



02/17/11

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Technical Report for

LT Environmental

Atlas Drill Cuttings

Background Lazy D 3-15H2

Accutest Job Number: D20984

Sampling Date: 02/10/11

Report to:

LT Environmental
4600 West 60th Avenue
Arvada, CO 80003
bforkner@ltenv.com

ATTN: Brett Forkner

Total number of pages in report: 20



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

A handwritten signature in black ink, appearing to read 'John Hamilton'.

John Hamilton
Laboratory Director

Client Service contact: Amanda Kissell 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)

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

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Sample Summary

LT Environmental

Job No: D20984

Atlas Drill Cuttings
Project No: Background Lazy D 3-15H2

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D20984-1	02/10/11	14:10 BF	02/10/11	SO	Soil	LAZY D 3-15H2

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: LT Environmental

Job No D20984

Site: Atlas Drill Cuttings

Report Dat 2/17/2011 9:47:21 AM

On 02/10/2011, one (1) sample, 0 Trip Blanks, and 0 Field Blanks were received at Accutest Mountain States (AMS) at a temperature of 5.1°C. The sample was intact and properly preserved, unless noted below. An AMS Job Number of D20984 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Metals By Method SW846 6010B

Matrix SO

Batch ID: MP4012

- The sample was digested and analyzed within the recommended method holding time.
- The method blank for this batch meets method specific criteria.
- Samples D21004-10MS, D21004-10MSD, and D21004-10SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD for Arsenic is outside control limits for sample MP4012-SD1. The percent difference is acceptable due to low initial sample concentration (< 50 times IDL).

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN8222

- The data for SM19 2540B M meets quality control requirements.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	LAZY D 3-15H2			Date Sampled:	02/10/11
Lab Sample ID:	D20984-1			Date Received:	02/10/11
Matrix:	SO - Soil			Percent Solids:	84.6
Project:	Atlas Drill Cuttings				

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	< 3.0	3.0	mg/kg	1	02/14/11	02/15/11 GJ	SW846 6010B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA1315
(2) Prep QC Batch: MP4012

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

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

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # D20984

[illegible]

D20984: Chain of Custody

Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D20984

Client: LT E

Immediate Client Services Action Required: No

Date / Time Received: 2/10/2011 4:05:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: ATLAS DRILL CUTTING BACKGROUND LAZY

Airbill #'s: HD

Cooler Security

Y or N

Y or N

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

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | Infrared gun | |
| 3. Cooler media: | Ice (bag) | |

Quality Control Preservation

Y or N

N/A

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

Sample Integrity - Documentation

Y or N

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

Sample Integrity - Condition

Y or N

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

Sample Integrity - Instructions

Y or N N/A

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

Comments

Accutest Laboratories
V:(303) 425-6021

4036 Youngfield Street
F: (303) 425-6854

Wheat Ridge, CO
www.accutest.com

Metals Analysis

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D20984
Account: LTENCODE - LT Environmental
Project: Atlas Drill Cuttings

QC Batch ID: MP4012
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 02/14/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.7	2		
Antimony	3.0	.17	.5		
Arsenic	2.5	.28	.72	-0.49	<2.5
Barium	1.0	.014	.05		
Beryllium	1.0	.14	.21		
Boron	5.0	.35	.91		
Cadmium	1.0	.022	.12		
Calcium	40	1.7	2.7		
Chromium	1.0	.027	.18		
Cobalt	0.50	.048	.058		
Copper	0.50	.16	.38		
Iron	7.0	.77	.91		
Lead	5.0	.13	.24		
Lithium	0.20	.076	.09		
Magnesium	20	.58	.93		
Manganese	0.50	.021	.028		
Molybdenum	1.0	.041	.16		
Nickel	3.0	.038	.075		
Phosphorus	10	1.5	3.5		
Potassium	200	38	130		
Selenium	5.0	.28	.54		
Silicon	5.0	1.2	.68		
Silver	3.0	.098	.068		
Sodium	40	23	6.3		
Strontium	5.0	.0091	.02		
Thallium	1.0	.31	.21		
Tin	5.0	1.4	.56		
Titanium	1.0	.0098	.041		
Uranium	5.0	.22	.53		
Vanadium	1.0	.027	.034		
Zinc	3.0	.076	.49		

Associated samples MP4012: D20984-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D20984
Account: LTENCODE - LT Environmental
Project: Atlas Drill Cuttings

QC Batch ID: MP4012
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

5.1.1

5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D20984
 Account: LTENCODE - LT Environmental
 Project: Atlas Drill Cuttings

QC Batch ID: MP4012
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 02/14/11

Metal	D21004-10 Original MS	Spikelot MPICPAL % Rec	QC Limits
Aluminum	anr		
Antimony	anr		
Arsenic	6.5	123	135
Barium	anr		
Beryllium	anr		
Boron			
Cadmium	anr		
Calcium			
Chromium	anr		
Cobalt			
Copper	anr		
Iron	anr		
Lead	anr		
Lithium			
Magnesium			
Manganese			
Molybdenum	anr		
Nickel	anr		
Phosphorus	anr		
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium			
Strontium			
Thallium	anr		
Tin			
Titanium			
Uranium			
Vanadium			
Zinc	anr		

Associated samples MP4012: D20984-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D20984
Account: LTENCODE - LT Environmental
Project: Atlas Drill Cuttings

QC Batch ID: MP4012
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

5.1.2

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MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D20984
 Account: LTENCODE - LT Environmental
 Project: Atlas Drill Cuttings

QC Batch ID: MP4012
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 02/14/11

Metal	D21004-10 Original MSD	Spikelot MPICPAL % Rec	MSD RPD	QC Limit
Aluminum	anr			
Antimony	anr			
Arsenic	6.5	123	135	83.3
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	anr			
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum	anr			
Nickel	anr			
Phosphorus	anr			
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP4012: D20984-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D20984
Account: LTENCODE - LT Environmental
Project: Atlas Drill Cuttings

QC Batch ID: MP4012
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

5.1.2

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SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D20984
Account: LTENCODE - LT Environmental
Project: Atlas Drill Cuttings

QC Batch ID: MP4012
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 02/14/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	91.9	100	91.9	80-120
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	anr			
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum	anr			
Nickel	anr			
Phosphorus	anr			
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP4012: D20984-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D20984
Account: LTENCODE - LT Environmental
Project: Atlas Drill Cuttings

QC Batch ID: MP4012
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

5.1.3

5

SERIAL DILUTION RESULTS SUMMARY

Login Number: D20984
Account: LTENCODE - LT Environmental
Project: Atlas Drill Cuttings

QC Batch ID: MP4012
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date: 02/14/11

Metal	D21004-10 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	47.9	134	52.8 (a)	0-10
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	anr			
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum	anr			
Nickel	anr			
Phosphorus	anr			
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP4012: D20984-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D20984
Account: LTENCODE - LT Environmental
Project: Atlas Drill Cuttings

QC Batch ID: MP4012
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

5.1.4

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