 02:17	MSZ	
1,2,3-Trichloropropane [96-18-4] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	10/03/14 02:17	MSZ	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
1,2-Dichlorobenzene [95-50-1] ^	0.19	U	ug/L	1	0.19	1.0	5	EPA 8260B	10/03/14 02:17	MSZ	
1,2-Dichloroethane [107-06-2] ^	0.21	U	ug/L	1	0.21	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
1,2-Dichloropropane [78-87-5] ^	0.10	U	ug/L	1	0.10	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
1,4-Dichlorobenzene [106-46-7] ^	0.19	U	ug/L	1	0.19	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	10/03/14 02:17	MSZ	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	10/03/14 02:17	MSZ	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	10/03/14 02:17	MSZ	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	10/03/14 02:17	MSZ	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	10/03/14 02:17	MSZ	
Benzene [71-43-2] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
Bromochloromethane [74-97-5] ^	0.48	U	ug/L	1	0.48	1.0	3	EPA 8260B	10/03/14 02:17	MSZ	
Bromodichloromethane [75-27-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
Bromoform [75-25-2] ^	0.22	U	ug/L	1	0.22	1.0	3	EPA 8260B	10/03/14 02:17	MSZ	
Bromomethane [74-83-9] ^	0.14	U	ug/L	1	0.14	1.0	10	EPA 8260B	10/03/14 02:17	MSZ	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	10/03/14 02:17	MSZ	
Carbon tetrachloride [56-23-5] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
Chlorobenzene [108-90-7] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 02:17	MSZ	
Chloroethane [75-00-3] ^	0.23	U	ug/L	1	0.23	1.0	10	EPA 8260B	10/03/14 02:17	MSZ	
Chloroform [67-66-3] ^	0.18	U	ug/L	1	0.18	1.0	5	EPA 8260B	10/03/14 02:17	MSZ	
Chloromethane [74-87-3] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
cis-1,2-Dichloroethene [156-59-2] ^	0.15	U	ug/L	1	0.15	1.0	5	EPA 8260B	10/03/14 02:17	MSZ	
cis-1,3-Dichloropropene [10061-01-5] ^	0.20	U	ug/L	1	0.20	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
Dibromochloromethane [124-48-1] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 02:17	MSZ	
Dibromomethane [74-95-3] ^	0.27	U	ug/L	1	0.27	1.0	10	EPA 8260B	10/03/14 02:17	MSZ	
Ethylbenzene [100-41-4] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	10/03/14 02:17	MSZ	
Methylene chloride [75-09-2] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
Styrene [100-42-5] ^	0.11	U	ug/L	1	0.11	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
Tetrachloroethene [127-18-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0		EPA 8260B	10/03/14 02:17	MSZ	
Toluene [108-88-3] ^	**0.45**	J	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
trans-1,2-Dichloroethene [156-60-5] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 02:17	MSZ	
trans-1,3-Dichloropropene [10061-02-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	10/03/14 02:17	MSZ	
Trichloroethene [79-01-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
Trichlorofluoromethane [75-69-4] ^	0.24	U	ug/L	1	0.24	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	10/03/14 02:17	MSZ	

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Description:	9228-MW3	**Lab Sample ID:**	C412436-02	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 12:53	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.32	U	ug/L	1	0.32	1.0	1	EPA 8260B	10/03/14 02:17	MSZ	
Xylenes (Total) [1330-20-7] ^	0.45	U	ug/L	1	0.45	3.0	5	EPA 8260B	10/03/14 02:17	MSZ	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*57*	*1*	*50.0*	*114 %*	*53-136*	*4J02026*	*EPA 8260B*	*10/03/14 02:17*	*MSZ*	
Dibromofluoromethane	*55*	*1*	*50.0*	*110 %*	*67-129*	*4J02026*	*EPA 8260B*	*10/03/14 02:17*	*MSZ*	
Toluene-d8	*60*	*1*	*50.0*	*120 %*	*59-134*	*4J02026*	*EPA 8260B*	*10/03/14 02:17*	*MSZ*	

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Description:	9228-MW3	**Lab Sample ID:**	C412436-02	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 12:53	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	10/09/14 13:41	T1D	

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Description: 9228-MW3 | **Lab Sample ID:** C412436-02 | **Received:** 09/30/14 15:55

Matrix: Ground Water | **Sampled:** 09/29/14 12:53 | **Work Order:** C412436

Project: WI- Red Rock | **Sampled By:** A. Stoddard

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	10/03/14 12:31	VLO	
Arsenic [7440-38-2] ^	5.40	U	ug/L	1	5.40	10.0	10	EPA 6010C	10/03/14 12:55	JDH	
Barium [7440-39-3] ^	**2230**		ug/L	1	1.00	10.0	100	EPA 6010C	10/03/14 12:55	JDH	
Beryllium [7440-41-7] ^	0.100	U	ug/L	1	0.100	1.00	1	EPA 6010C	10/03/14 12:55	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	10/03/14 12:55	JDH	
Chromium [7440-47-3] ^	**2.88**	J	ug/L	1	1.40	10.0	10	EPA 6010C	10/03/14 12:55	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	10/03/14 12:55	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	10/03/14 12:55	JDH	
Iron [7439-89-6] ^	**690**		ug/L	1	22.0	50.0	300	EPA 6010C	10/03/14 12:55	JDH	
Lead [7439-92-1] ^	2.10	U	ug/L	1	2.10	10.0	10	EPA 6010C	10/03/14 12:55	JDH	
Manganese [7439-96-5] ^	**18.1**	J	ug/L	1	1.10	10.0	50	EPA 6010C	10/03/14 12:55	JDH	
Nickel [7440-02-0] ^	**3.07**	J	ug/L	1	1.80	10.0	50	EPA 6010C	10/03/14 12:55	JDH	
Selenium [7782-49-2] ^	5.00	U	ug/L	1	5.00	10.0	10	EPA 6010C	10/03/14 12:55	JDH	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	10/03/14 12:55	JDH	
Thallium [7440-28-0] ^	**0.404**	J	ug/L	1	0.110	1.00	5.5	EPA 6020A	10/03/14 12:31	VLO	
Vanadium [7440-62-2] ^	**26.3**		ug/L	1	1.40	10.0	25	EPA 6010C	10/03/14 12:55	JDH	
Zinc [7440-66-6] ^	**8.34**	J	ug/L	1	3.80	10.0	10	EPA 6010C	10/03/14 12:55	JDH	

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Description:	9228-MW3	**Lab Sample ID:**	C412436-02	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 12:53	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Metals (Dissolved) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Barium [7440-39-3] ^	**2150**		ug/L	1	1.00	10.0	100	EPA 6010C	11/21/14 12:29	JDH	

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Description: 9228-MW3
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-02
Sampled: 09/29/14 12:53
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chloride [16887-00-6] ^	**1700000**	D	ug/L	25	54000	120000	NE	EPA 300.0	10/02/14 15:44	CV	
Sulfate as SO4 [14808-79-8] ^	**4900**	J	ug/L	1	2900	5000	250000	EPA 300.0	10/02/14 15:27	CV	
Total Alkalinity as CaCO3 [471-34-1] ^	**370000**	D	ug/L	5	70000	75000	NE	EPA 310.2	10/02/14 08:37	c1v	
Total Dissolved Solids^	**3400000**		ug/L	1	10000	10000	NE	SM 2540C-1997	10/02/14 14:45	MMR	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

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Description: 9228-MW4 | **Lab Sample ID:** C412436-03 | **Received:** 09/30/14 15:55

Matrix: Ground Water | **Sampled:** 09/29/14 17:00 | **Work Order:** C412436

Project: WI- Red Rock | **Sampled By:** A. Stoddard

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.17	U	ug/L	1	0.17	1.0	5	EPA 8260B	10/03/14 02:46	MSZ	
1,1,1-Trichloroethane [71-55-6] ^	0.12	U	ug/L	1	0.12	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.28	U	ug/L	1	0.28	1.0	3	EPA 8260B	10/03/14 02:46	MSZ	
1,1,2-Trichloroethane [79-00-5] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
1,1-Dichloroethane [75-34-3] ^	0.13	U	ug/L	1	0.13	1.0	5	EPA 8260B	10/03/14 02:46	MSZ	
1,1-Dichloroethene [75-35-4] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 02:46	MSZ	
1,2,3-Trichloropropane [96-18-4] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	10/03/14 02:46	MSZ	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
1,2-Dichlorobenzene [95-50-1] ^	0.19	U	ug/L	1	0.19	1.0	5	EPA 8260B	10/03/14 02:46	MSZ	
1,2-Dichloroethane [107-06-2] ^	0.21	U	ug/L	1	0.21	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
1,2-Dichloropropane [78-87-5] ^	0.10	U	ug/L	1	0.10	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
1,4-Dichlorobenzene [106-46-7] ^	0.19	U	ug/L	1	0.19	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	10/03/14 02:46	MSZ	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	10/03/14 02:46	MSZ	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	10/03/14 02:46	MSZ	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	10/03/14 02:46	MSZ	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	10/03/14 02:46	MSZ	
Benzene [71-43-2] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
Bromochloromethane [74-97-5] ^	0.48	U	ug/L	1	0.48	1.0	3	EPA 8260B	10/03/14 02:46	MSZ	
Bromodichloromethane [75-27-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
Bromoform [75-25-2] ^	0.22	U	ug/L	1	0.22	1.0	3	EPA 8260B	10/03/14 02:46	MSZ	
Bromomethane [74-83-9] ^	0.14	U	ug/L	1	0.14	1.0	10	EPA 8260B	10/03/14 02:46	MSZ	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	10/03/14 02:46	MSZ	
Carbon tetrachloride [56-23-5] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
Chlorobenzene [108-90-7] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 02:46	MSZ	
Chloroethane [75-00-3] ^	0.23	U	ug/L	1	0.23	1.0	10	EPA 8260B	10/03/14 02:46	MSZ	
Chloroform [67-66-3] ^	0.18	U	ug/L	1	0.18	1.0	5	EPA 8260B	10/03/14 02:46	MSZ	
Chloromethane [74-87-3] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
cis-1,2-Dichloroethene [156-59-2] ^	0.15	U	ug/L	1	0.15	1.0	5	EPA 8260B	10/03/14 02:46	MSZ	
cis-1,3-Dichloropropene [10061-01-5] ^	0.20	U	ug/L	1	0.20	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
Dibromochloromethane [124-48-1] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 02:46	MSZ	
Dibromomethane [74-95-3] ^	0.27	U	ug/L	1	0.27	1.0	10	EPA 8260B	10/03/14 02:46	MSZ	
Ethylbenzene [100-41-4] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	10/03/14 02:46	MSZ	
Methylene chloride [75-09-2] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
Styrene [100-42-5] ^	0.11	U	ug/L	1	0.11	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
Tetrachloroethene [127-18-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0		EPA 8260B	10/03/14 02:46	MSZ	
Toluene [108-88-3] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
trans-1,2-Dichloroethene [156-60-5] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 02:46	MSZ	
trans-1,3-Dichloropropene [10061-02-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	10/03/14 02:46	MSZ	
Trichloroethene [79-01-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
Trichlorofluoromethane [75-69-4] ^	0.24	U	ug/L	1	0.24	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	10/03/14 02:46	MSZ	

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Description:	9228-MW4	**Lab Sample ID:**	C412436-03	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 17:00	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.32	U	ug/L	1	0.32	1.0	1	EPA 8260B	10/03/14 02:46	MSZ	
Xylenes (Total) [1330-20-7] ^	0.45	U	ug/L	1	0.45	3.0	5	EPA 8260B	10/03/14 02:46	MSZ	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*59*	*1*	*50.0*	*118 %*	*53-136*	*4J02026*	*EPA 8260B*	*10/03/14 02:46*	*MSZ*	
Dibromofluoromethane	*53*	*1*	*50.0*	*105 %*	*67-129*	*4J02026*	*EPA 8260B*	*10/03/14 02:46*	*MSZ*	
Toluene-d8	*60*	*1*	*50.0*	*121 %*	*59-134*	*4J02026*	*EPA 8260B*	*10/03/14 02:46*	*MSZ*	

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Description:	9228-MW4	**Lab Sample ID:**	C412436-03	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 17:00	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	10/09/14 13:43	T1D	

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Description: 9228-MW4
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-03
Sampled: 09/29/14 17:00
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	10/03/14 12:35	VLO	
Arsenic [7440-38-2] ^	5.40	U	ug/L	1	5.40	10.0	10	EPA 6010C	10/03/14 12:57	JDH	
Barium [7440-39-3] ^	**18.4**	J	ug/L	1	1.00	10.0	100	EPA 6010C	10/03/14 12:57	JDH	
Beryllium [7440-41-7] ^	0.100	U	ug/L	1	0.100	1.00	1	EPA 6010C	10/03/14 12:57	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	10/03/14 12:57	JDH	
Chromium [7440-47-3] ^	1.40	U	ug/L	1	1.40	10.0	10	EPA 6010C	10/03/14 12:57	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	10/03/14 12:57	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	10/03/14 12:57	JDH	
Iron [7439-89-6] ^	**761**		ug/L	1	22.0	50.0	300	EPA 6010C	10/03/14 12:57	JDH	
Lead [7439-92-1] ^	2.10	U	ug/L	1	2.10	10.0	10	EPA 6010C	10/03/14 12:57	JDH	
Manganese [7439-96-5] ^	**23.0**	J	ug/L	1	1.10	10.0	50	EPA 6010C	10/03/14 12:57	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	10/03/14 12:57	JDH	
Selenium [7782-49-2] ^	5.00	U	ug/L	1	5.00	10.0	10	EPA 6010C	10/03/14 12:57	JDH	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	10/03/14 12:57	JDH	
Thallium [7440-28-0] ^	**1.18**	J	ug/L	1	0.110	1.00	5.5	EPA 6020A	10/03/14 12:35	VLO	
Vanadium [7440-62-2] ^	**1.96**	J	ug/L	1	1.40	10.0	25	EPA 6010C	10/03/14 12:57	JDH	
Zinc [7440-66-6] ^	**4.13**	J	ug/L	1	3.80	10.0	10	EPA 6010C	10/03/14 12:57	JDH	

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Description: 9228-MW4
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-03
Sampled: 09/29/14 17:00
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chloride [16887-00-6] ^	**5600**		ug/L	1	2200	5000	NE	EPA 300.0	10/02/14 16:01	CV	
Sulfate as SO4 [14808-79-8] ^	**9400**	J	ug/L	1	2900	5000	250000	EPA 300.0	10/02/14 16:01	CV	
Total Alkalinity as CaCO3 [471-34-1] ^	**34000**		ug/L	1	14000	15000	NE	EPA 310.2	10/02/14 08:38	c1v	
Total Dissolved Solids^	**86000**		ug/L	1	10000	10000	NE	SM 2540C-1997	10/02/14 14:45	MMR	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

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Description: 9228-MW5 (ms/msd) **Lab Sample ID:** C412436-04 **Received:** 09/30/14 15:55
Matrix: Ground Water **Sampled:** 09/29/14 16:14 **Work Order:** C412436
Project: WI- Red Rock **Sampled By:** A. Stoddard

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.17	U	ug/L	1	0.17	1.0	5	EPA 8260B	10/03/14 01:19	MSZ	
1,1,1-Trichloroethane [71-55-6] ^	0.12	U	ug/L	1	0.12	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.28	U	ug/L	1	0.28	1.0	3	EPA 8260B	10/03/14 01:19	MSZ	
1,1,2-Trichloroethane [79-00-5] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
1,1-Dichloroethane [75-34-3] ^	0.13	U	ug/L	1	0.13	1.0	5	EPA 8260B	10/03/14 01:19	MSZ	
1,1-Dichloroethene [75-35-4] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 01:19	MSZ	
1,2,3-Trichloropropane [96-18-4] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	10/03/14 01:19	MSZ	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
1,2-Dichlorobenzene [95-50-1] ^	0.19	U	ug/L	1	0.19	1.0	5	EPA 8260B	10/03/14 01:19	MSZ	
1,2-Dichloroethane [107-06-2] ^	0.21	U	ug/L	1	0.21	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
1,2-Dichloropropane [78-87-5] ^	0.10	U	ug/L	1	0.10	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
1,4-Dichlorobenzene [106-46-7] ^	0.19	U	ug/L	1	0.19	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	10/03/14 01:19	MSZ	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	10/03/14 01:19	MSZ	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	10/03/14 01:19	MSZ	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	10/03/14 01:19	MSZ	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	10/03/14 01:19	MSZ	
Benzene [71-43-2] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
Bromochloromethane [74-97-5] ^	0.48	U	ug/L	1	0.48	1.0	3	EPA 8260B	10/03/14 01:19	MSZ	
Bromodichloromethane [75-27-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
Bromoform [75-25-2] ^	0.22	U	ug/L	1	0.22	1.0	3	EPA 8260B	10/03/14 01:19	MSZ	
Bromomethane [74-83-9] ^	0.14	U	ug/L	1	0.14	1.0	10	EPA 8260B	10/03/14 01:19	MSZ	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	10/03/14 01:19	MSZ	
Carbon tetrachloride [56-23-5] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
Chlorobenzene [108-90-7] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 01:19	MSZ	
Chloroethane [75-00-3] ^	0.23	U	ug/L	1	0.23	1.0	10	EPA 8260B	10/03/14 01:19	MSZ	
Chloroform [67-66-3] ^	0.18	U	ug/L	1	0.18	1.0	5	EPA 8260B	10/03/14 01:19	MSZ	
Chloromethane [74-87-3] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
cis-1,2-Dichloroethene [156-59-2] ^	0.15	U	ug/L	1	0.15	1.0	5	EPA 8260B	10/03/14 01:19	MSZ	
cis-1,3-Dichloropropene [10061-01-5] ^	0.20	U	ug/L	1	0.20	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
Dibromochloromethane [124-48-1] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 01:19	MSZ	
Dibromomethane [74-95-3] ^	0.27	U	ug/L	1	0.27	1.0	10	EPA 8260B	10/03/14 01:19	MSZ	
Ethylbenzene [100-41-4] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	10/03/14 01:19	MSZ	
Methylene chloride [75-09-2] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
Styrene [100-42-5] ^	0.11	U	ug/L	1	0.11	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
Tetrachloroethene [127-18-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
Tetrahydrofuran [109-99-9] ^	**10**		ug/L	1	0.80	1.0		EPA 8260B	10/03/14 01:19	MSZ	
Toluene [108-88-3] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
trans-1,2-Dichloroethene [156-60-5] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 01:19	MSZ	
trans-1,3-Dichloropropene [10061-02-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	10/03/14 01:19	MSZ	
Trichloroethene [79-01-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
Trichlorofluoromethane [75-69-4] ^	0.24	U	ug/L	1	0.24	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	10/03/14 01:19	MSZ	

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Description: 9228-MW5 (ms/msd)
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-04
Sampled: 09/29/14 16:14
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.32	U	ug/L	1	0.32	1.0	1	EPA 8260B	10/03/14 01:19	MSZ	
Xylenes (Total) [1330-20-7] ^	0.45	U	ug/L	1	0.45	3.0	5	EPA 8260B	10/03/14 01:19	MSZ	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*58*	*1*	*50.0*	*117 %*	*53-136*	*4J02026*	*EPA 8260B*	*10/03/14 01:19*	*MSZ*	
Dibromofluoromethane	*54*	*1*	*50.0*	*108 %*	*67-129*	*4J02026*	*EPA 8260B*	*10/03/14 01:19*	*MSZ*	
Toluene-d8	*60*	*1*	*50.0*	*119 %*	*59-134*	*4J02026*	*EPA 8260B*	*10/03/14 01:19*	*MSZ*	

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Description: 9228-MW5 (ms/msd)
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-04
Sampled: 09/29/14 16:14
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	10/09/14 13:05	T1D	

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Description: 9228-MW5 (ms/msd) **Lab Sample ID:** C412436-04 **Received:** 09/30/14 15:55

Matrix: Ground Water **Sampled:** 09/29/14 16:14 **Work Order:** C412436

Project: WI- Red Rock **Sampled By:** A. Stoddard

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	**1.27**	JB	ug/L	1	0.220	2.00	6	EPA 6020A	10/03/14 12:09	VLO	J-01
Arsenic [7440-38-2] ^	5.40	U	ug/L	1	5.40	10.0	10	EPA 6010C	10/03/14 11:36	JDH	
Barium [7440-39-3] ^	**137**		ug/L	1	1.00	10.0	100	EPA 6010C	10/03/14 11:36	JDH	
Beryllium [7440-41-7] ^	**0.434**	J	ug/L	1	0.100	1.00	1	EPA 6010C	10/03/14 11:36	JDH	
Cadmium [7440-43-9] ^	**0.948**	J	ug/L	1	0.360	1.00	1	EPA 6010C	10/03/14 11:36	JDH	
Chromium [7440-47-3] ^	**90.9**		ug/L	1	1.40	10.0	10	EPA 6010C	10/03/14 11:36	JDH	
Cobalt [7440-48-4] ^	**20.9**		ug/L	1	1.10	10.0	10	EPA 6010C	10/03/14 11:36	JDH	
Copper [7440-50-8] ^	**4.54**	J	ug/L	1	1.60	10.0	10	EPA 6010C	10/03/14 11:36	JDH	
Iron [7439-89-6] ^	**2150**		ug/L	1	22.0	50.0	300	EPA 6010C	10/03/14 11:36	JDH	
Lead [7439-92-1] ^	2.10	U	ug/L	1	2.10	10.0	10	EPA 6010C	10/03/14 11:36	JDH	
Manganese [7439-96-5] ^	**2520**		ug/L	1	1.10	10.0	50	EPA 6010C	10/03/14 11:36	JDH	
Nickel [7440-02-0] ^	**42.4**	J	ug/L	1	1.80	10.0	50	EPA 6010C	10/03/14 11:36	JDH	
Selenium [7782-49-2] ^	5.00	U	ug/L	1	5.00	10.0	10	EPA 6010C	10/03/14 11:36	JDH	
Silver [7440-22-4] ^	**3.30**	J	ug/L	1	1.90	10.0	10	EPA 6010C	10/03/14 11:36	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	10/03/14 12:09	VLO	
Vanadium [7440-62-2] ^	**2.81**	J	ug/L	1	1.40	10.0	25	EPA 6010C	10/03/14 11:36	JDH	
Zinc [7440-66-6] ^	**24.6**		ug/L	1	3.80	10.0	10	EPA 6010C	10/03/14 11:36	JDH	

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Description:	9228-MW5 (ms/msd)	**Lab Sample ID:**	C412436-04	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 16:14	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Metals (Dissolved) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chromium [7440-47-3] ^	**1.60**	J	ug/L	1	1.00	10.0	10	EPA 6010C	11/21/14 12:32	JDH	

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Description: 9228-MW5 (ms/msd) | **Lab Sample ID:** C412436-04 | **Received:** 09/30/14 15:55

Matrix: Ground Water | **Sampled:** 09/29/14 16:14 | **Work Order:** C412436

Project: WI- Red Rock | **Sampled By:** A. Stoddard

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chloride [16887-00-6] ^	**1200000**		ug/L	1	87000	200000	NE	EPA 300.0	10/02/14 11:28	CV	
Sulfate as SO4 [14808-79-8] ^	**95000**	J	ug/L	1	5800	10000	250000	EPA 300.0	10/02/14 11:11	CV	
Total Alkalinity as CaCO3 [471-34-1] ^	**270000**		ug/L	1	28000	30000	NE	EPA 310.2	10/02/14 08:25	c1v	
Total Dissolved Solids^	**2800000**		ug/L	1	10000	10000	NE	SM 2540C-1997	10/02/14 14:45	MMR	

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Description: 9228-MW6T
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-05
Sampled: 09/29/14 15:15
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.17	U	ug/L	1	0.17	1.0	5	EPA 8260B	10/03/14 03:15	MSZ	
1,1,1-Trichloroethane [71-55-6] ^	0.12	U	ug/L	1	0.12	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.28	U	ug/L	1	0.28	1.0	3	EPA 8260B	10/03/14 03:15	MSZ	
1,1,2-Trichloroethane [79-00-5] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
1,1-Dichloroethane [75-34-3] ^	0.13	U	ug/L	1	0.13	1.0	5	EPA 8260B	10/03/14 03:15	MSZ	
1,1-Dichloroethene [75-35-4] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 03:15	MSZ	
1,2,3-Trichloropropane [96-18-4] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	10/03/14 03:15	MSZ	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
1,2-Dichlorobenzene [95-50-1] ^	0.19	U	ug/L	1	0.19	1.0	5	EPA 8260B	10/03/14 03:15	MSZ	
1,2-Dichloroethane [107-06-2] ^	0.21	U	ug/L	1	0.21	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
1,2-Dichloropropane [78-87-5] ^	0.10	U	ug/L	1	0.10	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
1,4-Dichlorobenzene [106-46-7] ^	0.19	U	ug/L	1	0.19	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	10/03/14 03:15	MSZ	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	10/03/14 03:15	MSZ	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	10/03/14 03:15	MSZ	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	10/03/14 03:15	MSZ	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	10/03/14 03:15	MSZ	
Benzene [71-43-2] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
Bromochloromethane [74-97-5] ^	0.48	U	ug/L	1	0.48	1.0	3	EPA 8260B	10/03/14 03:15	MSZ	
Bromodichloromethane [75-27-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
Bromoform [75-25-2] ^	0.22	U	ug/L	1	0.22	1.0	3	EPA 8260B	10/03/14 03:15	MSZ	
Bromomethane [74-83-9] ^	0.14	U	ug/L	1	0.14	1.0	10	EPA 8260B	10/03/14 03:15	MSZ	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	10/03/14 03:15	MSZ	
Carbon tetrachloride [56-23-5] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
Chlorobenzene [108-90-7] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 03:15	MSZ	
Chloroethane [75-00-3] ^	0.23	U	ug/L	1	0.23	1.0	10	EPA 8260B	10/03/14 03:15	MSZ	
Chloroform [67-66-3] ^	0.18	U	ug/L	1	0.18	1.0	5	EPA 8260B	10/03/14 03:15	MSZ	
Chloromethane [74-87-3] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
cis-1,2-Dichloroethene [156-59-2] ^	0.15	U	ug/L	1	0.15	1.0	5	EPA 8260B	10/03/14 03:15	MSZ	
cis-1,3-Dichloropropene [10061-01-5] ^	0.20	U	ug/L	1	0.20	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
Dibromochloromethane [124-48-1] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 03:15	MSZ	
Dibromomethane [74-95-3] ^	0.27	U	ug/L	1	0.27	1.0	10	EPA 8260B	10/03/14 03:15	MSZ	
Ethylbenzene [100-41-4] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	10/03/14 03:15	MSZ	
Methylene chloride [75-09-2] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
Styrene [100-42-5] ^	0.11	U	ug/L	1	0.11	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
Tetrachloroethene [127-18-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0		EPA 8260B	10/03/14 03:15	MSZ	
Toluene [108-88-3] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
trans-1,2-Dichloroethene [156-60-5] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 03:15	MSZ	
trans-1,3-Dichloropropene [10061-02-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	10/03/14 03:15	MSZ	
Trichloroethene [79-01-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
Trichlorofluoromethane [75-69-4] ^	0.24	U	ug/L	1	0.24	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	10/03/14 03:15	MSZ	

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Description:	9228-MW6T	**Lab Sample ID:**	C412436-05	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 15:15	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.32	U	ug/L	1	0.32	1.0	1	EPA 8260B	10/03/14 03:15	MSZ	
Xylenes (Total) [1330-20-7] ^	0.45	U	ug/L	1	0.45	3.0	5	EPA 8260B	10/03/14 03:15	MSZ	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*57*	*1*	*50.0*	*115 %*	*53-136*	*4J02026*	*EPA 8260B*	*10/03/14 03:15*	*MSZ*	
Dibromofluoromethane	*57*	*1*	*50.0*	*115 %*	*67-129*	*4J02026*	*EPA 8260B*	*10/03/14 03:15*	*MSZ*	
Toluene-d8	*59*	*1*	*50.0*	*119 %*	*59-134*	*4J02026*	*EPA 8260B*	*10/03/14 03:15*	*MSZ*	

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Description:	9228-MW6T	**Lab Sample ID:**	C412436-05	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 15:15	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	10/09/14 13:46	T1D	

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Description: 9228-MW6T
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-05
Sampled: 09/29/14 15:15
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	10/03/14 12:51	VLO	
Arsenic [7440-38-2] ^	5.40	U	ug/L	1	5.40	10.0	10	EPA 6010C	10/03/14 13:00	JDH	
Barium [7440-39-3] ^	**2540**		ug/L	1	1.00	10.0	100	EPA 6010C	10/03/14 13:00	JDH	
Beryllium [7440-41-7] ^	0.100	U	ug/L	1	0.100	1.00	1	EPA 6010C	10/03/14 13:00	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	10/03/14 13:00	JDH	
Chromium [7440-47-3] ^	**2.44**	J	ug/L	1	1.40	10.0	10	EPA 6010C	10/03/14 13:00	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	10/03/14 13:00	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	10/03/14 13:00	JDH	
Iron [7439-89-6] ^	**1040**		ug/L	1	22.0	50.0	300	EPA 6010C	10/03/14 13:00	JDH	
Lead [7439-92-1] ^	2.10	U	ug/L	1	2.10	10.0	10	EPA 6010C	10/03/14 13:00	JDH	
Manganese [7439-96-5] ^	**1770**		ug/L	1	1.10	10.0	50	EPA 6010C	10/03/14 13:00	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	10/03/14 13:00	JDH	
Selenium [7782-49-2] ^	5.00	U	ug/L	1	5.00	10.0	10	EPA 6010C	10/03/14 13:00	JDH	
Silver [7440-22-4] ^	**1.95**	J	ug/L	1	1.90	10.0	10	EPA 6010C	10/03/14 13:00	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	10/03/14 12:51	VLO	
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	10/03/14 13:00	JDH	
Zinc [7440-66-6] ^	3.80	U	ug/L	1	3.80	10.0	10	EPA 6010C	10/03/14 13:00	JDH	

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Description:	9228-MW6T	**Lab Sample ID:**	C412436-05	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 15:15	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Metals (Dissolved) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Barium [7440-39-3] ^	**2410**		ug/L	1	1.00	10.0	100	EPA 6010C	11/21/14 12:35	JDH	

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Description: 9228-MW6T
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-05
Sampled: 09/29/14 15:15
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chloride [16887-00-6] ^	**2100000**	D	ug/L	50	110000	250000	NE	EPA 300.0	10/02/14 17:09	CV	
Sulfate as SO4 [14808-79-8] ^	**12000**	J	ug/L	1	2900	5000	250000	EPA 300.0	10/02/14 16:18	CV	
Total Alkalinity as CaCO3 [471-34-1] ^	**370000**	D	ug/L	5	70000	75000	NE	EPA 310.2	10/02/14 08:39	c1v	
Total Dissolved Solids^	**4300000**		ug/L	1	10000	10000	NE	SM 2540C-1997	10/02/14 14:45	MMR	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

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Description: 9228-MW10 | **Lab Sample ID:** C412436-06 | **Received:** 09/30/14 15:55

Matrix: Ground Water | **Sampled:** 09/29/14 10:25 | **Work Order:** C412436

Project: WI- Red Rock | **Sampled By:** A. Stoddard

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.17	U	ug/L	1	0.17	1.0	5	EPA 8260B	10/03/14 03:45	MSZ	
1,1,1-Trichloroethane [71-55-6] ^	0.12	U	ug/L	1	0.12	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.28	U	ug/L	1	0.28	1.0	3	EPA 8260B	10/03/14 03:45	MSZ	
1,1,2-Trichloroethane [79-00-5] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
1,1-Dichloroethane [75-34-3] ^	0.13	U	ug/L	1	0.13	1.0	5	EPA 8260B	10/03/14 03:45	MSZ	
1,1-Dichloroethene [75-35-4] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 03:45	MSZ	
1,2,3-Trichloropropane [96-18-4] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	10/03/14 03:45	MSZ	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
1,2-Dichlorobenzene [95-50-1] ^	0.19	U	ug/L	1	0.19	1.0	5	EPA 8260B	10/03/14 03:45	MSZ	
1,2-Dichloroethane [107-06-2] ^	0.21	U	ug/L	1	0.21	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
1,2-Dichloropropane [78-87-5] ^	0.10	U	ug/L	1	0.10	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
1,4-Dichlorobenzene [106-46-7] ^	0.19	U	ug/L	1	0.19	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	10/03/14 03:45	MSZ	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	10/03/14 03:45	MSZ	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	10/03/14 03:45	MSZ	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	10/03/14 03:45	MSZ	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	10/03/14 03:45	MSZ	
Benzene [71-43-2] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
Bromochloromethane [74-97-5] ^	0.48	U	ug/L	1	0.48	1.0	3	EPA 8260B	10/03/14 03:45	MSZ	
Bromodichloromethane [75-27-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
Bromoform [75-25-2] ^	0.22	U	ug/L	1	0.22	1.0	3	EPA 8260B	10/03/14 03:45	MSZ	
Bromomethane [74-83-9] ^	0.14	U	ug/L	1	0.14	1.0	10	EPA 8260B	10/03/14 03:45	MSZ	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	10/03/14 03:45	MSZ	
Carbon tetrachloride [56-23-5] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
Chlorobenzene [108-90-7] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 03:45	MSZ	
Chloroethane [75-00-3] ^	0.23	U	ug/L	1	0.23	1.0	10	EPA 8260B	10/03/14 03:45	MSZ	
Chloroform [67-66-3] ^	0.18	U	ug/L	1	0.18	1.0	5	EPA 8260B	10/03/14 03:45	MSZ	
Chloromethane [74-87-3] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
cis-1,2-Dichloroethene [156-59-2] ^	0.15	U	ug/L	1	0.15	1.0	5	EPA 8260B	10/03/14 03:45	MSZ	
cis-1,3-Dichloropropene [10061-01-5] ^	0.20	U	ug/L	1	0.20	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
Dibromochloromethane [124-48-1] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 03:45	MSZ	
Dibromomethane [74-95-3] ^	0.27	U	ug/L	1	0.27	1.0	10	EPA 8260B	10/03/14 03:45	MSZ	
Ethylbenzene [100-41-4] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	10/03/14 03:45	MSZ	
Methylene chloride [75-09-2] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
Styrene [100-42-5] ^	0.11	U	ug/L	1	0.11	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
Tetrachloroethene [127-18-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0		EPA 8260B	10/03/14 03:45	MSZ	
Toluene [108-88-3] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
trans-1,2-Dichloroethene [156-60-5] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 03:45	MSZ	
trans-1,3-Dichloropropene [10061-02-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	10/03/14 03:45	MSZ	
Trichloroethene [79-01-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
Trichlorofluoromethane [75-69-4] ^	0.24	U	ug/L	1	0.24	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	10/03/14 03:45	MSZ	

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Description: 9228-MW10
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-06
Sampled: 09/29/14 10:25
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.32	U	ug/L	1	0.32	1.0	1	EPA 8260B	10/03/14 03:45	MSZ	
Xylenes (Total) [1330-20-7] ^	0.45	U	ug/L	1	0.45	3.0	5	EPA 8260B	10/03/14 03:45	MSZ	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*56*	*1*	*50.0*	*112 %*	*53-136*	*4J02026*	*EPA 8260B*	*10/03/14 03:45*	*MSZ*	
Dibromofluoromethane	*58*	*1*	*50.0*	*116 %*	*67-129*	*4J02026*	*EPA 8260B*	*10/03/14 03:45*	*MSZ*	
Toluene-d8	*62*	*1*	*50.0*	*124 %*	*59-134*	*4J02026*	*EPA 8260B*	*10/03/14 03:45*	*MSZ*	

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Description:	9228-MW10	**Lab Sample ID:**	C412436-06	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 10:25	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	10/09/14 13:53	T1D	

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Description: 9228-MW10 | **Lab Sample ID:** C412436-06 | **Received:** 09/30/14 15:55

Matrix: Ground Water | **Sampled:** 09/29/14 10:25 | **Work Order:** C412436

Project: WI- Red Rock | **Sampled By:** A. Stoddard

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	10/03/14 12:55	VLO	
Arsenic [7440-38-2] ^	5.40	U	ug/L	1	5.40	10.0	10	EPA 6010C	10/03/14 13:03	JDH	
Barium [7440-39-3] ^	**1410**		ug/L	1	1.00	10.0	100	EPA 6010C	10/03/14 13:03	JDH	
Beryllium [7440-41-7] ^	0.100	U	ug/L	1	0.100	1.00	1	EPA 6010C	10/03/14 13:03	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	10/03/14 13:03	JDH	
Chromium [7440-47-3] ^	1.40	U	ug/L	1	1.40	10.0	10	EPA 6010C	10/03/14 13:03	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	10/03/14 13:03	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	10/03/14 13:03	JDH	
Iron [7439-89-6] ^	22.0	U	ug/L	1	22.0	50.0	300	EPA 6010C	10/03/14 13:03	JDH	
Lead [7439-92-1] ^	2.10	U	ug/L	1	2.10	10.0	10	EPA 6010C	10/03/14 13:03	JDH	
Manganese [7439-96-5] ^	**1530**		ug/L	1	1.10	10.0	50	EPA 6010C	10/03/14 13:03	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	10/03/14 13:03	JDH	
Selenium [7782-49-2] ^	5.00	U	ug/L	1	5.00	10.0	10	EPA 6010C	10/03/14 13:03	JDH	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	10/03/14 13:03	JDH	
Thallium [7440-28-0] ^	**0.148**	J	ug/L	1	0.110	1.00	5.5	EPA 6020A	10/03/14 12:55	VLO	
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	10/03/14 13:03	JDH	
Zinc [7440-66-6] ^	3.80	U	ug/L	1	3.80	10.0	10	EPA 6010C	10/03/14 13:03	JDH	

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Description: 9228-MW10
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-06
Sampled: 09/29/14 10:25
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chloride [16887-00-6] ^	**460000**	D	ug/L	10	22000	50000	NE	EPA 300.0	10/02/14 17:43	CV	
Sulfate as SO4 [14808-79-8] ^	**9500**	J	ug/L	1	2900	5000	250000	EPA 300.0	10/02/14 17:26	CV	
Total Alkalinity as CaCO3 [471-34-1] ^	**260000**	D	ug/L	5	70000	75000	NE	EPA 310.2	10/02/14 08:40	c1v	
Total Dissolved Solids^	**1100000**		ug/L	1	10000	10000	NE	SM 2540C-1997	10/02/14 14:45	MMR	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

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Description: 9228-MW11 | **Lab Sample ID:** C412436-07 | **Received:** 09/30/14 15:55

Matrix: Ground Water | **Sampled:** 09/29/14 11:05 | **Work Order:** C412436

Project: WI- Red Rock | **Sampled By:** A. Stoddard

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.17	U	ug/L	1	0.17	1.0	5	EPA 8260B	10/03/14 04:14	MSZ	
1,1,1-Trichloroethane [71-55-6] ^	0.12	U	ug/L	1	0.12	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.28	U	ug/L	1	0.28	1.0	3	EPA 8260B	10/03/14 04:14	MSZ	
1,1,2-Trichloroethane [79-00-5] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
1,1-Dichloroethane [75-34-3] ^	0.13	U	ug/L	1	0.13	1.0	5	EPA 8260B	10/03/14 04:14	MSZ	
1,1-Dichloroethene [75-35-4] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 04:14	MSZ	
1,2,3-Trichloropropane [96-18-4] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	10/03/14 04:14	MSZ	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
1,2-Dichlorobenzene [95-50-1] ^	0.19	U	ug/L	1	0.19	1.0	5	EPA 8260B	10/03/14 04:14	MSZ	
1,2-Dichloroethane [107-06-2] ^	0.21	U	ug/L	1	0.21	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
1,2-Dichloropropane [78-87-5] ^	0.10	U	ug/L	1	0.10	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
1,4-Dichlorobenzene [106-46-7] ^	0.19	U	ug/L	1	0.19	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	10/03/14 04:14	MSZ	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	10/03/14 04:14	MSZ	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	10/03/14 04:14	MSZ	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	10/03/14 04:14	MSZ	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	10/03/14 04:14	MSZ	
Benzene [71-43-2] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
Bromochloromethane [74-97-5] ^	0.48	U	ug/L	1	0.48	1.0	3	EPA 8260B	10/03/14 04:14	MSZ	
Bromodichloromethane [75-27-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
Bromoform [75-25-2] ^	0.22	U	ug/L	1	0.22	1.0	3	EPA 8260B	10/03/14 04:14	MSZ	
Bromomethane [74-83-9] ^	0.14	U	ug/L	1	0.14	1.0	10	EPA 8260B	10/03/14 04:14	MSZ	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	10/03/14 04:14	MSZ	
Carbon tetrachloride [56-23-5] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
Chlorobenzene [108-90-7] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 04:14	MSZ	
Chloroethane [75-00-3] ^	0.23	U	ug/L	1	0.23	1.0	10	EPA 8260B	10/03/14 04:14	MSZ	
Chloroform [67-66-3] ^	0.18	U	ug/L	1	0.18	1.0	5	EPA 8260B	10/03/14 04:14	MSZ	
Chloromethane [74-87-3] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
cis-1,2-Dichloroethene [156-59-2] ^	0.15	U	ug/L	1	0.15	1.0	5	EPA 8260B	10/03/14 04:14	MSZ	
cis-1,3-Dichloropropene [10061-01-5] ^	0.20	U	ug/L	1	0.20	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
Dibromochloromethane [124-48-1] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 04:14	MSZ	
Dibromomethane [74-95-3] ^	0.27	U	ug/L	1	0.27	1.0	10	EPA 8260B	10/03/14 04:14	MSZ	
Ethylbenzene [100-41-4] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	10/03/14 04:14	MSZ	
Methylene chloride [75-09-2] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
Styrene [100-42-5] ^	0.11	U	ug/L	1	0.11	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
Tetrachloroethene [127-18-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0		EPA 8260B	10/03/14 04:14	MSZ	
Toluene [108-88-3] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
trans-1,2-Dichloroethene [156-60-5] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 04:14	MSZ	
trans-1,3-Dichloropropene [10061-02-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	10/03/14 04:14	MSZ	
Trichloroethene [79-01-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
Trichlorofluoromethane [75-69-4] ^	0.24	U	ug/L	1	0.24	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	10/03/14 04:14	MSZ	

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Description: 9228-MW11
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-07
Sampled: 09/29/14 11:05
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.32	U	ug/L	1	0.32	1.0	1	EPA 8260B	10/03/14 04:14	MSZ	
Xylenes (Total) [1330-20-7] ^	0.45	U	ug/L	1	0.45	3.0	5	EPA 8260B	10/03/14 04:14	MSZ	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*56*	*1*	*50.0*	*112 %*	*53-136*	*4J02026*	*EPA 8260B*	*10/03/14 04:14*	*MSZ*	
Dibromofluoromethane	*56*	*1*	*50.0*	*113 %*	*67-129*	*4J02026*	*EPA 8260B*	*10/03/14 04:14*	*MSZ*	
Toluene-d8	*60*	*1*	*50.0*	*120 %*	*59-134*	*4J02026*	*EPA 8260B*	*10/03/14 04:14*	*MSZ*	

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Description:	9228-MW11	**Lab Sample ID:**	C412436-07	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 11:05	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	10/09/14 13:55	T1D	

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Description: 9228-MW11
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-07
Sampled: 09/29/14 11:05
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	10/03/14 12:58	VLO	
Arsenic [7440-38-2] ^	5.40	U	ug/L	1	5.40	10.0	10	EPA 6010C	10/03/14 13:06	JDH	
Barium [7440-39-3] ^	**18.6**	J	ug/L	1	1.00	10.0	100	EPA 6010C	10/03/14 13:06	JDH	
Beryllium [7440-41-7] ^	0.100	U	ug/L	1	0.100	1.00	1	EPA 6010C	10/03/14 13:06	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	10/03/14 13:06	JDH	
Chromium [7440-47-3] ^	1.40	U	ug/L	1	1.40	10.0	10	EPA 6010C	10/03/14 13:06	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	10/03/14 13:06	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	10/03/14 13:06	JDH	
Iron [7439-89-6] ^	**92.0**	J	ug/L	1	22.0	50.0	300	EPA 6010C	10/03/14 13:06	JDH	
Lead [7439-92-1] ^	2.10	U	ug/L	1	2.10	10.0	10	EPA 6010C	10/03/14 13:06	JDH	
Manganese [7439-96-5] ^	**98.4**		ug/L	1	1.10	10.0	50	EPA 6010C	10/03/14 13:06	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	10/03/14 13:06	JDH	
Selenium [7782-49-2] ^	5.00	U	ug/L	1	5.00	10.0	10	EPA 6010C	10/03/14 13:06	JDH	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	10/03/14 13:06	JDH	
Thallium [7440-28-0] ^	**0.260**	J	ug/L	1	0.110	1.00	5.5	EPA 6020A	10/03/14 12:58	VLO	
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	10/03/14 13:06	JDH	
Zinc [7440-66-6] ^	3.80	U	ug/L	1	3.80	10.0	10	EPA 6010C	10/03/14 13:06	JDH	

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Description: 9228-MW11
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-07
Sampled: 09/29/14 11:05
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chloride [16887-00-6] ^	**11000**		ug/L	1	2200	5000	NE	EPA 300.0	10/02/14 18:00	CV	
Sulfate as SO4 [14808-79-8] ^	**13000**	J	ug/L	1	2900	5000	250000	EPA 300.0	10/02/14 18:00	CV	
Total Alkalinity as CaCO3 [471-34-1] ^	**300000**	D	ug/L	2	28000	30000	NE	EPA 310.2	10/02/14 08:40	c1v	
Total Dissolved Solids^	**340000**		ug/L	1	10000	10000	NE	SM 2540C-1997	10/02/14 14:45	MMR	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

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Description: 9228-MW14 | **Lab Sample ID:** C412436-08 | **Received:** 09/30/14 15:55

Matrix: Ground Water | **Sampled:** 09/29/14 11:41 | **Work Order:** C412436

Project: WI- Red Rock | **Sampled By:** A. Stoddard

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.17	U	ug/L	1	0.17	1.0	5	EPA 8260B	10/03/14 04:44	MSZ	
1,1,1-Trichloroethane [71-55-6] ^	0.12	U	ug/L	1	0.12	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.28	U	ug/L	1	0.28	1.0	3	EPA 8260B	10/03/14 04:44	MSZ	
1,1,2-Trichloroethane [79-00-5] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
1,1-Dichloroethane [75-34-3] ^	0.13	U	ug/L	1	0.13	1.0	5	EPA 8260B	10/03/14 04:44	MSZ	
1,1-Dichloroethene [75-35-4] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 04:44	MSZ	
1,2,3-Trichloropropane [96-18-4] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	10/03/14 04:44	MSZ	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
1,2-Dichlorobenzene [95-50-1] ^	0.19	U	ug/L	1	0.19	1.0	5	EPA 8260B	10/03/14 04:44	MSZ	
1,2-Dichloroethane [107-06-2] ^	0.21	U	ug/L	1	0.21	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
1,2-Dichloropropane [78-87-5] ^	0.10	U	ug/L	1	0.10	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
1,4-Dichlorobenzene [106-46-7] ^	0.19	U	ug/L	1	0.19	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	10/03/14 04:44	MSZ	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	10/03/14 04:44	MSZ	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	10/03/14 04:44	MSZ	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	10/03/14 04:44	MSZ	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	10/03/14 04:44	MSZ	
Benzene [71-43-2] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
Bromochloromethane [74-97-5] ^	0.48	U	ug/L	1	0.48	1.0	3	EPA 8260B	10/03/14 04:44	MSZ	
Bromodichloromethane [75-27-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
Bromoform [75-25-2] ^	0.22	U	ug/L	1	0.22	1.0	3	EPA 8260B	10/03/14 04:44	MSZ	
Bromomethane [74-83-9] ^	0.14	U	ug/L	1	0.14	1.0	10	EPA 8260B	10/03/14 04:44	MSZ	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	10/03/14 04:44	MSZ	
Carbon tetrachloride [56-23-5] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
Chlorobenzene [108-90-7] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 04:44	MSZ	
Chloroethane [75-00-3] ^	0.23	U	ug/L	1	0.23	1.0	10	EPA 8260B	10/03/14 04:44	MSZ	
Chloroform [67-66-3] ^	0.18	U	ug/L	1	0.18	1.0	5	EPA 8260B	10/03/14 04:44	MSZ	
Chloromethane [74-87-3] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
cis-1,2-Dichloroethene [156-59-2] ^	0.15	U	ug/L	1	0.15	1.0	5	EPA 8260B	10/03/14 04:44	MSZ	
cis-1,3-Dichloropropene [10061-01-5] ^	0.20	U	ug/L	1	0.20	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
Dibromochloromethane [124-48-1] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 04:44	MSZ	
Dibromomethane [74-95-3] ^	0.27	U	ug/L	1	0.27	1.0	10	EPA 8260B	10/03/14 04:44	MSZ	
Ethylbenzene [100-41-4] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	10/03/14 04:44	MSZ	
Methylene chloride [75-09-2] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
Styrene [100-42-5] ^	0.11	U	ug/L	1	0.11	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
Tetrachloroethene [127-18-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0		EPA 8260B	10/03/14 04:44	MSZ	
Toluene [108-88-3] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
trans-1,2-Dichloroethene [156-60-5] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 04:44	MSZ	
trans-1,3-Dichloropropene [10061-02-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	10/03/14 04:44	MSZ	
Trichloroethene [79-01-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
Trichlorofluoromethane [75-69-4] ^	0.24	U	ug/L	1	0.24	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	10/03/14 04:44	MSZ	

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Description: 9228-MW14
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-08
Sampled: 09/29/14 11:41
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.32	U	ug/L	1	0.32	1.0	1	EPA 8260B	10/03/14 04:44	MSZ	
Xylenes (Total) [1330-20-7] ^	0.45	U	ug/L	1	0.45	3.0	5	EPA 8260B	10/03/14 04:44	MSZ	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*57*	*1*	*50.0*	*115 %*	*53-136*	*4J02026*	*EPA 8260B*	*10/03/14 04:44*	*MSZ*	
Dibromofluoromethane	*54*	*1*	*50.0*	*108 %*	*67-129*	*4J02026*	*EPA 8260B*	*10/03/14 04:44*	*MSZ*	
Toluene-d8	*57*	*1*	*50.0*	*115 %*	*59-134*	*4J02026*	*EPA 8260B*	*10/03/14 04:44*	*MSZ*	

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Description:	9228-MW14	**Lab Sample ID:**	C412436-08	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 11:41	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	10/09/14 13:57	T1D	

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Description: 9228-MW14
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-08
Sampled: 09/29/14 11:41
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	10/03/14 13:02	VLO	
Arsenic [7440-38-2] ^	5.40	U	ug/L	1	5.40	10.0	10	EPA 6010C	10/03/14 13:08	JDH	
Barium [7440-39-3] ^	**70.6**	J	ug/L	1	1.00	10.0	100	EPA 6010C	10/03/14 13:08	JDH	
Beryllium [7440-41-7] ^	0.100	U	ug/L	1	0.100	1.00	1	EPA 6010C	10/03/14 13:08	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	10/03/14 13:08	JDH	
Chromium [7440-47-3] ^	1.40	U	ug/L	1	1.40	10.0	10	EPA 6010C	10/03/14 13:08	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	10/03/14 13:08	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	10/03/14 13:08	JDH	
Iron [7439-89-6] ^	**1950**		ug/L	1	22.0	50.0	300	EPA 6010C	10/03/14 13:08	JDH	
Lead [7439-92-1] ^	2.10	U	ug/L	1	2.10	10.0	10	EPA 6010C	10/03/14 13:08	JDH	
Manganese [7439-96-5] ^	**42.2**	J	ug/L	1	1.10	10.0	50	EPA 6010C	10/03/14 13:08	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	10/03/14 13:08	JDH	
Selenium [7782-49-2] ^	5.00	U	ug/L	1	5.00	10.0	10	EPA 6010C	10/03/14 13:08	JDH	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	11/20/14 12:23	JDH	
Thallium [7440-28-0] ^	**0.227**	J	ug/L	1	0.110	1.00	5.5	EPA 6020A	10/03/14 13:02	VLO	
Vanadium [7440-62-2] ^	**10.1**	J	ug/L	1	1.40	10.0	25	EPA 6010C	10/03/14 13:08	JDH	
Zinc [7440-66-6] ^	**8.84**	J	ug/L	1	3.80	10.0	10	EPA 6010C	10/03/14 13:08	JDH	

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Description:	9228-MW14	**Lab Sample ID:**	C412436-08	**Received:**	09/30/14 15:55
Matrix:	Ground Water	**Sampled:**	09/29/14 11:41	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**	A. Stoddard		

Metals (Dissolved) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	11/21/14 12:38	JDH	

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Description: 9228-MW14
Matrix: Ground Water
Project: WI- Red Rock

Lab Sample ID: C412436-08
Sampled: 09/29/14 11:41
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chloride [16887-00-6] ^	**30000**		ug/L	1	2200	5000	NE	EPA 300.0	10/02/14 18:17	CV	
Sulfate as SO4 [14808-79-8] ^	**12000**	J	ug/L	1	2900	5000	250000	EPA 300.0	10/02/14 18:17	CV	
Total Alkalinity as CaCO3 [471-34-1] ^	**240000**	D	ug/L	2	28000	30000	NE	EPA 310.2	10/02/14 08:41	c1v	
Total Dissolved Solids^	**340000**		ug/L	1	10000	10000	NE	SM 2540C-1997	10/02/14 14:45	MMR	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

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Description: 9228-SW2 | **Lab Sample ID:** C412436-09 | **Received:** 09/30/14 15:55

Matrix: Surface Water | **Sampled:** 09/29/14 13:05 | **Work Order:** C412436

Project: WI- Red Rock | **Sampled By:**

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.17	U	ug/L	1	0.17	1.0	5	EPA 8260B	10/03/14 05:13	MSZ	
1,1,1-Trichloroethane [71-55-6] ^	0.12	U	ug/L	1	0.12	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.28	U	ug/L	1	0.28	1.0	3	EPA 8260B	10/03/14 05:13	MSZ	
1,1,2-Trichloroethane [79-00-5] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
1,1-Dichloroethane [75-34-3] ^	0.13	U	ug/L	1	0.13	1.0	5	EPA 8260B	10/03/14 05:13	MSZ	
1,1-Dichloroethene [75-35-4] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 05:13	MSZ	
1,2,3-Trichloropropane [96-18-4] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	10/03/14 05:13	MSZ	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
1,2-Dichlorobenzene [95-50-1] ^	0.19	U	ug/L	1	0.19	1.0	5	EPA 8260B	10/03/14 05:13	MSZ	
1,2-Dichloroethane [107-06-2] ^	0.21	U	ug/L	1	0.21	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
1,2-Dichloropropane [78-87-5] ^	0.10	U	ug/L	1	0.10	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
1,4-Dichlorobenzene [106-46-7] ^	0.19	U	ug/L	1	0.19	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	10/03/14 05:13	MSZ	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	10/03/14 05:13	MSZ	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	10/03/14 05:13	MSZ	
Acetone [67-64-1] ^	**12**	J	ug/L	1	1.2	5.0	100	EPA 8260B	10/03/14 05:13	MSZ	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	10/03/14 05:13	MSZ	
Benzene [71-43-2] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
Bromochloromethane [74-97-5] ^	0.48	U	ug/L	1	0.48	1.0	3	EPA 8260B	10/03/14 05:13	MSZ	
Bromodichloromethane [75-27-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
Bromoform [75-25-2] ^	0.22	U	ug/L	1	0.22	1.0	3	EPA 8260B	10/03/14 05:13	MSZ	
Bromomethane [74-83-9] ^	0.14	U	ug/L	1	0.14	1.0	10	EPA 8260B	10/03/14 05:13	MSZ	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	10/03/14 05:13	MSZ	
Carbon tetrachloride [56-23-5] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
Chlorobenzene [108-90-7] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 05:13	MSZ	
Chloroethane [75-00-3] ^	0.23	U	ug/L	1	0.23	1.0	10	EPA 8260B	10/03/14 05:13	MSZ	
Chloroform [67-66-3] ^	0.18	U	ug/L	1	0.18	1.0	5	EPA 8260B	10/03/14 05:13	MSZ	
Chloromethane [74-87-3] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
cis-1,2-Dichloroethene [156-59-2] ^	0.15	U	ug/L	1	0.15	1.0	5	EPA 8260B	10/03/14 05:13	MSZ	
cis-1,3-Dichloropropene [10061-01-5] ^	0.20	U	ug/L	1	0.20	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
Dibromochloromethane [124-48-1] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 05:13	MSZ	
Dibromomethane [74-95-3] ^	0.27	U	ug/L	1	0.27	1.0	10	EPA 8260B	10/03/14 05:13	MSZ	
Ethylbenzene [100-41-4] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	10/03/14 05:13	MSZ	
Methylene chloride [75-09-2] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
Styrene [100-42-5] ^	0.11	U	ug/L	1	0.11	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
Tetrachloroethene [127-18-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0		EPA 8260B	10/03/14 05:13	MSZ	
Toluene [108-88-3] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
trans-1,2-Dichloroethene [156-60-5] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 05:13	MSZ	
trans-1,3-Dichloropropene [10061-02-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	10/03/14 05:13	MSZ	
Trichloroethene [79-01-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
Trichlorofluoromethane [75-69-4] ^	0.24	U	ug/L	1	0.24	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	10/03/14 05:13	MSZ	

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Description:	9228-SW2	**Lab Sample ID:**	C412436-09	**Received:**	09/30/14 15:55
Matrix:	Surface Water	**Sampled:**	09/29/14 13:05	**Work Order:**	C412436
Project:	WI- Red Rock	**Sampled By:**			

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.32	U	ug/L	1	0.32	1.0	1	EPA 8260B	10/03/14 05:13	MSZ	
Xylenes (Total) [1330-20-7] ^	0.45	U	ug/L	1	0.45	3.0	5	EPA 8260B	10/03/14 05:13	MSZ	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*61*	*1*	*50.0*	*122 %*	*53-136*	*4J02026*	*EPA 8260B*	*10/03/14 05:13*	*MSZ*	
Dibromofluoromethane	*52*	*1*	*50.0*	*104 %*	*67-129*	*4J02026*	*EPA 8260B*	*10/03/14 05:13*	*MSZ*	
Toluene-d8	*58*	*1*	*50.0*	*115 %*	*59-134*	*4J02026*	*EPA 8260B*	*10/03/14 05:13*	*MSZ*	

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Description: 9228-SW2 | **Lab Sample ID:** C412436-09 | **Received:** 09/30/14 15:55

Matrix: Surface Water | **Sampled:** 09/29/14 13:05 | **Work Order:** C412436

Project: WI- Red Rock | **Sampled By:**

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	**0.541**	JB	ug/L	1	0.220	2.00	6	EPA 6020A	10/03/14 13:05	VLO	J-01
Arsenic [7440-38-2] ^	**14.3**		ug/L	1	5.40	10.0	10	EPA 6010C	10/03/14 13:11	JDH	
Barium [7440-39-3] ^	**180**		ug/L	1	1.00	10.0	100	EPA 6010C	10/03/14 13:11	JDH	
Beryllium [7440-41-7] ^	0.100	U	ug/L	1	0.100	1.00	1	EPA 6010C	10/03/14 13:11	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	10/03/14 13:11	JDH	
Chromium [7440-47-3] ^	**14.2**		ug/L	1	1.40	10.0	10	EPA 6010C	10/03/14 13:11	JDH	
Cobalt [7440-48-4] ^	**3.81**	J	ug/L	1	1.10	10.0	10	EPA 6010C	10/03/14 13:11	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	10/03/14 13:11	JDH	
Lead [7439-92-1] ^	2.10	U	ug/L	1	2.10	10.0	10	EPA 6010C	10/03/14 13:11	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	10/03/14 13:11	JDH	
Selenium [7782-49-2] ^	5.00	U	ug/L	1	5.00	10.0	10	EPA 6010C	10/03/14 13:11	JDH	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	10/03/14 13:11	JDH	
Thallium [7440-28-0] ^	**0.162**	J	ug/L	1	0.110	1.00	5.5	EPA 6020A	10/03/14 13:05	VLO	
Vanadium [7440-62-2] ^	**13.7**	J	ug/L	1	1.40	10.0	25	EPA 6010C	10/03/14 13:11	JDH	
Zinc [7440-66-6] ^	**7.74**	J	ug/L	1	3.80	10.0	10	EPA 6010C	10/03/14 13:11	JDH	

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Description: 9228-Field Blank
Matrix: Water
Project: WI- Red Rock

Lab Sample ID: C412436-10
Sampled: 09/29/14 17:05
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.17	U	ug/L	1	0.17	1.0	5	EPA 8260B	10/03/14 08:44	MSZ	
1,1,1-Trichloroethane [71-55-6] ^	0.12	U	ug/L	1	0.12	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.28	U	ug/L	1	0.28	1.0	3	EPA 8260B	10/03/14 08:44	MSZ	
1,1,2-Trichloroethane [79-00-5] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
1,1-Dichloroethane [75-34-3] ^	0.13	U	ug/L	1	0.13	1.0	5	EPA 8260B	10/03/14 08:44	MSZ	
1,1-Dichloroethene [75-35-4] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 08:44	MSZ	
1,2,3-Trichloropropane [96-18-4] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	10/03/14 08:44	MSZ	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
1,2-Dichlorobenzene [95-50-1] ^	0.19	U	ug/L	1	0.19	1.0	5	EPA 8260B	10/03/14 08:44	MSZ	
1,2-Dichloroethane [107-06-2] ^	0.21	U	ug/L	1	0.21	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
1,2-Dichloropropane [78-87-5] ^	0.10	U	ug/L	1	0.10	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
1,4-Dichlorobenzene [106-46-7] ^	0.19	U	ug/L	1	0.19	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	10/03/14 08:44	MSZ	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	10/03/14 08:44	MSZ	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	10/03/14 08:44	MSZ	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	10/03/14 08:44	MSZ	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	10/03/14 08:44	MSZ	
Benzene [71-43-2] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
Bromochloromethane [74-97-5] ^	0.48	U	ug/L	1	0.48	1.0	3	EPA 8260B	10/03/14 08:44	MSZ	
Bromodichloromethane [75-27-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
Bromoform [75-25-2] ^	0.22	U	ug/L	1	0.22	1.0	3	EPA 8260B	10/03/14 08:44	MSZ	
Bromomethane [74-83-9] ^	0.14	U	ug/L	1	0.14	1.0	10	EPA 8260B	10/03/14 08:44	MSZ	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	10/03/14 08:44	MSZ	
Carbon tetrachloride [56-23-5] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
Chlorobenzene [108-90-7] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 08:44	MSZ	
Chloroethane [75-00-3] ^	0.23	U	ug/L	1	0.23	1.0	10	EPA 8260B	10/03/14 08:44	MSZ	
Chloroform [67-66-3] ^	0.18	U	ug/L	1	0.18	1.0	5	EPA 8260B	10/03/14 08:44	MSZ	
Chloromethane [74-87-3] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
cis-1,2-Dichloroethene [156-59-2] ^	0.15	U	ug/L	1	0.15	1.0	5	EPA 8260B	10/03/14 08:44	MSZ	
cis-1,3-Dichloropropene [10061-01-5] ^	0.20	U	ug/L	1	0.20	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
Dibromochloromethane [124-48-1] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 08:44	MSZ	
Dibromomethane [74-95-3] ^	0.27	U	ug/L	1	0.27	1.0	10	EPA 8260B	10/03/14 08:44	MSZ	
Ethylbenzene [100-41-4] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	10/03/14 08:44	MSZ	
Methylene chloride [75-09-2] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
Styrene [100-42-5] ^	0.11	U	ug/L	1	0.11	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
Tetrachloroethene [127-18-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
Tetrahydrofuran [109-99-9] ^	**1.7**		ug/L	1	0.80	1.0		EPA 8260B	10/03/14 08:44	MSZ	
Toluene [108-88-3] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
trans-1,2-Dichloroethene [156-60-5] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 08:44	MSZ	
trans-1,3-Dichloropropene [10061-02-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	10/03/14 08:44	MSZ	
Trichloroethene [79-01-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
Trichlorofluoromethane [75-69-4] ^	0.24	U	ug/L	1	0.24	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	10/03/14 08:44	MSZ	

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Description: 9228-Field Blank
Matrix: Water
Project: WI- Red Rock

Lab Sample ID: C412436-10
Sampled: 09/29/14 17:05
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.32	U	ug/L	1	0.32	1.0	1	EPA 8260B	10/03/14 08:44	MSZ	
Xylenes (Total) [1330-20-7] ^	0.45	U	ug/L	1	0.45	3.0	5	EPA 8260B	10/03/14 08:44	MSZ	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*63*	*1*	*50.0*	*126 %*	*53-136*	*4J02026*	*EPA 8260B*	*10/03/14 08:44*	*MSZ*	
Dibromofluoromethane	*53*	*1*	*50.0*	*107 %*	*67-129*	*4J02026*	*EPA 8260B*	*10/03/14 08:44*	*MSZ*	
Toluene-d8	*58*	*1*	*50.0*	*117 %*	*59-134*	*4J02026*	*EPA 8260B*	*10/03/14 08:44*	*MSZ*	

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Description: 9228-Field Blank
Matrix: Water
Project: WI- Red Rock

Lab Sample ID: C412436-10
Sampled: 09/29/14 17:05
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	10/09/14 13:59	T1D	

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Description: 9228-Field Blank
Matrix: Water
Project: WI- Red Rock

Lab Sample ID: C412436-10
Sampled: 09/29/14 17:05
Sampled By: A. Stoddard

Received: 09/30/14 15:55
Work Order: C412436

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	10/03/14 13:09	VLO	
Arsenic [7440-38-2] ^	5.40	U	ug/L	1	5.40	10.0	10	EPA 6010C	10/03/14 13:13	JDH	
Barium [7440-39-3] ^	1.00	U	ug/L	1	1.00	10.0	100	EPA 6010C	10/03/14 13:13	JDH	
Beryllium [7440-41-7] ^	0.100	U	ug/L	1	0.100	1.00	1	EPA 6010C	10/03/14 13:13	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	10/03/14 13:13	JDH	
Chromium [7440-47-3] ^	1.40	U	ug/L	1	1.40	10.0	10	EPA 6010C	10/03/14 13:13	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	10/03/14 13:13	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	10/03/14 13:13	JDH	
Iron [7439-89-6] ^	22.0	U	ug/L	1	22.0	50.0	300	EPA 6010C	10/03/14 13:13	JDH	
Lead [7439-92-1] ^	2.10	U	ug/L	1	2.10	10.0	10	EPA 6010C	10/03/14 13:13	JDH	
Manganese [7439-96-5] ^	1.10	U	ug/L	1	1.10	10.0	50	EPA 6010C	10/03/14 13:13	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	10/03/14 13:13	JDH	
Selenium [7782-49-2] ^	5.00	U	ug/L	1	5.00	10.0	10	EPA 6010C	10/03/14 13:13	JDH	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	10/03/14 13:13	JDH	
Thallium [7440-28-0] ^	**0.253**	J	ug/L	1	0.110	1.00	5.5	EPA 6020A	10/03/14 13:09	VLO	
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	10/03/14 13:13	JDH	
Zinc [7440-66-6] ^	3.80	U	ug/L	1	3.80	10.0	10	EPA 6010C	10/03/14 13:13	JDH	

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Description: 9228-Trip Blank
Matrix: Water
Project: WI- Red Rock

Lab Sample ID: C412436-11
Sampled: 09/29/14 10:25
Sampled By: ENCO

Received: 09/30/14 15:55
Work Order: C412436

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.17	U	ug/L	1	0.17	1.0	5	EPA 8260B	10/03/14 09:13	MSZ	
1,1,1-Trichloroethane [71-55-6] ^	0.12	U	ug/L	1	0.12	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.28	U	ug/L	1	0.28	1.0	3	EPA 8260B	10/03/14 09:13	MSZ	
1,1,2-Trichloroethane [79-00-5] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
1,1-Dichloroethane [75-34-3] ^	0.13	U	ug/L	1	0.13	1.0	5	EPA 8260B	10/03/14 09:13	MSZ	
1,1-Dichloroethene [75-35-4] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 09:13	MSZ	
1,2,3-Trichloropropane [96-18-4] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	10/03/14 09:13	MSZ	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
1,2-Dichlorobenzene [95-50-1] ^	0.19	U	ug/L	1	0.19	1.0	5	EPA 8260B	10/03/14 09:13	MSZ	
1,2-Dichloroethane [107-06-2] ^	0.21	U	ug/L	1	0.21	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
1,2-Dichloropropane [78-87-5] ^	0.10	U	ug/L	1	0.10	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
1,4-Dichlorobenzene [106-46-7] ^	0.19	U	ug/L	1	0.19	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	10/03/14 09:13	MSZ	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	10/03/14 09:13	MSZ	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	10/03/14 09:13	MSZ	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	10/03/14 09:13	MSZ	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	10/03/14 09:13	MSZ	
Benzene [71-43-2] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
Bromochloromethane [74-97-5] ^	0.48	U	ug/L	1	0.48	1.0	3	EPA 8260B	10/03/14 09:13	MSZ	
Bromodichloromethane [75-27-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
Bromoform [75-25-2] ^	0.22	U	ug/L	1	0.22	1.0	3	EPA 8260B	10/03/14 09:13	MSZ	
Bromomethane [74-83-9] ^	0.14	U	ug/L	1	0.14	1.0	10	EPA 8260B	10/03/14 09:13	MSZ	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	10/03/14 09:13	MSZ	
Carbon tetrachloride [56-23-5] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
Chlorobenzene [108-90-7] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 09:13	MSZ	
Chloroethane [75-00-3] ^	0.23	U	ug/L	1	0.23	1.0	10	EPA 8260B	10/03/14 09:13	MSZ	
Chloroform [67-66-3] ^	0.18	U	ug/L	1	0.18	1.0	5	EPA 8260B	10/03/14 09:13	MSZ	
Chloromethane [74-87-3] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
cis-1,2-Dichloroethene [156-59-2] ^	0.15	U	ug/L	1	0.15	1.0	5	EPA 8260B	10/03/14 09:13	MSZ	
cis-1,3-Dichloropropene [10061-01-5] ^	0.20	U	ug/L	1	0.20	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
Dibromochloromethane [124-48-1] ^	0.17	U	ug/L	1	0.17	1.0	3	EPA 8260B	10/03/14 09:13	MSZ	
Dibromomethane [74-95-3] ^	0.27	U	ug/L	1	0.27	1.0	10	EPA 8260B	10/03/14 09:13	MSZ	
Ethylbenzene [100-41-4] ^	0.13	U	ug/L	1	0.13	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	10/03/14 09:13	MSZ	
Methylene chloride [75-09-2] ^	0.23	U	ug/L	1	0.23	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
Styrene [100-42-5] ^	0.11	U	ug/L	1	0.11	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
Tetrachloroethene [127-18-4] ^	0.17	U	ug/L	1	0.17	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0		EPA 8260B	10/03/14 09:13	MSZ	
Toluene [108-88-3] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
trans-1,2-Dichloroethene [156-60-5] ^	0.21	U	ug/L	1	0.21	1.0	5	EPA 8260B	10/03/14 09:13	MSZ	
trans-1,3-Dichloropropene [10061-02-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	10/03/14 09:13	MSZ	
Trichloroethene [79-01-6] ^	0.15	U	ug/L	1	0.15	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
Trichlorofluoromethane [75-69-4] ^	0.24	U	ug/L	1	0.24	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	10/03/14 09:13	MSZ	

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Description: 9228-Trip Blank
Matrix: Water
Project: WI- Red Rock

Lab Sample ID: C412436-11
Sampled: 09/29/14 10:25
Sampled By: ENCO

Received: 09/30/14 15:55
Work Order: C412436

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.32	U	ug/L	1	0.32	1.0	1	EPA 8260B	10/03/14 09:13	MSZ	
Xylenes (Total) [1330-20-7] ^	0.45	U	ug/L	1	0.45	3.0	5	EPA 8260B	10/03/14 09:13	MSZ	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*60*	*1*	*50.0*	*120 %*	*53-136*	*4J02026*	*EPA 8260B*	*10/03/14 09:13*	*MSZ*	
Dibromofluoromethane	*56*	*1*	*50.0*	*113 %*	*67-129*	*4J02026*	*EPA 8260B*	*10/03/14 09:13*	*MSZ*	
Toluene-d8	*60*	*1*	*50.0*	*120 %*	*59-134*	*4J02026*	*EPA 8260B*	*10/03/14 09:13*	*MSZ*	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

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QUALITY CONTROL

Volatile Organic Compounds by GCMS - Quality Control

Batch 4J02026 - EPA 5030B_MS

Blank (4J02026-BLK1) Prepared: 10/02/2014 13:18 Analyzed: 10/02/2014 23:20

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	0.17	U	1.0	ug/L							
1,1,1-Trichloroethane	0.12	U	1.0	ug/L							
1,1,2,2-Tetrachloroethane	0.28	U	1.0	ug/L							
1,1,2-Trichloroethane	0.14	U	1.0	ug/L							
1,1-Dichloroethane	0.13	U	1.0	ug/L							
1,1-Dichloroethene	0.21	U	1.0	ug/L							
1,2,3-Trichloropropane	0.23	U	1.0	ug/L							
1,2-Dibromo-3-chloropropane	0.48	U	1.0	ug/L							
1,2-Dibromoethane	0.66	U	1.0	ug/L							
1,2-Dichlorobenzene	0.19	U	1.0	ug/L							
1,2-Dichloroethane	0.21	U	1.0	ug/L							
1,2-Dichloropropane	0.10	U	1.0	ug/L							
1,4-Dichlorobenzene	0.19	U	1.0	ug/L							
2-Butanone	1.3	U	5.0	ug/L							
2-Hexanone	0.88	U	5.0	ug/L							
4-Methyl-2-pentanone	1.1	U	5.0	ug/L							
Acetone	1.2	U	5.0	ug/L							
Acrylonitrile	3.5	U	10	ug/L							
Benzene	0.15	U	1.0	ug/L							
Bromochloromethane	0.48	U	1.0	ug/L							
Bromodichloromethane	0.17	U	1.0	ug/L							
Bromoform	0.22	U	1.0	ug/L							
Bromomethane	0.14	U	1.0	ug/L							
Carbon disulfide	1.5	U	5.0	ug/L							
Carbon tetrachloride	0.17	U	1.0	ug/L							
Chlorobenzene	0.17	U	1.0	ug/L							
Chloroethane	0.23	U	1.0	ug/L							
Chloroform	0.18	U	1.0	ug/L							
Chloromethane	0.13	U	1.0	ug/L							
cis-1,2-Dichloroethene	0.15	U	1.0	ug/L							
cis-1,3-Dichloropropene	0.20	U	1.0	ug/L							
Dibromochloromethane	0.17	U	1.0	ug/L							
Dibromomethane	0.27	U	1.0	ug/L							
Ethylbenzene	0.13	U	1.0	ug/L							
Iodomethane	1.7	U	5.0	ug/L							
Methylene chloride	0.23	U	1.0	ug/L							
Styrene	0.11	U	1.0	ug/L							
Tetrachloroethene	0.17	U	1.0	ug/L							
Tetrahydrofuran	0.80	U	1.0	ug/L							
Toluene	0.14	U	1.0	ug/L							
trans-1,2-Dichloroethene	0.21	U	1.0	ug/L							
trans-1,3-Dichloropropene	0.15	U	1.0	ug/L							
trans-1,4-Dichloro-2-butene	0.70	U	1.0	ug/L							
Trichloroethene	0.15	U	1.0	ug/L							
Trichlorofluoromethane	0.24	U	1.0	ug/L							
Vinyl acetate	0.95	U	5.0	ug/L							
Vinyl chloride	0.32	U	1.0	ug/L							
Xylenes (Total)	0.45	U	3.0	ug/L							

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QUALITY CONTROL

Volatile Organic Compounds by GCMS - Quality Control

Batch 4J02026 - EPA 5030B_MS

Blank (4J02026-BLK1) Continued Prepared: 10/02/2014 13:18 Analyzed: 10/02/2014 23:20

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Surrogate: 4-Bromofluorobenzene	*59*			*ug/L*	*50.0*		*118*	*53-136*			
Surrogate: Dibromofluoromethane	*52*			*ug/L*	*50.0*		*104*	*67-129*			
Surrogate: Toluene-d8	*58*			*ug/L*	*50.0*		*116*	*59-134*			

LCS (4J02026-BS1) Prepared: 10/02/2014 13:18 Analyzed: 10/02/2014 23:50

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	22		1.0	ug/L	20.0		111	75-133			
Benzene	21		1.0	ug/L	20.0		107	81-134			
Chlorobenzene	19		1.0	ug/L	20.0		96	83-117			
Toluene	18		1.0	ug/L	20.0		89	71-118			
Trichloroethene	20		1.0	ug/L	20.0		98	74-119			

Matrix Spike (4J02026-MS1) Prepared: 10/02/2014 13:18 Analyzed: 10/03/2014 00:20

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	28		1.0	ug/L	20.0	0.21 U	141	75-133			QM-07
Benzene	24		1.0	ug/L	20.0	0.15 U	119	81-134			
Chlorobenzene	22		1.0	ug/L	20.0	0.17 U	108	83-117			
Toluene	22		1.0	ug/L	20.0	0.14 U	108	71-118			
Trichloroethene	25		1.0	ug/L	20.0	0.15 U	125	74-119			QM-07

Matrix Spike Dup (4J02026-MSD1) Prepared: 10/02/2014 13:18 Analyzed: 10/03/2014 00:49

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	27		1.0	ug/L	20.0	0.21 U	136	75-133	4	20	QM-07
Benzene	24		1.0	ug/L	20.0	0.15 U	118	81-134	1	17	
Chlorobenzene	22		1.0	ug/L	20.0	0.17 U	112	83-117	4	16	
Toluene	20		1.0	ug/L	20.0	0.14 U	101	71-118	7	17	
Trichloroethene	25		1.0	ug/L	20.0	0.15 U	126	74-119	0.8	22	QM-07

Metals by EPA 6000/7000 Series Methods - Quality Control

Batch 4J07023 - EPA 7470A

Blank (4J07023-BLK1) Prepared: 10/07/2014 14:06 Analyzed: 10/09/2014 13:01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	0.170	U	0.200	ug/L							

Blank (4J07023-BLK2) Prepared: 10/07/2014 14:06 Analyzed: 10/09/2014 13:16

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	3.40	U	4.00	ug/L							

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QUALITY CONTROL

Metals by EPA 6000/7000 Series Methods - Quality Control

Batch 4J07023 - EPA 7470A

LCS (4J07023-BS1) Prepared: 10/07/2014 14:06 Analyzed: 10/09/2014 13:03

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.31		0.200	ug/L	5.00		86	80-120			

Matrix Spike (4J07023-MS1) Prepared: 10/07/2014 14:06 Analyzed: 10/09/2014 13:08

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	3.90		0.200	ug/L	5.00	0.170 U	78	75-125			

Matrix Spike Dup (4J07023-MSD1) Prepared: 10/07/2014 14:06 Analyzed: 10/09/2014 13:10

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	3.53		0.200	ug/L	5.00	0.170 U	71	75-125	10	25	QM-07

Post Spike (4J07023-PS1) Prepared: 10/07/2014 14:06 Analyzed: 10/09/2014 13:12

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.01		0.200	ug/L	5.00	0.00900	80	75-125			

Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control

Batch 4J01018 - EPA 3005A

Blank (4J01018-BLK1) Prepared: 10/01/2014 11:56 Analyzed: 10/03/2014 12:02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	**0.421**	**J**	2.00	ug/L							
Thallium	0.110	U	1.00	ug/L							

LCS (4J01018-BS1) Prepared: 10/01/2014 11:56 Analyzed: 10/03/2014 12:06

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	197	B	2.00	ug/L	200		99	80-120			
Thallium	209		1.00	ug/L	200		105	80-120			

Matrix Spike (4J01018-MS1) Prepared: 10/01/2014 11:56 Analyzed: 10/03/2014 12:13

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	199	B	2.00	ug/L	200	1.27	99	75-125			
Thallium	129		1.00	ug/L	200	0.110 U	65	75-125			QM-05

Matrix Spike Dup (4J01018-MSD1) Prepared: 10/01/2014 11:56 Analyzed: 10/03/2014 12:17

Source: C412436-04

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

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QUALITY CONTROL

Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control

Batch 4J01018 - EPA 3005A

Matrix Spike Dup (4J01018-MSD1) Continued Prepared: 10/01/2014 11:56 Analyzed: 10/03/2014 12:17

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	195	B	2.00	ug/L	200	1.27	97	75-125	2	20	
Thallium	126		1.00	ug/L	200	0.110 U	63	75-125	2	20	QM-05

Post Spike (4J01018-PS1) Prepared: 10/01/2014 11:56 Analyzed: 10/03/2014 12:20

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	182	B	2.00	ug/L	200	1.27	90	80-120			
Thallium	132		1.00	ug/L	200	0.0425	66	80-120			QM-08

Batch 4J02009 - EPA 3005A

Blank (4J02009-BLK1) Prepared: 10/02/2014 10:22 Analyzed: 10/03/2014 11:26

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	5.40	U	10.0	ug/L							
Barium	1.00	U	10.0	ug/L							
Beryllium	0.100	U	1.00	ug/L							
Cadmium	0.360	U	1.00	ug/L							
Chromium	1.40	U	10.0	ug/L							
Cobalt	1.10	U	10.0	ug/L							
Copper	1.60	U	10.0	ug/L							
Iron	22.0	U	50.0	ug/L							
Lead	2.10	U	10.0	ug/L							
Manganese	1.10	U	10.0	ug/L							
Nickel	1.80	U	10.0	ug/L							
Selenium	5.00	U	10.0	ug/L							
Silver	1.90	U	10.0	ug/L							
Vanadium	1.40	U	10.0	ug/L							
Zinc	3.80	U	10.0	ug/L							

LCS (4J02009-BS1) Prepared: 10/02/2014 10:22 Analyzed: 10/03/2014 11:29

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	197		10.0	ug/L	200		99	80-120			
Barium	207		10.0	ug/L	200		103	80-120			
Beryllium	19.9		1.00	ug/L	20.0		99	80-120			
Cadmium	20.9		1.00	ug/L	20.0		105	80-120			
Chromium	196		10.0	ug/L	200		98	80-120			
Cobalt	205		10.0	ug/L	200		102	80-120			
Copper	191		10.0	ug/L	200		95	80-120			
Iron	1030		50.0	ug/L	1000		103	80-120			
Lead	202		10.0	ug/L	200		101	80-120			
Manganese	198		10.0	ug/L	200		99	80-120			
Nickel	208		10.0	ug/L	200		104	80-120			
Selenium	197		10.0	ug/L	200		98	80-120			
Silver	197		10.0	ug/L	200		98	80-120			

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QUALITY CONTROL

Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control

Batch 4J02009 - EPA 3005A

LCS (4J02009-BS1) Continued Prepared: 10/02/2014 10:22 Analyzed: 10/03/2014 11:29

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Vanadium	190		10.0	ug/L	200		95	80-120			
Zinc	212		10.0	ug/L	200		106	80-120			

Matrix Spike (4J02009-MS1) Prepared: 10/02/2014 10:22 Analyzed: 10/03/2014 11:39

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	199		10.0	ug/L	200	5.40 U	99	75-125			
Barium	331		10.0	ug/L	200	137	97	75-125			
Beryllium	19.8		1.00	ug/L	20.0	0.434	97	75-125			
Cadmium	20.2		1.00	ug/L	20.0	0.948	96	75-125			
Chromium	274		10.0	ug/L	200	90.9	91	75-125			
Cobalt	211		10.0	ug/L	200	20.9	95	75-125			
Copper	200		10.0	ug/L	200	4.54	98	75-125			
Iron	2940		50.0	ug/L	1000	2150	79	75-125			
Lead	189		10.0	ug/L	200	2.10 U	94	75-125			
Manganese	2560		10.0	ug/L	200	2520	20	75-125			QM-05
Nickel	233		10.0	ug/L	200	42.4	95	75-125			
Selenium	201		10.0	ug/L	200	5.00 U	100	75-125			
Silver	200		10.0	ug/L	200	3.30	98	75-125			
Vanadium	188		10.0	ug/L	200	2.81	93	75-125			
Zinc	220		10.0	ug/L	200	24.6	98	75-125			

Matrix Spike Dup (4J02009-MSD1) Prepared: 10/02/2014 10:22 Analyzed: 10/03/2014 11:41

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	211		10.0	ug/L	200	5.40 U	106	75-125	6	20	
Barium	340		10.0	ug/L	200	137	102	75-125	3	20	
Beryllium	20.8		1.00	ug/L	20.0	0.434	102	75-125	5	20	
Cadmium	21.1		1.00	ug/L	20.0	0.948	101	75-125	4	20	
Chromium	282		10.0	ug/L	200	90.9	95	75-125	3	20	
Cobalt	220		10.0	ug/L	200	20.9	100	75-125	4	20	
Copper	207		10.0	ug/L	200	4.54	101	75-125	4	20	
Iron	3000		50.0	ug/L	1000	2150	85	75-125	2	20	
Lead	197		10.0	ug/L	200	2.10 U	99	75-125	4	20	
Manganese	2570		10.0	ug/L	200	2520	21	75-125	0.05	20	QM-05
Nickel	243		10.0	ug/L	200	42.4	100	75-125	4	20	
Selenium	211		10.0	ug/L	200	5.00 U	106	75-125	5	20	
Silver	208		10.0	ug/L	200	3.30	102	75-125	4	20	
Vanadium	196		10.0	ug/L	200	2.81	97	75-125	4	20	
Zinc	230		10.0	ug/L	200	24.6	103	75-125	4	20	

Post Spike (4J02009-PS1) Prepared: 10/02/2014 10:22 Analyzed: 10/03/2014 11:44

Source: C412436-04

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

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QUALITY CONTROL

Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control

Batch 4J02009 - EPA 3005A

Post Spike (4J02009-PS1) Continued Prepared: 10/02/2014 10:22 Analyzed: 10/03/2014 11:44

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	0.182		0.0100	mg/L	0.200	-0.00506	91	80-120			
Barium	0.317		0.0100	mg/L	0.200	0.137	90	80-120			
Beryllium	0.0185		0.00100	mg/L	0.0200	0.000434	90	80-120			
Cadmium	0.0187		0.00100	mg/L	0.0200	0.000948	89	80-120			
Chromium	0.262		0.0100	mg/L	0.200	0.0909	86	80-120			
Cobalt	0.199		0.0100	mg/L	0.200	0.0209	89	80-120			
Copper	0.186		0.0100	mg/L	0.200	0.00454	91	80-120			
Iron	2.92		0.0500	mg/L	1.00	2.15	77	80-120			QM-08
Lead	0.176		0.0100	mg/L	0.200	-0.00130	88	80-120			
Manganese	2.63		0.0100	mg/L	0.200	2.52	54	80-120			QM-08
Nickel	0.220		0.0100	mg/L	0.200	0.0424	89	80-120			
Selenium	0.190		0.0100	mg/L	0.200	0.000966	95	80-120			
Silver	0.157		0.0100	mg/L	0.200	0.00330	77	80-120			QM-08
Vanadium	0.176		0.0100	mg/L	0.200	0.00281	86	80-120			
Zinc	0.207		0.0100	mg/L	0.200	0.0246	91	80-120			

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Batch 4K20007 - EPA 3005A

Blank (4K20007-BLK2) Prepared: 11/20/2014 09:17 Analyzed: 11/21/2014 11:29

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Barium	1.00	U	10.0	ug/L							
Chromium	1.00	U	10.0	ug/L							
Silver	1.90	U	10.0	ug/L							

LCS (4K20007-BS1) Prepared: 11/20/2014 09:17 Analyzed: 11/21/2014 11:32

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Barium	213		10.0	ug/L	200		106	80-120			
Chromium	202		10.0	ug/L	200		101	80-120			
Silver	201		10.0	ug/L	200		100	80-120			

Matrix Spike (4K20007-MS1) Prepared: 11/20/2014 09:17 Analyzed: 11/21/2014 12:19

Source: C414012-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Barium	218		10.0	ug/L	200	1.84	108	75-125			
Chromium	208		10.0	ug/L	200	1.00 U	104	75-125			
Silver	206		10.0	ug/L	200	1.90 U	103	75-125			

Matrix Spike Dup (4K20007-MSD1) Prepared: 11/20/2014 09:17 Analyzed: 11/21/2014 12:21

Source: C414012-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Barium	219		10.0	ug/L	200	1.84	109	75-125	0.6	20	

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QUALITY CONTROL

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Batch 4K20007 - EPA 3005A

Matrix Spike Dup (4K20007-MSD1) Continued Prepared: 11/20/2014 09:17 Analyzed: 11/21/2014 12:21

Source: C414012-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chromium	208		10.0	ug/L	200	1.00 U	104	75-125	0.3	20	
Silver	205		10.0	ug/L	200	1.90 U	103	75-125	0.08	20	

Post Spike (4K20007-PS1) Prepared: 11/20/2014 09:17 Analyzed: 11/21/2014 12:24

Source: C414012-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Barium	0.200		0.0100	mg/L	0.200	0.00184	99	80-120			
Chromium	0.186		0.0100	mg/L	0.200	-0.000840	93	80-120			
Silver	0.186		0.0100	mg/L	0.200	0.00113	92	80-120			

Classical Chemistry Parameters - Quality Control

Batch 4J02001 - NO PREP

Blank (4J02001-BLK1) Prepared: 10/02/2014 07:11 Analyzed: 10/02/2014 08:23

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	14000	U	15000	ug/L							

LCS (4J02001-BS1) Prepared: 10/02/2014 07:11 Analyzed: 10/02/2014 08:24

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	100		15	mg/L	100		100	80-120			

Matrix Spike (4J02001-MS1) Prepared: 10/02/2014 07:11 Analyzed: 10/02/2014 08:26

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	330000		30000	ug/L	80000	270000	80	80-120			

Matrix Spike Dup (4J02001-MSD1) Prepared: 10/02/2014 07:11 Analyzed: 10/02/2014 08:27

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	330000		30000	ug/L	80000	270000	77	80-120	0.6	25	QM-05

Batch 4J02005 - NO PREP

Blank (4J02005-BLK1) Prepared: 10/02/2014 08:57 Analyzed: 10/02/2014 10:03

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloride	2200	U	5000	ug/L							
Sulfate as SO4	2900	U	5000	ug/L							

LCS (4J02005-BS1) Prepared: 10/02/2014 08:57 Analyzed: 10/02/2014 10:20

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QUALITY CONTROL

Classical Chemistry Parameters - Quality Control

Batch 4J02005 - NO PREP

LCS (4J02005-BS1) Continued Prepared: 10/02/2014 08:57 Analyzed: 10/02/2014 10:20

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloride	48000		5000	ug/L	50000		95	90-110			
Sulfate as SO4	47000		5000	ug/L	50000		94	90-110			

Matrix Spike (4J02005-MS1) Prepared: 10/02/2014 08:57 Analyzed: 10/02/2014 19:25

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sulfate as SO4	140000		10000	ug/L	40000	95000	106	90-110			

Matrix Spike (4J02005-MS2) Prepared: 10/02/2014 08:57 Analyzed: 10/02/2014 20:33

Source: C412436-04RE1

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloride	2000000		200000	ug/L	800000	1200000	102	90-110			

Matrix Spike Dup (4J02005-MSD1) Prepared: 10/02/2014 08:57 Analyzed: 10/02/2014 19:42

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sulfate as SO4	140000		10000	ug/L	40000	95000	105	90-110	0.4	10	

Matrix Spike Dup (4J02005-MSD2) Prepared: 10/02/2014 08:57 Analyzed: 10/02/2014 20:50

Source: C412436-04RE1

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloride	2000000		200000	ug/L	800000	1200000	102	90-110	0.05	10	

Batch 4J02030 - NO PREP

Blank (4J02030-BLK1) Prepared & Analyzed: 10/02/2014 14:45

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Dissolved Solids	10000	U	10000	ug/L							

LCS (4J02030-BS1) Prepared & Analyzed: 10/02/2014 14:45

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Dissolved Solids	980		10	mg/L	1000		98	90-110			

Duplicate (4J02030-DUP1) Prepared & Analyzed: 10/02/2014 14:45

Source: C412436-04

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Dissolved Solids	2800000		10000	ug/L		2800000			2	5	

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FLAGS/NOTES AND DEFINITIONS

B	The analyte was detected in the associated method blank.
D	The sample was analyzed at dilution.
J	The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.
U	The analyte was analyzed for but not detected to the level shown, adjusted for actual sample preparation data and moisture content, where applicable.
E	The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
MRL	Method Reporting Limit. The MRL is roughly equivalent to the practical quantitation limit (PQL) and is based on the low point of the calibration curve, when applicable, sample preparation factor, dilution factor, and, in the case of soil samples, moisture content.
J-01	Result is estimated due to positive results in the associated method blank.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QM-08	Post-digestion spike did not meet method requirements due to confirmed matrix effects (dilution test).

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ENVIRONMENTAL CONSERVATION LABORATORIES CHAIN-OF-CUSTODY RECORD

www.encolabs.com

10775 Central Port Dr.
Orlando, FL 32824
(407) 826-5314 Fax (407) 850-6945

4810 Executive Park Court, Suite 111
Jacksonville, FL 32216-6069
(904) 296-3007 Fax (904) 296-6210

102-A Woodwinds Industrial Ct.
Cary, NC 27511
(919) 467-3090 Fax (919) 467-3515

Client Name: Golder Associates, Inc. (GO007)	Project Number: 0739-603514.100
Address: 5B Oak Branch Drive	Project Name/Desc: WI- Red Rock
City/ST/Zip: Greensboro, NC 27407	PO # / Billing Info: 2014:
Tel: (336) 852-4903 Fax: (336) 852-4904	Reporting Contact: Dusty Reedy
Sampler(s) Name, Affiliation (Print): A. Stoddard, Golder	Billing Contact: Francine Judd
Sampler(s) Signature: Anna Stoddard	Site Location / Time Zone: Holly Springs NC / EST

Requested Turnaround Times

Note : Rush requests subject to acceptance by the facility

✓ Standard

___ Expedited

Due ___/___/___

Lab Workorder: C412436

Requested Analyses / Preservation (See Codes) (Combine as necessary)

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	8260B Appendix 1,8260B Extended	Ag,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Ni,Pb,Sb,Se,Se,Ti,V,Zn	Ag,As,Ba,Be,Cd,Co,Cr,Cu,Ni,Pb,Sb,Se,Se,Ti,V,Zn	Alkalinity 310.2,Chloride 300,TDS SW2540C	Hg	Sulfate 300					Sample Comments
	9228-MW2T	9-29-14	1221	G	GW	5	X	X		X	X	X					
	9228-MW3	↓	1253	G	GW	5	X	X		X	X	X					
	9228-MW4		1700	G	GW	5	X	X		X	X	X					
	9228-MW5 (ms/msd)		1614	G	GW	8	X	X		X	X	X					
	9228-MW6T		1515	G	GW	5	X	X		X	X	X					
	9228-MW10		1025	G	GW	5	X	X		X	X	X					
	9228-MW11		1105	G	GW	5	X	X		X	X	X					
	9228-MW14		1141	G	GW	5	X	X		X	X	X					
	9228-SW2		1305	G	SW	4	X		X								
	9228-SW3		—	—	SW	4	X		X								NO FLOW, NOT SAMPLED
	9228-Field Blank	↓	1705	G	WA	4	X	X			X						
	9228-Trip Blank		—		WA	2	X										

<-- Total # of Containers

Sample Kit Prepared By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
		Anna Stoddard	9-30-14 5pm	[signature]	9/30/14 1555
		Relinquished By	Date/Time	Received By	Date/Time
		Relinquished By	Date/Time	Received By	Date/Time

Comments/Special Reporting Requirements
1. Please provide a "Level 2" data report
2. Need 7-10 day TAT at no surcharge per client request
3. Direct bill to Waste Industries (report sent to Golder)

Cooler #'s & Temps on Receipt: C271 1.7c C52 2.9c

Condition Upon Receipt: ✓ Acceptable ___ Unacceptable

Matrix: GW-Groundwater SO-Soil DW-Drinking Water SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (detail in comments) Preservation: I-Ice H-HCl N-HNO3 S-H2SO4 NO-NaOH O-Other (detail in comments)

Note : All samples submitted to ENCO Labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist

WORK ORDER

Printed: 10/14/2014 2:08:08PM

C412436

ENCO Cary

Sample Receipt Conditions

Client:	**Golder Associates, Inc. (GO007)**	**Lab Project Mgr:**	**Stephanie Franz**
Project:	**WI- Red Rock**	**Project Number:**	**0739-603514.100**
PO #:	**2014:**		

Report To:

Golder Associates, Inc. (GO007)
Dusty Reedy
5B Oak Branch Drive
Greensboro, NC 27407
Phone: (336) 852-4903
Fax: (336) 852-4904

Invoice To:

Waste Industries - Red Rock Disposal (WA023)
Francine Judd
7130 New Landfill Drive
Holly Springs, NC 27540
Phone :(919) 557-9583
Fax: (919) 557-9523

Received By:	John C King	Date Received:	30-Sep-14 15:55
Logged In By:	John C King	Date Logged In:	30-Sep-14 16:16

Work Order Comments:

C-271 received at 1.7°C

Containers Intact	Y	Containers Properly Preserved	Y	Proper Containers Received	Y	All Samples in PreLog Received	N	COC/Labels Agree	Y
Custody Seals Intact	Y	Volatile Containers Preserved	Y	Volatile Containers Headspace Free	Y	Aqueous Samples Checked for Residual Cl	N	Received On Ice	Y
Temperature Corrected	Y								

C-52 received at 2.9°C

Containers Intact	Y	Containers Properly Preserved	Y	Proper Containers Received	Y	All Samples in PreLog Received	N	COC/Labels Agree	Y
Custody Seals Intact	Y	Volatile Containers Preserved	Y	Volatile Containers Headspace Free	Y	Aqueous Samples Checked for Residual Cl	N	Received On Ice	Y
Temperature Corrected	Y								

GOLDER ASSOCIATES INC.
QUALITY ASSURANCE & QUALITY CONTROL
LABORATORY DATA REVIEW

Project Name: Waste Industries – Red Rock C&D Landfill

Project Reference Number: 0739603514.100

Sampling Event Date: September 29, 2014

Review Date: November 11, 2014 *Initials:* KS

Report #: C412436

Person(s) performing the review are to initial each item on this form as acknowledgement of data acceptance, or as acknowledgement of a review issue. In the case of the latter, a brief explanation should follow the applicable item.

Golder Associates Inc. has reviewed the laboratory certificates of analysis, chain-of-custody form, and laboratory provided sample group quality assurance and quality control data for the above referenced sample group to identify potential bias or inaccuracy, in general accordance with the following United States Environmental Protection Agency documents:

- Region III Modifications to Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration, September 1994;
- Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, April 1993; and
- Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, July 1998.

COMPLIANCE ANALYTE LIST(S) (check all that apply)

X NC C & D List (*GW*)

X NC Appendix I (*SW*)

_____ NC Appendix I + Detects

_____ NC Appendix II

_____ NC Subtitle D Leachate List

_____ NC Surface Water Compliance List

Other: _____

1.0 CHAIN OF CUSTODY (COC) REVIEW

KS COC was properly signed by all parties.

KS Correct project name and number are on the form.

KS Sample receipt condition at laboratory was acceptable.

KS Each sample and blank submitted for analysis appears in the report.

Notes: _____

2.0 SAMPLE HOLDING TIMES

KS Holding times for extraction and/or analysis were met for each analytical Method (see below for reference).

Notes: _____

Review Criteria		
Method	**Analytes**	**Holding Time**
SW-846 Method 8260	VOCs	14 days
SW-846 Methods 8270, 8080, 8081, 8082, and 8151	SVOCs, PCBs, pesticides and herbicides	7 days for extraction, 40 days from extraction for analysis
SW-846 Methods 6000 and 7000 Series	Metals except mercury	6 months (no temperature requirements)
SW-846 Method 7470	Mercury	28 days
SW-846 Method 376.1	Sulfide	7 days
EPA Method 335.2	Cyanide	14 days
EPA Method 300	Chloride	28 days
EPA Method 300	Nitrate/Sulfate	48 hours/28 days
EPA Method 405.1	BOD	48 hours
EPA Method 410.4	COD	28 days
EPA Method 365.4	Phosphorous	28 days

3.0 LABORATORY QUALITY CONTROL REVIEW

KS Laboratory analyzed at least one internal blank for each method, where applicable.

KS Laboratory blank is interference-free.

KS Surrogate recoveries are provided for each analytical method, where applicable.

KS Surrogate recoveries for each method are within the acceptable limits (i.e., at least 50% of the surrogates were within range).

KS MS/MSD/LCS data results are provided for each analytical method.

KS MS/MSD/LCS recoveries for each method are within the acceptable limits (i.e., at least 1 of the 3 were within range).

- ***The spike recoveries and matrix spike duplicate recoveries for Manganese were outside of control limits for Method 3005A due to matrix interference. The LCS and/or LCSD were within acceptance limits showing the laboratory is in control and the data is acceptable.***

- ***The post spike recoveries recoveries for Manganese were outside of control limits for Method 3005A. The post-digestion spike did not meet method requirements due to confirmed matrix effects (dilution test).***

- ***The matrix spike duplicate recovery of Mercury was outside of control limits for the 7470A MS, MSD, and Post Spike samples. The QC batch was approved based on acceptable LCS recovery of this metal.***

- ***The spike, matrix spike duplicate, and post spike recoveries of Thallium was outside of control limits for one of the MS samples due to matrix interference. The LCS and/or LCSD were within acceptance limits showing the laboratory is in control and the data is acceptable.***

- ***The matrix spike duplicate recovery for Total Alkalinity was outside of control limits due to matrix interference. The LCS and/or LCSD were within acceptance limits showing the laboratory is in control and the data is acceptable.***

4.0 ANALYTE LISTS/METHODS

KS The proper number of constituents are present for each analyte list as identified above (including detects where applicable).

KS Proper EPA SW-846 analytical methods were used for analysis.

5.0 DATA REPORTING

KS All analytical reporting associated with the event was performed by the contracted lab.

KS Trip, field and/or equipment, and laboratory blank results have all been reported. All detects for blanks are listed below by constituent. All laboratory method blanks, if any, have been 'flagged' with a 'B' where detected in other samples as appropriate and a laboratory narrative was provided. If the sample was flagged by the laboratory and is not within 5X of the concentration in the blank (or 10X for commonly detected laboratory contaminants-acetone, methylene chloride and phthalates), list below with explanation if flags should be removed. If flags need to be added for samples, also list below.

- **Field Blank**
  - ***Thallium @ 0.253 ug/L "J"***
  - ***Tetrahydrofuran @ 1.7 ug/L***

- ***Method Blank***
  - ***Antimony @ 0.421 ug/L "J"***

KS It is clear from the laboratory report that samples have or have not been diluted during analysis, and if the samples have been diluted, the result is reported as a multiple of the dilution (e.g., a sample diluted 10x resulting in an analytical detection of 1.0 should be reported as 10). Those that have been diluted are listed below with the dilution factor.

- **Total Alkalinity** ***(5x)***
  - ***MW-2T, MW-3, MW-6T, MW-10,***
- ***Total Alkalinity (2x)***
  - ***MW-11, MW-14***

- **Chloride**
  - ***MW-2T, MW-10 (10x)***
  - ***MW -3 (25x)***
  - ***MW -6T (50x)***

KS The report provides the reporting limit for each constituent.

KS The results were reported at or below their proper reporting limits (e.g., NC Solid Waste Section approved PQLs). Those that are not reported correctly are listed below (by constituent) with the proper reporting limit listed beside them. State if the reporting limit error is due to dilutions.

KS No inorganic or organic constituents were reported above their respective NC 2L Drinking Water Standards or SWS Groundwater Protection Standards in wells or field/equipment/trip blanks, or above applicable surface water standards in surface water monitoring points.

- ***Antimony (GWPS = 1 ug/L)***
  - ***MW-5 @ 1.27 ug/L (J)(B)***
- **Barium *(NC 2L = 700 ug/L)***
  (MCL = 2000 ug/L)
  - ***MW-3 @ 2230 ug/L***
  - ***MW-6T @ 2540 ug/L***
  - ***MW-10 @ 1410 ug/L***
- ***Chromium (NC 2L = 10ug/L)***
  - ***MW-5 @ 90.9 ug/L***
- ***Cobalt (SWS GWPS = 1.0 ug/L)***
  - ***MW-5 @ 20.9 ug/L***
- **Thallium *(SWS GWPS = 0.28 ug/L)***
  - ***MW-2T @ 0.966 ug/L (J)(B)***
  - ***MW-3 @ 0.404 ug/L (J)(B)***
  - ***MW-4 @ 1.18 ug/L (J)(B)***
- ***Silver (NC 2L = 20 ug/L)***
  - ***MW-14 @ 70.4 ug/L***
- **Vanadium *(SWS GPS = 0.3 ug/L)***
  - ***MW-3 @ 26.3 ug/L***
  - ***MW-4 @ 1.96 ug/L (J)***
  - ***MW-5 @ 2.81 ug/L (J)***
  - ***MW-14 @ 10.1 ug/L (J)***
- **Iron *(NC 2L & MCL = 300 ug/L)***
  - ***MW-2T @ 636 ug/L***
  - ***MW-3 @ 690 ug/L***
  - ***MW-4 @ 761 ug/L***
  - ***MW-5 @ 2150 ug/L***
  - ***MW-6T @ 1040 ug/L***
  - ***MW-14 @ 1950 ug/L***
- **Manganese *(NC 2L & MCL = 50 ug/L)***
  - ***MW-2T @ 180 ug/L***
  - ***MW-5@ 2520 ug/L***
  - ***MW-6T @ 1770 ug/L***
  - ***MW-10 @ 1530 ug/L***
  - ***MW-11 @ 98.4 ug/L***
- **Chloride *(NC 2L & MCL = 250 mg/L)***
  - ***MW-2T @ 490 mg/L***
  - ***MW-3 @ 1700 mg/L***
  - ***MW-5 @ 1200 mg/L***
  - ***MW-6T @ 2100 mg/L***
  - ***MW-10 @ 460 mg/L***
- **TDS *(NC 2L = 1000 mg/L)***
  - ***MW-2T @ 1200 mg/L***
  - ***MW-3 @ 3400 mg/L***
  - ***MW-5 @ 2800 mg/L***
  - ***MW-6T @ 4300 mg/L***
  - ***MW-10 @ 1100 mg/L***

KS No inorganic or organic constituents were detected in a well or surface water point at quantifiable concentrations outside of their historical range (more than 5X previous concentrations or first-time detections).

KS Other report issues/Communications with laboratory/etc.:

- ***This report does not contain a laboratory narrative.***

APPENDIX C

STATISTICAL EVALUATION WORKSHEETS & SUMMARY TABLE

Summary of Statistical Analysis
Red Rock Disposal. LLC C&D Landfill, Permit No. 92-28
Wake County, North Carolina

September 2014												
Detected Monitoring Constituent/Analytes	**Reporting Units**	**Statistical Evaluation Method**		**Prediction Interval**	**Downgradient Monitoring Wells and Concentrations**						
					MW-2T	**MW-3**	**MW-4**	**MW-5**	**MW-6T**	**MW-11**	**MW-14**
Barium	ug/L	Interwell	Upper Prediction Interval	1938	34.2 J	2230 (2150)	18.4 J	137	2540 (2410)	18.6 J	70.6 J
		MW-3 Intrawell	Nonparametric Prediction Interval	2129							
		MW-6T Intrawell	Upper Tolerance Interval	2420							
Chromium	ug/L	Interwell	Nonparametric Prediction Interval	10.0	ND	2.88 J	ND	90.9 (1.60)	2.44 J	ND	ND
		MW-5 Intrawell	Nonparametric Prediction Interval	12.0							
Cobalt	ug/L	Interwell	Nonparametric Prediction Interval	10.0	ND	ND	ND	20.9	ND	ND	ND
		MW-5 Intrawell	Upper Tolerance Interval	79.3							
Silver	ug/L	Interwell	Nonparametric Prediction Interval	10.0	4.28 J	ND	ND	3.30 J	1.95 J	ND	70.4 (ND)
		MW-14 Intrawell	Nonparametric Prediction Interval	10.0							
Vanadium	ug/L	Interwell	Nonparametric Prediction Interval	25.0	ND	26.3	1.96 J	2.81 J	ND	ND	10.1 J
		MW-3 Intrawell	Nonparametric Prediction Interval	41.3							

Notes:
1. Shaded values represent apparent statistically significant increases (SSIs) over background concentrations.
2. Statistical worksheets are provided as Appendix C.
3. ug/L = micrograms per liter
4. ND = Not Detected
5. J = estimated concentration below the Solid Waste Section Limit

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Analyte: Barium

Sample No.	Sample Date	Location	Concentration (ug/L)	Quantitation Limit (ug/L)
1	10/31/01	MW-1	909	500
2	06/11/02	MW-1	ND	500
3	11/01/02	MW-1	ND	500
4	03/06/03	MW-1	ND	500
5	09/23/03	MW-1	1046	500
6	03/11/04	MW-1	752	500
7	06/11/02	MW-10	ND	500
8	11/01/02	MW-10	ND	500
9	03/06/03	MW-10	ND	500
10	09/23/03	MW-10	ND	500
11	03/11/04	MW-10	707	500
12	09/23/04	MW-10	ND	500
13	03/10/05	MW-10	872	500
14	09/22/05	MW-10	ND	500
15	03/06/06	MW-10	590	500
16	09/19/06	MW-10	ND	500
17	03/21/07	MW-10	901	100
18	09/28/07	MW-10	488	100
19	03/25/08	MW-10	710	100
20	09/29/08	MW-10	1040	100
21	03/30/09	MW-10	999	100
22	09/29/09	MW-10	1100	100
23	03/30/10	MW-10	1120	100
24	09/29/10	MW-10	892	100
25	04/06/11	MW-10	1080	100
26	09/28/11	MW-10	1410	100
27	03/28/12	MW-10	974	100
28	09/26/12	MW-10	1350	100
29	04/01/13	MW-10	1120	100
30	09/25/13	MW-10	1180	100
31	04/01/14	MW-10	996	100
32	09/29/14	MW-10	1410	100

Number of Data	32
Number of Truncated Data	10
Percentage of Truncated Data	31%

Upper Prediction Limit: **1938 ug/L**

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Probability Plots to determine the distribution of Barium

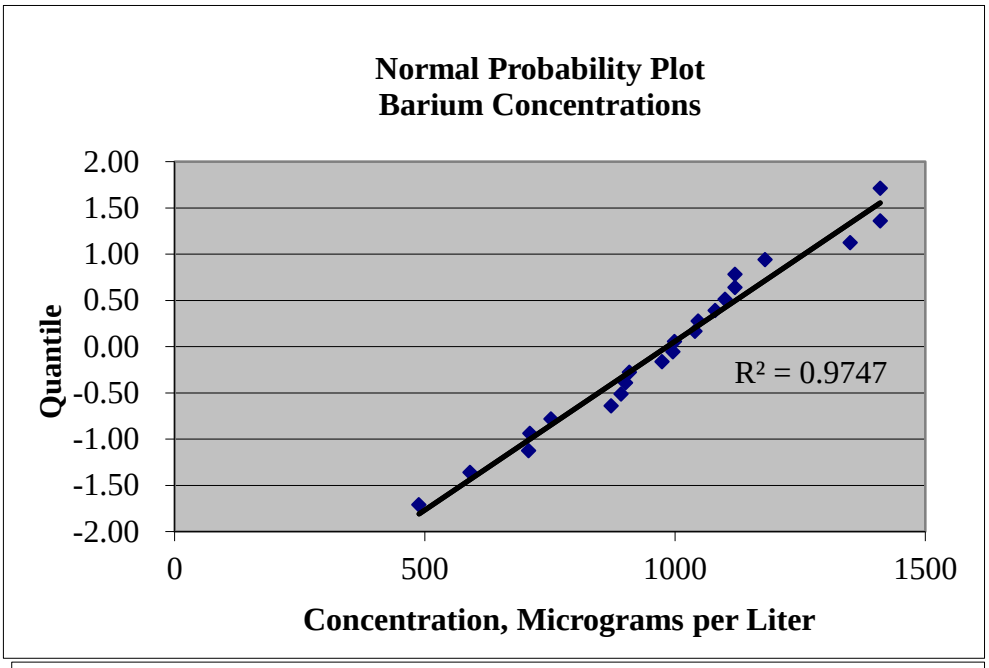
Complete the following table where:

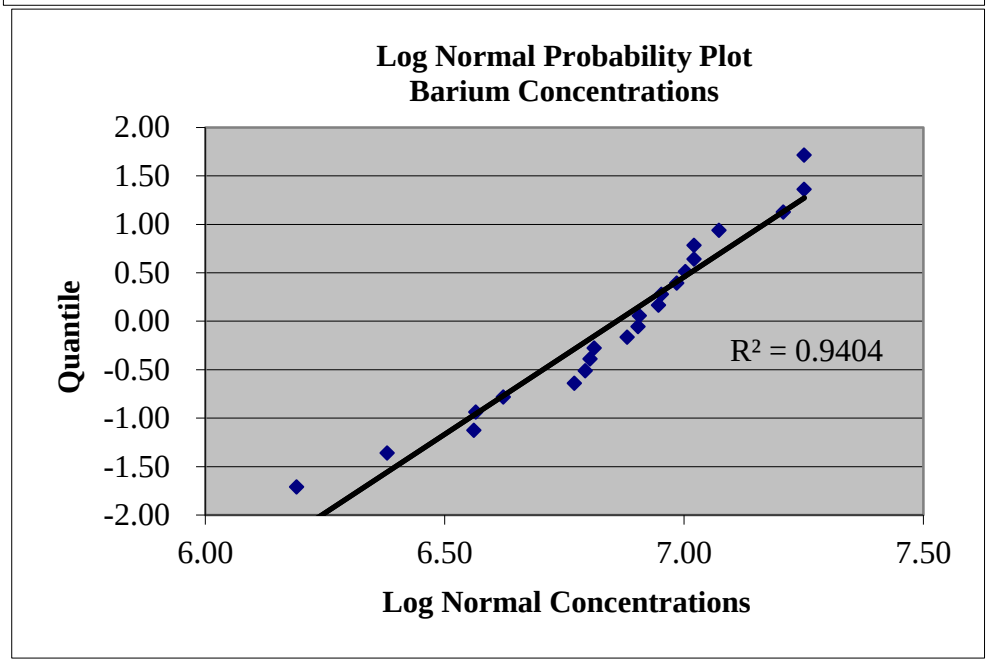
i = ordered value of sample, arranged from smallest to largest
X(i) = sample values arranged from smallest to largest
LN[X(i)] = Natural Log Value of sample concentrations arranged from smallest to largest
[i/(n+1)] = Cumulative probability
n = number of samples = 22

X(i)	LN[X(i)]	i	Rank	[Rank/(n+1)]	Quantiles
488	6.19	1	1	0.043	-1.71
590	6.38	2	2	0.087	-1.36
707	6.56	3	3	0.130	-1.12
710	6.57	4	4	0.174	-0.94
752	6.62	5	5	0.217	-0.78
872	6.77	6	6	0.261	-0.64
892	6.79	7	7	0.304	-0.51
901	6.80	8	8	0.348	-0.39
909	6.81	9	9	0.391	-0.28
974	6.88	10	10	0.435	-0.16
996	6.90	11	11	0.478	-0.05
999	6.91	12	12	0.522	0.05
1040	6.95	13	13	0.565	0.16
1046	6.95	14	14	0.609	0.28
1080	6.98	15	15	0.652	0.39
1100	7.00	16	16	0.696	0.51
1120	7.02	17	17	0.739	0.64
1120	7.02	18	18	0.783	0.78
1180	7.07	19	19	0.826	0.94
1350	7.21	20	20	0.870	1.12
1410	7.25	21	21	0.913	1.36
1410	7.25	22	22	0.957	1.71

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Probability Plots to determine the distribution of Barium





Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Determination of reported background value as an outlier

Analyte: Barium

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)
1	10/31/01	MW-1	909	500
2	6/11/02	MW-1	ND	500
3	11/1/02	MW-1	ND	500
4	3/6/03	MW-1	ND	500
5	9/23/03	MW-1	1046	500
6	3/11/04	MW-1	752	500
7	6/11/02	MW-10	ND	500
8	11/1/02	MW-10	ND	500
9	3/6/03	MW-10	ND	500
10	9/23/03	MW-10	ND	500
11	3/11/04	MW-10	707	500
12	9/23/04	MW-10	ND	500
13	3/10/05	MW-10	872	500
14	9/22/05	MW-10	ND	500
15	3/6/06	MW-10	590	500
16	9/19/06	MW-10	ND	500
17	3/21/07	MW-10	901	100
18	9/28/07	MW-10	488	100
19	3/25/08	MW-10	710	100
20	9/29/08	MW-10	1040	100
21	3/30/09	MW-10	999	100
22	9/29/09	MW-10	1100	100
23	3/30/10	MW-10	1120	100
24	9/29/10	MW-10	892	100
25	4/6/11	MW-10	1080	100
26	9/28/11	MW-10	1410	100
27	3/28/12	MW-10	974	100
28	9/26/12	MW-10	1350	100
29	4/1/13	MW-10	1120	100
30	9/25/13	MW-10	1180	100
31	4/1/14	MW-10	996	100
32	9/29/14	MW-10	1410	100
		mean =	983.9	
		STD =	243.3	

Note: All concentrations are micrograms per liter

Using the data listed above, form the statisitc Tn:

Tn = (Xn - mean) / STD

where: Xn = largest observed sample value
mean = mean of the background values

STD = standard deviation of the background values

For	Xn =	1410
	mean =	983.9
	STD =	243.3
	Tn =	**1.751**

From Table 8 included in the Staistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Interim Final Guidance, the critical value for the given sample group is

Number of samples =	32
Tc =	**2.773**

Since Tc>Tn, the sample result is not considered to be an outlier

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Shapiro Wilk Test Statistic (W) for normality of total Barium

Complete the following table where

i = ordered value of sample, arranged from smallest to largest
X(i) = sample values arranged from smallest to largest
X(n-i+1) = sample values arranged from largest to smallest
A(n-i+1) = coefficient from table A-1, Statistical Analysis of Ground-Water Data at RCRA Facilities
B(i) = summation of (X(n-i+1)-X(i))A(n-i+1)

i	X(i)	X(n-i+1)	X(n-i+1) - X(i)	A(n-i+1)	B(i)
1	488	1410	922	0.459	423.20
2	590	1410	820	0.3156	258.79
3	707	1350	643	0.2571	165.32
4	710	1180	470	0.2131	100.16
5	752	1120	368	0.1764	64.92
6	872	1120	248	0.1443	35.79
7	892	1100	208	0.115	23.92
8	901	1080	179	0.0878	15.72
9	909	1046	137	0.0618	8.47
10	974	1040	66	0.0368	2.43
11	996	999	3	0.0122	0.04
12	999	996			
13	1040	974			
14	1046	909			
15	1080	901			
16	1100	892			
17	1120	872			
18	1120	752			
19	1180	710			
20	1350	707			
21	1410	590			
22	1410	488			

The test statistic W can be found using:

W = SQR[B/(SD x SQRT(n-1))]

where:

B =	summation of (X(n-i+1)-X(i))A(n-i+1)	=	1098.73
SD =	standard deviation of the data group	=	243.28
n =	number of samples	=	22

W = 0.971

Compare this value to the critical value in Table A-2 of Statistical Analysisof Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (Draft) July, 1992, to determine if the data is normally distributed.

From Table A-2 with (n) samples and a 95% confidence level, the critical value is

W(crit) = 0.911
and the calculated W = 0.971

Therefore the data set is Normal

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Aitchison's Adjustment for Barium

Background Values (positive detects only)

Sample No.	Sample Date	Location	Concentration (ug/l)
1	10/31/01	MW-1	909
2	6/11/02	MW-1	ND
3	11/1/02	MW-1	ND
4	3/6/03	MW-1	ND
5	9/23/03	MW-1	1046
6	3/11/04	MW-1	752
7	6/11/02	MW-10	ND
8	11/1/02	MW-10	ND
9	3/6/03	MW-10	ND
10	9/23/03	MW-10	ND
11	3/11/04	MW-10	707
12	9/23/04	MW-10	ND
13	3/10/05	MW-10	872
14	9/22/05	MW-10	ND
15	3/6/06	MW-10	590
16	9/19/06	MW-10	ND
17	3/21/07	MW-10	901
18	9/28/07	MW-10	488
19	3/25/08	MW-10	710
20	9/29/08	MW-10	1040
21	3/30/09	MW-10	999
22	9/29/09	MW-10	1100
23	3/30/10	MW-10	1120
24	9/29/10	MW-10	892
25	4/6/11	MW-10	1080
26	9/28/11	MW-10	1410
27	3/28/12	MW-10	974
28	9/26/12	MW-10	1350
29	4/1/13	MW-10	1120
30	9/25/13	MW-10	1180
31	4/1/14	MW-10	996
32	9/29/14	MW-10	1410

Mean of detected values = 983.9
Standard Deviation of detected values = 243.3

The adjusted mean can be found using

$$M(a) = (1-d/n) \times M$$

where:	d =	number non- detected values	=	10
	n =	total number samples	=	32
	M =	mean detected values	=	983.91
		M(a)	**=**	**676.44**

The adjusted standard deviation squared may be found using

STD(a) = (n-(d+1)S)/n-1) + d(n-d)MM/n(n-1)

where:	n =	total number samples	=	32
	d =	number non-detected values	=	10
	S =	std deviation of detected values squared	=	59182.85
	MM =	mean of detected values squared	=	968077.10
		STD(a)	=	254786.13

and the adjusted standard deviation is then

S(a) = SQRT(STD(a)) = 504.76

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Parametric Prediction Interval for Aitchison's adjusted data

Analyte: Barium

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)
1	10/31/01	MW-1	909	500
2	6/11/02	MW-1	ND	500
3	11/1/02	MW-1	ND	500
4	3/6/03	MW-1	ND	500
5	9/23/03	MW-1	1046	500
6	3/11/04	MW-1	752	500
7	6/11/02	MW-10	ND	500
8	11/1/02	MW-10	ND	500
9	3/6/03	MW-10	ND	500
10	9/23/03	MW-10	ND	500
11	3/11/04	MW-10	707	500
12	9/23/04	MW-10	ND	500
13	3/10/05	MW-10	872	500
14	9/22/05	MW-10	ND	500
15	3/6/06	MW-10	590	500
16	9/19/06	MW-10	ND	500
17	3/21/07	MW-10	901	100
18	9/28/07	MW-10	488	100
19	3/25/08	MW-10	710	100
20	9/29/08	MW-10	1040	100
21	3/30/09	MW-10	999	100
22	9/29/09	MW-10	1100	100
23	3/30/10	MW-10	1120	100
24	9/29/10	MW-10	892	100
25	4/6/11	MW-10	1080	100
26	9/28/11	MW-10	1410	100
27	3/28/12	MW-10	974	100
28	9/26/12	MW-10	1350	100
29	4/1/13	MW-10	1120	100
30	9/25/13	MW-10	1180	100
31	4/1/14	MW-10	996	100
32	9/29/14	MW-10	1410	100

Note: All sample concentrations are micrograms per liter

The background mean and standard deviation were modified using Aitchison's Adjustment.
The adjusted mean and standard deviation are as follows:

the adjusted mean and standard deviation are

adjusted mean = 676.4
adjusted standard deviation = 504.8

Using the background data, the upper Prediction Limit can be determined using:

Upper Prediction Limit = (Mean Conc) + t(n-1,k,.95) x (Std Dev) x SQRT(1/m+1/n)

where:	Mean Conc =	mean concentration background samples
	t(n-1k,.95) =	Bonferroni t-statistic from table 1, with
	n-1 =	degrees of freedom (number of samples - 1)
	k =	number of downgradient samples per event
	.95 =	confidence interval
	Std Dev =	standard deviation of background samples
	m =	number independent samples from each sampling point
	n =	number of background samples

For:	Mean Conc =	676.4	
	Std Dev =	504.8	
	t(n-1,k,.95)*sqrt(1/m+1/n) =	2.500	
	k =	7	
	m =	1	
	n =	32	
	UPL =	**1938**	ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Parametric Tolerance Interval for Aitchison's adjusted data

Analyte: Barium

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)
1	10/31/01	MW-1	909	500
2	6/11/02	MW-1	ND	500
3	11/1/02	MW-1	ND	500
4	3/6/03	MW-1	ND	500
5	9/23/03	MW-1	1046	500
6	3/11/04	MW-1	752	500
7	6/11/02	MW-10	ND	500
8	11/1/02	MW-10	ND	500
9	3/6/03	MW-10	ND	500
10	9/23/03	MW-10	ND	500
11	3/11/04	MW-10	707	500
12	9/23/04	MW-10	ND	500
13	3/10/05	MW-10	872	500
14	9/22/05	MW-10	ND	500
15	3/6/06	MW-10	590	500
16	9/19/06	MW-10	ND	500
17	3/21/07	MW-10	901	100
18	9/28/07	MW-10	488	100
19	3/25/08	MW-10	710	100
20	9/29/08	MW-10	1040	100
21	3/30/09	MW-10	999	100
22	9/29/09	MW-10	1100	100
23	3/30/10	MW-10	1120	100
24	9/29/10	MW-10	892	100
25	4/6/11	MW-10	1080	100
26	9/28/11	MW-10	1410	100
27	3/28/12	MW-10	974	100
28	9/26/12	MW-10	1350	100
29	4/1/13	MW-10	1120	100
30	9/25/13	MW-10	1180	100
31	4/1/14	MW-10	996	100
32	9/29/14	MW-10	1410	100

Note: All sample concentrations are micrograms per liter

The background mean and standard deviation were modified using Aitchison's Adjustment.
The adjusted mean and standard deviation are as follows:

The adjusted mean and standard deviation are

adjusted mean =	676.4
adjusted standard deviation =	504.8

Using the background data, the upper Tolerance Limit can be determined using

Upper Tolerance Limit = (Mean Concentration) + K x (Standard Deviation Samples)

where: K = factor for constructing one sided normal tolerance limit taken from table 4-2, page 87, Statistical Methods for Groun Monitoring, Gibbons, 1994

n = number of background samples

For: K = 2.198

n = 32

UTL = 1786 ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Analyte: Barium

Sample No.	Sample Date	Location	Concentration (ug/L)	Quantitation Limit (ug/L)
1	10/31/01	MW-3	1650	500
2	06/11/02	MW-3	1547	500
3	11/01/02	MW-3	1733	500
4	03/06/03	MW-3	1939	500
5	09/23/03	MW-3	2090	500
6	03/11/04	MW-3	1881	500
7	09/23/04	MW-3	1830	500
8	03/10/05	MW-3	2129	500
9	09/22/05	MW-3	1871	500
10	03/06/06	MW-3	1838	500
11	09/19/06	MW-3	2090	500
12	03/21/07	MW-3	2080	100
13	09/28/07	MW-3	1930	100
14	03/25/08	MW-3	2010	100
15	09/29/08	MW-3	2090	100
16	03/30/09	MW-3	1950	100
17	09/29/09	MW-3	1920	100
18	03/30/10	MW-3	1810	100
19	09/29/10	MW-3	1770	100
20	04/06/11	MW-3	2020	100
21	09/28/11	MW-3	2060	100
22	03/28/12	MW-3	2100	100
23	09/26/12	MW-3	2080	100
24	04/01/13	MW-3	2030	100
25	09/25/13	MW-3	2080	100
26	04/01/14	MW-3	2120	100

Number of Data	26
Number of Truncated Data	0
Percentage of Truncated Data	0%

Nonparametric Prediction Interval: **2129** ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Analyte: Barium Intrawell MW-6T

Sample No.	Sample Date	Location	Concentration (ug/L)	Quantitation Limit (ug/L)
1	6/11/2002	MW-6T	837	500
2	11/1/2002	MW-6T	787	500
3	3/6/2003	MW-6T	936	500
4	9/23/2003	MW-6T	1066	500
5	3/11/2004	MW-6T	966	500
6	9/23/2004	MW-6T	977.0	500
7	3/10/2005	MW-6T	1164.0	500
8	9/22/2005	MW-6T	1018.0	500
9	3/6/2006	MW-6T	1458.0	500
10	9/19/2006	MW-6T	1787.0	500
11	3/21/2007	MW-6T	1700.0	100
12	9/28/2007	MW-6T	1800.0	100
13	3/25/2008	MW-6T	1470.0	100
14	9/29/2008	MW-6T	1880.0	100
15	3/30/2009	MW-6T	1950.0	100
16	9/29/2009	MW-6T	2180.0	100
17	3/30/2010	MW-6T	1880.0	100
18	9/29/2010	MW-6T	1420.0	100
19	4/6/2011	MW-6T	2040.0	100
20	9/28/2011	MW-6T	2230.0	100
21	3/28/2012	MW-6T	2250.0	100
22	9/26/2012	MW-6T	2420.0	100
23	4/1/2013	MW-6T	2280.0	100
24	9/25/2014	MW-6T	2390.0	100
25	4/1/2014	MW-6T	2370.0	100

Number of Data	25
Number of Truncated Data	0
Percentage of Truncated Data	0%

Nonparametric Prediction Interval: **2420** ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Probability Plots to determine the distribution of Barium Intrawell MW-6T

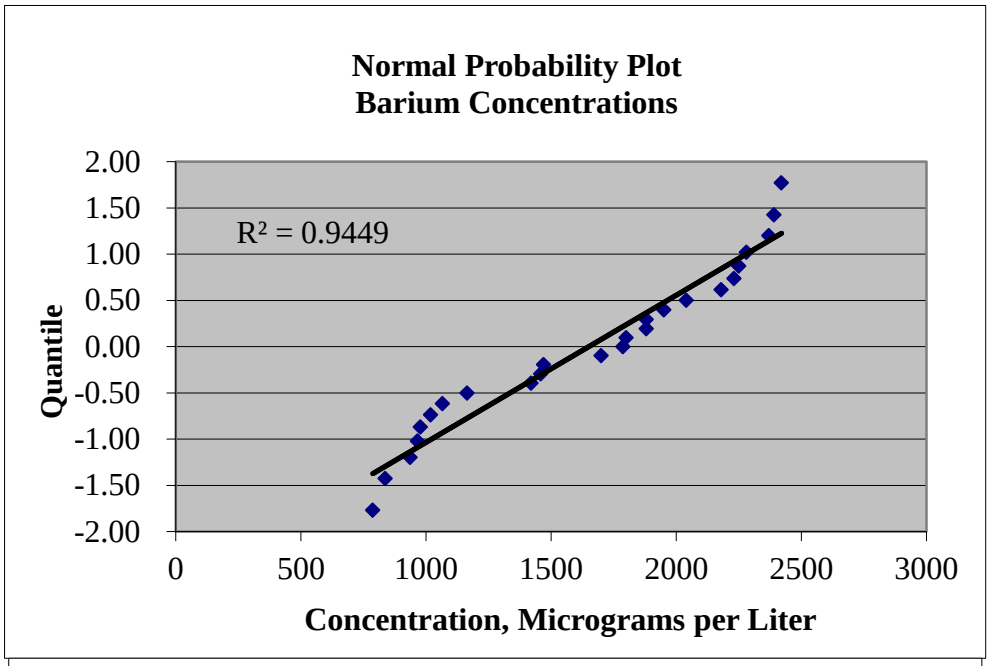
Complete the following table where:

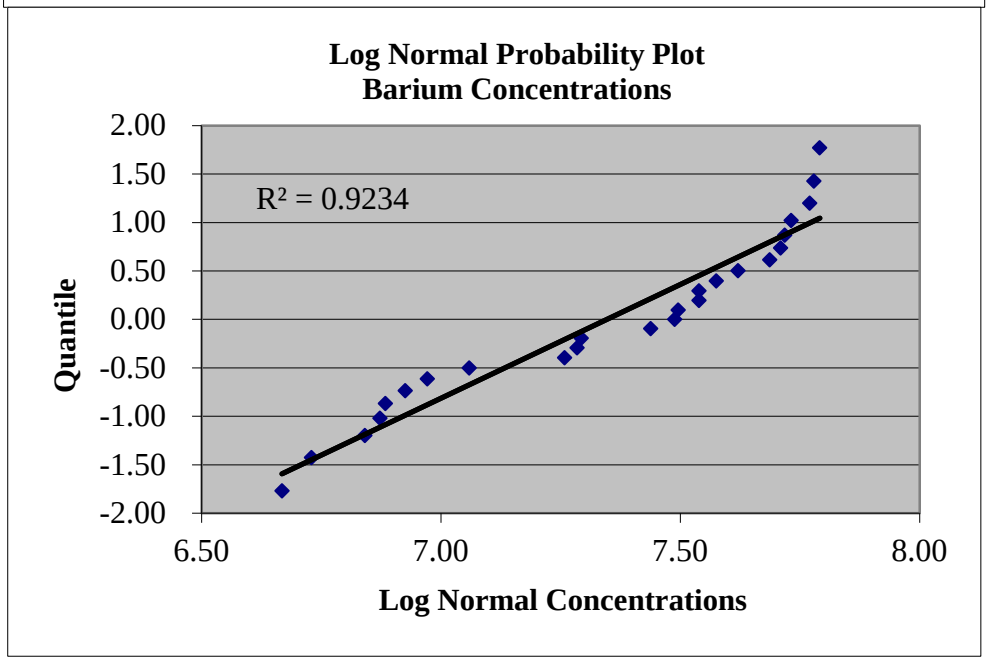
i = ordered value of sample, arranged from smallest to largest
X(i) = sample values arranged from smallest to largest
LN[X(i)] = Natural Log Value of sample concentrations arranged from smallest to largest
[i/(n+1)] = Cumulative probability
n = number of samples = 25

X(i)	LN[X(i)]	i	Rank	[Rank/(n+1)]	Quantiles
787	6.67	1	1	0.038	-1.77
837	6.73	2	2	0.077	-1.43
936	6.84	3	3	0.115	-1.20
966	6.87	4	4	0.154	-1.02
977	6.88	5	5	0.192	-0.87
1018	6.93	6	6	0.231	-0.74
1066	6.97	7	7	0.269	-0.62
1164	7.06	8	8	0.308	-0.50
1420	7.26	9	9	0.346	-0.40
1458	7.28	10	10	0.385	-0.29
1470	7.29	11	11	0.423	-0.19
1700	7.44	12	12	0.462	-0.10
1787	7.49	13	13	0.500	0.00
1800	7.50	14	14	0.538	0.10
1880	7.54	15	15	0.577	0.19
1880	7.54	16	16	0.615	0.29
1950	7.58	17	17	0.654	0.40
2040	7.62	18	18	0.692	0.50
2180	7.69	19	19	0.731	0.62
2230	7.71	20	20	0.769	0.74
2250	7.72	21	21	0.808	0.87
2280	7.73	22	22	0.846	1.02
2370	7.77	23	23	0.885	1.20
2390	7.78	24	24	0.923	1.43
2420	7.79	25	25	0.962	1.77

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Probability Plots to determine the distribution of Barium Intrawell MW-6T





Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Determination of reported background value as an outlier

Analyte: Barium Intrawell MW-6T

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)		Quantitation Limit (ug/l)
1	6/11/02	MW-6T	837		500
2	11/1/02	MW-6T	787		500
3	3/6/03	MW-6T	936		500
4	9/23/03	MW-6T	1066		500
5	3/11/04	MW-6T	966		500
6	9/23/04	MW-6T	977		500
7	3/10/05	MW-6T	1164		500
8	9/22/05	MW-6T	1018		500
9	3/6/06	MW-6T	1458		500
10	9/19/06	MW-6T	1787		500
11	3/21/07	MW-6T	1700		100
12	9/28/07	MW-6T	1800		100
13	3/25/08	MW-6T	1470		100
14	9/29/08	MW-6T	1880		100
15	3/30/09	MW-6T	1950		100
16	9/29/09	MW-6T	2180		100
17	3/30/10	MW-6T	1880		100
18	9/29/10	MW-6T	1420		100
19	4/6/11	MW-6T	2040		100
20	9/28/11	MW-6T	2230		100
21	3/28/12	MW-6T	2250		100
22	9/26/12	MW-6T	2420		100
23	4/1/13	MW-6T	2280		100
24	9/25/14	MW-6T	2390		100
25	4/1/14	MW-6T	2370		100

mean = 1650.240
STD = 553.772

Note: All concentrations are micrograms per liter

Using the data listed above, form the statisitc Tn:

Tn = (Xn - mean) / STD

where: Xn = largest observed sample value
mean = mean of the background values
STD = standard deviation of the background values

For Xn = 2420.000
mean = 1650.240
STD = 553.772

Tn = 1.390

From Table 8 included in the Staistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Interim Final Guidance, the critical value for the given sample group is

Number of samples =	25
Tc =	**2.663**

Since Tc>Tn, the sample result is not considered to be an outlier

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Shapiro Wilk Test Statistic (W) for normality of total Barium Intrawell MW-6T

Complete the following table where

i = ordered value of sample, arranged from smallest to largest
X(i) = sample values arranged from smallest to largest
X(n-i+1) = sample values arranged from largest to smallest
A(n-i+1) = coefficient from table A-1, Statistical Analysis of Ground-Water Data at RCRA Facilities
B(i) = summation of (X(n-i+1)-X(i))A(n-i+1)

i	X(i)	X(n-i+1)	X(n-i+1) - X(i)	A(n-i+1)	B(i)
1	787.00	2420.00	1633	0.445	726.69
2	837.00	2390.00	1553	0.3069	476.62
3	936.00	2370.00	1434	0.2543	364.67
4	966.00	2280.00	1314	0.2148	282.25
5	977.00	2250.00	1273	0.1822	231.94
6	1018.00	2230.00	1212	0.1539	186.53
7	1066.00	2180.00	1114	0.1283	142.93
8	1164.00	2040.00	876	0.1046	91.63
9	1420.00	1950.00	530	0.0823	43.62
10	1458.00	1880.00	422	0.061	25.74
11	1470.00	1880.00	410	0.0403	16.52
12	1700.00	1800.00	100	0.02	2.00
13	1787.00	1787.00	0	0	0.00
14	1800.00	1700.00			
15	1880.00	1470.00			
16	1880.00	1458.00			
17	1950.00	1420.00			
18	2040.00	1164.00			
19	2180.00	1066.00			
20	2230.00	1018.00			
21	2250.00	977.00			
22	2280.00	966.00			
23	2370.00	936.00			
24	2390.00	837.00			
25	2420.00	787.00			

The test statistic W can be found using:

W = SQR[B/(SD x SQRT(n-1))]

where:

B =	summation of (X(n-i+1)-X(i))A(n-i+1)	=	2591.12
SD =	standard deviation of the data group	=	553.77
n =	number of samples	=	25
		W =	0.912

Compare this value to the critical value in Table A-2 of Statistical Analysisof Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (Draft) July, 1992, to determine if the data is normally distributed.

From Table A-2 with (n) samples and a 95% confidence level, the critical value is

W(crit) = 0.918
and the calculated W = 0.912

Therefore the data is Non Normal

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Shapiro Wilk Test Statistic (W) for log normality of Barium Intrawell MW-6T

Complete the following table where

i = ordered value of sample, arranged from smallest to largest
X(i) = sample values arranged from smallest to largest
X(n-i+1) = sample values arranged from largest to smallest
A(n-i+1) = coefficient from table A-1, Statistical Analysis of Ground-Water Data at RCRA Facilities
B(i) = summation of (X(n-i+1)-X(i))A(n-i+1)

i	X(i)	X(n-i+1)	X(n-i+1) - X(i)	A(n-i+1)	B(i)
1	6.67	7.79	1.1233	0.4450	0.4999
2	6.73	7.78	1.0492	0.3069	0.3220
3	6.84	7.77	0.9290	0.2543	0.2363
4	6.87	7.73	0.8588	0.2148	0.1845
5	6.88	7.72	0.8342	0.1822	0.1520
6	6.93	7.71	0.7842	0.1539	0.1207
7	6.97	7.69	0.7154	0.1283	0.0918
8	7.06	7.62	0.5611	0.1046	0.0587
9	7.26	7.58	0.3172	0.0823	0.0261
10	7.28	7.54	0.2542	0.0610	0.0155
11	7.29	7.54	0.2460	0.0403	0.0099
12	7.44	7.50	0.0572	0.0200	0.0011
13	7.49	7.49	0.0000	0.0000	0.0000
14	7.50	7.44			
15	7.54	7.29			
16	7.54	7.28			
17	7.58	7.26			
18	7.62	7.06			
19	7.69	6.97			
20	7.71	6.93			
21	7.72	6.88			
22	7.73	6.87			
23	7.77	6.84			
24	7.78	6.73			
25	7.79	6.67			

The test statistic W can be found using:

W = SQR((B/SD x SQRT(n-1))

where:

B =	summation of (X(n-i+1)-X(i))A(n-i+1)	=	1.7184
SD =	standard deviation of the data group	=	0.3708
n =	number of samples	=	25

W = 0.8949

Compare this value to the critical value in Table A-2 of Statistical Analysisof Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (Draft) July, 1992, to determine if the data is normally distributed.

From Table A-2 with (n) samples and a 95% confidence level, the critical value is

W(crit) = 0.918
and the calculated W = 0.895

Therefore the data is Non Normal

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Analyte: Chromium

Sample No.	Sample Date	Location	Concentration (ug/L)		Quantitation Limit (ug/L)
1	10/31/2001	MW-1	ND		10
2	6/11/2002	MW-1	ND		10
3	11/1/2002	MW-1	ND		10
4	3/6/2003	MW-1	ND		10
5	9/23/2003	MW-1	ND		10
6	3/11/2004	MW-1	ND		10
7	6/11/2002	MW-10	ND		10
8	11/1/2002	MW-10	ND		10
9	3/6/2003	MW-10	ND		10
10	9/23/2003	MW-10	ND		10
11	3/11/2004	MW-10	ND		10
12	9/23/2004	MW-10	ND		10
13	3/10/2005	MW-10	ND		10
14	9/22/2005	MW-10	ND		10
15	3/6/2006	MW-10	ND		10
16	9/19/2006	MW-10	ND		10
17	3/21/2007	MW-10	ND		10
18	9/28/2007	MW-10	ND		10
19	3/25/2008	MW-10	ND		10
20	9/29/2008	MW-10	ND		10
21	3/30/2009	MW-10	ND		10
22	9/29/2009	MW-10	1.9	J	10
23	3/30/2010	MW-10	ND		10
24	9/29/2010	MW-10	ND		10
25	4/6/2011	MW-10	ND		10
26	9/28/2011	MW-10	1.2	J	10
27	3/28/2012	MW-10	ND		10
28	9/26/2012	MW-10	ND		10
29	4/1/2013	MW-10	ND		10
30	9/25/2013	MW-10	9.0	J	10
31	4/1/2014	MW-10	ND		10
32	9/29/2014	MW-10	ND		10

Number of Data	32
Number of Truncated Data	29
Percentage of Truncated Data	91%

Nonparametric Prediction Interval: **10.0** ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Analyte: Chromium (MW-5 Intrawell)

Sample No.	Sample Date	Location	Concentration (ug/L)		Quantitation Limit (ug/L)
1	10/31/2001	MW-5	ND		10
2	6/11/2002	MW-5	ND		10
3	11/1/2002	MW-5	ND		10
4	3/6/2003	MW-5	ND		10
5	9/23/2003	MW-5	ND		10
6	3/11/2004	MW-5	ND		10
7	9/23/2004	MW-5	ND		10
8	3/10/2005	MW-5	ND		10
9	9/22/2005	MW-5	ND		10
10	3/6/2006	MW-5	ND		10
11	9/19/2006	MW-5	ND		10
12	3/21/2007	MW-5	ND		10
13	9/28/2007	MW-5	ND		10
14	3/25/2008	MW-5	ND		10
15	9/29/2008	MW-5	ND		10
16	3/30/2009	MW-5	ND		10
17	9/29/2009	MW-5	2.4	J	10
18	3/30/2010	MW-5	1.7	J	10
19	9/29/2010	MW-5	1.9	J	10
20	4/6/2011	MW-5	4.9	J	10
21	9/28/2011	MW-5	7.7	J	10
22	3/28/2012	MW-5	12.0		10
23	5/23/2012	MW-5	6.5	J	10
24	9/26/2012	MW-5	5.1	J	10
25	4/1/2013	MW-5	4.2	J	10
26	9/25/2013	MW-5	5.1	J	10
27	4/1/2014	MW-5	3.4	J	10

Number of Data	27
Number of Truncated Data	16
Percentage of Truncated Data	59%

Nonparametric Prediction Interval: **12.0** ug/L

Golder Associates

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Analyte: Cobalt

Sample No.	Sample Date	Location	Concentration (ug/L)		Quantitation Limit (ug/L)
1	10/31/2001	MW-1	ND		10
2	3/21/2007	MW-10	ND		10
3	9/28/2007	MW-10	ND		10
4	3/25/2008	MW-10	ND		10
5	9/29/2008	MW-10	ND		10
6	3/30/2009	MW-10	ND		10
7	9/29/2009	MW-10	ND		10
8	3/30/2010	MW-10	ND		10
9	9/29/2010	MW-10	ND		10
10	4/6/2011	MW-10	ND		10
11	9/28/2011	MW-10	ND		10
12	3/28/2012	MW-10	ND		10
13	9/26/2012	MW-10	ND		10
14	4/1/2013	MW-10	ND		10
15	9/25/2013	MW-10	ND		10
16	4/1/2014	MW-10	ND		10
17	9/29/2014	MW-10	ND		10

Number of Data	17
Number of Truncated Data	17
Percentage of Truncated Data	100%

Nonparametric Prediction Interval: **10.0** ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Analyte: Cobalt (MW-5 Intrawell)

Sample No.	Sample Date	Location	Concentration (ug/L)		Quantitation Limit (ug/L)
1	3/21/2007	MW-5	30.7		10
2	9/28/2007	MW-5	21.1		10
3	3/25/2008	MW-5	2.9	J	10
4	9/29/2008	MW-5	20.5		10
5	3/30/2009	MW-5	1.1	J	10
6	9/29/2009	MW-5	9.2	J	10
7	3/30/2010	MW-5	2.4	J	10
8	9/29/2010	MW-5	2.1	J	10
9	4/6/2011	MW-5	8.2	J	10
10	9/28/2011	MW-5	2.4	J	10
11	3/28/2012	MW-5	1.8	J	10
12	9/26/2012	MW-5	ND		10
13	4/1/2013	MW-5	ND		10
14	9/25/2013	MW-5	ND		10
15	4/1/2014	MW-5	ND		10

Number of Data	15
Number of Truncated Data	4
Percentage of Truncated Data	27%

Upper Tolerance Interval: **79.3** ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Probability Plots to determine the distribution of Cobalt (MW-5 Intrawell)

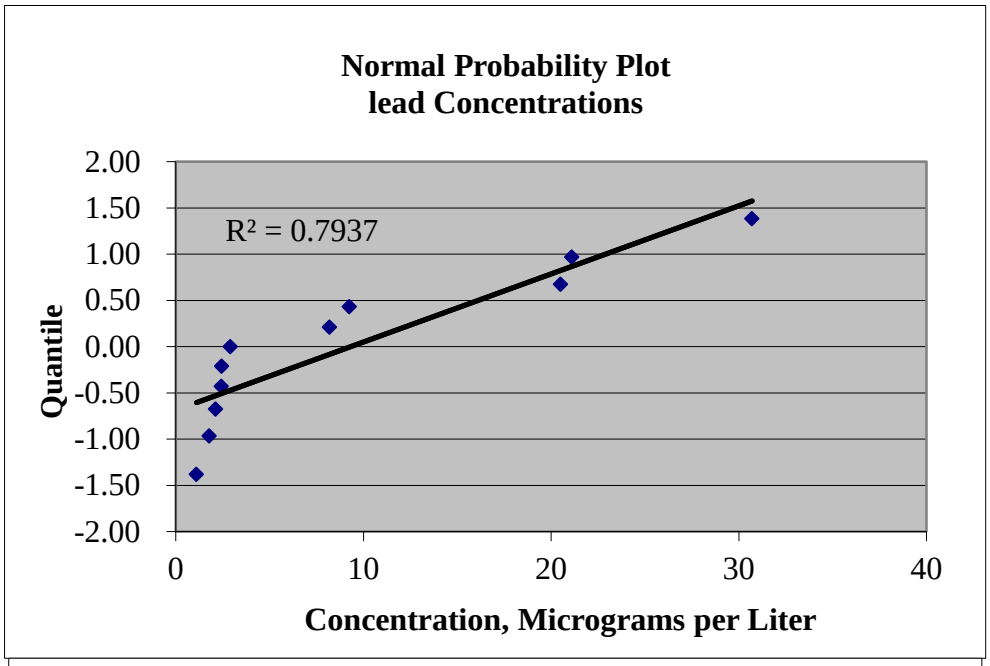
Complete the following table where:

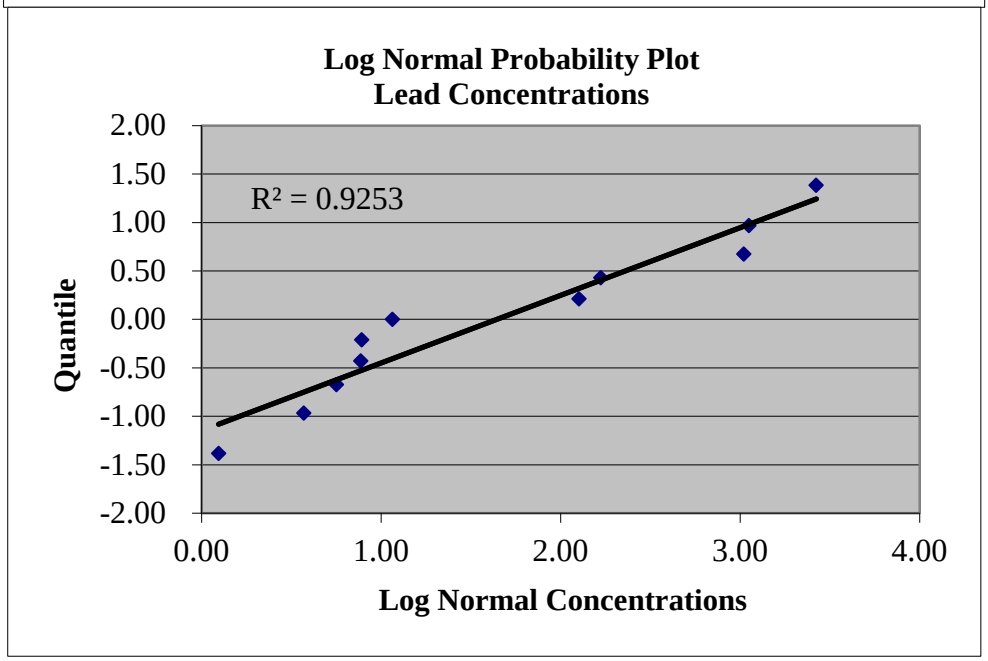
i = ordered value of sample, arranged from smallest to largest
X(i) = sample values arranged from smallest to largest
LN[X(i)] = Natural Log Value of sample concentrations arranged from smallest to largest
[i/(n+1)] = Cumulative probability
n = number of samples = 11

X(i)	LN[X(i)]	i	Rank	[Rank/(n+1)]	Quantiles
1.1	0.10	1	1	0.083	-1.38
1.77	0.57	2	2	0.167	-0.97
2.12	0.75	3	3	0.250	-0.67
2.43	0.89	4	4	0.333	-0.43
2.44	0.89	5	5	0.417	-0.21
2.9	1.06	6	6	0.500	0.00
8.19	2.10	7	7	0.583	0.21
9.24	2.22	8	8	0.667	0.43
20.5	3.02	9	9	0.750	0.67
21.1	3.05	10	10	0.833	0.97
30.7	3.42	11	11	0.917	1.38

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Probability Plots to determine the distribution of Cobalt (MW-5 Intrawell)





Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Determination of reported background value as an outlier

Analyte: Cobalt (MW-5 Intrawell)

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)		Quantitation Limit (ug/l)
1	3/21/07	MW-5	30.7		10
2	9/28/07	MW-5	21.1		10
3	3/25/08	MW-5	2.9	J	10
4	9/29/08	MW-5	20.5		10
5	3/30/09	MW-5	1.1	J	10
6	9/29/09	MW-5	9.24	J	10
7	3/30/10	MW-5	2.43	J	10
8	9/29/10	MW-5	2.12	J	10
9	4/6/11	MW-5	8.19	J	10
10	9/28/11	MW-5	2.44	J	10
11	3/28/12	MW-5	1.77	J	10
12	9/26/12	MW-5	ND		10
13	4/1/13	MW-5	ND		10
14	9/25/13	MW-5	ND		10
15	4/1/14	MW-5	ND		10

mean = 9.317
STD = 10.171

Note: All concentrations are micrograms per liter

Using the data listed above, form the statisitc Tn:

Tn = (Xn - mean) / STD

where: Xn = largest observed sample value
mean = mean of the background values
STD = standard deviation of the background values

For Xn = 30.700
mean = 9.317
STD = 10.171

Tn = 2.102

From Table 8 included in the Staistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Interim Final Guidance, the critical value for the given sample group is

Number of samples = 15
Tc = 2.409

Since Tc>Tn, the sample result is not considered to be an outlier

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Shapiro Wilk Test Statistic (W) for normality of total Cobalt (MW-5 Intrawell)

Complete the following table where

i = ordered value of sample, arranged from smallest to largest
X(i) = sample values arranged from smallest to largest
X(n-i+1) = sample values arranged from largest to smallest
A(n-i+1) = coefficient from table A-1, Statistical Analysis of Ground-Water Data at RCRA Facilities
B(i) = summation of (X(n-i+1)-X(i))A(n-i+1)

i	X(i)	X(n-i+1)	X(n-i+1) - X(i)	A(n-i+1)	B(i)
1	1.10	30.70	29.6	0.5601	16.58
2	1.77	21.10	19.33	0.3315	6.41
3	2.12	20.50	18.38	0.226	4.15
4	2.43	9.24	6.81	0.1429	0.97
5	2.44	8.19	5.75	0.0695	0.40
6	2.90	2.90	0	0	0.00
7	8.19	2.44			
8	9.24	2.43			
9	20.50	2.12			
10	21.10	1.77			
11	30.70	1.10			

The test statistic W can be found using:

W = SQR[B/(SD x SQRT(n-1))]

where:
B = summation of (X(n-i+1)-X(i))A(n-i+1) = 28.51
SD = standard deviation of the data group = 10.17
n = number of samples = 11

W = 0.786

Compare this value to the critical value in Table A-2 of Statistical Analysisof Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (Draft) July, 1992, to determine if the data is normally distributed.

From Table A-2 with (n) samples and a 95% confidence level, the critical value is

W(crit) = 0.85
and the calculated W = 0.786

Therefore the data is Non Normal

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Shapiro Wilk Test Statistic (W) for log normality of Cobalt (MW-5 Intrawell)

Complete the following table where

i = ordered value of sample, arranged from smallest to largest
X(i) = sample values arranged from smallest to largest
X(n-i+1) = sample values arranged from largest to smallest
A(n-i+1) = coefficient from table A-1, Statistical Analysis of Ground-Water Data at RCRA Facilities
B(i) = summation of (X(n-i+1)-X(i))A(n-i+1)

i	X(i)	X(n-i+1)	X(n-i+1) - X(i)	A(n-i+1)	B(i)
1	0.10	3.42	3.3290	0.5601	1.8645
2	0.57	3.05	2.4783	0.3315	0.8216
3	0.75	3.02	2.2690	0.2260	0.5128
4	0.89	2.22	1.3357	0.1429	0.1909
5	0.89	2.10	1.2109	0.0695	0.0842
6	1.06	1.06	0.0000	0.0000	0.0000
7	2.10	0.89			
8	2.22	0.89			
9	3.02	0.75			
10	3.05	0.57			
11	3.42	0.10			

The test statistic W can be found using:

W = SQR((B/SD x SQRT(n-1))

where:
B = summation of (X(n-i+1)-X(i))A(n-i+1) = 3.4739
SD = standard deviation of the data group = 1.1578
n = number of samples = 11

W = 0.9003

Compare this value to the critical value in Table A-2 of Statistical Analysisof Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (Draft) July, 1992, to determine if the data is normally distributed.

From Table A-2 with (n) samples and a 95% confidence level, the critical value is

W(crit) = 0.85
and the calculated W = 0.900

Therefore the data set is Log Normal

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Aitchison's Adjustment for Cobalt (MW-5 Intrawell)

Background Values (positive detects only)

Sample No.	Sample Date	Location	Concentration (ug/l)	ln(conc)
1	3/21/07	MW-5	30.7	3.42426265
2	9/28/07	MW-5	21.1	3.04927304
3	3/25/08	MW-5	2.9	1.06471074
4	9/29/08	MW-5	20.5	3.02042489
5	3/30/09	MW-5	1.1	0.09531018
6	9/29/09	MW-5	9.24	2.22354189
7	3/30/10	MW-5	2.43	0.88789126
8	9/29/10	MW-5	2.12	0.75141609
9	4/6/11	MW-5	8.19	2.1029139
10	9/28/11	MW-5	2.44	0.89199804
11	3/28/12	MW-5	1.77	0.57097955
12	9/26/12	MW-5	ND	ND
13	4/1/13	MW-5	ND	ND
14	9/25/13	MW-5	ND	ND
15	4/1/14	MW-5	ND	ND

Mean of detected values = 1.6439
Standard Deviation of detected values = 1.1578

The adjusted mean can be found using

$$M(a) = (1-d/n) \times M$$

where:	d =	number non- detected values	=	4
	n =	total number samples	=	15
	M =	mean detected values	=	1.64
		M(a)	**=**	**1.21**

The adjusted standard deviation squared may be found using

$$STD(a) = (n-(d+1)S)/n-1) + d(n-d)MM/n(n-1)$$

where:	n =	total number samples	=	15
	d =	number non-detected values	=	4
	S =	std deviation of detected values squared	=	1.34
	MM =	mean of detected values squared	=	2.70
		STD(a)	=	1.52

and the adjusted standard deviation is then

S(a) = SQRT(STD(a)) = 1.23

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Parametric Prediction Interval for Aitchison's adjusted data

Analyte: Cobalt (MW-5 Intrawell)

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)	ln(Cocentration)
1	3/21/07	MW-5	30.7	10	3.424
2	9/28/07	MW-5	21.1	10	3.0493
3	3/25/08	MW-5	2.9	10	1.0647
4	9/29/08	MW-5	20.5	10	3.0204
5	3/30/09	MW-5	1.1	10	0.0953
6	9/29/09	MW-5	9.24	10	2.2235
7	3/30/10	MW-5	2.43	10	0.8879
8	9/29/10	MW-5	2.12	10	0.7514
9	4/6/11	MW-5	8.19	10	2.1029
10	9/28/11	MW-5	2.44	10	0.8920
11	3/28/12	MW-5	1.77	10	0.5710
12	9/26/12	MW-5	ND	10	ND
13	4/1/13	MW-5	ND	10	ND
14	9/25/13	MW-5	ND	10	ND
15	4/1/14	MW-5	ND	10	ND

Note: All sample concentrations are micrograms per liter

The background mean and standard deviation were modified using Aitchison's Adjustment.
The adjusted mean and standard deviation are as follows:

the ln(adjusted mean) and l(standard deviation) are

ln(adjusted mean) = 1.21
ln(adjusted standard deviation) = 1.23

Using the background data, the upper Prediction Limit can be determined using:

Upper Prediction Limit = (Mean Conc) + t(n-1,k,.95) x (Std Dev) x SQRT(1/m+1/n)

where:
Mean Conc = mean concentration background samples
t(n-1k,.95) = Bonferroni t-statistic from table 1, with
n-1 = degrees of freedom (number of samples - 1)
k = number of downgradient samples per event
.95 = confidence interval
Std Dev = standard deviation of background samples
m = number independent samples from each sampling point
n = number of background samples

For:
Mean Conc = 1.206
Std Dev = 1.234
t(n-1,k,.95)*sqrt(1/m+1/n) = 1.830
k = 1
m = 1

n = 15

Antilog UPL = 32.0 ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Parametric Tolerance Interval for Aitchison's adjusted data

Analyte: Cobalt (MW-5 Intrawell)

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)	ln(Concentration)
1	3/21/07	MW-5	30.7	10.00	3.424
2	9/28/07	MW-5	21.1	10.00	3.049
3	3/25/08	MW-5	2.9	10.00	1.065
4	9/29/08	MW-5	20.5	10.00	3.020
5	3/30/09	MW-5	1.1	10.00	0.095
6	9/29/09	MW-5	9.24	10.00	2.224
7	3/30/10	MW-5	2.43	10.00	0.888
8	9/29/10	MW-5	2.12	10.00	0.751
9	4/6/11	MW-5	8.19	10.00	2.103
10	9/28/11	MW-5	2.44	10.00	0.892
11	3/28/12	MW-5	1.77	10.00	0.571
12	9/26/12	MW-5	ND	10.00	ND
13	4/1/13	MW-5	ND	10.00	ND
14	9/25/13	MW-5	ND	10.00	ND
15	4/1/14	MW-5	ND	10.00	ND

Note: All sample concentrations are micrograms per liter

The background mean and standard deviation were modified using Aitchison's Adjustment.
The adjusted mean and standard deviation are as follows:

The ln(adjusted mean) and ln(standard deviation) are

ln(adjusted mean) = 1.21
ln(adjusted standard deviation) = 1.23

Using the background data, the upper Tolerance Limit can be determined using

Upper Tolerance Limit = (Mean Concentration) + K x (Standard Deviation Samples)

where: K = factor for constructing one sided normal tolerance limit taken from table 4-2, page 87, Statistical Methods for Groundwater Monitoring, Gibbons, 1994
n = number of background samples

For: K = 2.566
n = 15

UTL = 79.3 ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Analyte: Silver

Sample No.	Sample Date	Location	Concentration (ug/L)		Quantitation Limit (ug/L)
1	10/31/2001	MW-1	ND		10
2	6/11/2002	MW-1	ND		10
3	11/1/2002	MW-1	ND		10
4	3/6/2003	MW-1	ND		10
5	9/23/2003	MW-1	ND		10
6	3/11/2004	MW-1	ND		10
7	6/11/2002	MW-10	ND		10
8	11/1/2002	MW-10	ND		10
9	3/6/2003	MW-10	ND		10
10	9/23/2003	MW-10	ND		10
11	3/11/2004	MW-10	ND		10
12	9/23/2004	MW-10	ND		10
13	3/10/2005	MW-10	ND		10
14	9/22/2005	MW-10	ND		10
15	3/6/2006	MW-10	ND		10
16	9/19/2006	MW-10	ND		10
17	3/21/2007	MW-10	ND		10
18	9/27/2007	MW-10	ND		10
19	3/25/2008	MW-10	ND		10
20	9/29/2008	MW-10	ND		10
21	3/30/2009	MW-10	1.3	J	10
22	9/29/2009	MW-10	ND		10
23	3/30/2010	MW-10	ND		10
24	9/29/2010	MW-10	ND		10
25	4/6/2011	MW-10	ND		10
26	9/28/2011	MW-10	ND		10
27	3/28/2012	MW-10	ND		10
28	9/26/2012	MW-10	ND		10
29	4/1/2013	MW-10	ND		10
30	9/25/2013	MW-10	ND		10
31	4/1/2014	MW-10	ND		10
32	9/29/2014	MW-10	ND		10

Number of Data	32
Number of Truncated Data	31
Percentage of Truncated Data	97%

Nonparametric Prediction Interval: **10.0** ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Analyte: Silver (MW-14 Intrawell)

Sample No.	Sample Date	Location	Concentration (ug/L)		Quantitation Limit (ug/L)
1	9/29/2008	MW-14	ND		10
2	3/30/2009	MW-14	1.4	J	10
3	9/29/2009	MW-14	ND		10
4	3/30/2010	MW-14	ND		10
5	9/29/2010	MW-14	ND		10
6	4/6/2011	MW-14	ND		10
7	9/28/2011	MW-14	ND		10
8	3/28/2012	MW-14	ND		10
9	9/26/2012	MW-14	ND		10
10	4/1/2013	MW-14	ND		10
11	9/25/2013	MW-14	ND		10
12	4/1/2014	MW-14	ND		10

Number of Data	12
Number of Truncated Data	11
Percentage of Truncated Data	92%

Nonparametric Prediction Interval: **10.0** ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Analyte: Vanadium

Sample No.	Sample Date	Location	Concentration (ug/L)		Quantitation Limit (ug/L)
1	3/21/2007	MW-10	ND		25
2	9/28/2007	MW-10	ND		25
3	3/25/2008	MW-10	ND		25
4	9/29/2008	MW-10	ND		25
5	3/30/2009	MW-10	ND		25
6	9/29/2009	MW-10	ND		25
7	3/30/2010	MW-10	ND		25
8	9/29/2010	MW-10	ND		25
9	4/6/2011	MW-10	ND		25
10	9/28/2011	MW-10	ND		25
11	3/28/2012	MW-10	ND		25
12	9/26/2012	MW-10	ND		25
13	4/1/2013	MW-10	ND		25
14	9/25/2013	MW-10	ND		25
15	4/1/2014	MW-10	ND		25
16	9/29/2014	MW-10	ND		25

Number of Data	16
Number of Truncated Data	16
Percentage of Truncated Data	100%

Nonparametric Prediction Interval: **25.0** ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Analyte: Vanadium (MW-3 Intrawell)

Sample No.	Sample Date	Location	Concentration (ug/L)		Quantitation Limit (ug/L)
1	3/21/2007	MW-3	22.9	J	25
2	9/28/2007	MW-3	29.6		25
3	3/25/2008	MW-3	25.5		25
4	9/29/2008	MW-3	24.6	J	25
5	3/30/2009	MW-3	41.3		25
6	9/29/2009	MW-3	35.1		25
7	3/30/2010	MW-3	30.3		25
8	9/29/2010	MW-3	23.3	J	25
9	4/6/2011	MW-3	28.0		25
10	9/28/2011	MW-3	34.4		25
11	3/28/2012	MW-3	25.1		25
12	9/26/2012	MW-3	22.0	J	25
13	4/1/2013	MW-3	24.8	J	25
14	9/25/2013	MW-3	25.2		25
15	4/1/2014	MW-3	23.1	J	25

Number of Data	15
Number of Truncated Data	0
Percentage of Truncated Data	0%

Nonparametric Prediction Interval: **41.3** ug/L

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Probability Plots to determine the distribution of Vanadium (MW-3 Intrawell)

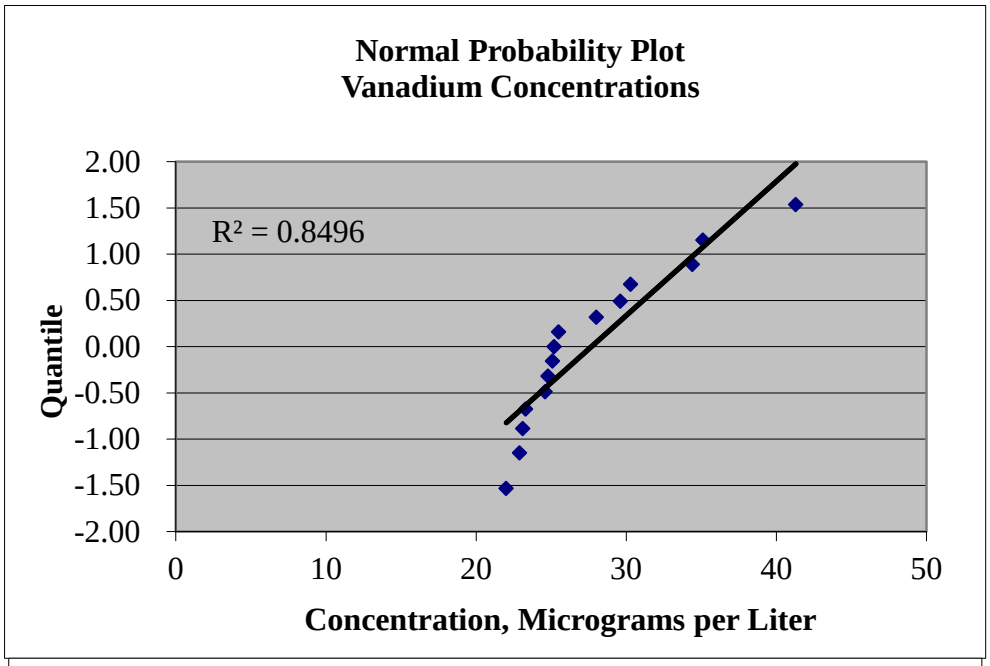
Complete the following table where:

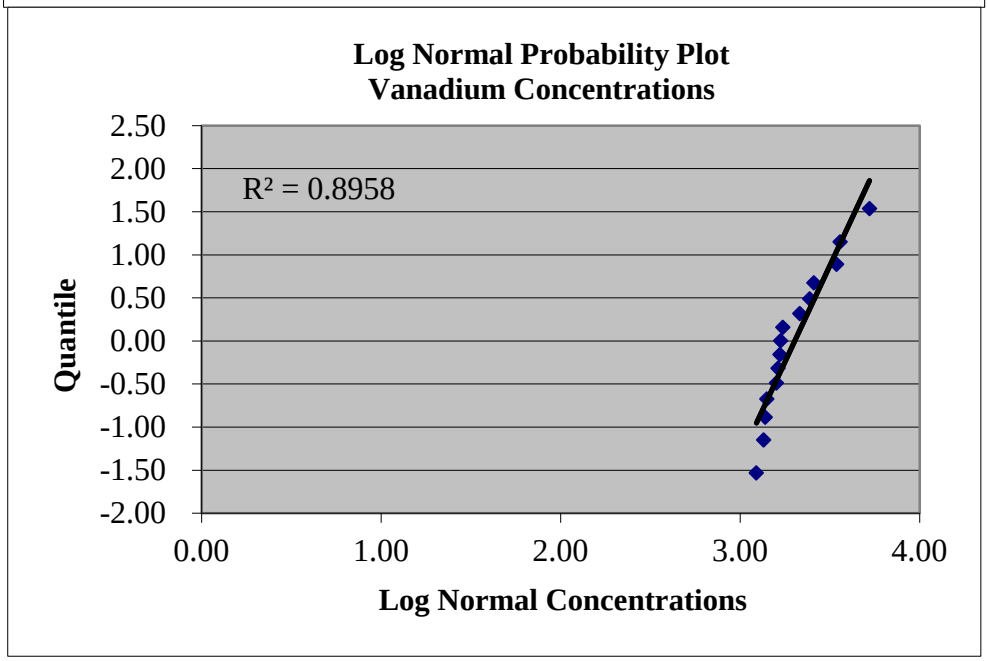
i = ordered value of sample, arranged from smallest to largest
X(i) = sample values arranged from smallest to largest
LN[X(i)] = Natural Log Value of sample concentrations arranged from smallest to largest
[i/(n+1)] = Cumulative probability
n = number of samples = 15

X(i)	LN[X(i)]	i	Rank	[Rank/(n+1)]	Quantiles
22	3.09	1	1	0.063	-1.53
22.9	3.13	2	2	0.125	-1.15
23.1	3.14	3	3	0.188	-0.89
23.3	3.15	4	4	0.250	-0.67
24.6	3.20	5	5	0.313	-0.49
24.8	3.21	6	6	0.375	-0.32
25.1	3.22	7	7	0.438	-0.16
25.2	3.23	8	8	0.500	0.00
25.5	3.24	9	9	0.563	0.16
28	3.33	10	10	0.625	0.32
29.6	3.39	11	11	0.688	0.49
30.3	3.41	12	12	0.750	0.67
34.4	3.54	13	13	0.813	0.89
35.1	3.56	14	14	0.875	1.15
41.3	3.72	15	15	0.938	1.53

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Probability Plots to determine the distribution of Vanadium (MW-3 Intraw





Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Determination of reported background value as an outlier

Analyte: Vanadium (MW-3 Intrawell)

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)		Quantitation Limit (ug/l)
1	3/21/07	MW-3	22.9	J	25
2	9/28/07	MW-3	29.6		25
3	3/25/08	MW-3	25.5		25
4	9/29/08	MW-3	24.6	J	25
5	3/30/09	MW-3	41.3		25
6	9/29/09	MW-3	35.1		25
7	3/30/10	MW-3	30.3		25
8	9/29/10	MW-3	23.3	J	25
9	4/6/11	MW-3	28		25
10	9/28/11	MW-3	34.4		25
11	3/28/12	MW-3	25.1		25
12	9/26/12	MW-3	22	J	25
13	4/1/13	MW-3	24.8	J	25
14	9/25/13	MW-3	25.2		25
15	4/1/14	MW-3	23.1	J	25

mean = 27.680
STD = 5.523

Note: All concentrations are micrograms per liter

Using the data listed above, form the statisitc Tn:

Tn = (Xn - mean) / STD

where:
Xn = largest observed sample value
mean = mean of the background values
STD = standard deviation of the background values

For
Xn = 41.300
mean = 27.680
STD = 5.523

Tn = 2.466

From Table 8 included in the Staistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Interim Final Guidance, the critical value for the given sample group is

Number of samples = 15
Tc = 2.409

Since Tc<Tn, the sample result is considered to be an outlier

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Determination of reported background value as an outlier

Analyte: Vanadium (MW-3 Intrawell)

Background Data

Sample No.	Sample Date	Location	ln(Concentration) (ug/l)		Quantitation Limit (ug/l)
1	3/21/07	MW-3	3.1311	J	25
2	9/28/07	MW-3	3.3878		25
3	3/25/08	MW-3	3.2387		25
4	9/29/08	MW-3	3.2027	J	25
5	3/30/09	MW-3	3.7209		25
6	9/29/09	MW-3	3.5582		25
7	3/30/10	MW-3	3.4111		25
8	9/29/10	MW-3	3.1485	J	25
9	4/6/11	MW-3	3.3322		25
10	9/28/11	MW-3	3.5381		25
11	3/28/12	MW-3	3.2229		25
12	9/26/12	MW-3	3.0910	J	25
13	4/1/13	MW-3	3.2108	J	25
14	9/25/13	MW-3	3.2268		25
15	4/1/14	MW-3	3.1398	J	25
		mean =	3.304		
		STD =	0.184		

Note: All concentrations are micrograms per liter

Using the data listed above, form the statisitc Tn:

Tn = (Xn - mean) / STD

where: Xn = largest observed sample value
mean = mean of the background values
STD = standard deviation of the background values

For Xn = 3.721
mean = 3.304
STD = 0.184

Tn = 2.264

From Table 8 included in the Staistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Interim Final Guidance, the critical value for the given sample group is

Number of samples = 15
Tc = 2.409

Since Tc>Tn, the sample result is not considered to be an outlier

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Shapiro Wilk Test Statistic (W) for normality of total Vanadium (MW-3 Intrawell)

Complete the following table where

i = ordered value of sample, arranged from smallest to largest
X(i) = sample values arranged from smallest to largest
X(n-i+1) = sample values arranged from largest to smallest
A(n-i+1) = coefficient from table A-1, Statistical Analysis of Ground-Water Data at RCRA Facilities
B(i) = summation of (X(n-i+1)-X(i))A(n-i+1)

i	X(i)	X(n-i+1)	X(n-i+1) - X(i)	A(n-i+1)	B(i)
1	22.00	22.90	0.9	0.515	0.46
2	22.90	41.30	18.4	0.3306	6.08
3	23.10	35.10	12	0.2495	2.99
4	23.30	34.40	11.1	0.1878	2.08
5	24.60	30.30	5.7	0.1353	0.77
6	24.80	29.60	4.8	0.088	0.42
7	25.10	28.00	2.9	0.0433	0.13
8	25.20	25.50	0.3	0	0.00
9	25.50	25.20			
10	28.00	25.10			
11	29.60	24.80			
12	30.30	24.60			
13	34.40	23.30			
14	35.10	23.10			
15	41.30	22.00			

The test statistic W can be found using:

W = SQR[B/(SD x SQRT(n-1))]

where:
B = summation of (X(n-i+1)-X(i))A(n-i+1) = 12.94
SD = standard deviation of the data group = 5.52
n = number of samples = 15

W = 0.392

Compare this value to the critical value in Table A-2 of Statistical Analysisof Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (Draft) July, 1992, to determine if the data is normally distributed.

From Table A-2 with (n) samples and a 95% confidence level, the critical value is

W(crit) = 0.881
and the calculated W = 0.392

Therefore the data is Non Normal

Project Name: WI - Red Rock
Project No: 073-9603514
Date: 11/14/14

Shapiro Wilk Test Statistic (W) for log normality of Vanadium (MW-3 Intrawell)

Complete the following table where

i = ordered value of sample, arranged from smallest to largest
X(i) = sample values arranged from smallest to largest
X(n-i+1) = sample values arranged from largest to smallest
A(n-i+1) = coefficient from table A-1, Statistical Analysis of Ground-Water Data at RCRA Facilities
B(i) = summation of (X(n-i+1)-X(i))A(n-i+1)

i	X(i)	X(n-i+1)	X(n-i+1) - X(i)	A(n-i+1)	B(i)
1	3.09	3.13	0.0401	0.5150	0.0206
2	3.13	3.72	0.5897	0.3306	0.1950
3	3.14	3.56	0.4184	0.2495	0.1044
4	3.15	3.54	0.3896	0.1878	0.0732
5	3.20	3.41	0.2084	0.1353	0.0282
6	3.21	3.39	0.1769	0.0880	0.0156
7	3.22	3.33	0.1093	0.0433	0.0047
8	3.23	3.24	0.0118	0.0000	0.0000
9	3.24	3.23			
10	3.33	3.22			
11	3.39	3.21			
12	3.41	3.20			
13	3.54	3.15			
14	3.56	3.14			
15	3.72	3.09			

The test statistic W can be found using:

W = SQR((B/SD x SQRT(n-1))

where:
B = summation of (X(n-i+1)-X(i))A(n-i+1) = 0.4417
SD = standard deviation of the data group = 0.1841
n = number of samples = 15

W = 0.4110

Compare this value to the critical value in Table A-2 of Statistical Analysisof Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (Draft) July, 1992, to determine if the data is normally distributed.

From Table A-2 with (n) samples and a 95% confidence level, the critical value is

W(crit) = 0.881
and the calculated W = 0.411

Therefore the data is Non Normal

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