



Paragon Analytics

TCLP METALS CASE NARRATIVE

New Horizons

CSMRI -- 2135

Order Number - 0404241

1. This report consists of 2 TCLP samples.
2. The samples were received intact on 04/23/04. The temperature of the samples upon receipt was ambient.
3. The samples were prepared for analysis based on SW-846, 3rd Edition procedures.

The samples were processed through the TCLP leaching procedure based on method 1311. The leachates were then digested at a ten fold dilution.

For analysis by Trace ICP, the leachates were digested following method 3010A and PA SOP 806 Rev. 9.

For analysis by Cold Vapor AA (CVAA), the leachates were digested following method 7470A and PA SOP 812 Rev. 10.

4. The leachates were analyzed following SW-846, 3rd Edition procedures.

Analysis by Trace ICP followed method 6010B and PA SOP 834 Rev. 2. The analysis of silver was done by Trace ICP.

The relationship between intensity and concentration for each element is established using at least four standards, one of which is a blank solution. The equation which relates intensity to concentration is:

$$I = A_0 + (A_1 * c^n) + (A_2 * c^{2n})$$

where: I = intensity
c = concentration
A₀ = offset coefficient
A₁ = gain coefficient
A₂ = curvature coefficient
n = exponent coefficient

During sample analysis concentrations are computed by the software and the results are printed in mg/L. The instrument software does not provide a printout that gives both intensity and concentration. The validity of the

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calibration equation is tested by analyzing the following solutions: a blank, a low level check solution with concentrations near the reporting limit, an Initial Calibration Verification (ICV) standard from a 2nd source standard solution with concentrations near the middle of the analytical range, a Continuing Calibration Verification (CCV) standard with concentrations at two times those in the ICV, and a readback of the highest calibration standard.

These solutions provide verification that the calibration equations are functioning properly throughout the analytical range of the instrument. During sample analysis dilutions are made for analytes found at concentrations above the highest calibration standard. No results are taken from extrapolations beyond the highest standard.

Analysis by CVAA followed method 7470A and PA SOP 812 Rev. 10.

The relationship between intensity and concentration is determined daily, prior to sample analysis. At least five standards and a blank solution are analyzed to establish the calibration curve. The instrument software performs a linear regression to fit the calibration data to a curve of the form:

$$\text{conc.} = B * I + C$$

where: conc. = concentration
B = slope coefficient
I = intensity
C = intercept coefficient

A printout summarizing the calibration data supplies the calibration curve and correlation coefficient. During sample analysis both intensity and concentration values are printed. Dilutions are made for concentrations above the highest calibration standard. No results are taken from extrapolations above the highest standard.

5. All standards and solutions are NIST traceable and were used within their recommended shelf life.
6. The samples were prepared and analyzed within the established hold times. All in house quality control procedures were followed, as described below.
7. General quality control procedures.
 - A preparation (method) blank and laboratory control sample were digested and analyzed with the samples in each digestion batch. There were not more than 20 samples in each digestion batch.
 - The preparation (method) blank associated with each digestion batch was below the practical quantitation limit for each requested analyte.
 - The laboratory control sample associated with each digestion batch was within the acceptance limits. This indicates complete digestion according to the method.

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- All initial and continuing calibration blanks associated with each analytical batch were below the practical quantitation limits for the requested analytes. This indicates a valid calibration and stable instrument conditions.
 - All initial and continuing calibration verifications associated with each analytical batch were within the acceptance criteria for the requested analytes. This indicates a valid calibration and stable instrument conditions.
 - The interference check samples and high standard readbacks associated with Method 6010B analyses were within acceptance criteria.
8. Matrix specific quality control procedures.
- Since a sample from this Order Number was not selected as a quality control (QC) sample, matrix specific QC results are not included in this report.
9. Sample dilutions were not required for the requested analyses.

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

Darryl Patrick
Darryl Patrick
Data Reporting Specialist

5/24/04
Date

SW
Reviewer's Initials

5/24/04
Date

Paragon Analytics

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0404241

Client Name: New Horizons

Client Project Name: CSMRI

Client Project Number: 2135

Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
BB04	0404241-1		SOIL	16-Apr-04	13:10
BI17	0404241-2		SOIL	19-Apr-04	11:00
BI17	0404241-3		SOIL	19-Apr-04	11:00
BI37	0404241-4		SOIL	19-Apr-04	14:15
BI37	0404241-5		SOIL	19-Apr-04	14:15
BI42	0404241-6		SOIL	19-Apr-04	15:15
BI42	0404241-7		SOIL	19-Apr-04	15:15
H07	0404241-8		SOIL	22-Apr-04	13:00
H07	0404241-9		SOIL	22-Apr-04	13:00
H07S	0404241-10		SOIL	22-Apr-04	13:05
H07S	0404241-11		SOIL	22-Apr-04	13:05
BB04	0404241-12		SOIL	16-Apr-04	13:10
H07	0404241-13		LEACHAT	22-Apr-04	13:00
H07S	0404241-14		LEACHAT	22-Apr-04	13:05

Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- A “B” is entered if the reported value was obtained from a reading that was less than the Practical Quantitation Limit but greater than or equal to the Method Detection Limit (MDL). If the analyte was analyzed for but not detected a “U” is entered.
- QC qualifier -- Specified entries and their meanings are as follows:
 - 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 6010B 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.

TCLP ICP Metals

Method SW6010--TCLP Leachate

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0404241

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Field ID: H07 Lab ID: 0404241-13	Sample Matrix: LEACHATE % Moisture: N/A Date Collected: 22-Apr-04 Date Extracted: 28-Apr-04 Date Analyzed: 30-Apr-04	Prep Batch: IP040428-3 QCBatchID: IP040428-3-2 Run ID: IT040430-1A3 Cleanup: NONE Basis: As Received	Sample Aliquot: 5g Final Volume: 50g Result Units: mg/l Clean DF: 1 File Name: TS40430
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LEACH DATE: 4/27/04

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	0.024	0.1	0.024	U	
7440-39-3	BARIUM	1	0.11	1	0.0026	B	
7440-43-9	CADMIUM	1	0.67	0.05	0.0029		
7440-47-3	CHROMIUM	1	0.0032	0.1	0.0032	U	
7439-92-1	LEAD	1	2	0.03	0.01		
7782-49-2	SELENIUM	1	0.024	0.05	0.024	U	
7440-22-4	SILVER	1	0.0052	0.1	0.0052	U	
7440-62-2	VANADIUM	1	0.0044	0.1	0.0044	U	
7440-66-6	ZINC	1	71	0.2	0.049		

Data Package ID: IT0404241-1

TCLP ICP Metals

Method SW6010--TCLP Leachate

Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0404241

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Field ID: H07S

Lab ID: 0404241-14

LEACH DATE: 4/27/04

Sample Matrix: LEACHATE

% Moisture: N/A

Date Collected: 22-Apr-04

Date Extracted: 28-Apr-04

Date Analyzed: 30-Apr-04

Prep Batch: IP040428-3

QCBatchID: IP040428-3-2

Run ID: IT040430-1A3

Cleanup: NONE

Basis: As Received

Sample Aliquot: 5g

Final Volume: 50g

Result Units: mg/l

Clean DF: 1

File Name: TS40430

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	0.024	0.1	0.024	U	
7440-39-3	BARIUM	1	0.16	1	0.0026	B	
7440-43-9	CADMIUM	1	0.63	0.05	0.0029		
7440-47-3	CHROMIUM	1	0.0032	0.1	0.0032	U	
7439-92-1	LEAD	1	2.5	0.03	0.01		
7782-49-2	SELENIUM	1	0.024	0.05	0.024	U	
7440-22-4	SILVER	1	0.0064	0.1	0.0052	B	
7440-62-2	VANADIUM	1	0.0044	0.1	0.0044	U	
7440-66-6	ZINC	1	65	0.2	0.049		

Data Package ID: IT0404241-1

TCLP MOLYBDENUM

Method SW6010

Sample Results

Lab Name: Paragon Analytics
Client Name: New Horizons
Client Project ID: CSMRI 2135
Work Order Number: 0404241
Reporting Basis: As Received

Final Volume: 50 ml
Matrix: LEACHATE
Result Units: mg/l

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	MDL	Flag	Sample Aliquot
H07	0404241-13	4/22/2004	4/28/2004	04/29/2004	N/A	1	0.024	0.1	0.024	U	5 g
H07S	0404241-14	4/22/2004	4/28/2004	04/29/2004	N/A	1	0.028	0.1	0.024	B	5 g

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: IP0404241-1

Date Printed: Monday, May 03, 2004

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TCLP MERCURY

Method SW7470

Sample Results

Lab Name: Paragon Analytics
Client Name: New Horizons
Client Project ID: CSMRI 2135
Work Order Number: 0404241
Reporting Basis: As Received

Final Volume: 20 g
Matrix: LEACHATE
Result Units: mg/l

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	MDL	Flag	Sample Aliquot
H07	0404241-13	4/22/2004	4/28/2004	04/29/2004	N/A	1	0.000023	0.002	0.000023	U	2 g
H07S	0404241-14	4/22/2004	4/28/2004	04/29/2004	N/A	1	0.000023	0.002	0.000023	U	2 g

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: HG0404241-1

Date Printed: Monday, May 03, 2004

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ICP Metals

Method SW6010--Leachate Method Blank

Lab Name: Paragon Analytics

Work Order Number: 0404241

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Lab ID: EX040427-6MB

Sample Matrix: LEACHATE

Prep Batch: IP040428-3

Sample Aliquot: 5g

% Moisture: N/A

QCBatchID: IP040428-3-2

Final Volume: 50g

Date Collected: N/A

Run ID: IT040430-1A3

Result Units: mg/l

LEACH DATE: 4/27/04

Date Extracted: 04/28/2004

Cleanup: NONE

Clean DF: 1

Date Analyzed: 04/30/2004

Basis: N/A

File Name: TS40430

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	0.024	0.1	0.024	U	
7440-39-3	BARIUM	1	0.06	1	0.0026	B	
7440-43-9	CADMIUM	1	-0.003	0.05	0.0029	B	
7440-47-3	CHROMIUM	1	0.0032	0.1	0.0032	U	
7439-92-1	LEAD	1	0.01	0.03	0.01	U	
7782-49-2	SELENIUM	1	0.024	0.05	0.024	U	
7440-22-4	SILVER	1	0.0052	0.1	0.0052	U	
7440-62-2	VANADIUM	1	0.0044	0.1	0.0044	U	
7440-66-6	ZINC	1	0.12	0.2	0.049	B	

Data Package ID: IT0404241-1

Date Printed: Monday, May 24, 2004

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ICP Metals

Method SW6010--Leachate

Laboratory Control Sample

Lab Name: Paragon Analytics

Work Order Number: 0404241

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Lab ID: EX040427-6LCS

Sample Matrix: LEACHATE

Prep Batch: IP040428-3

Sample Aliquot: 5 g

% Moisture: N/A

QC Batch ID: IP040428-3-2

Final Volume: 50 g

Date Collected: N/A

Run ID: IT040430-1A3

Result Units: mg/l

LEACH DATE: 4/27/04

Date Extracted: 04/28/2004

Cleanup: NONE

Clean DF: 1

Date Analyzed: 04/30/2004

Basis: N/A

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-38-2	ARSENIC	20	20.4	0.1		102	80 - 120%
7440-39-3	BARIUM	20	19.8	1		99	80 - 120%
7440-43-9	CADMIUM	0.5	0.504	0.05		101	80 - 120%
7440-47-3	CHROMIUM	2	2.01	0.1		100	80 - 120%
7439-92-1	LEAD	5	5.14	0.03		103	80 - 120%
7782-49-2	SELENIUM	20	21	0.05		105	80 - 120%
7440-22-4	SILVER	0.5	0.511	0.1		102	80 - 120%
7440-62-2	VANADIUM	5	5.12	0.1		102	80 - 120%
7440-66-6	ZINC	5	5.17	0.2		103	80 - 120%

Data Package ID: IT0404241-1

ICP Metals

Method SW6010--Leachate Method Blank

Lab Name: Paragon Analytics

Work Order Number: 0404241

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Lab ID: EX040427-6MB

Sample Matrix: LEACHATE
% Moisture: N/A
Date Collected: N/A
Date Extracted: 04/28/2004
Date Analyzed: 04/29/2004

Prep Batch: IP040428-3
QC Batch ID: IP040428-3-1
Run ID: IP040429-1A2
Cleanup: NONE
Basis: N/A

Sample Aliquot: 5 g
Final Volume: 50 ml
Result Units: mg/l
Clean DF: 1
File Name: IS40429

LEACH DATE: 4/27/2004

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
7439-98-7	MOLYBDENUM	1	0.026	0.1	0.024	B	

Data Package ID: IP0404241-1

Date Printed: Monday, May 03, 2004

Paragon Analytics

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ICP Metals

Method SW6010--Leachate Laboratory Control Sample

Lab Name: Paragon Analytics

Work Order Number: 0404241

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Lab ID: EX040427-6LCS

Sample Matrix: LEACHATE

Prep Batch: IP040428-3

Sample Aliquot: 5 g

% Moisture: N/A

QCBatchID: IP040428-3-1

Final Volume: 50 ml

Date Collected: N/A

Run ID: IP040429-1A2

Result Units: mg/l

LEACH DATE: 4/27/2004

Date Extracted: 04/28/2004

Cleanup: NONE

Clean DF: 1

Date Analyzed: 04/29/2004

Basis: N/A

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7439-98-7	MOLYBDENUM	10	9.94	0.1		99	80 - 120%

Data Package ID: IP0404241-1

Date Printed: Monday, May 03, 2004

Paragon Analytics

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Mercury

Method SW7470--Leachate

Method Blank

Lab Name: Paragon Analytics

Work Order Number: 0404241

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Lab ID: EX040427-6MB

Sample Matrix: LEACHATE
 % Moisture: N/A
 Date Collected: N/A
 Date Extracted: 04/28/2004
 Date Analyzed: 04/29/2004

Prep Batch: HG040428-1
 QCBatchID: HG040428-1-2
 Run ID: HG040429-1A2
 Cleanup: NONE
 Basis: N/A

Sample Aliquot: 2 g
 Final Volume: 20 g
 Result Units: mg/l
 Clean DF: 1
 File Name: 04042900

LEACH DATE: 4/27/2004

CASNO	Target Analyte	DF	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
7439-97-6	MERCURY	1	-0.000058	0.002	0.000023	B	

Data Package ID: HG0404241-1

000014

Mercury

Method SW7470--Leachate Laboratory Control Sample

Lab Name: Paragon Analytics

Work Order Number: 0404241

Client Name: New Horizons

ClientProject ID: CSMRI 2135

Lab ID: EX040427-6LCS

Sample Matrix: LEACHATE

Prep Batch: HG040428-1

Sample Aliquot: 2 g

% Moisture: N/A

QCBatchID: HG040428-1-2

Final Volume: 20 g

Date Collected: N/A

Run ID: HG040429-1A2

Result Units: mg/l

LEACH DATE: 4/27/2004

Date Extracted: 04/28/2004

Cleanup: NONE

Clean DF: 1

Date Analyzed: 04/29/2004

Basis: N/A

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7439-97-6	MERCURY	0.01	0.0102	0.002		102	80 - 120%

Data Package ID: HG0404241-1

Date Printed: Monday, May 03, 2004

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Percent Moisture

Method SOP1114

Lab Name: Paragon Analytics

Date Extracted: 04/28/2004
Date Analyzed: 04/29/2004
Analyst: Crystal Halverson

Validated By: ckh
Validation Date: 04/29/2004
Validation Time: 1:39:05 PM

Run ID	Prep Batch ID	QC Batch ID	Lab ID	QC Type	Dish Wt	Wet Wt	Dry Wt	Dry Wt-Dish Wt	Percent Moisture	Percent Solids	RPD
EX040427-8A	ex040427-8	ex040427-8-1	0404241-3	SMP	1.3	10.06	10.38	9.08	9.7	90.3	
EX040427-8A	ex040427-8	ex040427-8-1	0404241-5	DUP	1.31	10.88	11.04	9.73	10.6	89.4	1
EX040427-8A	ex040427-8	ex040427-8-1	0404241-5	SMP	1.31	11.24	11.35	10.04	10.7	89.3	
EX040427-8A	ex040427-8	ex040427-8-1	0404241-7	SMP	1.32	10.66	10.86	9.54	10.5	89.5	
EX040427-8A	ex040427-8	ex040427-8-1	ex040427-8	MB	1.32	1.32	1.32	0.00	100.0	0.0	
EX040427-8A	ex040427-8	ex040427-8-1	0404241-11	DUP	1.34	10.38	9.89	8.55	17.6	82.4	6
EX040427-8A	ex040427-8	ex040427-8-1	0404241-11	SMP	1.33	11.15	10.39	9.06	18.7	81.3	
EX040506-5A	EX040506-5	EX040506-5-1	0404241-9	SMP	1.3	10.52	10.18	8.88	15.6	84.4	
EX040506-5A	EX040506-5	EX040506-5-1	0404241-12	SMP	1.31	10.55	10.28	8.97	15.0	85.0	

QC Types

CAR	Carrier reference sample	DUP	Laboratory Duplicate
LCS	Laboratory Control Sample	LCSD	Laboratory Control Sample Duplicat
MB	Method Blank	MS	Laboratory Matrix Spike
MSD	Laboratory Matrix Spike Duplicate	REP	Sample replicate
SMP	Field Sample	SYS	Sample Yield Spike

Comments:

DUP = Sample Duplicate
Wet Wt = Sample Wet Wt - Dish Wt
Dry Wt = Sample Dry Wt + Dish Wt
Dry Wt - Dish Wt = Sample Dry Wt - Dish Wt
All weight values shown above are expressed in grams.