

September 2, 2008

Mr. Art O'Connell  
Land Restoration Program  
Maryland Department of Environment  
1800 Washington Blvd.  
Baltimore, Maryland 21230

RE: Assessment of Existing Geosynthetic Cap and Surface Soil Sampling Event  
**Stansbury Park**  
Dundalk, Maryland  
Remedial Management Services Contract  
CGS Project No. CG-08-0357

Dear Mr. O'Connell:

Chesapeake GeoSciences, Inc. (CGS) is pleased to present the results of the Geosynthetic Cap Assessment and Surface Soil Sampling Event performed for the Stansbury Park site (Site) in Dundalk, Maryland. This work was performed to assess the original design and existing geosynthetic cap, which was installed to contain chromium ore tailings adjacent to the pond at the Site, and to determine the adequacy of the containment system at this location. This work was performed in accordance with CGS Proposal No. CG-P08-0503 dated May 30, 2008.

#### Assessment of Existing Geosynthetic Cap

EBA Engineering, Inc. (EBA) reviewed the original design drawings of the geosynthetic cap system (dated November 1998) and performed a field assessment of the condition of the cap. The findings of EBA's assessment are included in the attached letter report.

#### Surface Soil Sampling Event

CGS collected three (3) surface soil samples on the slope between the pond and the edge of the geosynthetic cap to determine whether contaminated soils are present in this area. The soil samples and one (1) duplicate soil sample were analyzed for Target Analyte Metals (U.S. EPA Method 6020) and hexavalent chromium (U.S. EPA Method 7196A). The results of the analyses are presented in Table 1.

The laboratory results were compared with MDE Non-Residential Soil Clean-up Standards and MDE Central Maryland Anticipated Typical Concentrations (ATCs) (i.e., background concentrations). No metals were detected at concentrations which exceed

both the Non-Residential Soil Clean-up Standards and the ATCs.

Conclusion

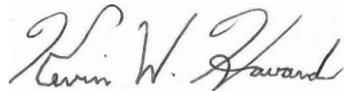
Based on EBA's assessment, we conclude that the geosynthetic cap was properly designed and constructed to contain the ore tailings present in the subsurface soil. EBA had no recommendations for the improvement of the cap and liner system.

Some metals were present at concentrations that exceed ATCs indicating that low-levels of contaminants were present in surface soil on the slope between the pond and the edge of the geosynthetic cap. However, no metals were detected at concentrations which exceed both the Non-Residential Soil Clean-up Standards and the ATCs indicating that these contaminants should not pose an unacceptable risk.

CGS is pleased to have assisted you on this project. If there are any questions, please feel free to contact our office in Columbia, Maryland at (410) 740-1911. Our facsimile number is (410) 740-3299.

Sincerely,

Chesapeake GeoSciences, Inc.



Kevin W. Howard, PG  
Program Manager

cc: Project File

Attachments:

EBA Engineering, Inc. – Assessment of Existing Cap and LLDPE Liner Adjacent to Pond

Table 1 – Surface Soil Sample Analytical Results – July 10, 2008

Table 2 - Test Hole and Surface Soil Sample Location Coordinates

Laboratory Analytical Report and Chain of Custody

## **ATTACHMENTS**



August 27, 2008

Mr. Kevin W. Howard, P.G.  
Chesapeake GeoSciences, Inc.  
5405 Twin Knolls Road, Suite 1  
Columbia, Maryland 21045

Subject: Assessment of Existing Cap and LLDPE Liner Adjacent to Pond  
Stansbury Park  
Dundalk, Maryland

Dear Mr. Howard:

EBA Engineering, Inc. is pleased to submit this report of the findings of the investigation and assessment for the referenced project. The investigation and assessment were performed to obtain an understanding of the as-built construction of the cap and LLDPE liner and efficacy of the design. The conclusions that follow in this report are based on our understanding of the construction obtained from a review of the original design drawings prepared by Century Engineering in November 1998 and observations made in the field during the investigation.

### **Site Description**

Stansbury Park is located on Stansbury Road in Dundalk, Maryland. The cap and liner are located in a grassy area immediately northeast of the cul-de-sac at the end of the park access road. A pond is located to the north and northwest of the cap area. The cap area is bound to the south by an open, grassy area and to the east by a narrow wooded strip and a golf course beyond the woods.

The ground surface in the cap area is steep on the north and west sides and relatively level on the east and south sides. The highest elevation of the ground surface in the cap area is about 25 feet at the south end according to the drawings. The lowest elevation of the cap area is about 6 feet at the north end. Two monitoring wells are also present at the north end. A paved path crosses the north end of the cap area from east to west. A bench is present next to the paved path roughly in the middle of the cap area. A super silt fence is present at the northwest side of the cap area between the cap area and the pond. The drawings indicate that the area of the geosynthetic liner is 0.32 acre.

According to the cap detail provided in the drawings, the cap consists of a 40 mil Linear Low Density Polyethylene (LLDPE) liner under a geocomposite drainage mat (i.e., geonet), 1 foot of select borrow and 4 inches of topsoil. The drawings indicate that there is a perimeter drainage trench which consists of a perforated pipe encased in Size No. 57 stone above the LLDPE liner. The drainage trench was designed to drain water that collects above the liner and flows thru the geonet.

Mr. Kevin Howard  
August 27, 2008  
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## **Investigation**

The subsurface investigation included eight test holes numbered TH-1 to TH-8. The test holes were excavated using hand tools including a shovel and a 3.5-inch bucket style hand auger. The location of each test pit is shown on the attached Test Hole Location Plan. Descriptions of the soils encountered in the test pits are provided on the attached Summary of Test Hole Observations. The test holes were backfilled with the excavated materials after completion. The existing ground surface elevations indicated on the Summary of Test Hole Observations were estimated from the proposed contours shown on the drawings.

Fill soil was encountered in each test hole. The fill soil generally consisted of brown, dry to damp, sandy SILT and silty SAND, with concrete fragments, rock fragments and gravel, and traces of oyster shells and debris. Additionally, dark brown slag was observed in Test Hole TH-1 at a depth of 1.5 to 1.8 feet. Natural, undisturbed soil was encountered under the fill soil in Test Holes TH-1 and TH-6 at depths of 1.8 and 3.2 feet, respectively. The natural soil consisted of pale brown and white, damp to moist, sandy SILT and silty SAND. No groundwater was observed in the test holes. All the test holes were dry at completion.

A layer of filter fabric and Size No. 57 stone was encountered at the bottom of Test Holes TH-2, TH-5 and TH-7. The filter fabric and Size No. 57 stone was consistent with the drainage trench materials indicated on the drawings. A geonet and heavy geosynthetic liner were encountered at the bottom of Test Holes TH-4 and TH-8. The geonet and geosynthetic liner were consistent with the geonet and LLDPE liner indicated on the drawings. Elements of the liner system were not encountered in Test Holes TH-1, TH-3 and TH-6. Photographs of all the test holes are attached.

Water level depth observations obtained from the monitoring wells were provided by your firm. The data you provided indicates that water was observed in the monitoring wells at depths of 11.5 and 12.1 feet in Well #2 and Well #4, respectively. It is understood that Well #2 is located at the northwest end of the cap area and Well #4 is located at the northeast end of the cap area. According to the contours on the drawings, these water level depths correspond to elevations of about -0.5 and 0.4 feet in Well #2 and Well #4, respectively.

## **Engineering Assessment**

Based on the findings of the investigation, all the observed elements of the cap and liner system, including the cover soil, geonet, geosynthetic liner, filter fabric and drainage stone, appear to be present as shown on the drawings prepared by Century Engineering. The liner and drainage materials were not encountered in Test Holes TH-1, TH-3 and TH-6, but it is suspected that these test holes were excavated slightly beyond the perimeter of the cap area. The liner elements were generally encountered in the test holes at locations consistent with the locations shown on the drawings. The

Mr. Kevin Howard  
August 27, 2008  
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outlet pipes and riprap were observed at the locations shown on the drawings at the north end of the cap area. It was noted that topsoil was not present, but the cover soil was generally more than 16 inches thick and appeared to be suitable as cover soil.

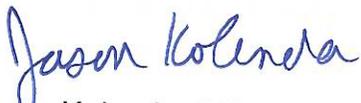
In regards to the cap and liner system, it appears that it was properly designed and the field evidence indicates it was properly constructed in accordance with the drawings. However, it is not known if the chrome tailings are completely contained within the cap area, but natural soils were encountered at shallow depths in Test Holes TH-1 and TH-6 adjacent to the cap area. Furthermore, the depth of the chrome contaminated fill is not known. It is understood that some forms of chrome tailings are soluble and mobile in water. According to the water level depth observations in the monitoring wells, the groundwater is at an Elevation of about zero feet. It is not known if the chrome contaminated fill extends below this elevation.

During the field visit, sloughing of the soils on the slopes was not observed at the north and west sides of the cap area. Additionally, the soils encountered in the test holes on the slopes were firm and dense. Based on this information, the stability of the soil slopes is not considered a problem. It was noted that there has been some minor erosion of the cover soil in the steeply sloped area at the north end of the cap.

It is not known to EBA if the chrome contaminated tailings extend beyond the limits of the investigation area. It is understood your firm has collected soil samples from outside the limits of cap area for testing in an environmental laboratory. If you should have any question regarding this report, please do not hesitate to call me at 410-358-7171.

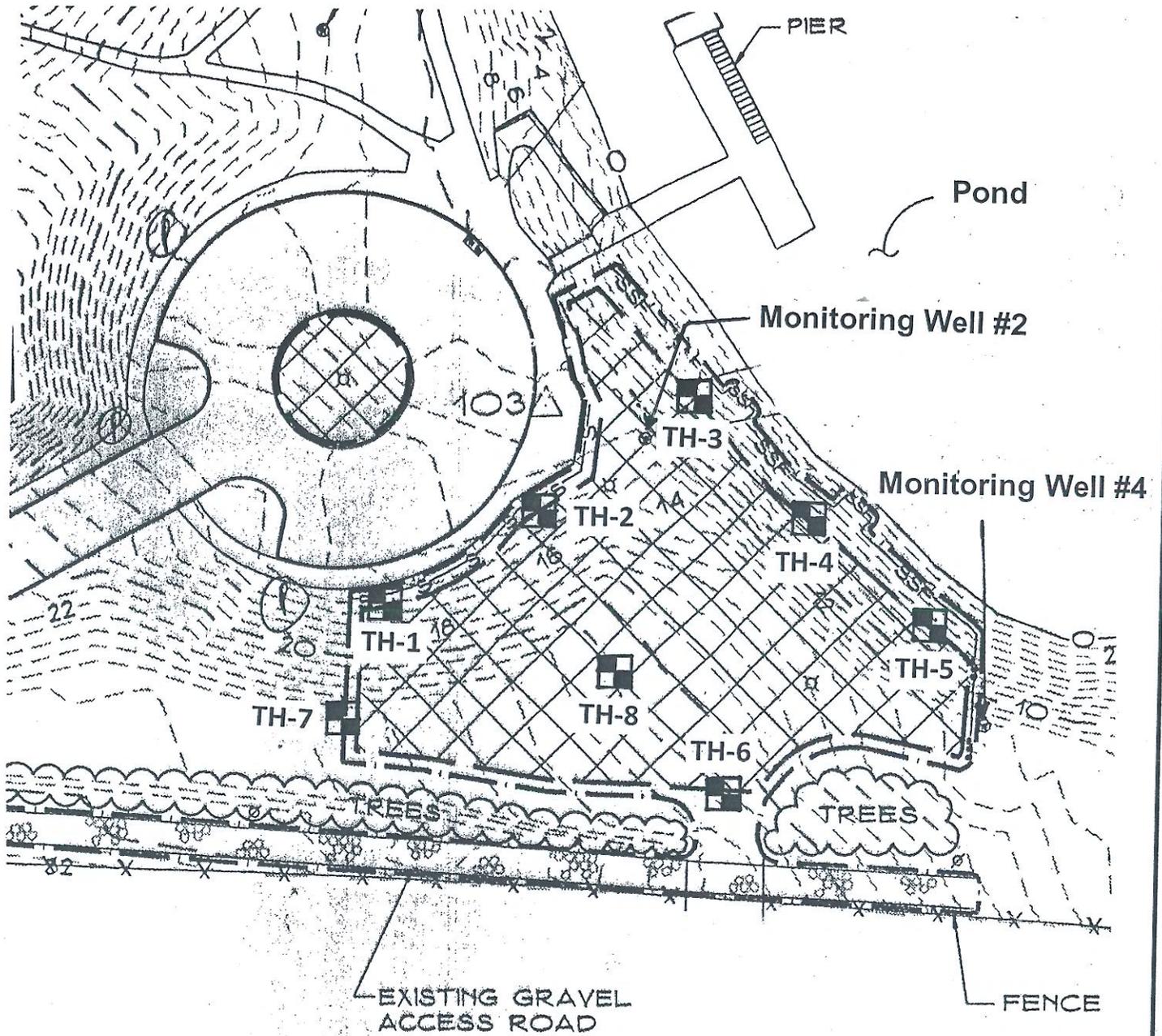
Very truly yours,

EBA ENGINEERING, INC.



Jason Kolenda, P.E.  
Senior Geotechnical Engineer

ATTACHMENTS



	<p> <b>EBA ENGINEERING, INC.</b>          4813 Seton Drive          Baltimore, Maryland 21215       </p>	<p>         Project Name:    <b>Stansbury Park</b>  <b>Dundalk, Maryland</b> </p>	<p> <b>Figure: Test Hole Location Plan</b>          Date: 7/18/08 Job No.: 3481C0039          Prepared By: JMK          1 inch = 50 feet       </p>
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**Summary of Test Hole Observations  
Stansbury Park, Dundalk, Maryland  
July, 2008**

Test Hole No.	Location	Surface Elevation (ft)	Test Hole Depth (ft)	Soil Description	Remarks
TH-1	39° 15' 34.751" N 76° 30' 01.476 W	15	5.4	0 to 1.5 feet: Brown, dry, dense, silty SAND, with gravel and concrete fragments, trace metal debris (Fill). 1.5 to 1.8 feet: Dark brown, damp, silty SAND, with gravel and slag (Fill). 1.8 to 5.4 feet: Pale brown and white, moist, medium stiff, sandy SILT (natural)	Liner not encountered at this location. The test hole was hand augered from 2.6 to 5.4 feet. Groundwater was not observed in the test hole.
TH-2	39° 15' 35.310" N 76° 30' 01.368 W	14	1.2	0.0 to 1.2 feet: Brown, dry, dense, silty SAND, with gravel and concrete fragments (Fill)	A layer of filter fabric was observed at the bottom of the test hole. Size No. 57 stone was observed under the filter fabric.
TH-3	39° 15' 35.957" N 76° 30' 01.439 W	6	3.2	0 to 3.2 feet: Brown, moist, sandy SILT, little rock fragments and gravel (Fill)	Liner not encountered at this location. Groundwater was not observed in the test hole.
TH-4	39° 15' 35.898" N 76° 30' 00.448 W	7	1.7	0 to 1.7 feet: Brown, damp, sandy SILT, little rock fragments and gravel (Fill)	A geocomposite drainage layer was observed at the bottom of the test hole. A geomembrane liner was observed under the geocomposite drainage layer.
TH-5	39° 15' 36.190" N 76° 30' 00.010 W	7	2.5	0 to 2.5 feet: Brown, damp, sandy SILT, little rock fragments and gravel (Fill)	A layer of filter fabric was observed at the bottom of the test hole. Size No. 57 stone was observed under the filter fabric.
TH-6	39° 15' 35.271" N 76° 30' 00.195 W	21	5.6	0 to 3.2 feet: Brown, dry to damp, dense, silty SAND, with gravel, rock and concrete fragments, trace asphalt, oyster shells and debris (Fill). 3.2 to 5.6 feet: Pale brown, damp, silty SAND and white SILT (natural).	Liner not encountered at this location. The test hole was hand augered from 3.2 to 5.6 feet. Groundwater was not observed in the test hole.
TH-7	39° 15' 34.570" N 76° 30' 01.059 W	25	1.5	0 to 1.5 feet: Brown, dry to damp, dense, silty SAND, with gravel, concrete and rock fragments (Fill)	A layer of filter fabric was observed at the bottom of the test hole. Size No. 57 stone was observed under the filter fabric.
TH-8	39° 15' 35.116" N 76° 30' 00.676 W	21	2.2	0 to 2.2 feet: Brown, dry to damp, dense, silty SAND, little gravel, concrete and rock fragments (Fill)	A geocomposite drainage layer was observed at the bottom of the test hole. A geomembrane liner was observed under the geocomposite drainage layer.

Stansbury Park Test Holes  
July 2008



**TEST HOLE TH-1**

Stansbury Park Test Holes  
July 2008



**TEST HOLE TH-2**



**TEST HOLE TH-3**

Stansbury Park Test Holes  
July 2008



**TEST HOLE TH-4**



**TEST HOLE TH-5**

Stansbury Park Test Holes  
July 2008



**TEST HOLE TH-6**



**TEST HOLE TH-7**



**TEST HOLE TH-8**

**Table 1**  
**Stansbury Park**  
**Assessment of Existing Geosynthetic Cap and Surface Soil Sampling Event**  
**Surface Soil Sample Analytical Results**  
**July 10, 2008**

**Target Analyte List Metals and Hexavalent Chromium**

Analyte	SS-1	SS-2	SS-2 [DUPE]	SS-3	MDE Non-Residential Soil Clean-up Standard (1)(2)	MDE Central Maryland ATC (1)(3)
	Concentration (mg/kg)					
Aluminum	<b>31,000</b>	<b>33,200</b>	<b>31,800</b>	<b>29,700</b>	100,000	19,000
Antimony	<0.40	<0.37	<0.40	<0.41	41	6.8
Arsenic	<b>3.27</b>	<b>2.83</b>	<b>3.53</b>	<b>3.26</b>	1.9	4.9
Barium	<b>98.9</b>	<b>111</b>	<b>99.2</b>	<b>103</b>	20,000	99
Beryllium	<b>0.9</b>	<b>1.03</b>	<b>1.75</b>	<b>0.93</b>	200	1.6
Cadmium	<0.40	<0.37	<0.40	<0.41	51	1.1
Calcium	<b>1,900</b>	<b>2,700</b>	<b>2,150</b>	<b>2,000</b>	na	12,000
Chromium, Total*	<b>83.4</b>	<b>81.4</b>	<b>133</b>	<b>62.3</b>	150,000	30
Chromium, Hexavalent	<2.20	<2.16	<2.16	<2.28	310	na
Cobalt	<b>17.3</b>	<b>16.3</b>	<b>15.7</b>	<b>17.6</b>	na	33
Copper	<b>32.1</b>	<b>30.6</b>	<b>29.8</b>	<b>29.7</b>	4,100	42
Iron	<b>30,800</b>	<b>27,900</b>	<b>38,600</b>	<b>30,100</b>	72,000	26,000
Lead	<b>24.3</b>	<b>29.3</b>	<b>26.7</b>	<b>25.3</b>	1,000	61
Magnesium	<b>3,870</b>	<b>4,750</b>	<b>4,360</b>	<b>4,080</b>	na	3,700
Manganese	<b>781</b>	<b>742</b>	<b>780</b>	<b>791</b>	2,000	1,400
Mercury	<0.080	<b>0.096</b>	<0.079	<0.083	31	0.14
Nickel	<b>24.7</b>	<b>25.6</b>	<b>23.2</b>	<b>27.1</b>	2,000	22
Potassium	<b>2,500</b>	<b>3,300</b>	<b>2,570</b>	<b>2,680</b>	na	2,600
Selenium	<b>0.91</b>	<b>0.89</b>	<b>0.91</b>	<b>0.92</b>	510	1
Silver	<0.80	<0.75	<0.79	<0.83	510	1
Sodium	<b>145</b>	<b>202</b>	<b>121</b>	<b>167</b>	na	230
Thallium	<0.40	<0.37	<0.40	<0.41	7.2	1.5
Vanadium	<b>60.8</b>	<b>56.3</b>	<b>62.5</b>	<b>56.2</b>	100	35
Zinc	<b>44</b>	<b>67.6</b>	<b>55.9</b>	<b>48.6</b>	31,000	73

Table Notes:

TAL (Target Analyte List) Metals Analytical Method: EPA Method 6020

Hexavalent Chromium Analytical Method: EPA Method 7196A

mg/Kg - milligrams per kilogram or parts per million (ppm)

(1) Reference: State of Maryland Department of the Environment Cleanup Standards for Soil and Groundwater, March 2008.

(2) Table 1 - Generic Numeric Cleanup Standards for Groundwater and Soil

(3) Appendix 2 - Attachment 2 - Anticipated Typical Concentrations (ATCs)/Reference Levels in the State of Maryland

< - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)

**Bold** - Detected Analyte

na - Not Applicable

\* The MDE Residential Soil Clean-up Standard for Trivalent Chromium was used to evaluate the Total Chromium concentrations. This evaluation was done in this manner because Hexavalent Chromium was not detected and because the MDE Residential Soil Clean-up Standard for Total Chromium is the same as that for Hexavalent Chromium to conservatively account for unspicuated Hexavalent Chromium concentrations.

**Table 2**  
**Stansbury Park**  
**Assessment of Existing Geosynthetic Cap and Surface Soil Sampling Event**  
**Test Hole and Surface Soil Sample Location Coordinates**  
**July 10, 2008**

Test Pit	TH-1	TH-2	TH-3	TH-4	TH-5	TH-6	TH-7	TH-8
Northing	39° 15' 34.751" N	39° 15' 35.310" N	39° 15' 35.957" N	39° 15' 35.898" N	39° 15' 36.190" N	39° 15' 35.271" N	39° 15' 34.570" N	39° 15' 35.116" N
Easting	76° 30' 01.476" W	76° 30' 01.368" W	76° 30' 01.439" W	76° 30' 00.448" W	76° 30' 00.010" W	76° 30' 00.195" W	76° 30' 01.059" W	76° 30' 00.676" W

Sample Point	SS-1	SS-2	SS-3	SS-2 [DUPE]
Northing	39° 15' 36.016" N	39° 15' 36.106" N	39° 15' 36.247" N	39° 15' 36.106" N
Easting	76° 30' 01.435" W	76° 30' 00.620" W	76° 30' 00.065" W	76° 30' 00.620" W
Location Description	21.5' down slope from Well #2, near TH-3	31' down slope from path, near TH-4	21.5' down slope from path, near TH-5	31' down slope from path, near TH-4
Soil Sample Description	Tan, dry, Clayey SILT	Tan, dry, Clayey SILT, little Gravel	Brown, moist, Clayey SILT	Tan, dry, Clayey SILT, little Gravel

Notes:  
 TH = Test Hole  
 SS = Surface Soil, samples collected @ 3-4 inches  
 Coordinates are Latitude/Longitude

# ENVIRO-CHEM LABORATORIES, INC.



47 Loveton Circle, Suite K • Sparks, Maryland 21152

410-472-1112

## FINAL REPORT OF ANALYSES

ENSAT Chesapeake  
5405 Twin Knolls Rd  
Suite 1  
Columbia, MD 21045-

PROJECT NAME: CG080357  
REPORT DATE: 17-Jul-08

LAB#- ECL016022-001      SAMPLE ID- SS-1  
LOCATION-  
DATE SAMPLED- 7/10/2008      TIME SAMPLED- 14:10      SAMPLER- K. Howard  
DATE RECEIVED- 7/10/2008      TIME RECEIVED- 16:15  
DELIVERED BY- K. Howard      RECEIVED BY- SES

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ANALYSIS	METHOD	ANALYSIS DATE/TIME	BY	RESULT	DETECTION LIMIT
% Solids	SM2540 G	7/11/2008	CHK	89.1 %	1.0
Aluminum	EPA 6020	7/16/2008 14:08	CHK	31000 mg/kg	159
Antimony	EPA 6020	7/15/2008 10:10	CHK	< 0.40 mg/kg	0.40
Arsenic	EPA 6020	7/15/2008 10:10	CHK	3.27 mg/kg	0.40
Barium	EPA 6020	7/15/2008 10:10	CHK	98.9 mg/kg	0.40
Beryllium	EPA 6020	7/15/2008 10:10	CHK	0.90 mg/kg	0.40
Cadmium	EPA 6020	7/15/2008 10:10	CHK	< 0.40 mg/kg	0.40
Calcium	EPA 6020	7/15/2008 10:10	CHK	1900 mg/kg	19.9
Chromium	EPA 6020	7/15/2008 10:10	CHK	83.4 mg/kg	0.40
Chromium, Hexavalent	EPA 7196A	7/15/2008 17:00	SES	< 2.20 mg/kg	2.20
Cobalt	EPA 6020	7/15/2008 10:10	CHK	17.3 mg/kg	0.40
Copper	EPA 6020	7/15/2008 10:10	CHK	32.1 mg/kg	0.40
Iron	EPA 6020	7/16/2008 12:51	CHK	30800 mg/kg	79.6
Lead	EPA 6020	7/15/2008 10:10	CHK	24.3 mg/kg	0.40
Magnesium	EPA 6020	7/15/2008 10:10	CHK	3870 mg/kg	19.9
Manganese	EPA 6020	7/16/2008 12:51	CHK	781 mg/kg	15.9
Mercury	EPA 6020	7/15/2008 10:10	CHK	< 0.080 mg/kg	0.080
Nickel	EPA 6020	7/15/2008 10:10	CHK	24.7 mg/kg	0.40
Potassium	EPA 6020	7/15/2008 10:10	CHK	2500 mg/kg	199
Selenium	EPA 6020	7/15/2008 10:10	CHK	0.91 mg/kg	0.40
Silver	EPA 6020	7/15/2008 10:10	CHK	< 0.80 mg/kg	0.80
Sodium	EPA 6020	7/15/2008 10:10	CHK	145 mg/kg	19.9
Thallium	EPA 6020	7/16/2008 11:24	CHK	< 0.40 mg/kg	0.40
Vanadium	EPA 6020	7/15/2008 10:10	CHK	60.8 mg/kg	0.40

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47 Loveton Circle, Suite K • Sparks, Maryland 21152

410-472-1112

## FINAL REPORT OF ANALYSES

ENSAT Chesapeake  
5405 Twin Knolls Rd  
Suite 1  
Columbia, MD 21045-

PROJECT NAME: CG080357  
REPORT DATE: 17-Jul-08

LAB#- ECL016022-001      SAMPLE ID- SS-1  
LOCATION-  
DATE SAMPLED- 7/10/2008      TIME SAMPLED- 14:10      SAMPLER- K. Howard  
DATE RECEIVED- 7/10/2008      TIME RECEIVED- 16:15  
DELIVERED BY- K. Howard      RECEIVED BY- SES

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ANALYSIS	METHOD	ANALYSIS DATE/TIME	BY	RESULT	DETECTION LIMIT
Zinc	EPA 6020	7/15/2008 10:10	CHK	44.0 mg/kg	1.99

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47 Loveton Circle, Suite K • Sparks, Maryland 21152

410-472-1112

FINAL REPORT OF ANALYSES

ENSAT Chesapeake  
5405 Twin Knolls Rd  
Suite 1  
Columbia, MD 21045-

PROJECT NAME: CG080357  
REPORT DATE: 17-Jul-08

LAB#- ECL016022-002      SAMPLE ID- SS-2  
LOCATION-  
DATE SAMPLED- 7/10/2008      TIME SAMPLED- 14:30      SAMPLER- K. Howard  
DATE RECEIVED- 7/10/2008      TIME RECEIVED- 16:15  
DELIVERED BY- K. Howard      RECEIVED BY- SES

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ANALYSIS	METHOD	ANALYSIS DATE/TIME	BY	RESULT	DETECTION LIMIT
% Solids	SM2540 G	7/11/2008	CHK	90.6 %	1.0
Aluminum	EPA 6020	7/16/2008 14:08	CHK	33200 mg/kg	149
Antimony	EPA 6020	7/15/2008 10:10	CHK	< 0.37 mg/kg	0.37
Arsenic	EPA 6020	7/15/2008 10:10	CHK	2.83 mg/kg	0.37
Barium	EPA 6020	7/15/2008 10:10	CHK	111 mg/kg	0.37
Beryllium	EPA 6020	7/15/2008 10:10	CHK	1.03 mg/kg	0.37
Cadmium	EPA 6020	7/15/2008 10:10	CHK	< 0.37 mg/kg	0.37
Calcium	EPA 6020	7/15/2008 10:10	CHK	2700 mg/kg	18.6
Chromium	EPA 6020	7/15/2008 10:10	CHK	81.4 mg/kg	0.37
Chromium, Hexavalent	EPA 7196A	7/15/2008 17:00	SES	< 2.16 mg/kg	2.16
Cobalt	EPA 6020	7/15/2008 10:10	CHK	16.3 mg/kg	0.37
Copper	EPA 6020	7/15/2008 10:10	CHK	30.6 mg/kg	0.37
Iron	EPA 6020	7/16/2008 12:51	CHK	27900 mg/kg	74.6
Lead	EPA 6020	7/15/2008 10:10	CHK	29.3 mg/kg	0.37
Magnesium	EPA 6020	7/15/2008 10:10	CHK	4750 mg/kg	18.6
Manganese	EPA 6020	7/16/2008 12:51	CHK	742 mg/kg	14.9
Mercury	EPA 6020	7/15/2008 10:10	CHK	0.096 mg/kg	0.075
Nickel	EPA 6020	7/15/2008 10:10	CHK	25.6 mg/kg	0.37
Potassium	EPA 6020	7/15/2008 10:10	CHK	3300 mg/kg	186
Selenium	EPA 6020	7/15/2008 10:10	CHK	0.89 mg/kg	0.37
Silver	EPA 6020	7/15/2008 10:10	CHK	< 0.75 mg/kg	0.75
Sodium	EPA 6020	7/15/2008 10:10	CHK	202 mg/kg	18.6
Thallium	EPA 6020	7/16/2008 11:24	CHK	< 0.37 mg/kg	0.37
Vanadium	EPA 6020	7/15/2008 10:10	CHK	56.3 mg/kg	0.37

# ENVIRO-CHEM LABORATORIES, INC.



47 Loveton Circle, Suite K • Sparks, Maryland 21152

410-472-1112

## FINAL REPORT OF ANALYSES

ENSAT Chesapeake  
5405 Twin Knolls Rd  
Suite 1  
Columbia, MD 21045-

PROJECT NAME: CG080357  
REPORT DATE: 17-Jul-08

LAB#- ECL016022-002      SAMPLE ID- SS-2  
LOCATION-  
DATE SAMPLED- 7/10/2008      TIME SAMPLED- 14:30      SAMPLER- K. Howard  
DATE RECEIVED- 7/10/2008      TIME RECEIVED- 16:15  
DELIVERED BY- K. Howard      RECEIVED BY- SES

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ANALYSIS	METHOD	ANALYSIS DATE/TIME	BY	RESULT	DETECTION LIMIT
Zinc	EPA 6020	7/15/2008 10:10	CHK	67.6 mg/kg	1.86

# ENVIRO-CHEM LABORATORIES, INC.



47 Loveton Circle, Suite K • Sparks, Maryland 21152

410-472-1112

FINAL REPORT OF ANALYSES

ENSAT Chesapeake  
5405 Twin Knolls Rd  
Suite 1  
Columbia, MD 21045-

PROJECT NAME: CG080357  
REPORT DATE: 17-Jul-08

LAB#- ECL016022-003      SAMPLE ID- SS-3  
LOCATION-  
DATE SAMPLED- 7/10/2008      TIME SAMPLED- 14:45      SAMPLER- K. Howard  
DATE RECEIVED- 7/10/2008      TIME RECEIVED- 16:15  
DELIVERED BY- K. Howard      RECEIVED BY- SES

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ANALYSIS	METHOD	ANALYSIS DATE/TIME	BY	RESULT	DETECTION LIMIT
% Solids	SM2540 G	7/11/2008	CHK	84.4 %	1.0
Aluminum	EPA 6020	7/16/2008 14:08	CHK	29700 mg/kg	166
Antimony	EPA 6020	7/15/2008 10:10	CHK	< 0.41 mg/kg	0.41
Arsenic	EPA 6020	7/15/2008 10:10	CHK	3.26 mg/kg	0.41
Barium	EPA 6020	7/15/2008 10:10	CHK	103 mg/kg	0.41
Beryllium	EPA 6020	7/15/2008 10:10	CHK	0.93 mg/kg	0.41
Cadmium	EPA 6020	7/15/2008 10:10	CHK	< 0.41 mg/kg	0.41
Calcium	EPA 6020	7/15/2008 10:10	CHK	2000 mg/kg	20.7
Chromium	EPA 6020	7/15/2008 10:10	CHK	62.3 mg/kg	0.41
Chromium, Hexavalent	EPA 7196A	7/15/2008 17:00	SES	< 2.28 mg/kg	2.28
Cobalt	EPA 6020	7/15/2008 10:10	CHK	17.6 mg/kg	0.41
Copper	EPA 6020	7/15/2008 10:10	CHK	29.7 mg/kg	0.41
Iron	EPA 6020	7/16/2008 12:51	CHK	30100 mg/kg	82.9
Lead	EPA 6020	7/15/2008 10:10	CHK	25.3 mg/kg	0.41
Magnesium	EPA 6020	7/15/2008 10:10	CHK	4080 mg/kg	20.7
Manganese	EPA 6020	7/16/2008 12:51	CHK	791 mg/kg	16.6
Mercury	EPA 6020	7/15/2008 10:10	CHK	< 0.083 mg/kg	0.083
Nickel	EPA 6020	7/15/2008 10:10	CHK	27.1 mg/kg	0.41
Potassium	EPA 6020	7/15/2008 10:10	CHK	2680 mg/kg	207
Selenium	EPA 6020	7/15/2008 10:10	CHK	0.92 mg/kg	0.41
Silver	EPA 6020	7/15/2008 10:10	CHK	< 0.83 mg/kg	0.83
Sodium	EPA 6020	7/15/2008 10:10	CHK	167 mg/kg	20.7
Thallium	EPA 6020	7/16/2008 11:24	CHK	< 0.41 mg/kg	0.41
Vanadium	EPA 6020	7/15/2008 10:10	CHK	56.2 mg/kg	0.41

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ENSAT Chesapeake  
5405 Twin Knolls Rd  
Suite 1  
Columbia, MD 21045-

PROJECT NAME: CG080357  
REPORT DATE: 17-Jul-08

LAB#- ECL016022-003

SAMPLE ID- SS-3

LOCATION-

DATE SAMPLED- 7/10/2008

TIME SAMPLED- 14:45

SAMPLER- K. Howard

DATE RECEIVED- 7/10/2008

TIME RECEIVED- 16:15

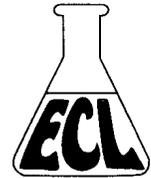
DELIVERED BY- K. Howard

RECEIVED BY- SES

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ANALYSIS	METHOD	ANALYSIS DATE/TIME	BY	RESULT	DETECTION LIMIT
Zinc	EPA 6020	7/15/2008 10:10	CHK	48.6 mg/kg	2.07

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FINAL REPORT OF ANALYSES

ENSAT Chesapeake  
5405 Twin Knolls Rd  
Suite 1  
Columbia, MD 21045-

PROJECT NAME: CG080357  
REPORT DATE: 17-Jul-08

LAB#- ECL016022-004      SAMPLE ID- DUPE  
LOCATION-  
DATE SAMPLED- 7/10/2008      TIME SAMPLED- 14:35      SAMPLER- K. Howard  
DATE RECEIVED- 7/10/2008      TIME RECEIVED- 16:15  
DELIVERED BY- K. Howard      RECEIVED BY- SES

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ANALYSIS	METHOD	ANALYSIS DATE/TIME	BY	RESULT	DETECTION LIMIT
% Solids	SM2540 G	7/11/2008	CHK	90.3 %	1.0
Aluminum	EPA 6020	7/16/2008 14:08	CHK	31800 mg/kg	158
Antimony	EPA 6020	7/15/2008 10:10	CHK	< 0.40 mg/kg	0.40
Arsenic	EPA 6020	7/15/2008 10:10	CHK	3.53 mg/kg	0.40
Barium	EPA 6020	7/15/2008 10:10	CHK	99.2 mg/kg	0.40
Beryllium	EPA 6020	7/15/2008 10:10	CHK	1.75 mg/kg	0.40
Cadmium	EPA 6020	7/15/2008 10:10	CHK	< 0.40 mg/kg	0.40
Calcium	EPA 6020	7/15/2008 10:10	CHK	2150 mg/kg	19.8
Chromium	EPA 6020	7/15/2008 10:10	CHK	133 mg/kg	0.40
Chromium, Hexavalent	EPA 7196A	7/15/2008 17:00	SES	< 2.16 mg/kg	2.16
Cobalt	EPA 6020	7/15/2008 10:10	CHK	15.7 mg/kg	0.40
Copper	EPA 6020	7/15/2008 10:10	CHK	29.8 mg/kg	0.40
Iron	EPA 6020	7/16/2008 12:51	CHK	38600 mg/kg	79.1
Lead	EPA 6020	7/15/2008 10:10	CHK	26.7 mg/kg	0.40
Magnesium	EPA 6020	7/15/2008 10:10	CHK	4360 mg/kg	19.8
Manganese	EPA 6020	7/16/2008 12:51	CHK	780 mg/kg	15.8
Mercury	EPA 6020	7/15/2008 10:10	CHK	< 0.079 mg/kg	0.079
Nickel	EPA 6020	7/15/2008 10:10	CHK	23.2 mg/kg	0.40
Potassium	EPA 6020	7/15/2008 10:10	CHK	2570 mg/kg	198
Selenium	EPA 6020	7/15/2008 10:10	CHK	0.91 mg/kg	0.40
Silver	EPA 6020	7/15/2008 10:10	CHK	< 0.79 mg/kg	0.79
Sodium	EPA 6020	7/15/2008 10:10	CHK	121 mg/kg	19.8
Thallium	EPA 6020	7/16/2008 11:24	CHK	< 0.40 mg/kg	0.40
Vanadium	EPA 6020	7/15/2008 10:10	CHK	62.5 mg/kg	0.40

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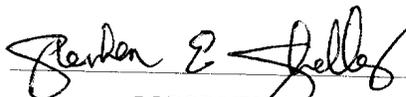
ENSAT Chesapeake  
5405 Twin Knolls Rd  
Suite 1  
Columbia, MD 21045-

PROJECT NAME: CG080357  
REPORT DATE: 17-Jul-08

LAB#- ECL016022-004      SAMPLE ID- DUPE  
LOCATION-  
DATE SAMPLED- 7/10/2008      TIME SAMPLED- 14:35      SAMPLER- K. Howard  
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ANALYSIS	METHOD	ANALYSIS DATE/TIME	BY	RESULT	DETECTION LIMIT
Zinc	EPA 6020	7/15/2008 10:10	CHK	55.9 mg/kg	1.98

  
LABORATORY DIRECTOR

