



Tuesday, October 29, 2019

eAnalytics Laboratory
eAnalytics Laboratory
4130 Clydesdale Parkway
Loveland, CO 80538

Re: ALS Workorder: 1910381
Project Name: Platteville Drill Cuttings
Project Number:

Dear Laboratory:

Five soil samples were received from eAnalytics Laboratory, on 10/15/2019. The samples were scheduled for the following analyses:

Inorganics

Metals

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Katie M. OBrien
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
AIHA	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
PJ-LA (DoD ELAP/ISO 170250)	95377
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280



1910381

Metals:

The samples were analyzed following SW-846, 3rd Edition procedures. Analysis by ICPMS followed method 6020B and the current revision of SOP 827. Mercury analysis by CVAA followed method 747FA and the current revision of SOP 812.

All acceptance criteria were met.

Inorganics:

The samples were analyzed following SW-846 procedures for the current revision of the following SOP and method:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Hexavalent chromium	7196A	1122

All acceptance criteria were met.

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1910381

Client Name: eAnalytics Laboratory

Client Project Name: Platteville Drill Cuttings

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
NW1 Composite 6"-12" (1690-1)	1910381-1		SOIL	08-Oct-19	
NE2 Composite 6"-12" (1690-2)	1910381-2		SOIL	08-Oct-19	
SE3 Composite 6"-12" (1690-3)	1910381-3		SOIL	08-Oct-19	
SW4 Composite 6"-12" (1690-4)	1910381-4		SOIL	08-Oct-19	
Background (1690-5)	1910381-5		SOIL	08-Oct-19	

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SAMPLE SUMMARY REPORT

Client: eAnalytics Laboratory
Project: Platteville Drill Cuttings
Sample ID: NW1 Composite 6"-12" (1690-1)
Legal Location:
Collection Date: 10/8/2019

Date: 29-Oct-19
Work Order: 1910381
Lab ID: 1910381-1
Matrix: SOIL
Percent Moisture: 3.9

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
HEXAVALENT CHROMIUM CHROMIUM VI	ND		SW7196 0.1	MG/KG	1	0.031	Prep Date: 10/22/2019 PrepBy: KJS 10/22/2019
ICPMS METALS ARSENIC	1900		SW6020 210	UG/KG	10	37	Prep Date: 10/18/2019 PrepBy: JML 10/22/2019 23:54
MERCURY MERCURY	0.0048	J	SW7471 0.035	MG/KG	1	0.000062	Prep Date: 10/24/2019 PrepBy: AFS 10/24/2019 13:53

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SAMPLE SUMMARY REPORT

Client: eAnalytics Laboratory
Project: Platteville Drill Cuttings
Sample ID: NE2 Composite 6"-12" (1690-2)
Legal Location:
Collection Date: 10/8/2019

Date: 29-Oct-19
Work Order: 1910381
Lab ID: 1910381-2
Matrix: SOIL
Percent Moisture: 5.4

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
HEXAVALENT CHROMIUM CHROMIUM VI	ND		SW7196 0.11	MG/KG	1	0.032	Prep Date: 10/22/2019 PrepBy: KJS 10/22/2019
ICPMS METALS ARSENIC	2400		SW6020 200	UG/KG	10	36	Prep Date: 10/18/2019 PrepBy: JML 10/22/2019 23:57
MERCURY MERCURY	0.007	J	SW7471 0.035	MG/KG	1	0.000063	Prep Date: 10/24/2019 PrepBy: AFS 10/24/2019 13:59

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SAMPLE SUMMARY REPORT

Client: eAnalytics Laboratory
Project: Platteville Drill Cuttings
Sample ID: SE3 Composite 6"-12" (1690-3)
Legal Location:
Collection Date: 10/8/2019

Date: 29-Oct-19
Work Order: 1910381
Lab ID: 1910381-3
Matrix: SOIL
Percent Moisture: 2.4

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
HEXAVALENT CHROMIUM CHROMIUM VI	ND		SW7196 0.1	MG/KG	1	0.03	Prep Date: 10/22/2019 PrepBy: KJS 10/22/2019
ICPMS METALS ARSENIC	2000		SW6020 200	UG/KG	10	36	Prep Date: 10/18/2019 PrepBy: JML 10/23/2019 00:00
MERCURY MERCURY	0.00055	J	SW7471 0.034	MG/KG	1	0.000061	Prep Date: 10/24/2019 PrepBy: AFS 10/24/2019 14:01

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SAMPLE SUMMARY REPORT

Client: eAnalytics Laboratory
Project: Platteville Drill Cuttings
Sample ID: SW4 Composite 6"-12" (1690-4)
Legal Location:
Collection Date: 10/8/2019

Date: 29-Oct-19
Work Order: 1910381
Lab ID: 1910381-4
Matrix: SOIL
Percent Moisture: 2.1

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
HEXAVALENT CHROMIUM CHROMIUM VI	ND		SW7196 0.1	MG/KG	1	0.03	Prep Date: 10/22/2019 PrepBy: KJS 10/22/2019
ICPMS METALS ARSENIC	1600		SW6020 200	UG/KG	10	36	Prep Date: 10/18/2019 PrepBy: JML 10/23/2019 00:14
MERCURY MERCURY	ND		SW7471 0.034	MG/KG	1	0.000061	Prep Date: 10/24/2019 PrepBy: AFS 10/24/2019 14:04

Client: eAnalytics Laboratory
Project: Platteville Drill Cuttings
Sample ID: Background (1690-5)
Legal Location:
Collection Date: 10/8/2019

Date: 29-Oct-19
Work Order: 1910381
Lab ID: 1910381-5
Matrix: SOIL
Percent Moisture: 5.3

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
HEXAVALENT CHROMIUM CHROMIUM VI	ND		SW7196 0.11	MG/KG	1	0.032	Prep Date: 10/22/2019 PrepBy: KJS 10/22/2019
ICPMS METALS ARSENIC	2300		SW6020 210	UG/KG	10	37	Prep Date: 10/18/2019 PrepBy: JML 10/23/2019 00:17
MERCURY MERCURY	ND		SW7471 0.035	MG/KG	1	0.000063	Prep Date: 10/24/2019 PrepBy: AFS 10/24/2019 14:06

Client: eAnalytics Laboratory
Project: Platteville Drill Cuttings
Sample ID: Background (1690-5)
Legal Location:
Collection Date: 10/8/2019

Date: 29-Oct-19
Work Order: 1910381
Lab ID: 1910381-5
Matrix: SOIL
Percent Moisture: 5.3

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
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Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC
- U or ND - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 - Chemical Yield outside default limits.
- W - DER is greater than Warning Limit of 1.42
- * - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
- # - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
- G - Sample density differs by more than 15% of LCS density.
- D - DER is greater than Control Limit
- M - Requested MDC not met.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L - LCS Recovery below lower control limit.
- H - LCS Recovery above upper control limit.
- P - LCS, Matrix Spike Recovery within control limits.
- N - Matrix Spike Recovery outside control limits
- NC - Not Calculated for duplicate results less than 5 times MDC
- B - Analyte concentration greater than MDC.
- B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

- B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
- U or ND - Indicates that the compound was analyzed for but not detected.
- E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
- M - Duplicate injection precision was not met.
- N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
- Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
- * - Duplicate analysis (relative percent difference) not within control limits.
- S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

- U or ND - Indicates that the compound was analyzed for but not detected.
- B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
- E - Analyte concentration exceeds the upper level of the calibration range.
- J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
- A - A tentatively identified compound is a suspected aldol-condensation product.
- X - The analyte was diluted below an accurate quantitation level.
- * - The spike recovery is equal to or outside the control criteria used.
- + - The relative percent difference (RPD) equals or exceeds the control criteria.
- G - A pattern resembling gasoline was detected in this sample.
- D - A pattern resembling diesel was detected in this sample.
- M - A pattern resembling motor oil was detected in this sample.
- C - A pattern resembling crude oil was detected in this sample.
- 4 - A pattern resembling JP-4 was detected in this sample.
- 5 - A pattern resembling JP-5 was detected in this sample.
- H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
- Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
 - gasoline
 - JP-8
 - diesel
 - mineral spirits
 - motor oil
 - Stoddard solvent
 - bunker C

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Date: 10/29/2019 5:01

Client: eAnalytics Laboratory
 Work Order: 1910381
 Project: Platteville Drill Cuttings

QC BATCH REPORT

Batch ID: **HG191024-1-1** Instrument ID **CETAC7500** Method: **SW7471**

LCS		Sample ID: HG191024-1			Units: MG/KG		Analysis Date: 10/24/2019 13:51				
Client ID:		Run ID: HG191024-2A2					Prep Date: 10/24/2019		DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
MERCURY	0.161	0.0333	0.167		96	80-120				20	

MB		Sample ID: HG191024-1			Units: MG/KG		Analysis Date: 10/24/2019 13:44				
Client ID:		Run ID: HG191024-2A2					Prep Date: 10/24/2019		DF: 1		
Analyte	Result	ReportLimit	MDL								Qual
MERCURY	-0.0031	0.033	0.00006								J

MS		Sample ID: 1910381-1			Units: MG/KG		Analysis Date: 10/24/2019 13:55				
Client ID: NW1 Composite 6"-12" (1690-1)		Run ID: HG191024-2A2					Prep Date: 10/24/2019		DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
MERCURY	0.328	0.0346	0.346	0.0048	94	80-120				20	

MSD		Sample ID: 1910381-1			Units: MG/KG		Analysis Date: 10/24/2019 13:57				
Client ID: NW1 Composite 6"-12" (1690-1)		Run ID: HG191024-2A2					Prep Date: 10/24/2019		DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
MERCURY	0.328	0.0346	0.346	0.0048	93	80-120		0.328	0	20	

The following samples were analyzed in this batch:

1910381-1	1910381-2	1910381-3
1910381-4	1910381-5	

Client: eAnalytics Laboratory
 Work Order: 1910381
 Project: Platteville Drill Cuttings

QC BATCH REPORT

Batch ID: **IP191018-3-2** Instrument ID **ICPMS2** Method: **SW6020**

LCS		Sample ID: IM191018-3			Units: UG/KG		Analysis Date: 10/22/2019 22:48				
Client ID:		Run ID: IM191022-10A17			Prep Date: 10/18/2019		DF: 10				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
ARSENIC	8830	200	10000		88	80-120				20	

MB		Sample ID: IP191018-3			Units: UG/KG		Analysis Date: 10/22/2019 22:45				
Client ID:		Run ID: IM191022-10A17			Prep Date: 10/18/2019		DF: 10				
Analyte	Result	ReportLimit	MDL								Qual
ARSENIC	ND	200	36								

The following samples were analyzed in this batch:

1910381-1	1910381-2	1910381-3
1910381-4	1910381-5	

Client: eAnalytics Laboratory
 Work Order: 1910381
 Project: Platteville Drill Cuttings

QC BATCH REPORT

Batch ID: **CR191022-1-1** Instrument ID **Spec** Method: **SW7196**

LCS		Sample ID: CR191022-1			Units: MG/KG		Analysis Date: 10/22/2019				
Client ID:		Run ID: CR191022-1a4			Prep Date: 10/22/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHROMIUM VI	2.94	0.1	3		98	80-120				20	

MB		Sample ID: CR191022-1			Units: MG/KG		Analysis Date: 10/22/2019				
Client ID:		Run ID: CR191022-1a4			Prep Date: 10/22/2019		DF: 1				
Analyte	Result	ReportLimit	MDL	Qual							
CHROMIUM VI	ND	0.1	0.03								

MS		Sample ID: 1910381-4			Units: MG/KG		Analysis Date: 10/22/2019				
Client ID: SW4 Composite 6"-12" (1690-4)		Run ID: CR191022-1a4			Prep Date: 10/22/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHROMIUM VI	0.83	0.102	1.02	0.1	81	75-125				20	

MSD		Sample ID: 1910381-4			Units: MG/KG		Analysis Date: 10/22/2019				
Client ID: SW4 Composite 6"-12" (1690-4)		Run ID: CR191022-1a4			Prep Date: 10/22/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHROMIUM VI	0.768	0.102	1.02	0.1	76	75-125		0.83	8	20	

The following samples were analyzed in this batch:

1910381-1	1910381-2	1910381-3
1910381-4	1910381-5	