lerracon

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CON 12-15 Doc #18955

SOIL CHARACTERIZATION SERVICES
PROPOSED CASINO PARKING RAMP FACILITY
RUBIE FARM SITE
8159 SETTLERS LANE
DUBUQUE, IOWA

Project No. 07077067 January 18, 2008

Prepared For:

CITY OF DUBUQUE Dubuque, Iowa

Prepared By:

TerraconBettendorf, Iowa

January 18, 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

Rubie Farm Site 8159 Settlers Lane 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 fill.

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

John W. Cameron

Environmental Scientist

John F. Brimeyer, PE

Consulting Engineers & Scientists

Terracon Consultants, Inc.

Bettendorf, Iowa 52722 Phone 563.355.0702

870 40th Avenue

Fax 563 355 4789 www.terracon.com

Environmental Manager

JWC/JFB/jb2 -

N:\Projects\2007\07077067\reports\CharacterizationRubieFarm.doc

cc: Paul Kalb, Conlon Construction Inc.

Jane McAlister, Ahlers Law Firm

Wayne Stewart, Stewart Construction

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SOIL CHARACTERIZATION SERVICES PROPOSED CASINO PARKING RAMP FACILITY RUBIE FARM SITE 8159 SETTLERS LANE DUBUQUE, IOWA

Project No. 07077067 January 18, 2008

1.0 INTRODUCTION

Terracon has completed the soil characterization activities at the Rubie Farm Site in rural Dubuque County near the town of Key West, 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 intersection of E. 5th Street and Bell Street, Dubuque, Iowa. 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.

Prior to the implementation of the SMP, approximately 5,000 cubic yards of excess materials were removed form the Casino Parking Ramp construction site by Stewart Construction. These soils have been disposed of at a site located near Key West, Iowa. The site is located within the southeast quarter of section 6, Township 88 North, Range 3 East, Dubuque County, Iowa. The location of the site is depicted on the Topographic Vicinity Map attached as Figure 1, Appendix A.

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

Soil Characterization Rubie Farm Site Project No. 07077067 January 18, 2008

1.2 Project Objective

The intent of the characterization activities was to determine whether excess soils placed at the site are impacted at levels above the IDNR Statewide Standards and if impacts were observed, how soils should be handled.

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 January 7, 2008, Terracon mobilized a technician and equipment to the disposal site. Upon arrival, Terracon met with Russell Stewart, Stewart Construction, and discussed site activities. Terracon observed that the site had previously been a gully. Mr. Stewart informed Terracon that construction spoils, mainly concrete and brick had been deposited at the site from several construction projects. Terracon relied on Mr. Stewart to define limits of material that was received from the Casino Parking Ramp construction site. The limits of the deposited material were measured and a field site diagram was produced. Terracon divided the disposal area into 10 sub-areas of approximately equivalent volume. An excavator was used to excavate test pits within each sub-area. One soil sample was taken from each sub-area at varying depths. Soil samples were obtained directly from the excavator bucket. A site diagram identifying the limits of the soil from the construction site and sample locations is attached on Figure 2, Appendix A.

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 polynuclear aromatic hydrocarbons (PAHs), using USEPA Methods 6010B and 8270C, respectively. The soil disposal area and sample locations were measured with respect to site features using a measuring wheel. Angles were estimated.

Soil Characterization Rubie Farm Site Project No. 07077067 January 18, 2008

3.0 ANALYTICAL RESULTS

Lead was detected in each of the soil samples at concentrations below the lowa Department of Natural Resources (IDNR) Statewide Standard. PAH's were detected in eight of the ten soil samples. The reported concentration of detected PAH's in eight of the ten samples were below the IDNR Statewide Standards. The reported benzo(a)pyrene concentration in samples TP-3 7' and TP-4 8' was 0.63 milligrams per kilogram (mg/kg) and was 2.6 mg/kg, respectively which are above the IDNR Statewide Standard of 0.31 mg/kg. The reported benzo(b)fluoranthene concentration in sample TP-4 8' was 4.0 mg/kg which is above the IDNR Statewide Standard of 3.1 mg/kg.

In accordance with Iowa Administrative Code (IAC) 137.10(5).a(1), not less than 75% of soil samples collected within an affected area must be below the Statewide Standard with no sample exceeding ten times the Statewide Standard. Review of the analytical data indicates that 80% and 90% of benzo(a)pyrene and benzo(b)fluoranthene, respectively are less than ten times the Statewide Standard and the maximum reported concentrations of each are less than the Statewide Standard. Application of the compliance demonstration specified at IAC 137.10(5).a(1) is subject to enrollment in the Iowa Land Recycling Program (LRP).

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 the deposited material from Casino Parking Ramp do exceed IDNR Statewide Standards. If the site was enrolled in the lowa LRP, further action may not be necessary regarding the deposited material. However, site assessment activities completed to date do not constitute a site investigation under the lowa LRP. Further, evaluation of the site conditions is subject to the review and approval of an lowa LRP project manager if the site were to be enrolled in the LRP.

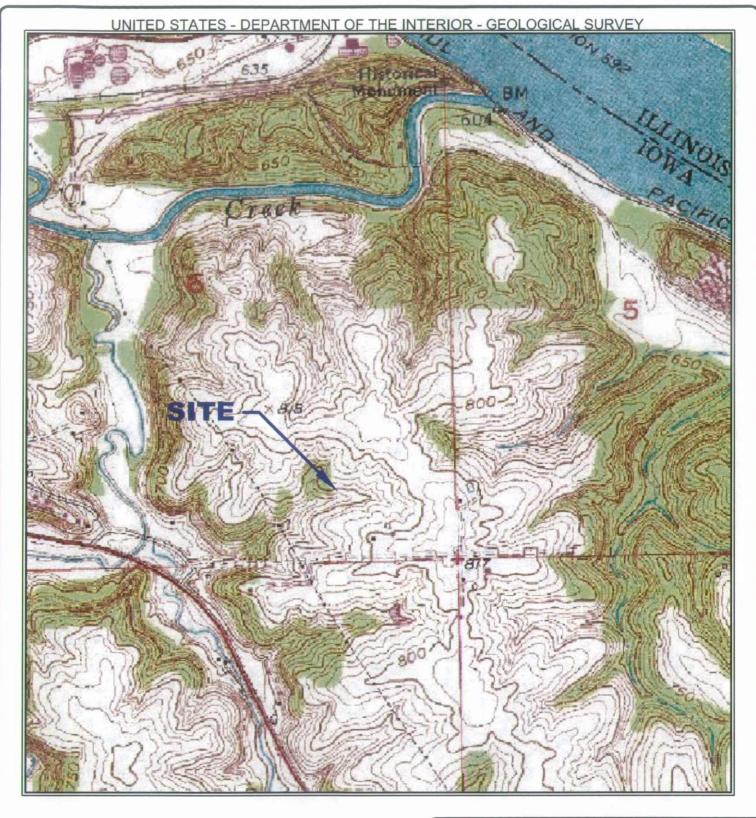
This evaluation is not a recommendation to utilize excess material from the Casino Parking Ramp as fill at this site. This evaluation does not provide an opinion on whether this site is an appropriate landfill under the laws and regulations of the State of lowa. If a Phase 1 Environmental Site Assessment was completed for this site, an Environmental Professional may regard the deposited material from the Casino Parking Ramp that exceeds lowa LRP standards as a Recognized Environmental Condition.

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.

Tierracon

Soil Characterization Rubie Farm Site Project No. 07077067 January 18, 2008

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.





Map Source: USGS TERRASERVER-USA.COM Topographic Image Dated 1978

TOPOGRAPHIC VICINITY MAP LIMITED SITE INVESTIGATION PARKING RAMP SOIL CHARACTERIZATION

RUBIE FARM FILL SITE, 8159 SETTLERS LANE DUBUQUE, IOWA

Project Mngr: Drawn By: Checked By:

Approved By:

File Name:

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

07077067C AS SHOWN

January 10, 2008 Revised By

07077067c-LSI.dwg



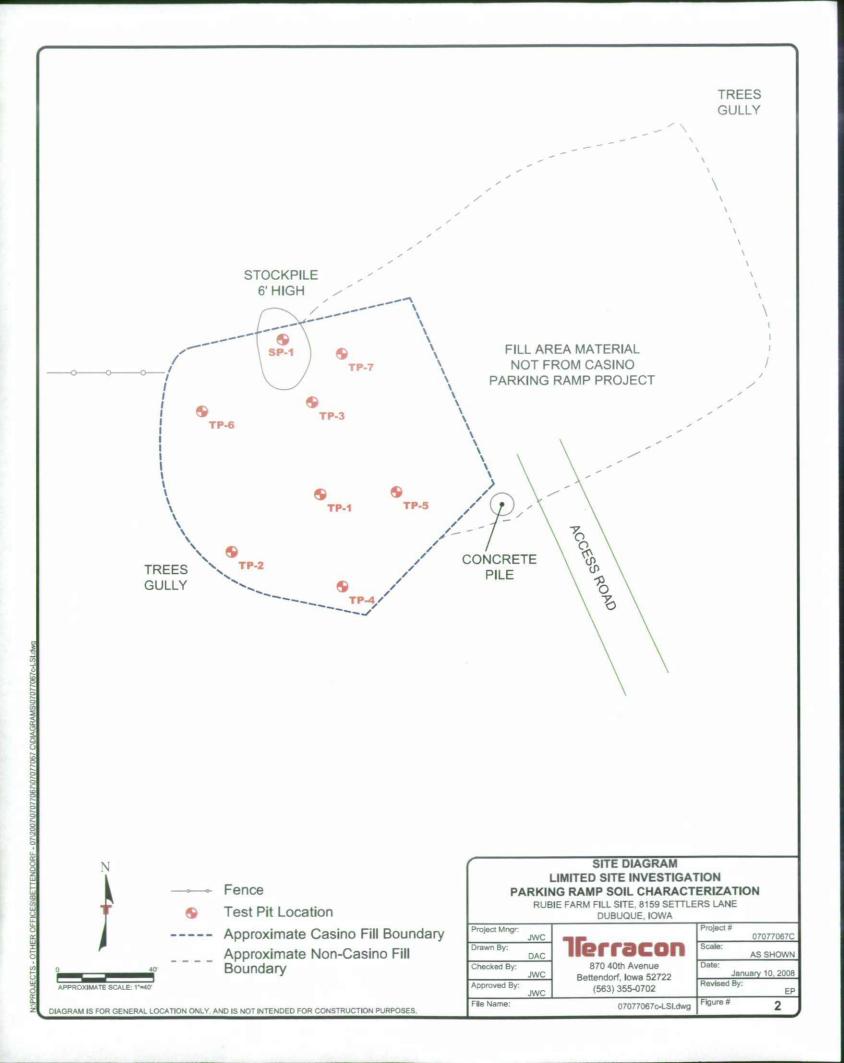


Table 1 Soil Analytical Results Rubie Farm Fill Site Dubuque, Iowa

Client Sams	ole ID		SP-14 FT I	TP-1 15 FT	TP-1 2-4 FT	TP-2 13 FT I	TP-3 11 FT	TP-3 7 FT	TP-4 8 FT	TP-54 FT	TP-88FT	TP-7 3 FT	r	Maximum			lowa LRP Standards
Date Sampl			1/7/2008	1/7/2008	1/7/2008	1/7/2008	1/7/2008	1/7/2008	1/7/2008	1/7/2008	1/7/2008	1/7/2008	Frequency of	Detected	Most Restrictive	Maximum	Residential Land Use
CAS No	Parameter	Units	11172333	,,,,E					17772430	1777222	17772200		Detection	Concentration	LRP Standard	Exceeds?	Statewide Standard
7439-92-1	Lead, Total		130	52	170	38	67	72	23	57	65	67	10 of 10 (100%)	170	3400	NO	400
		mg/kg						13									
83-32-9	Acenaphthene	mg/kg	< 0.033	<0.033		0,036	0.043	0,11	0.45	<0.033	<0.033	<0.033		0.45	Not Established	No Standard	3400
208-96-8	Acenaphthylene	mg/kg	< 0.033	<0,033	<0.033	<0.033	0.037	0,058	0.038	< 0.033	0.048	<0.033	4 of 10 (40%)	0.058	17000	NO	No Standard
120-12-7	Anthracene	mg/kg	<0.033	<0.033	0.046	0.065	0.11	0.34	1.6	0.085	0.073	<0.033	7 of 10 (70%)	1.6	3.1	NO	17000
56-55-3	Benzo(a)anthracene	mg/kg	<0.033	<0.033	0.15	0.23	0.32	0,87	2.8	0.22	0.2	0.05	8 of 10 (80%)	2.8	0.31	YES	3.1
50-32-8	Benzo(a)pyrene	mg/kg	<0.033	<0.033	0.12	0,23	0.28	0,63	2.6	0.17	0,18	0.042	8 of 10 (80%)	2,6	3,1	NO	0.31
205-99-2	Benzo(b)fluoranthene	mg/kg	<0.033	<0.033	0.14	0.28	0.43	0,91	4	0.2	0.29	0.05	8 of 10 (80%)	4	Not Established	No Standard	3.1
191-24-2	Benzo(g,h,i)perylene	mg/kg	< 0.033	<0.033	0.092	0,17	<0.033	0.21	0.72	0.11	0.069	0.037	7 of 10 (70%)	0.72	31	NO	No Standard
207-08-9	Benzo(k)fluoranthene	mg/kg_	<0.033	< 0.033	0.072	0.12	0.15	0.45	1.4	0.11	0.11	< 0.033	7 of 10 (70%)	1.4	310	МО	31
218-01-9	Chrysene	mg/kg	<0.033	<0.033	0.1	0.22	0.28	0.74	2.8	0.19	0.16	0.044	8 of 10 (80%)	2.8	0.31	YES	310
53-70-3	Dibenzo(a,h)anthracene	mg/kg	<0.033	<0.033	<0.033	0.034	<0.033	0.085	0.23	0,04	<0.033	<0.033	4 of 10 (40%)	0,23	2300	NO	0.31
206-44-0	Fluoranthene	mg/kg	<0.033	<0.033	0.27	0.39	0.63	1.9	11	0.44	0,36	0.084	8 of 10 (80%)	11	2300	NO	2300
86-73-7	Fluorene	mg/kg	< 0.033	<0.033	<0.033	<0.033	0.04	0.16	0.56	0.037	0.046	<0.033	5 of 10 (50%)	0.56	3.1	NO	2300
193-39-5	Indeno(1,2,3-c,d)pyrene	mg/kg	<0.033	<0,033	0.08	0.14	0.064	0.17	0.68	0.094	0.072	<0.033	7 of 10 (70%)	0,68	1100	NO	3.1
91-20-3	Naphthalene	mg/kg	<0.033	<0.033	< 0.033	0.039	0.053	0.05	0.15	0.053	0.05	<0.033	6 of 10 (60%)	0.15	Not Established	No Standard	1100
85-01-8	Phenanthrene	mg/kg	< 0.033	<0.033	0.13	0.25	0.38	1.3	9.6	0.32	0.31	0.063	8 of 10 (80%)	9.6	1700	NÖ	No Standard
129-00-0	Pyrene	mg/kg	< 0.033	<0.033	0.22	0.37	0.38	1.4	6.3	0.35	0.33	0.074	8 of 10 (80%)	6.3	Not Established	No Standard	1700



Tax I.D. 62-0814289

Est. 1970

John Brimeyer Terracon - Bettendorf 870 40th Avenue

Bettendorf, IA 52722

Report Summary

Tuesday January 15, 2008

Report Number: L326856 Samples Received: 01/09/08 Client Project: 07077067

Description: Debuque Casino Soil Sampling

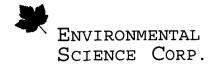
The analytical results in this report are based upon information surby you, the client, and are for your exclusive use. If you have a questions regarding this data package, please do not hesitate to the surface Report Reviewed By:

Entire Report Reviewed By:

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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Tax I.D. 62-0814289

Est 1970

REPORT OF ANALYSIS

John Brimeyer Terracon - Bettendorf 870 40th Avenue Bettendorf, IA 52722 January 15, 2008

Date Received

09, 2008

ESC Sample # : L326856-01

Description

January 09, 2008 Casion Soil Characterization

Site ID :

RUBIE FARM

Sample ID

TP-1 2-4 FT

Project # :

07077067

Collected By Collection Date : John Cameron 01/07/08 10:00

Dil. Det. Limit Units Method Date Result Parameter 01/10/08 1 0.25 6010B 170 mg/kg Lead Polynuclear Aromatic Hydrocarbons 01/10/08 mg/kg 8270C 0.046 0.033 Anthracene 01/10/08 01/10/08 01/10/08 0.033 mg/kg 8270C BDL Acenaphthene 8270C 8270C BDL 0.033 mg/kg Acenaphthylene Benzo(a)anthracene mg/kg mg/kg 0.15 0.033 8270C 01/10/08 Benzo (a) pyrene Benzo (b) fluoranthene 0.12 0.033 8270C 01/10/08 0.033 mg/kg 0.14 01/10/08 01/10/08 0.092 0.033 mg/kg 8270C Benzo(g,h,i)perylene Benzo(k)fluoranthene 8270C 8270C 0.072 0.033 mg/kg mg/kg mg/kg 01/10/08 0.10 0.033 Chrysene 8270C 01/10/08 0.033 Dibenz (a, h) anthracene BDL8270C 01/10/08 0.27 0.033 mg/kg Fluoranthene BDL 0.033 mg/kg 8270C 8270C 01/10/08 Fluorene Indeno(1,2,3-cd)pyrene 01/10/08 0.080 0.033 mg/kg 8270C 01/10/08 mg/kg mg/kg 0.033 Naphthalene BDL0.13 8270C 01/10/08 Phenanthrene 1 0.033 mg/kg 8270C 01/10/08 Pyrene Surrogate Recovery 01/10/08 82.7 % Rec. 8270C Nitrobenzene-d5 01/10/08 8270C 2-Fluorobiphenyl 85.1 % Rec. % Rec. 8270C 01/10/08 p-Terphenyl-d14 69.4

BDL - Below Detection Limit

Practical Quantitation Limit(PQL) Det. Limit -

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.



Tax I.D. 62-0814289

Est. 1970

RUBIE FARM

07077067

REPORT OF ANALYSIS

John Brimeyer Terracon - Bettendorf 870 40th Avenue Bettendorf, IA 52722 January 15, 2008

Site ID :

Project # :

ESC Sample # : L326856-02

Date Received Description

January 09, 2008 Casion Soil Characterization

Sample ID

TP-2 13 FT

Collected By : Collection Date :

John Cameron 01/07/08 10:30

arameter	Result	Det. Limit	Units	Method	Date	Dil
Lead	36.	0.25	mg/kg	6010B	01/10/08	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.065	0.033	mg/kg	8270C	01/10/08	1
Acenaphthene	0.036	0.033	mg/kg	8270C	01/10/08	1 1
Acenaphthylene	BDL	0.033	mg/kg	8270C	01/10/08	1
Benzo(a)anthracene	0.23	0.033	mg/kg	8270C	01/10/08	1 1
Benzo(a)pyrene	0.23	0.033	mg/kg	8270C	01/10/08	1
Benzo(b) fluoranthene	0.28	0.033	mg/kg	8270C	01/10/08	1
Benzo(g,h,i)perylene	0.17	0.033	mg/kg	8270C	01/10/08	1
Benzo(k) fluoranthene	0.12	0.033	mg/kg	8270C	01/10/08	1
Chrysene	0.22	0.033	mg/kg	8270C	01/10/08	1
Dibenz(a,h)anthracene	0.034	0.033	mg/kg	8270C	01/10/08	1
Fluoranthene	0.39	0.033	mg/kg	8270C	01/10/08	1
Fluorene	BDL	0.033	mg/kg	8270C	01/10/08	1
Indeno(1,2,3-cd)pyrene	0.14	0.033	mg/kg	8270C	01/10/08	1
Naphthalene	0.039	0.033	mg/kg	8270C	01/10/08	1
Phenanthrene	0.25	0.033	mg/kg	8270C	01/10/08	1
Pyrene	0.37	0.033	mg/kg	8270C	01/10/08	1
Surrogate Recovery		•				
Nitrobenzene-d5	90.3		% Rec.	8270C	01/10/08	1
2-Fluorobiphenyl	89.9		% Rec.	8270C	01/10/08	1
p-Terphenyl-d14	93.5		% Rec.	8270C	01/10/08	1

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

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L326856-03

Est. 1970

REPORT OF ANALYSIS

January 15, 2008

ESC Sample # :

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

January 09, 2008 Casion Soil Characterization Date Received Description

Sample ID TP-1 15 FT

Collected By : Collection Date : John Cameron 01/07/08 10:45 Site ID : RUBIE FARM 07077067 Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Lead .	52.	0.25	mg/kg	6010B	01/10/08	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.033	mg/kg	8270C	01/11/08	1
Acenaphthene	BDL	0.033	mg/kg	8270C	01/11/08	1
Acenaphthylene	BDL	0.033	mg/kg	8270C	01/11/08	1
Benzo(a)anthracene	BDL	0.033	mg/kg	8270C	01/11/08	1
Benzo(a)pyrene	BDL	0.033	mg/kg	8270C	01/11/08	1
Benzo(b) fluoranthene	BDL	0.033	mg/kg	8270C	01/11/08	1
Benzo(q,h,i)perylene	BDL	0.033	mg/kg	8270C	01/11/08	1
Benzo(k) fluoranthene	BDL	0.033	mg/kg	8270C	01/11/08	1
Chrysene	BDL	0.033	mg/kg	8270C	01/11/08	1
Dibenz(a,h)anthracene	BDL	0.033	mg/kg	8270C	01/11/08	1
Fluoranthene	\mathtt{BDL}	0.033	mg/kg	8270C	01/11/08	1
Fluorene	BDL	0.033	mg/kg	8270C	01/11/08	1
Indeno(1,2,3-cd)pyrene	\mathtt{BDL}	0.033	mg/kg	8270C	01/11/08	1
Naphthalene	BDL	0.033	mg/kg	8270C	01/11/08	1
Phenanthrene	BDL	0.033	mg/kg	8270C	01/11/08	1 1
Pyrene	BDL	0.033	mg/kg	8270C	01/11/08	1
Surrogate Recovery						
Nitrobenzene-d5	51.3		% Rec.	8270C	01/11/08	1
2-Fluorobiphenyl	54.7		°% Rec.	8270C	01/11/08	1
p-Terphenyl-d14	94.0		% Rec.	8270C	01/11/08	1

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

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L326856-04

Est. 1970

RUBIE FARM

07077067

REPORT OF ANALYSIS

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

January 15, 2008

ESC Sample # :

Site ID :

Date Received

Description

January 09, 2008 Casion Soil Characterization

Sample ID

TP-3 7 FT

Collected By : Collection Date :

John Cameron 01/07/08 11:00

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Lead	73.	0.25	mg/kg	6010B	01/10/08	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.34	0.033	mg/kg	8270C	01/10/08	1
Acenaphthene	0.11	0.033	mg/kg	8270C	01/10/08	1
Acenaphthylene	0.058	0.033	mg/kg	8270C	01/10/08	1.
Benzo(a)anthracene	0.87	0.033	mg/kg	8270C	01/10/08	1
Benzo(a)pyrene	0.63	0.033	mg/kg	8270C	01/10/08	1
Benzo(b)fluoranthene	0.91	0.033	mg/kg	8270C	01/10/08	1 .
Benzo(g,h,i)perylene	0.21	0.033	mg/kg	8270C	01/10/08	1
Benzo(k)fluoranthene	0.45	0.033	mg/kg	8270C	01/10/08	1
Chrysene	0.74	0.033	mg/kg	8270C	01/10/08	1
Dibenz(a,h)anthracene	0.085	0.033	mg/kg	8270C	01/10/08	1
Fluoranthene	1.9	0.033	mg/kg	8270C	01/10/08	1
Fluorene	0.16	0.033	mg/kg	8270C	01/10/08	1
Indeno(1,2,3-cd)pyrene	0.17	0.033	mg/kg	8270C	01/10/08	1
Naphthalene	0.050	0.033	mg/kg	8270C	01/10/08	1
Phenanthrene	1.3	0.033	mg/kg	8270C	01/10/08	1
Pyrene	1.4	0.033	mg/kg	8270C	01/10/08	1
Surrogate Recovery		•				
Nitrobenzene-d5	86.3		% Rec.	8270C	01/10/08	1
2-Fluorobiphenyl	87.1		% Rec.	8270C	01/10/08	1
p-Terphenyl-d14	81.3		% Rec.	8270C	01/10/08	1

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

Note:
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Reported: 01/14/08 17:14 Revised: 01/15/08 13:54

Page 5 of 13



Tax I.D. 62-0814289

L326856-05

Est. 1970

RUBIE FARM

REPORT OF ANALYSIS

John Brimeyer Terracon - Bettendorf 870 40th Avenue Bettendorf, IA 52722 January 15, 2008

ESC Sample # :

Site ID :

Date Received

Description

January 09, 2008 Casion Soil Characterization

Sample ID

TP-3 11 FT

07077067 Project # :

Collected By John Cameron Collection Date : 01/07/08 11:15

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Lead	67.	0.25	mg/kg	6010B	01/11/08	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.11	0.033	mg/kg	8270C	01/10/08	1
Acenaphthene	0.043	0.033	mg/kg	8270C	01/10/08	1
Acenaphthylene	0.037	0.033	mg/kg	8270C	01/10/08	1
Benzo(a)anthracene	0.32	0.033	mg/kg	8270C	01/10/08	1
Benzo(a)pyrene	0.28	0.033	mg/kg	8270C	01/10/08	1
Benzo(b)fluoranthene	0.43	0.033	mg/kg	8270C	01/10/08	1
Benzo(g,h,i)perylene	BDL	0.033	mg/kg	8270C	01/10/08	1
Benzo(k)fluoranthene	0.15	0.033	mg/kg	8270C	01/10/08	1
Chrysene	0.28	0.033	mg/kg	8270C	01/10/08	1 .
Dibenz(a,h)anthracene	BDL	0.033	mg/kg	8270C	01/10/08	1
Fluoranthene	0.63	0.033	mg/kg	8270C	01/10/08	1
Fluorene	0.040	0.033	mg/kg	8270C	01/10/08	1
Indeno(1,2,3-cd)pyrene	0.064	0.033	mg/kg	8270C	01/10/08	1
Naphthalene	0.053	0.033	mg/kg	8270C	01/10/08	1
Phenanthrene	0.38	0.033	mg/kg	8270C	01/10/08	1
Pyrene	0.38	0.033	mg/kg	8270C	01/10/08	1
Surrogate Recovery						
Nitrobenzene-d5	90.2		% Rec.	8270C	01/10/08	1
2-Fluorobiphenyl	89.8		% Rec.	8270C	01/10/08	1
p-Terphenyl-d14	72.3		% Rec.	8270C	01/10/08	1

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

The reported analytical results relate only to the sample submitted.

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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

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

January 15, 2008

ESC Sample # : L326856-06

Date Received

Description

January 09, 2008 Casion Soil Characterization

Sample ID

TP-4 8 FT

Site ID : Project # : 07077067

RUBIE FARM

Collected By Collection Date : John Cameron 01/07/08 11:20

Det. Limit Units Method Date Dil. Parameter Result Lead 23. 0.25 mg/kg 6010B 01/10/08 1 Polynuclear Aromatic Hydrocarbons Anthracene 01/10/08 0.033 mg/kg 8270C 1.6 Acenaphthene 0.45 0.033 mg/kg 8270C 01/10/08 01/10/08 01/10/08 01/10/08 8270C 8270C Acenaphthylene 0.038 0.033 mg/kg mg/kg mg/kg Benzo(a) anthracene Benzo(a) pyrene Benzo(b) fluoranthene 2.8 0.033 8270C mg/kg 8270C 01/10/08 4.0 0.033 Benzo(g,h,i)perylene Benzo(k)fluoranthene 8270C 8270C 8270C 0.72 0.033 mg/kg 01/10/08 01/10/08 01/10/08 1.4 0.033 mg/kg 2.8 0.033 mg/kg Chrysene Dibenz (a, h) anthracene 0.23 0.033 mg/kg 8270C 01/10/08 01/10/08 01/10/08 Fluoranthene 0.033 mg/kg 8270C 8270C 8270C Fluorene 0.56 0.033 mg/kg Indeno(1,2,3-cd)pyrene Naphthalene Phenanthrene 0.68 0.033 mg/kg 01/10/08 0.033 0.15 8270C 01/10/08 9.6 0.033 mg/kg 8270C 01/10/08 6.3 0.033 mg/kg 8270C 01/10/08 1 Pyrene Surrogate Recovery 01/10/08 Nitrobenzene-d5 88.1 % Rec. 8270C 2-Fluorobiphenyl p-Terphenyl-d14 01/10/08 % Rec. 8270C 80.0 8270C 01/10/08

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Tax I.D. 62-0814289

L326856-07

Est. 1970

RUBIE FARM

07077067

REPORT OF ANALYSIS

January 15, 2008

ESC Sample # :

Site ID :

Project # :

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

Date Received

January 09, 2008 Casion Soil Characterization Description

Sample ID TP-5 4 FT

Collected By John Cameron Collection Date : 01/07/08 11:30

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Parameter	Result	Dec. Dimit	Ulifes	месноа	- Bace	
Lead	57.	0.25	mg/kg	6010B	01/10/08	1
Polynuclear Aromatic Hydrocarbons			•			
Anthracene	0.085	0.033	mg/kg	8270C	01/10/08	1
Acenaphthene	BDL	0.033	mg/kg	8270C	01/10/08	1
Acenaphthylene	BDL	0.033	mg/kg	8270C	01/10/08	1
Benzo (a) anthracene	0.22	0.033	mg/kg	8270C	01/10/08	1
Benzo(a)pyrene	0.17	0.033	mg/kg	8270C	01/10/08	1
Benzo(b) fluoranthene	0.20	0.033	mg/kg	8270C	01/10/08	1
Benzo(g,h,i)perylene	0.11	0.033	mg/kg	8270C	01/10/08	1
Benzo(k)fluoranthene	0.11	0.033	mg/kg	8270C	01/10/08	1
Chrysene	0.19	0.033	mg/kg	8270C	01/10/08	1
Dibenz(a,h)anthracene	0.040	0.033	mg/kg	8270C	01/10/08	1
Fluoranthene	0.44	0.033	mg/kg	8270C	01/10/08	1
Fluorene	0.037	. 0.033	mg/kg	8270C	01/10/08	1
Indeno(1,2,3-cd)pyrene	0.094	0.033	mg/kg	8270C	01/10/08	1
Naphthalene	0.053	0.033	mg/kg	8270C	01/10/08	1
Phenanthrene	0.32	0.033	mg/kg	8270C	01/10/08	1
Pyrene	0.35	0.033	mg/kg	8270C	01/10/08	1
Surrogate Recovery			3, 3			
Nitrobenzene-d5	88.5		% Rec.	8270C	01/10/08	1
2-Fluorobiphenyl	68.1		% Rec.	8270C	01/10/08	1
p-Terphenyl-d14	21.0		% Rec.	8270C	01/10/08	1

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

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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

John Brimeyer Terracon - Bettendorf 870 40th Avenue Bettendorf, IA 52722 January 15, 2008

Date Received

January 09, 2008 Casion Soil Characterization

ESC Sample # :

L326856-08

Description

Site ID : RUBIE FARM

Sample ID

SP-1 4 FT AGS

Project # :

07077067

Collected By Collection Date :

John Cameron 01/07/08 11:45

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Lead	130	0.25	mg/kg	6010B	01/11/08	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.033	mg/kg	8270C	01/10/08	1
Acenaphthene	BDL	0.033	mg/kg	8270C	01/10/08	1
Acenaphthylene	BDL	0.033	mg/kg	8270C	01/10/08	1
Benzo(a)anthracene	BDL	0.033	mg/kg	8270C	01/10/08	1
Benzo (a) pyrene	\mathtt{BDL}	0.033	mg/kg	8270C	01/10/08	1
Benzo(b)fluoranthene	BDL	0.033	mg/kg	8270C	01/10/08	1
Benzo(q,h,i)perylene	BDL	0.033	mg/kg	8270C	01/10/08	1
Benzo(k) fluoranthene	BDL	0.033	mg/kg	8270C	01/10/08	1
Chrysene	BDL	0.033	mg/kg	8270C	01/10/08	1
Dibenz(a,h)anthracene	BDL	0.033	mg/kg	8270C	01/10/08	1
Fluoranthene	BDL	0.033	mg/kg	8270C	01/10/08	1
Fluorene	BDL	0.033	mg/kg	8270C	01/10/08	1
Indeno(1,2,3-cd)pyrene	BDL	0.033	mg/kg	8270C	01/10/08	1
Naphthalene	BDL	0.033	mg/kg	8270C	01/10/08	1
Phenanthrene	BDL	0.033	mg/kg	8270C	01/10/08	1
Pyrene	BDL	0.033	mg/kg	8270C	01/10/08	1
Surrogate Recovery			3, 3			
Nitrobenzene-d5	84.1		% Rec.	8270C	01/10/08	1
2-Fluorobiphenyl	86.4		% Rec.	8270C	01/10/08	1
p-Terphenyl-d14	102.		% Rec.	8270C	01/10/08	1

. BDL - Below Detection Limit Det. Limit - Practical Quar

Practical Quantitation Limit(PQL)

Note:
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Tax I.D. 62-0814289

L326856-09

Est. 1970

REPORT OF ANALYSIS

January 15, 2008

ESC Sample # :

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

Date Received Description

January 09, 2008 Casion Soil Characterization

Sample ID

TP-6 6 FT

Site ID :

RUBIE FARM

Collected By : Collection Date :

John Cameron 01/07/08 12:00 Project # : 07077067

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Lead	65.	0.25	mg/kg	6010B	01/14/08	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.073	0.033	mg/kg	8270C	01/10/08	1
Acenaphthene	BDL	0.033	mg/kg	8270C	01/10/08	1
Acenaphthylene	0.048	0.033	mg/kg	8270C	01/10/08	1.
Benzo (a) anthracene	0.20	0.033	mg/kg	8270C	01/10/08	1
Benzo (a) pyrene	0.18	0.033	mg/kg	8270C	01/10/08	. 1
Benzo(b) fluoranthene	0.29	0.033	mg/kg	8270C	01/10/08	1
Benzo(g,h,i)perylene	0.069	0.033	mg/kg	8270C	01/10/08	1
Benzo(k) fluoranthene	0.11	0.033	mg/kg	8270C	01/10/08	1
Chrysene	0.16	0.033	mg/kg	8270C	01/10/08	1
Dibenz(a,h)anthracene	BDL	0.033	mg/kg	8270C	01/10/08	1
Fluoranthene	0.36	0.033	mg/kg	8270C	01/10/08	1
Fluorene	0.046	0.033	mg/kg	8270C	01/10/08	1
Indeno(1,2,3-cd)pyrene	0.072	0.033	mg/kg	8270C	01/10/08	1
Naphthalene	0.050	0.033	mg/kg	8270C	01/10/08	1
Phenanthrene	0.31	0.033	mg/kg	8270C	01/10/08	1
Pyrene	0.33	0.033	mg/kg	8270C	01/10/08	1
Surrogate Recovery						
Nitrobenzene-d5	96.2		% Rec.	8270C	01/10/08	1
2-Fluorobiphenyl	93.8		% Rec.	8270C	01/10/08	1
p-Terphenyl-d14	89.8		% Rec.	8270C	01/10/08	1

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

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Reported: 01/14/08 17:14 Revised: 01/15/08 13:54

Page 10 of 13



12065 Lebanon Rd. 12065 Lebanon Rd. Mt. Juliet, TN 37122 (615) 758-5858 1-800-767-5859 Fax (615) 758-5859

Tax I.D. 62-0814289

L326856-10

Est. 1970

REPORT OF ANALYSIS

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

January 15, 2008

ESC Sample # :

Date Received Description

January 09, 2008 Casion Soil Characterization

Sample ID

TP-7 3 FT

Collected By : Collection Date :

John Cameron 01/07/08 12:15 Site ID : RUBIE FARM Project # : 07077067

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Lead	57.	1.2	mg/kg	6010B	01/11/08	5
Polynuclear Aromatic Hydrocarbons						
Anthracene	\mathtt{BDL}	0.033	mg/kg	8270C	01/10/08	1
Acenaphthene	\mathtt{BDL}	0.033	mg/kg	8270C	01/10/08	1
Acenaphthylene	BDL	0.033	mg/kg	8270C	01/10/08	1
Benzo(a)anthracene	0.050	0.033	mg/kg	8270C	01/10/08	1
Benzo(a) pyrene	0.042	0.033	mg/kg	8270C	01/10/08	1
Benzo(b)fluoranthene	0.050	0.033	mg/kg	8270C	01/10/08	1
Benzo(g,h,i)perylene	0.037	0.033	mg/kg	8270C	01/10/08	1
Benzo(k)fluoranthene	BDL	0.033	mg/kg	8270C	01/10/08	1
Chrysene	0.044	0.033	mg/kg	8270C	01/10/08	1
Dibenz(a,h)anthracene	BDL	0.033	mg/kg	8270C	01/10/08	1
Fluoranthene	0.084	0.033	mg/kg	8270C	01/10/08	1
Fluorene	BDL	0.033	mg/kg	8270C	01/10/08	1
Indeno(1,2,3-cd)pyrene	BDL	0.033	mg/kg	8270C	01/10/08	1
Naphthalene	BDL	0.033	mg/kg	8270C	01/10/08	1
Phenanthrene	0.063	0.033	mg/kg	8270C	01/10/08	1
Pyrene	0.074	0.033	mg/kg	8270C	01/10/08	1
Surrogate Recovery						
Nitrobenzene-d5	81.7		% Rec.	8270C	01/10/08	1
2-Fluorobiphenyl	88.0		% Rec.	8270C	01/10/08	1
p-Terphenyl-d14	94.6		% Rec.	8270C	01/10/08	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Attachment A List of Analytes with QC Qualifiers

Sample #	Analyte	Qualifier
L326856-01	Phenanthrene	. дз
L326856-02	Phenanthrene	J3
L326856-03	Phenanthrene	J3
L326856-04	Phenanthrene	J3
L326856-05	Phenanthrene	J3
L326856-06	Benzo(a)pyrene	Ј8
	Benzo(b)fluoranthene	J8
	Benzo(g,h,i)perylene	J8
	Benzo(k)fluoranthene	J8
	Dibenz(a,h)anthracene	J8
	Fluorene	E
	Indeno(1,2,3-cd)pyrene	J8
	Phenanthrene	J3E
L326856-07	Phenanthrene	J3
	p-Terphenyl-d14	J2
L326856-08	Phenanthrene	J3
L326856-09	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
	Phenanthrene	J3
L326856-10	Phenanthrene	J3

Attachment B Explanation of QC Qualifier Codes

Qualifier	Meaning
E	GTL (EPA) - Greater than upper calibration limit: Actual value is known to be greater than the upper calibration range.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits
J3	The associated batch QC was outside the established quality control range for precision.
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 Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography 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.

Summary of Remarks For Samples Printed 01/15/08 at 13:54:54

TSR Signing Reports: 206 R5 - Desired TAT

Sample: L326856-01 Account: TERRABIA Received: 01/09/08 09:00 Due Date: 01/16/08 00:00 RPT Date: 01/14/08 17:14
Sample: L326856-02 Account: TERRABIA Received: 01/09/08 09:00 Due Date: 01/16/08 00:00 RPT Date: 01/14/08 17:14
Sample: L326856-03 Account: TERRABIA Received: 01/09/08 09:00 Due Date: 01/16/08 00:00 RPT Date: 01/14/08 17:14
Sample: L326856-04 Account: TERRABIA Received: 01/09/08 09:00 Due Date: 01/16/08 00:00 RPT Date: 01/14/08 17:14
Sample: L326856-05 Account: TERRABIA Received: 01/09/08 09:00 Due Date: 01/16/08 00:00 RPT Date: 01/14/08 17:14
Sample: L326856-06 Account: TERRABIA Received: 01/09/08 09:00 Due Date: 01/16/08 00:00 RPT Date: 01/14/08 17:14
Sample: L326856-07 Account: TERRABIA Received: 01/09/08 09:00 Due Date: 01/16/08 00:00 RPT Date: 01/14/08 17:14
Sample: L326856-09 Account: TERRABIA Received: 01/09/08 09:00 Due Date: 01/16/08 00:00 RPT Date: 01/14/08 17:14
Sample: L326856-09 Account: TERRABIA Received: 01/09/08 09:00 Due Date: 01/16/08 00:00 RPT Date: 01/14/08 17:14
Sample: L326856-10 Account: TERRABIA Received: 01/09/08 09:00 Due Date: 01/16/08 00:00 RPT Date: 01/14/08 17:14
Sample: L326856-10 Account: TERRABIA Received: 01/09/08 09:00 Due Date: 01/16/08 00:00 RPT Date: 01/14/08 17:14