

CON 12-15
Doc #18956

**SOIL CHARACTERIZATION SERVICES
PROPOSED CASINO PARKING RAMP FACILITY
INTERSECTION OF EAST 5TH and BELL
DUBUQUE, IOWA**

~~XXXXXXXXXXXXXXXXXXXX~~
Project No. 07077067
January 8, 2008

• 5,000 CY - Stockpile #1

Prepared For:

CITY OF DUBUQUE
Dubuque, Iowa

Prepared By:

Terracon
Bettendorf, Iowa

benzo(a) pyrene

January 8, 2008

City of Dubuque
Engineering Department
50 West 13th Street
Dubuque, IA 52001-4864

Attention: Mr. Steve Brown

Re: Soil Characterization Services
Proposed Casino Parking Ramp Facility
Intersection of East 5th and Bell
Dubuque, Iowa
Project No. 07077067

Dear Mr. Brown:

Terracon is pleased to submit our report of soil characterization services completed at the site referenced above. The report presents documentation from recent field activities that included the sampling of soil from known impacted areas.

Based upon the results of the activities documented in this report, a portion of stockpiled soil requires special handling.

Terracon appreciates the opportunity to assist you with this project. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
Terracon

Kathleen Soft for:

John W. Cameron
Environmental Scientist


John F. Brimeyer, PE
Department Manager

JWC/JFB/jb2
N:\Projects\2007\07077067\report\Characterization.doc

cc: Paul Kalb, Conlon Construction Inc.
Jane McAlister, Ahlers Law Firm

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SOIL CHARACTERIZATION SERVICES
PROPOSED CASINO PARKING RAMP FACILITY
INTERSECTION OF 5th & BELL
DUBUQUE, IOWA

Project No. 07077067
January 8, 2008

1.0 INTRODUCTION

Terracon has completed the soil characterization activities at the intersection of 5th & Bell as described in our proposal dated December 27, 2007.

1.1 Project History

Terracon understands that a parking ramp for the proposed Diamond Jo Casino is currently under construction at the site. Previous site assessment activities identified the presence of uncontrolled fill, consisting of sand, clay, sawdust, and other miscellaneous material across the site. Laboratory analysis of soil samples identified reported concentrations of lead and polynuclear aromatic hydrocarbons (PAHs) in excess of Iowa Department of Natural Resources (IDNR) Statewide Standards. The results of previous assessment activities have been presented^{1,2} to the IDNR and have resulted in the issuance of an IDNR "Comfort Letter" dated October 12, 2006.

The "Comfort Letter" references the Soil Management Plan (SMP) dated August 18, 2006 and prepared by Terracon (Project Number 07037005). The SMP provides an assessment of hazards associated with possible chemical impact, identifies health and safety precautions to reduce the risk of chemical exposure for on-site construction workers, and recommends procedures to handle excess soils in consideration of the observed chemical impact. At the direction of the City of Dubuque (the City), the SMP has been implemented for the site.

Approximately ~~5,000~~ cubic yards of excess materials removed from the Casino Parking Ramp construction site have been placed on a temporary soil stockpile at the Dubuque Hardwoods property located on the north side of 5th Street.

1.2 Project Objective

The intent of the characterization activities was to determine whether portions of the stockpiled soils are impacted at levels above the IDNR Statewide Standards and to identify soil handling and disposal procedures.

¹ Phase II Environmental Site Assessment, East 5th and Bell Street, Dubuque, Iowa, Port of Dubuque Brownfields Redevelopment Project, Terracon Project No. 07037005, June 21, 2005

² Supplemental Phase II Environmental Site Assessment, East Fifth^h and Bell Street, Port of Dubuque Brownfields Redevelopment Project, Dubuque, Iowa, Terracon Project No. 07037005, August 18, 2006

2.0 CHARACTERIZATION ACTIVITIES

2.1 Health and Safety

Terracon performed field activities under Level D safety precautions. Level D safety attire for this project consisted of a washable work uniform including safety shoes, hardhat, rubber gloves, and appropriate eye protection. Terracon developed a health and safety plan before mobilization.

2.2 Sampling Activities

On December 20, 2007, Terracon mobilized a technician and equipment to the stockpile site. The site location is identified on Figure 1, Appendix A. Soils were stockpiled north of 5th Street on the former Dubuque Hardwoods property. Upon arrival, Terracon divided the stockpile into five areas of approximately equivalent volume. Terracon advanced one soil boring within each of the five areas. One soil sample was taken from each boring at varying depths within each boring. The sample locations are identified on Figure 2, Appendix A. Soil samples were obtained directly from the hand auger bucket.

Terracon transferred the soil samples to laboratory-prepared containers that were placed in an ice-packed cooler for transport to the laboratory. Terracon shipped the samples under standard Chain-of-Custody procedures via overnight carrier to Environmental Science Corporation (ESC). ESC analyzed the samples for lead and PAHs using USEPA Methods 6010B and 8270C, respectively.

Sample locations were measured with respect to site features using a measuring wheel. Angles were estimated.

3.0 ANALYTICAL RESULTS

Lead was detected in each of the soil samples at concentrations below the IDNR Statewide Standard. PAH's were detected in four of the five soil samples. The reported concentration of detected PAH's in three of the five samples (HA-1, HA-2, and HA-5) were below the IDNR Statewide Standards. The reported benzo(a)pyrene concentration in sample HA-3, collected approximately five feet above ground surface (ags), was 1.9 milligrams per kilogram (mg/kg) which is above the IDNR Statewide Standard of 0.31 mg/kg. Laboratory analytical results for the soil samples are summarized in Table 1, Appendix B. Copies of the laboratory analytical report are attached as Appendix C.

4.0 CONCLUSIONS AND RECOMMENDATIONS

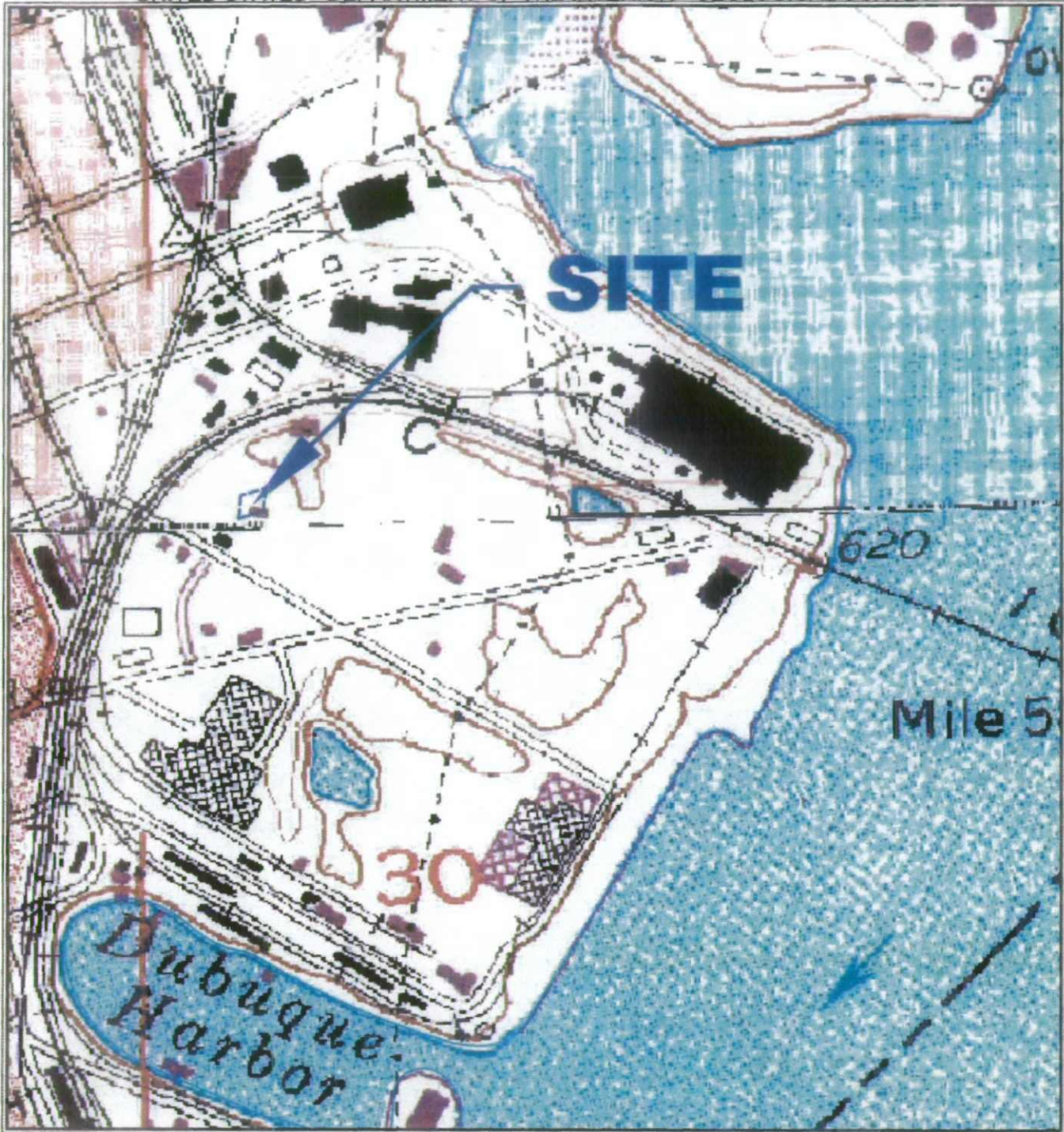
Analytical results indicate that a portion of the stockpile represented by sample HA-3 requires special handling. This sample was located in the southwestern portion of the stockpile. Off-site disposal at a landfill would be an appropriate method to handle these soils. Please note that the landfill will need to be notified and approval given before soils will be accepted by them.

The intent of soil characterization activities is that each soil sample is representative of the approximately equivalent proportion of the pile that it was collected from. The actual extent of observed impact throughout that portion of the stockpile, however, is not known. The representative portion of the stockpile around HA-3 could be further divided and additional samples could be analyzed to help determine the extent of impact around sample HA-3. Further sampling with the intent of reducing the quantity of soil to be disposed of would have to be evaluated against the cost of disposal.

The analysis presented in this report is based upon data obtained from field activities and from other information discussed in this report. This report does not reflect any variations in subsurface stratigraphy which may occur between borings or across the site. Actual subsurface conditions may vary. The extent of such variations may not become evident without additional exploration.

This report is prepared for the exclusive use of our client for the specific application to the project discussed and has been prepared in accordance with generally accepted environmental engineering practices. No warranties, either express or implied are intended or made. In the event any changes in nature or location of subsurface conditions as outlined in this report are observed, the conclusions contained in this report cannot be considered valid unless the changes are reviewed and the conclusions of this report are modified or verified in writing by the environmental engineer.

APPENDIX A



SITE

Dubuque Harbor

30

620

Mile 5



Map Source:
USGS TERRASERVER-USA.COM
Topographic Image
Dated 1972

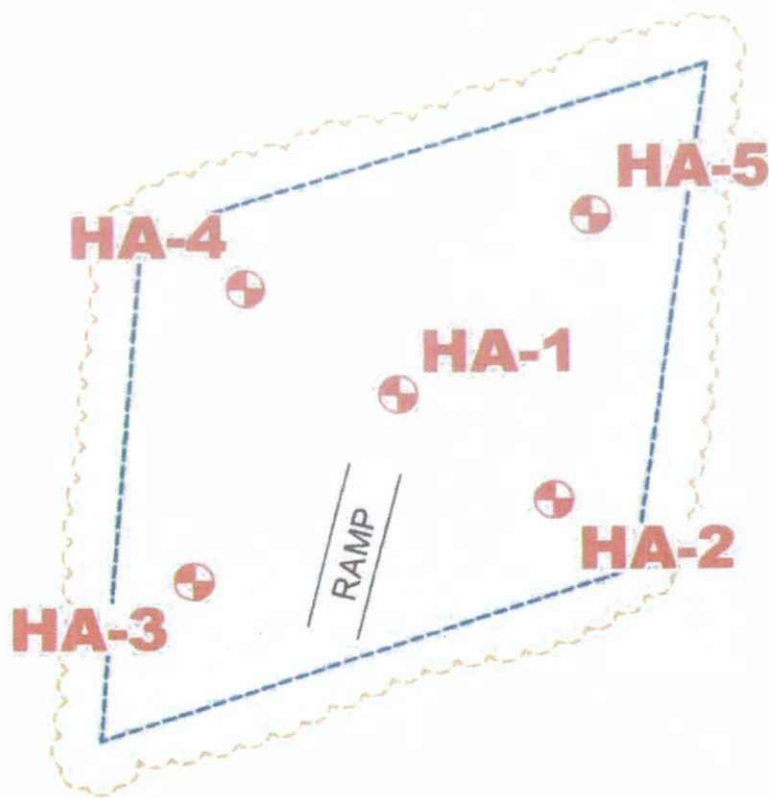
----- Approximate Site Boundary

0 500'
APPROXIMATE SCALE: 1"=500'

TOPOGRAPHIC VICINITY MAP LIMITED SITE INVESTIGATION PARKING RAMP SOIL CHARACTERIZATION EAST 6TH STREET, PORT OF DUBUQUE DUBUQUE, IOWA				
Project Mngr:	JWC	Project #	07077067b	
Drawn By:	DAC	Scale:	AS SHOWN	
Checked By:	JWC	Date:	January 9, 2008	
Approved By:	JWC	Revised By:	-	
File Name:	07077067b-LSI - REV 20071227a.dwg		Figure #	1

Terracon
870 40th Avenue
Bettendorf, Iowa 52722
(563) 355-0702

N:\PROJECTS - OTHER OFFICES\BETTENDORF - 0750070707\0670707067.BID\GRAMS\0707067b-LSI - REV 20071227a.dwg



- - - - Approximate Stockpile Boundary
- - - - 2 Foot High Sand Berm
- ⊕ Approximate Hand Auger Sample Locations

**SITE DETAIL DIAGRAM
LIMITED SITE INVESTIGATION
PARKING RAMP SOIL CHARACTERIZATION**
EAST 6TH STREET, PORT OF DUBUQUE
DUBUQUE, IOWA

Project Mngr:	JWC	Terracon 870 40th Avenue Bettendorf, Iowa 52722 (563) 355-0702	Project #	07077067b
Drawn By:	DAC		Scale:	AS SHOWN
Checked By:	JWC		Date:	December 28, 2007
Approved By:	JWC		Revised By:	-
File Name:	07077067b-LSI - REV 20071227a.dwg		Figure #	2

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

N:\Projects\07077067\07077067.dwg - REV 20071227a.dwg

APPENDIX B

**Table 1: Soil Analytical Results
Soil Stockpile - Dubuque Hardwoods Site**

Client Sample ID			L325431-01	L325431-02	L325431-03	L325431-04	L325431-05	Frequency of Detection	Maximum Detected Concentration	Most Restrictive LRP Standard	Maximum Exceeds?
Lab Sample ID			HA-1 6 FT	HA-2 2 FT	HA-3 5 FT	HA-4 6 FT	HA-5 5 FT				
Date Sampled			12/20/2007	12/20/2007	12/20/2007	12/20/2007	12/20/2007				
CAS No	Parameter	Units									
7439-92-1	Lead, Total	mg/kg	19	40	130	19	78	5 of 5 (100%)	130	400	NO
83-32-9	Acenaphthene	mg/kg	<0.033	0.22	0.47	<0.033	<0.033	2 of 5 (40%)	0.47	3400	NO
208-96-8	Acenaphthylene	mg/kg	<0.033	<0.033	0.17	<0.033	<0.033	1 of 5 (20%)	0.17	Not Established	No Standard
120-12-7	Anthracene	mg/kg	<0.033	0.12	1.3	<0.033	<0.033	2 of 5 (40%)	1.3	17000	NO
56-55-3	Benzo(a)anthracene	mg/kg	0.064	0.28	2.5	<0.033	0.13	4 of 5 (80%)	2.5	3.1	NO
50-32-8	Benzo(a)pyrene	mg/kg	<0.033	0.22	1.9	<0.033	0.1	3 of 5 (60%)	1.9	0.31	YES
205-99-2	Benzo(b)fluoranthene	mg/kg	<0.033	0.35	2.7	<0.033	0.13	3 of 5 (60%)	2.7	3.1	NO
191-24-2	Benzo(g,h,i)perylene	mg/kg	<0.033	<0.033	0.85	<0.033	0.075	2 of 5 (40%)	0.85	Not Established	No Standard
207-08-9	Benzo(k)fluoranthene	mg/kg	<0.033	0.14	1	<0.033	0.042	3 of 5 (60%)	1	31	NO
218-01-9	Chrysene	mg/kg	0.061	0.24	2	<0.033	0.096	4 of 5 (80%)	2	310	NO
53-70-3	Dibenzo(a,h)anthracene	mg/kg	<0.033	<0.033	<0.033	<0.033	<0.033	0 of 5 (0%)	Not Detected	0.31	Not Detected
206-44-0	Fluoranthene	mg/kg	0.14	0.55	9.1	<0.033	0.3	4 of 5 (80%)	9.1	2300	NO
86-73-7	Fluorene	mg/kg	<0.033	0.14	1.3	<0.033	<0.033	2 of 5 (40%)	1.3	2300	NO
193-39-5	Indeno(1,2,3-c,d)pyrene	mg/kg	<0.033	0.11	0.8	<0.033	0.062	3 of 5 (60%)	0.8	3.1	NO
91-20-3	Naphthalene	mg/kg	<0.033	0.084	2.2	<0.033	<0.033	2 of 5 (40%)	2.2	1100	NO
85-01-8	Phenanthrene	mg/kg	0.091	0.44	10	<0.033	0.17	4 of 5 (80%)	10	Not Established	No Standard
129-00-0	Pyrene	mg/kg	0.094	0.47	5.7	<0.033	0.22	4 of 5 (80%)	5.7	1700	NO

APPENDIX C



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Est. 1970

John Brimeyer
Terracon - Bettendorf
870 40th Avenue

Bettendorf, IA 52722

Report Summary

Monday December 31, 2007

Report Number: L325431

Samples Received: 12/22/07

Client Project: 07077067

Description: Debuque Casino Soil Sampling

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:


Jeff Carr, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 09227, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375, DW21704, ND - R-140
NJ - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

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5 Samples Reported: 12/31/07 10:57 Printed: 12/31/07 12:12

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REPORT OF ANALYSIS

December 31, 2007

John Brimeyer
Terracon - Bettendorf
870 40th Avenue
Bettendorf, IA 52722

Date Received : December 22, 2007
Description : Debuque Casino Soil Sampling

Sample ID : HA-1 6 FT

Collected By : John W. Cameron
Collection Date : 12/20/07 00:00

ESC Sample # : L325431-01

Site ID :

Project # : 07077067

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Lead	19.	0.25	mg/kg	6010B	12/24/07	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.033	mg/kg	8270C	12/28/07	1
Acenaphthene	BDL	0.033	mg/kg	8270C	12/28/07	1
Acenaphthylene	BDL	0.033	mg/kg	8270C	12/28/07	1
Benzo(a)anthracene	0.064	0.033	mg/kg	8270C	12/28/07	1
Benzo(a)pyrene	BDL	0.033	mg/kg	8270C	12/28/07	1
Benzo(b)fluoranthene	BDL	0.033	mg/kg	8270C	12/28/07	1
Benzo(g,h,i)perylene	BDL	0.033	mg/kg	8270C	12/28/07	1
Benzo(k)fluoranthene	BDL	0.033	mg/kg	8270C	12/28/07	1
Chrysene	0.061	0.033	mg/kg	8270C	12/28/07	1
Dibenz(a,h)anthracene	BDL	0.033	mg/kg	8270C	12/28/07	1
Fluoranthene	0.14	0.033	mg/kg	8270C	12/28/07	1
Fluorene	BDL	0.033	mg/kg	8270C	12/28/07	1
Indeno(1,2,3-cd)pyrene	BDL	0.033	mg/kg	8270C	12/28/07	1
Naphthalene	BDL	0.033	mg/kg	8270C	12/28/07	1
Phenanthrene	0.091	0.033	mg/kg	8270C	12/28/07	1
Pyrene	0.094	0.033	mg/kg	8270C	12/28/07	1
Surrogate Recovery						
Nitrobenzene-d5	65.1		% Rec.	8270C	12/28/07	1
2-Fluorobiphenyl	64.4		% Rec.	8270C	12/28/07	1
p-Terphenyl-d14	38.2		% Rec.	8270C	12/28/07	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

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REPORT OF ANALYSIS

December 31, 2007

John Brimeyer
Terracon - Bettendorf
870 40th Avenue
Bettendorf, IA 52722

Date Received : December 22, 2007
Description : Debuque Casino Soil Sampling
Sample ID : HA-2 2 FT
Collected By : John W. Cameron
Collection Date : 12/20/07 00:00

ESC Sample # : L325431-02

Site ID :

Project # : 07077067

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Lead	40.	0.25	mg/kg	6010B	12/24/07	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.12	0.033	mg/kg	8270C	12/28/07	1
Acenaphthene	0.22	0.033	mg/kg	8270C	12/28/07	1
Acenaphthylene	BDL	0.033	mg/kg	8270C	12/28/07	1
Benzo(a)anthracene	0.28	0.033	mg/kg	8270C	12/28/07	1
Benzo(a)pyrene	0.22	0.033	mg/kg	8270C	12/28/07	1
Benzo(b)fluoranthene	0.35	0.033	mg/kg	8270C	12/28/07	1
Benzo(g,h,i)perylene	BDL	0.033	mg/kg	8270C	12/28/07	1
Benzo(k)fluoranthene	0.14	0.033	mg/kg	8270C	12/28/07	1
Chrysene	0.24	0.033	mg/kg	8270C	12/28/07	1
Dibenz(a,h)anthracene	BDL	0.033	mg/kg	8270C	12/28/07	1
Fluoranthene	0.55	0.033	mg/kg	8270C	12/28/07	1
Fluorene	0.14	0.033	mg/kg	8270C	12/28/07	1
Indeno(1,2,3-cd)pyrene	0.11	0.033	mg/kg	8270C	12/28/07	1
Naphthalene	0.084	0.033	mg/kg	8270C	12/28/07	1
Phenanthrene	0.44	0.033	mg/kg	8270C	12/28/07	1
Pyrene	0.47	0.033	mg/kg	8270C	12/28/07	1
Surrogate Recovery						
Nitrobenzene-d5	79.7		% Rec.	8270C	12/28/07	1
2-Fluorobiphenyl	82.8		% Rec.	8270C	12/28/07	1
p-Terphenyl-d14	81.2		% Rec.	8270C	12/28/07	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

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REPORT OF ANALYSIS

December 31, 2007

John Brimeyer
Terracon - Bettendorf
870 40th Avenue
Bettendorf, IA 52722

Date Received : December 22, 2007
Description : Debuque Casino Soil Sampling
Sample ID : HA-3 5 FT
Collected By : John W. Cameron
Collection Date : 12/20/07 00:00

ESC Sample # : L325431-03

Site ID :

Project # : 07077067

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Lead	130	0.25	mg/kg	6010B	12/24/07	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	1.3	0.033	mg/kg	8270C	12/28/07	1
Acenaphthene	0.47	0.033	mg/kg	8270C	12/28/07	1
Acenaphthylene	0.17	0.033	mg/kg	8270C	12/28/07	1
Benzo(a)anthracene	2.5	0.033	mg/kg	8270C	12/28/07	1
Benzo(a)pyrene	1.9	0.033	mg/kg	8270C	12/28/07	1
Benzo(b)fluoranthene	2.7	0.033	mg/kg	8270C	12/28/07	1
Benzo(g,h,i)perylene	0.85	0.033	mg/kg	8270C	12/28/07	1
Benzo(k)fluoranthene	1.0	0.033	mg/kg	8270C	12/28/07	1
Chrysene	2.0	0.033	mg/kg	8270C	12/28/07	1
Dibenz(a,h)anthracene	BDL	0.033	mg/kg	8270C	12/28/07	1
Fluoranthene	9.1	0.033	mg/kg	8270C	12/28/07	1
Fluorene	1.3	0.033	mg/kg	8270C	12/28/07	1
Indeno(1,2,3-cd)pyrene	0.80	0.033	mg/kg	8270C	12/28/07	1
Naphthalene	2.2	0.033	mg/kg	8270C	12/28/07	1
Phenanthrene	10.	0.033	mg/kg	8270C	12/28/07	1
Pyrene	5.7	0.033	mg/kg	8270C	12/28/07	1
Surrogate Recovery						
Nitrobenzene-d5	87.9		% Rec.	8270C	12/28/07	1
2-Fluorobiphenyl	96.2		% Rec.	8270C	12/28/07	1
p-Terphenyl-d14	109.		% Rec.	8270C	12/28/07	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)

Note:

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REPORT OF ANALYSIS

December 31, 2007

John Brimeyer
Terracon - Bettendorf
870 40th Avenue
Bettendorf, IA 52722

ESC Sample # : L325431-04

Date Received : December 22, 2007
Description : Debuque Casino Soil Sampling

Site ID :

Sample ID : HA-4 6 FT

Project # : 07077067

Collected By : John W. Cameron
Collection Date : 12/20/07 00:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Lead	19.	0.25	mg/kg	6010B	12/24/07	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.033	mg/kg	8270C	12/28/07	1
Acenaphthene	BDL	0.033	mg/kg	8270C	12/28/07	1
Acenaphthylene	BDL	0.033	mg/kg	8270C	12/28/07	1
Benzo(a)anthracene	BDL	0.033	mg/kg	8270C	12/28/07	1
Benzo(a)pyrene	BDL	0.033	mg/kg	8270C	12/28/07	1
Benzo(b)fluoranthene	BDL	0.033	mg/kg	8270C	12/28/07	1
Benzo(g,h,i)perylene	BDL	0.033	mg/kg	8270C	12/28/07	1
Benzo(k)fluoranthene	BDL	0.033	mg/kg	8270C	12/28/07	1
Chrysene	BDL	0.033	mg/kg	8270C	12/28/07	1
Dibenz(a,h)anthracene	BDL	0.033	mg/kg	8270C	12/28/07	1
Fluoranthene	BDL	0.033	mg/kg	8270C	12/28/07	1
Fluorene	BDL	0.033	mg/kg	8270C	12/28/07	1
Indeno(1,2,3-cd)pyrene	BDL	0.033	mg/kg	8270C	12/28/07	1
Naphthalene	BDL	0.033	mg/kg	8270C	12/28/07	1
Phenanthrene	BDL	0.033	mg/kg	8270C	12/28/07	1
Pyrene	BDL	0.033	mg/kg	8270C	12/28/07	1
Surrogate Recovery						
Nitrobenzene-d5	50.5		% Rec.	8270C	12/28/07	1
2-Fluorobiphenyl	66.9		% Rec.	8270C	12/28/07	1
p-Terphenyl-d14	95.1		% Rec.	8270C	12/28/07	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Est. 1970

REPORT OF ANALYSIS

December 31, 2007

John Brimeyer
Terracon - Bettendorf
870 40th Avenue
Bettendorf, IA 52722

ESC Sample # : L325431-05

Date Received : December 22, 2007
Description : Debuque Casino Soil Sampling

Site ID :

Sample ID : HA-5 5 FT

Project # : 07077067

Collected By : John W. Cameron
Collection Date : 12/20/07 00:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Lead	78.	0.25	mg/kg	6010B	12/24/07	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.033	mg/kg	8270C	12/28/07	1
Acenaphthene	BDL	0.033	mg/kg	8270C	12/28/07	1
Acenaphthylene	BDL	0.033	mg/kg	8270C	12/28/07	1
Benzo (a) anthracene	0.13	0.033	mg/kg	8270C	12/28/07	1
Benzo (a) pyrene	0.10	0.033	mg/kg	8270C	12/28/07	1
Benzo (b) fluoranthene	0.13	0.033	mg/kg	8270C	12/28/07	1
Benzo (g, h, i) perylene	0.075	0.033	mg/kg	8270C	12/28/07	1
Benzo (k) fluoranthene	0.042	0.033	mg/kg	8270C	12/28/07	1
Chrysene	0.096	0.033	mg/kg	8270C	12/28/07	1
Dibenz (a, h) anthracene	BDL	0.033	mg/kg	8270C	12/28/07	1
Fluoranthene	0.30	0.033	mg/kg	8270C	12/28/07	1
Fluorene	BDL	0.033	mg/kg	8270C	12/28/07	1
Indeno (1, 2, 3-cd) pyrene	0.062	0.033	mg/kg	8270C	12/28/07	1
Naphthalene	BDL	0.033	mg/kg	8270C	12/28/07	1
Phenanthrene	0.17	0.033	mg/kg	8270C	12/28/07	1
Pyrene	0.22	0.033	mg/kg	8270C	12/28/07	1
Surrogate Recovery						
Nitrobenzene-d5	51.1		% Rec.	8270C	12/28/07	1
2-Fluorobiphenyl	71.8		% Rec.	8270C	12/28/07	1
p-Terphenyl-d14	76.9		% Rec.	8270C	12/28/07	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit (PQL)

Note:

The reported analytical results relate only to the sample submitted.
This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 12/31/07 10:57 Printed: 12/31/07 12:13

Attachment A
List of Analytes with QC Qualifiers

Sample #	Analyte	Qualifier
L325431-01	Benzo(a) anthracene	J8
	Chrysene	J8
	p-Terphenyl-d14	J2
L325431-02	Benzo(a) pyrene	J8
	Benzo(b) fluoranthene	J8
	Benzo(k) fluoranthene	J8
	Indeno(1,2,3-cd)pyrene	J8
L325431-03	Benzo(a) pyrene	J8
	Benzo(b) fluoranthene	J8
	Benzo(g,h,i)perylene	J8
	Benzo(k) fluoranthene	J8
	Indeno(1,2,3-cd)pyrene	J8

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits
J8	The internal standard associated with this data responded abnormally low. The data is likely to show a high bias concerning the result.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable unless qualified as 'R' (Rejected).

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Company Name/Address:

Terracon - Bettendorf

870 40th Avenue
Bettendorf, IA 52722

Alternate billing information:

Analysis/Container/Preservative

Chain of Custody
Page 1 of 1

Prepared by:

**ENVIRONMENTAL
SCIENCE CORP.**

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Report to: *John Brimeyer*

Email to: *jbrimeyer@terracon.com*

Project Description: *Dubuege Casino Soil Sampling*

City/State Collected: *Dubuege Iowa*

Phone: (563) 355-0702
FAX: (563) 355-4789

Client Project #: *07077067*

ESC Key:

Collected by: *John W. Cameron*

Site/Facility ID#:

P.O.#:

Collected by (signature): *John W. Cameron*

Rush? (Lab MUST Be Notified)

Same Day 200%
Next Day 100%
Two Day 50%
Three Day 25%

Date Results Needed:

Email? No Yes
FAX? No Yes

Immediately Packed on Ice N Y

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Remarks/Contaminant	Sample # (lab only)
HA-1	grab		6' A&S	12/20/07		2	Apex 10'	6325491-01
HA-2	grab		2'	↓		2	Apex 5'	02
HA-3	grab		5'	↓		2	Apex 8'	03
HA-4	grab		6'	↓		2	Apex 9'	04
HA-5	grab		5'	↓		2	Apex 9'	05

Lead PAH's 8270

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

pH _____ Temp _____

Remarks: *ICE HARBOR / PORT of Dubuege*

6415 3258 7145

Flow _____ Other _____

Relinquished by: (Signature) <i>John W. Cameron</i>	Date: <i>12/21/07</i>	Time: <i>13:00</i>	Received by: (Signature) <i>[Signature]</i>	Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/>	Condition: (lab use only) <i>OK</i>
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received by: (Signature) <i>[Signature]</i>	Temp: <i>3.4°C</i>	Bottles Received: <i>10</i>
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: <i>12/22/07</i>	Time: <i>9:30</i>
					pH Checked: _____ NCF: _____