

Prepared for:
WCA Waste Corporation, Inc. of North Carolina
421 Raleigh View Road
Raleigh, North Carolina 27610

APPROVED DOCUMENT
Division of Waste Management
Solid Waste Section
Approved March 20, 2012
By D. Wilson
Facility ID 9231-CDLF
Attch. 1, Part II, Doc 11
Doc ID 16328



CONSTRUCTION QUALITY ASSURANCE CERTIFICATION REPORT

CELL 1 of PHASE 2A CONSTRUCTION
BROWNFIELD ROAD C&D LANDFILL
NCDENR PERMIT # 92-31

September 2011
Revised November 2011
Revised December 2011
Prepared by:

JOYCE
ENGINEERING

2211 West Meadowview Road, Suite 101
Greensboro, NC 27407

JEI PROJECT NO. 824.1102.21, TASK 01

NC Corporate License: C-0782



December 19, 2011

Ms. Donna Wilson, Environmental Engineer
North Carolina Department of Environmental and Natural Resources
Permitting Branch, Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699

RE: Construction Quality Assurance Certification Report
WCA Waste Corporation Brownfield Road Landfill, Cell 1 of Phase 2 A Expansion
NC DENR Permit #92-31
Wake County, North Carolina
JEI Project 824.1102.21, Task 01

Dear Donna:

This letter is to certify that to the best of my knowledge and belief, the Cell 1 of Phase 2A expansion of the WCA Waste Corporation Brownfield Road C&D Landfill has been constructed in conformance with the WCA Material Recovery, LLC, Permit #92-31, CDFL Cell 1 of Phase 2A Permit to Construct Application.

The enclosed Certification Report addresses revisions to your comments to the Cell 1 of Phase 2A construction. This letter certifies that the Cell 1 of Phase 2A was constructed in accordance with the construction requirements of Rule .0540, the construction quality assurance requirements of Rule .0541, the approved CQA plan (stamped approved 1-28-11), conditions of the Permit to Construct, and acceptable engineering practices.

On behalf of WCA Waste Corporation of North Carolina, thank you in advance for your assistance in reviewing the response letter and revisions to the Construction Quality Assurance Certification Report.

Sincerely,
JOYCE ENGINEERING, INC.

Evan Andrews, P.E.
Regional Manager



Enclosure

Cc: Mr, Dennis Gehle, General Manager WCA
Nick Marotta, Regional Engineer WCA
Hannu Kempainen, P.G. JEI

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Figure: A Facility Layout

Figure: B Modified Facility Plan for Cell 1 Phase 2A

Appendix I: Site Visit Reports and Photographic Record

Appendix II: Meeting Minutes

Appendix III: CQA Record Test Results

Appendix IV: Basegrade Inspection

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1.0 INTRODUCTION

This report, prepared by Joyce Engineering, Inc. (JEI) on behalf of WCA Waste Corporation, Inc. of North Carolina (WCA), addresses the quality assurance procedures and activities performed during construction of Cell 1 of the Phase 2A expansion at the Brownfield Road, Wake County, North Carolina Material Recovery facility. The documents comprising this report were compiled for the C&D landfill construction with North Carolina Solid Waste Management Regulations, 15A NCAC 13B .0540 and .0541 and the Cell 1 of Phase 2A Permit Modifications # 92-31 conditions of the Permit to Construct, and acceptable engineering practices.

Bentley Development Company, Inc. of Blairsville, Pennsylvania was selected as the General Contractor and performed earthwork in the summer 2011 for the proposed Cell 1 of Phase 2A excavation.

JEI provided third party construction quality assurance observations, basegrade soil materials laboratory testing and basegrade inspection. The soil testing was conducted at Geotechnics, Inc. laboratory in Raleigh, NC.

At the completion of the excavation and grading the constructed basegrade was surveyed to two-foot contour intervals.

2.0 PROJECT DESCRIPTION

WCA retained Bentley Development to construct the proposed Cell 1 of the Phase 2A C&D landfill expansion. The earthwork included clearing and grubbing the work area, excavating and hauling the material to a stockpile. Approximately 140,000 cubic yards (CY) of material was cut in the cell which included nearly 30,000 CY of rock. The Cell 1 limits of waste includes 4.8 acres and the limits of disturbance 6.1 acres.

Joyce Engineering, Inc. conducted periodic site visits to observe construction progress and keep WCA informed of the work. The CQA site visit reports and photographic record are included in Appendix I; preconstruction meeting minutes are in Appendix II. At the end of the construction, a soil sample of the basegrade material was collected for laboratory analyses to classify and characterize the soil properties. The basegrade CQA record test results are included in Appendix III; and the Basegrade Inspection letter is in Appendix IV.

At the completion of the construction, Boundary Zone, Inc. of Apex North Carolina conducted a final basegrade survey. The survey record drawing is included in Appendix V.

3.0 CONSTRUCTION QUALITY ASSURANCE PROGRAM

3.1 Scope of Work

JEI's role as the CQA Engineer was to attend preconstruction meeting, provide periodic site visits to observe progress and document the construction activities. Basegrade soil sampling and laboratory testing of the soils for classification was conducted at the completion of the basegrade construction to meet the Rule .0540 (2)(b) construction requirements for C&D landfills.

3.2 Personnel

WCA retained Joyce Engineering, Inc. to provide construction quality assurance during the Cell 1 of Phase 2A expansion. A senior project consultant (Hannu Kempainen) attended the preconstruction meeting, and visited the site in two week intervals to observe and document the work progress. A construction field representative (David Wright) of Geotechnics, Inc. collected the basegrade soil sample for laboratory testing for classification.

3.3 Earthwork

Bentley Development began the construction in early May, 2011 by first clearing the nearly 5 acre Cell 1 Phase 2A expansion area and then grubbed the roots and stumps from the site. Bentley mobilized a Volvo 460 excavator, two Volvo 40 articulated dump trucks and a CAT D8 dozer for the work. Rocks and boulders were excavated and hauled to a separate stockpile from the excavated soil. Resistant rocky material was drilled and blasted and the fragmented material stockpiled with the rest of the boulders. Bentley spent approximately 12 weeks excavating and grading the majority of the Cell 1 of Phase 2A area until only resistant rock remained in the middle of Cell 1 of Phase 2A. WCA evaluated the cost of drilling and blasting the remaining rocky material and decided to leave this portion of rocky material in place. Soil from the stockpile was returned back to the excavated cell to cover the remaining rock. Approximately 735 cubic yard of soil was placed over the rocky sub-base. The soil was placed, compacted, and graded to form a modified floor and provide the required separation from bedrock.

The Cell 1 of Phase 2A construction plan was for excavation with no fill anticipated. The areas where rock was encountered and removed were backfilled with the excavated site soil. The soil was placed in lifts and compacted with a roller compactor. Proofrolling of the constructed cell floor was conducted in place of in-situ soil testing to demonstrate the adequacy of compaction. A representative sample of the landfill foundation soil was collected from the upper two feet of the basegrade in late July for laboratory index testing as required by Rule .0540 (2)(b) construction requirements for C&D landfills. The laboratory soil testing included: sieving analysis for grain size distribution and classification of the material; Atterberg Limits to analyze plasticity of the soil; specific gravity and standard Proctor to determine compaction characteristics of the soil. The sieving analysis of the bulk sample determined soil classification

of silty sand (SM). Silty Sand (SM) meets the classification requirement of the Rule .0540 (2)(b) and the CQA plan. The CQA record test results are included in Appendix III.

Control testing of the site soils was not conducted prior to its use in construction since the planned work consisted only of excavation. Record testing was conducted by collecting the subgrade soil and determining its properties. The results of the record testing are included in Appendix III. Proofrolling of the subgrade was conducted after the actual placement of the material to demonstrate that its in-place properties meet or exceed the requirements of the project specifications. The proofrolling was utilized as an alternative compaction testing method to satisfy the compaction criteria for the placement of the limited amount of material per section 6.2.1.1. of the CQA Plan. The placed fill was observed not yielding or pumping under the loaded articulated truck. Only slight indentation of tire thread marks remained on the soil surface.

Since only Cell 1 of the Phase 2A was constructed at this time, Figure A - Facility Layout Drawing from the CDLF Phase 2A PTC Application is included with this report to illustrate boundaries of Cell 1 within Phase 2A. Figure B, a modified Facility Plan shows the Cell 1 limits and constructed grades. The constructed Cell 1 limits of waste, shown in black dashed line, is 4.8 acres. The limits of disturbance are shown in red dashed line is 6.1 acres. Facility Permit No. 92-31 dated 1-28-2011 lists the acreage and capacities of each phase for the landfill from basegrades through the top of the final cover. Cell 1 capacity from Phase 2A is estimated based on an acre/volume ratio as depicted below:

The Northern Disposal Area:

<u>Phase</u>	<u>Acres</u>	<u>Gross Capacity</u>	<u>Status</u>
1	20	1,636,000	Partially filled
2A Cell 1	4.8	366,000	Approved for construction
2A Remaining	11.9	1,034,000	Approved for construction
2B	8.2	1,400,000	Future
2C	(Note 2)	1,400,000	Future

4.0 DEVIATIONS FROM THE CONTRACT DOCUMENTS

4.1 General

The purpose of this section is to identify any deviation from the contract documents, which occurred during construction.

4.2 Adjustments to Basegrade Elevations

Bentley Development excavated and removed loose rocks and boulders during the landfill cell expansion construction. Resistant bedrock was drilled and blasted, and the fragmented rock hauled to a stockpile. By late July all of the Cell 1 of Phase 2A area was cut and graded with the exception of some bedrock remaining in the middle of the cell. The rock

was resistant to ripping and required drilling and blasting. WCA evaluated the cost benefits of removing the remaining rock against loss of landfill capacity, and a decision was made to leave the rock in place. Bentley hauled soil from the stockpile of excavated material back to the Cell 1 of Phase 2A and covered the rock with soil. Soil was placed over the rock to provide the required four foot separation between rock and basegrade. Bentley Development further explored the mid-cell area for limits of the bedrock with the use of their drill rig. The exploration was conducted to verify depth to rock so that the final basegrade elevations would provide the required separation to bedrock. For the majority of the constructed Cell 1 of Phase 2A the grades follow the original design elevations with the exception of the rock remaining above design basegrade elevations in the center of the cell. Grades that vary slightly on the east and west side slopes deviate from the design by a fraction of a foot but comply with the rules requiring a separation to bedrock and groundwater.

The final survey record drawing included in Appendix V shows the modification to the basegrade.

5.0 Compliance and Pre-Operative Conditions

The current Permit to Operate 92-31 will expire in January 28, 2016. The permit approves the continued operation of Phase 1, Cells A, B, and C of the landfill. Operation of future phases or cells requires written approval of the Section after documentation has been submitted that the area has been constructed in accordance with applicable statutes and rules. Permit to Construct Phase 2A, Attachment 2 - Conditions of Permit to Construct, items 6a through 6h list required documentation for the pre-operative conditions. This CQA report with engineer's certification letter addresses the Item 6(a). The remaining items b through h are outside of the CQA reporting requirements and will be provided by the WCA Corporation and coordinated with the Solid Waste Section.

END



FIGURE A - Facility Layout
(Waste Boundaries are Approximate)

Wake County GIS aerial photography, 2005

0  866 ft

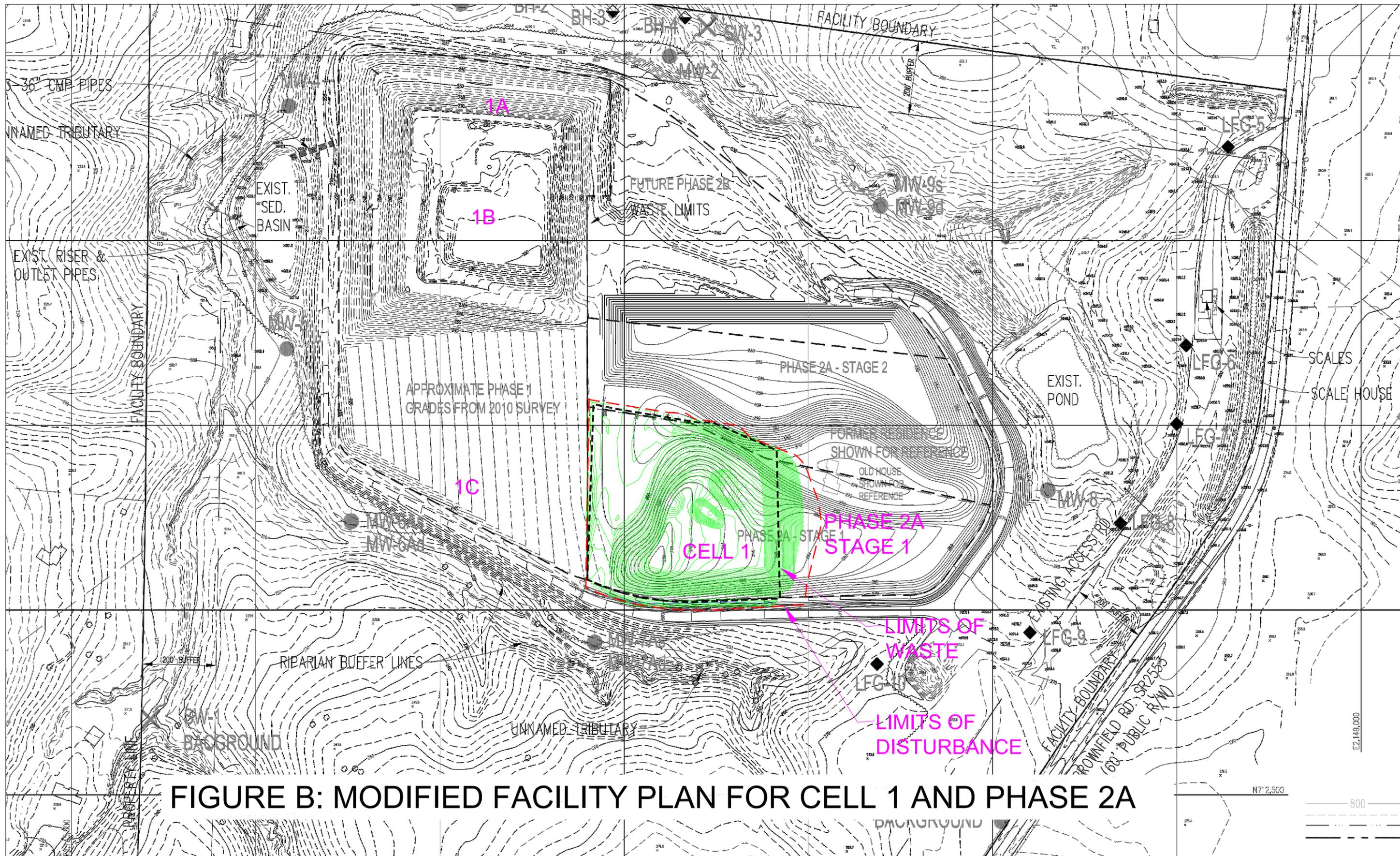


FIGURE B: MODIFIED FACILITY PLAN FOR CELL 1 AND PHASE 2A

APPENDIX I

SITE VISIT REPORTS AND PHOTOGRAPHIC RECORD



1. May 1, 2011 - South side access road to Phase 2A.



2. Phase 2A expansion area view from south side access road.



3. Phase 2A expansion area from south side access road.



4. Phase 2A expansion area seen from the north side.



1. May 10, 2011 - Phase 2A area cleared and grubbed and Bentley has begun excavation.



2. West end of Phase 2A after clearing and grubbing.



3. May 25, 2011 – Bentley excavating Phase 2A.



4. Survey stakes on Phase 2A floor indicate 14 to 16 foot cut.



5. Resistant bedrock requires drilling to remove rock within Phase 2A.



6. Rock stockpile from Phase 2A excavation.



1. June 8, 2011 Bentley Development continues Phase 2A excavation.



2. Contractor excavating southeast quadrant of Phase 2A.



3. Bentley estimates 9 feet of cut remains on the Phase 2A floor on the fore ground.



4. Challenges in rock removal.



5. Drilling of resistant bedrock continues.



6. Southwest corner of Phase 2A. At drilling location approximately 18 feet remains to cut.



1. June 23, 2011 – East end of Phase 2A excavation.



2. West end of Phase 2A.



3. East Slope Phase 2A graded.



4. North side of Phase 2A excavation continues.



1. Site visit July 7, 2011. Phase 2A floor appears to be at grade.



2. No survey stakes to read, but much of cell floor is near grade.



3. East Slope Phase 2A graded.



4. Work remaining includes rock removal, backfill and survey of final grades.



1. Site visit July 20, 2011. Phase 2A south side and floor appear to be at grade.



2. Rock removal remaining in the bottom of the new cell.



1. Site visit September 21, 2011. Proofrolling subgrade.



2. Fully loaded articulated truck enters the Phase 2A.



3. WCA demonstrated the constructed subgrade firmness.



4. Subgrade was observed firm without pumping.

APPENDIX II
MEETING MINUTES

WCA Waste Corporation, Raleigh Brownfield Road Landfill, Permit Number 92-31

April 6, 2011

Pre-Construction Meeting for the construction of phase 2 cell A.

Attendees:

WCA:

Nick Marotta

Dennis Gehle

NC DENR

Donna Wilson

Elizabeth Werner

John Patrone

Jason Watkins

Bentley Development

Phil Shumaker

John Brink

John Lee

Joyce Engineering, CQA

Hannu Kempainen

Boundary Zone, Inc., Survey

Anthony DiBona

Discussion Items:

Safety

Bentley will supply a copy of Health and Safety Plan, Bentley will supply blasting plan; Nick Marotta will forward blasting plan to Elizabeth Werner for her review and approval. All chemicals brought on site will require an MSDS. Best Management practices will apply to storage of petroleum products and to prevention of stormwater pollution.

Permitting:

Donna Wilson reviewed with WCA personnel permit required items to commence construction and what is require for CQA report to obtain Permit to Operate for cell. WCA is responsible for following all permit conditions. Pictures will be included in the CQA report. WCA must update financial assurance before submitting the CQA report.

WCA is in the process of obtaining erosions and sediment (E&S) permit from Wake County. Permit is required before actual construction.

Schedule:

Bentley anticipates mobilization during the week of April 25, 2011. The project is expected to be about 12 weeks in duration.

CQA report consisting of as-built survey and appropriate soils testing will be submitted to NC-DENR.

Action Items:

Nick Marotta will obtain drawing in CADD and forward to surveyor and Bentley.

Nick Marotta will forward blasting plan to Elizabeth Werner.

Nick Marotta will send the revised plan drawing to Donna Wilson.

Questions or comments regarding this construction should be directed to Dennis Gehle, General Manager, or Nick Marotta, Region Engineer.

APPENDIX III
CQA RECORD TEST RESULTS

ATTERBERG LIMITS

ASTM D 4318-10 / AASHTO T89 (SOP - S4A)

Client	JOYCE ENGINEERING, INC.	Boring No.	NA
Client Reference	BROWNFIELD RD C&D LF PH2 PERMIT	Depth (ft)	NA
Project No.	2011-807-01	Sample No.	1
Lab ID	2011-807-01-01	Soil Description	TAN SILT (Minus No. 40 sieve material, Airdried)

Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.

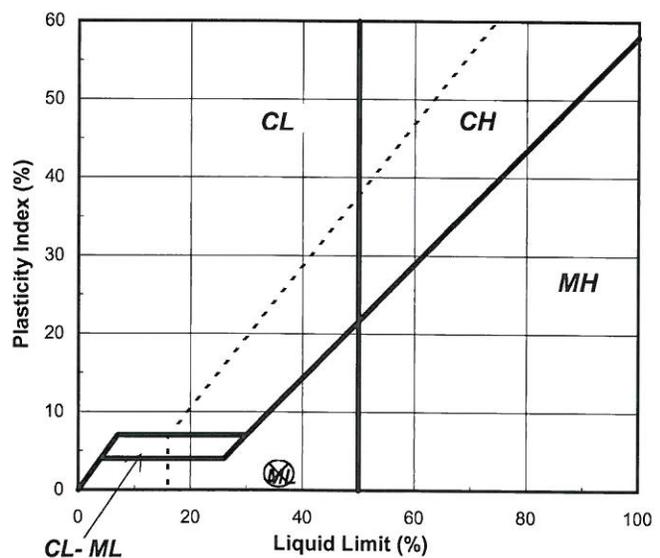
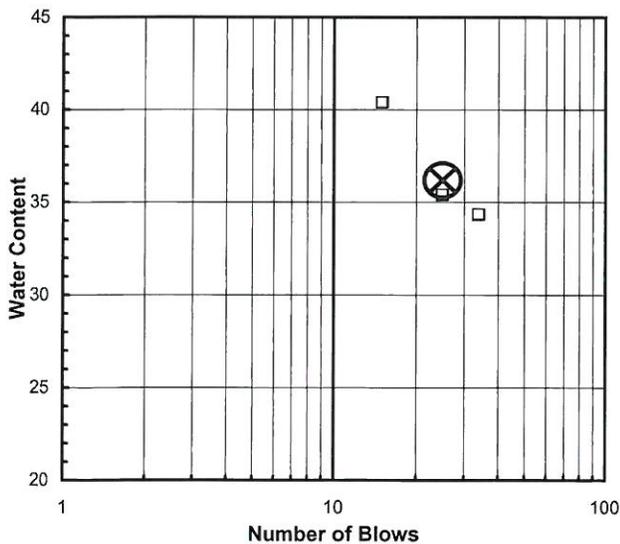
Liquid Limit Test	1	2	3	
Tare Number	V	O	Y	M
Wt. of Tare & WS (gm)	25.70	24.03	25.42	U
Wt. of Tare & DS (gm)	23.04	21.72	22.59	L
Wt. of Tare (gm)	15.29	15.19	15.58	T
Wt. of Water (gm)	2.7	2.3	2.8	I
Wt. of DS (gm)	7.8	6.5	7.0	P
				O
				I
Moisture Content (%)	34.3	35.4	40.4	N
Number of Blows	34	25	15	T

Plastic Limit Test	1	2	Range	Test Results
Tare Number	A-Q	A-M		Liquid Limit (%) 36
Wt. of Tare & WS (gm)	21.78	21.94		Plastic Limit (%) 34
Wt. of Tare & DS (gm)	20.18	20.23		Plasticity Index (%) 2
Wt. of Tare (gm)	15.45	15.33		USCS Symbol ML
Wt. of Water (gm)	1.6	1.7		
Wt. of DS (gm)	4.7	4.9		
Moisture Content (%)	33.8	34.9	-1.1	

Note: The acceptable range of the two Moisture contents is ± 2.6

Flow Curve

Plasticity Chart



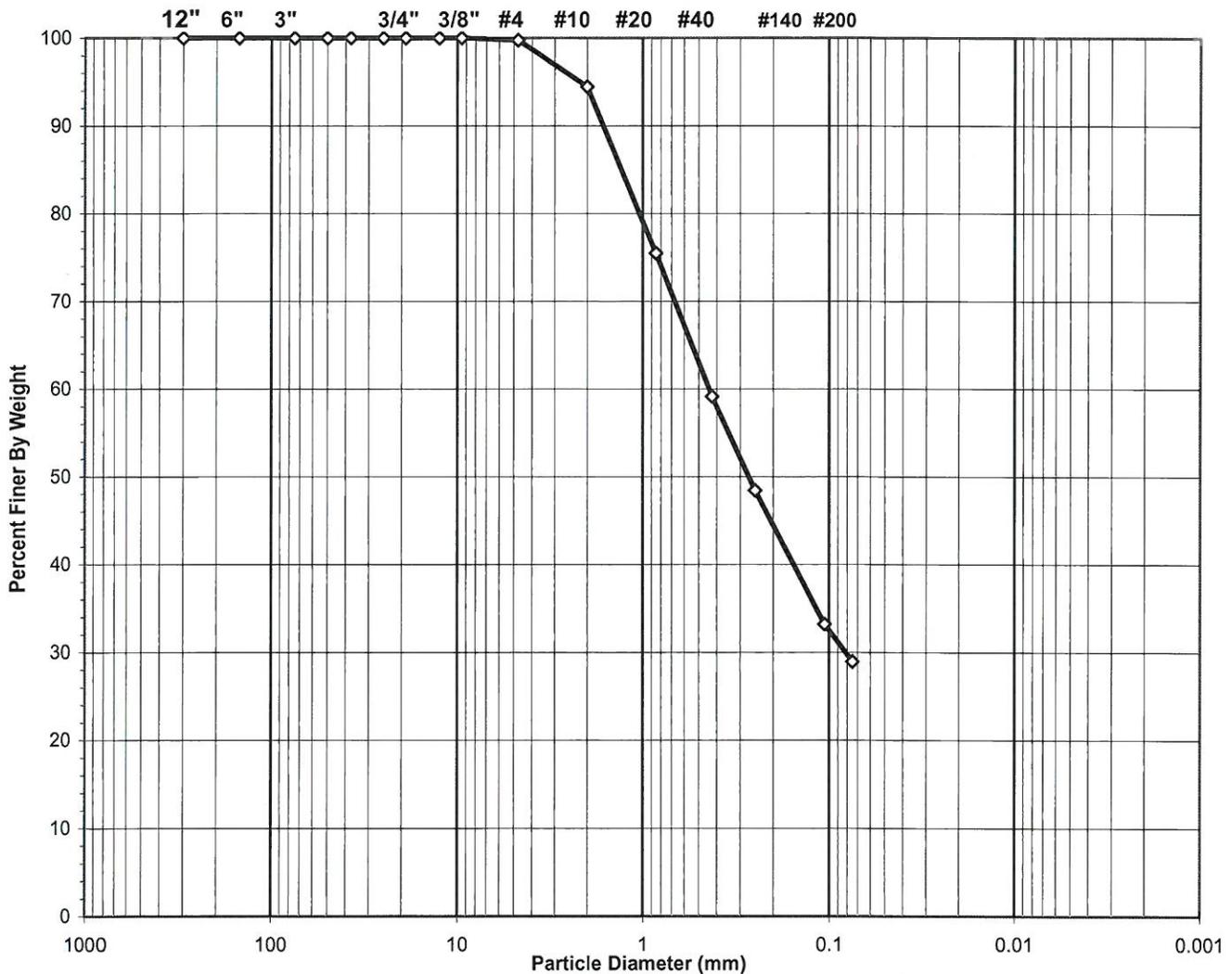
Tested By SD Date 7/22/2011 Checked By GAM Date 7-25-11

page 1 of 1 DCN: CT-S4B DATE: 12/20/2006 REVISION: 3

SIEVE ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	JOYCE ENGINEERING, INC.	Boring No.	NA
Client Reference	BROWNFIELD RD C&D LF PH2 PERMIT	Depth (ft)	NA
Project No.	2011-807-01	Sample No.	1
Lab ID	2011-807-01-01	Soil Color	TAN

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol SM, TESTED

USCS Classification SILTY SAND

Tested By SD Date 7/25/2011 Checked By *GAM* Date *7-25-11*

WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	JOYCE ENGINEERING, INC.	Boring No.	NA
Client Reference	BROWNFIELD RD C&D LF PH2 PERMIT	Depth (ft)	NA
Project No.	2011-807-01	Sample No.	1
Lab ID	2011-807-01-01	Soil Color	TAN

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	830	Tare No.	NA
Wgt. Tare + Wet Specimen (gm)	591.78	Wgt. Tare + Wet Specimen (gm)	NA
Wgt. Tare + Dry Specimen (gm)	564.02	Wgt. Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	258.30	Weight of Tare (gm)	NA
Weight of Water (gm)	27.76	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	305.72	Weight of Dry Soil (gm)	NA
Moisture Content (%)	9.1	Moisture Content (%)	NA

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	305.72
Dry Weight - 3/4" Sample (gm)	217.2	Weight of minus #200 material (gm)	88.51
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	217.21
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt. of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.0	0.0	100.0	100.0
6"	150	0.00	0.0	0.0	100.0	100.0
3"	75	0.00	0.0	0.0	100.0	100.0
2"	50	0.00	0.0	0.0	100.0	100.0
1 1/2"	37.5	0.00	0.0	0.0	100.0	100.0
1"	25.0	0.00	0.0	0.0	100.0	100.0
3/4"	19.0	0.00	0.0	0.0	100.0	100.0
1/2"	12.50	0.00	0.0	0.0	100.0	100.0
3/8"	9.50	0.00	0.0	0.0	100.0	100.0
#4	4.75	0.73	0.2	0.2	99.8	99.8
#10	2.00	16.21	5.3	5.5	94.5	94.5
#20	0.850	58.02	19.0	24.5	75.5	75.5
#40	0.425	49.89	16.3	40.8	59.2	59.2
#60	0.250	32.74	10.7	51.5	48.5	48.5
#140	0.106	46.65	15.3	66.8	33.2	33.2
#200	0.075	12.97	4.2	71.0	29.0	29.0
Pan	-	88.51	29.0	100.0	-	-

Tested By SD Date 7/25/2011 Checked By GEM Date 7-25-11

MOISTURE - DENSITY RELATIONSHIP

ASTM D698-07 SOP-S12

Client	JOYCE ENGINEERING, INC.	Boring No.	NA
Client Reference	BROWNFIELD RD C&D LF PH2 PERMIT	Depth (ft)	NA
Project No.	2011-807-01	Sample No.	1
Lab ID	2011-807-01-01		

Visual Description TAN SILTY SAND

Total Weight of the Sample (gm)	NA
As Received Water Content(%)	NA
Assumed Specific Gravity	2.70
Percent Retained on 3/4"	NA
Percent Retained on 3/8"	NA
Percent Retained on #4	NA
Oversize Material	Not included
Procedure Used	A

TestType	STANDARD	
Rammer Weight (lbs)		5.5
Rammer Drop (in)		12
Rammer Type	MECHANICAL	
Machine ID	R	174
Mold ID	R	172
Mold diameter		4"
Weight of the Mold		4298
Volume of the Mold(cc)		941

Mold / Specimen

Point No.	1	2	3	4	5
Wt. of Mold & WS (gm)	6094	6161	6213	6219	6181
Wt. of Mold (gm)	4298	4298	4298	4298	4298
Wt. of WS	1796	1863	1915	1921	1883
Mold Volume (cc)	941	941	941	941	941

Moisture Content / Density

Tare Number	314	308	317	399	398
Wt. of Tare & WS (gm)	391.00	456.50	426.70	516.70	443.40
Wt. of Tare & DS (gm)	365.49	420.67	385.15	457.25	387.92
Wt. of Tare (gm)	84.50	111.40	85.70	86.70	84.30
Wt. of Water (gm)	25.51	35.83	41.55	59.45	55.48
Wt. of DS (gm)	280.99	309.27	299.45	370.55	303.62

Wet Density (gm/cc)	1.91	1.98	2.03	2.04	2.00
Wet Density (pcf)	119.1	123.5	127.0	127.4	124.8
Moisture Content (%)	9.1	11.6	13.9	16.0	18.3
Dry Density (pcf)	109.1	110.7	111.5	109.8	105.5

Zero Air Voids

Moisture Content (%)	18.0	20.0	23.0
Dry Unit Weight (pcf)	113.4	109.4	103.9

Tested By SD Date 7/22/2011 Checked By *GJM* Date 7-25-11

APPENDIX IV
BASEGRADE INSPECTION



Waste Industry Experts

Joyce Engineering, Inc.
2211 West Meadowview Rd
Suite 101
Greensboro, NC 27407

tel: **336/323-0092**
fax: **336/323-0093**

www.JoyceEngineering.com

September 22, 2011

Ms. Elizabeth Werner, Hydrogeologist
DENR-Division of Waste Management, Solid Waste Section
401 Oberlin Road, Suite 150
1646 Mail Service Center
Raleigh, NC 27611-1646

RE: WCA Waste Corporation Subtitle D Landfill
NCDENR Landfill Permit No. 92-31
Phase 2A Construction –Base Grade Inspection
JEI Project No. 824.1102.21.01

Dear Elizabeth:

On behalf of WCA Waste Corporation, Inc., Joyce Engineering is submitting this response to the solid waste Rule .0540(5) Construction Requirements for C&DLF Facilities which requires the Owner's engineer or geologist to inspect the base grade. WCA Landfill Permit, No. 92-31, Phase 2A was constructed during the summer of 2011. The purpose of this letter is to make the required notification on behalf of WCA.

On September 21, 2011 Hannu Kemppinen, P.G. (NC # 1490) conducted an inspection of the constructed Phase 2A base grades. The subgrade was prepared substantially in accordance with the design with the exception of resistant bedrock that was left in place and covered with soil to provide the required four foot separation between the base grade and rock. Beside the rock, the site exhibited no unusual geologic conditions that would be judged to impact the long-term stability of the waste disposal cell, or potential flow of Vadose waters and or groundwater.

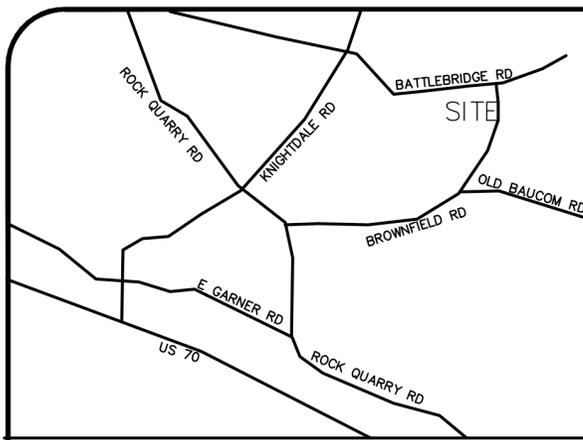
Sincerely,
JOYCE ENGINEERING, INC.

A handwritten signature in blue ink that reads "Hannu Kemppinen".

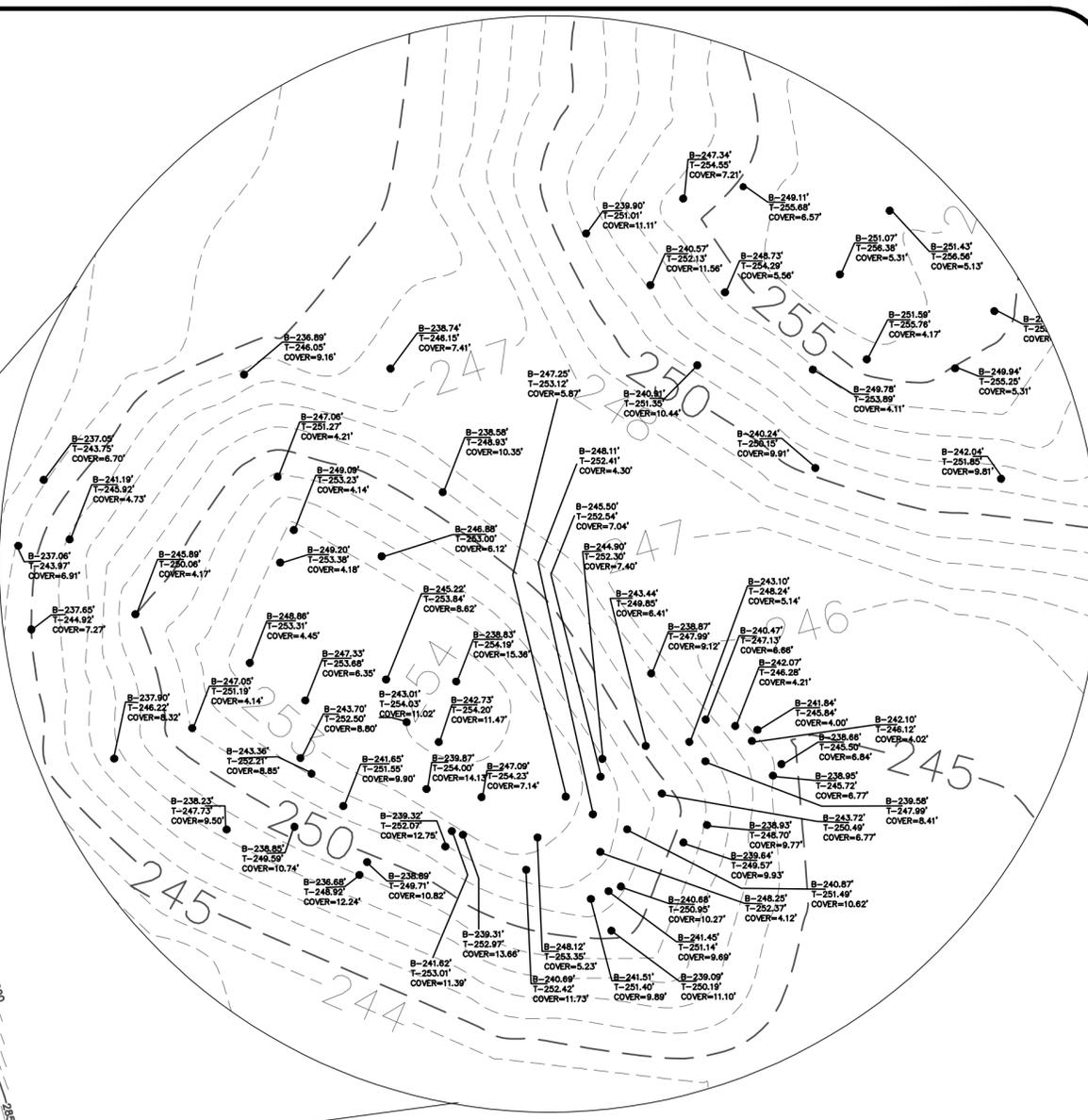
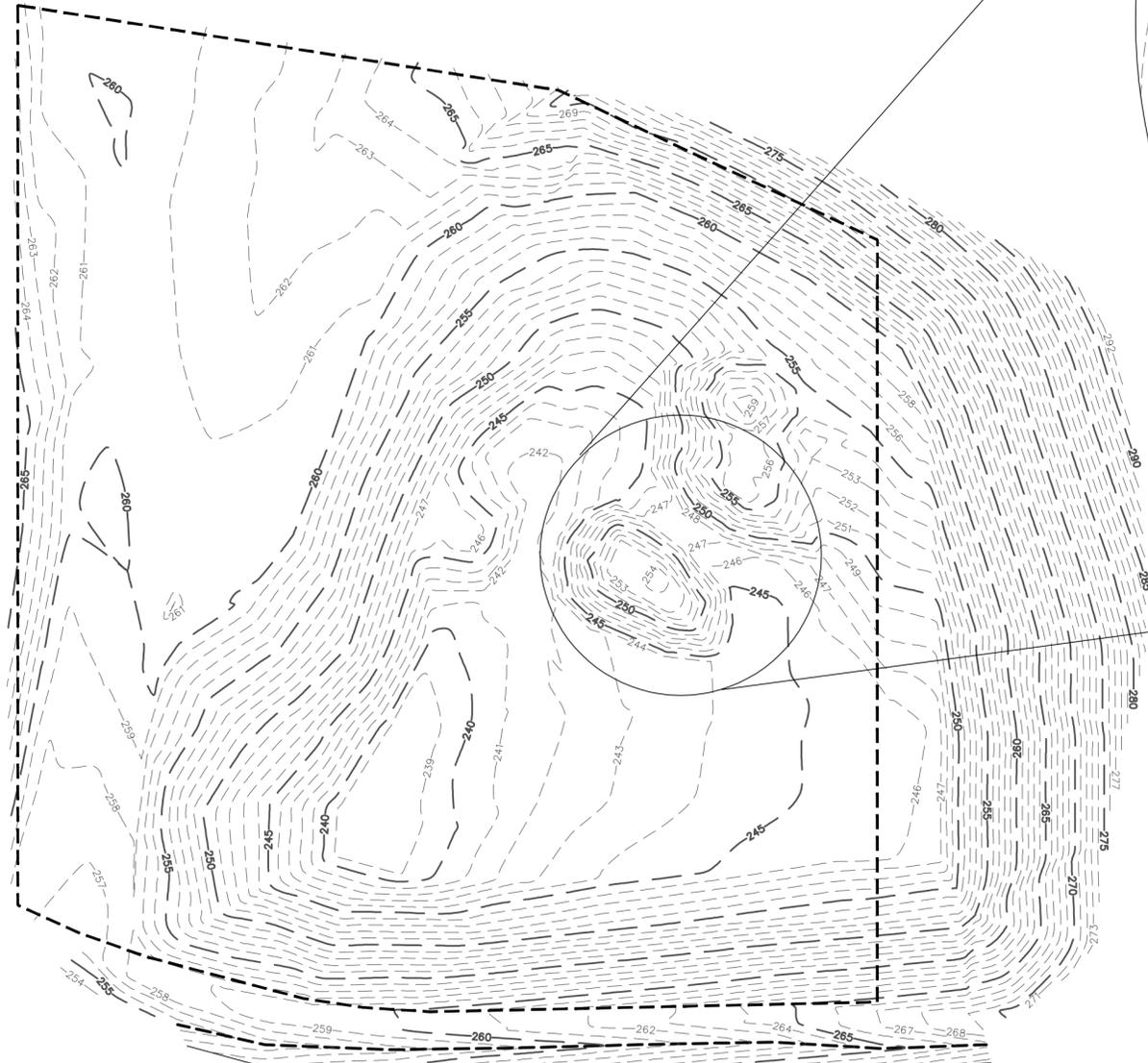
Hannu Kemppinen, P.G.
Senior Project Consultant

C: Dennis Gehle and Nick Marotta, WCA
Matt Fountain, JEI

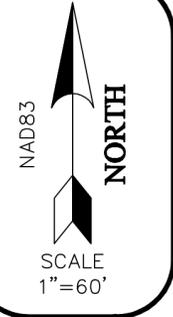
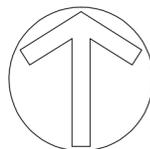
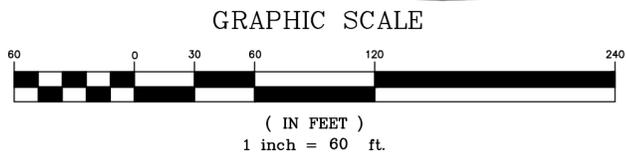
APPENDIX V
RECORD SURVEY DRAWING



VICINITY MAP
(NOT TO SCALE)



BLOW UP
NTS



FINAL TOPOGRAPHICAL SURVEY
 PREPARED FOR MATERIAL RECOVERY, LLC
 ST MARY'S TOWNSHIP,
 WAKE COUNTY, NORTH CAROLINA -8/25/11

I, ANTHONY S. DIBONA, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 25th DAY OF AUGUST, A.D., 2011.

SURVEYOR: ANTHONY S. DIBONA, PLS



FOR THE FIRM
 BOUNDARY ZONE, INC.
 FIRM NUMBER: C-3534

THIS SURVEY WAS MADE WITHOUT THE BENEFIT OF A CURRENT TITLE COMMITMENT. EASEMENTS AND ENCUMBRANCES MAY EXIST WHICH BENEFIT AND BURDEN THIS PROPERTY.

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 zone, inc. LAND SURVEYING SERVICES
 APEX, NORTH CAROLINA: (919) 363-9226
 FAX: (919) 363-9228 WWW.BOUNDARYZONE.COM

APEX
 2205 CANDUN DRIVE SUITE C
 APEX, NORTH CAROLINA 27523
ATLANTA
 235 PEACHTREE ST. NE, SUITE 800
 ATLANTA, GEORGIA 30303
BUFORD
 4195 SOUTH LEE STREET, SUITE 1
 BUFORD, GEORGIA 30518

PROJECT
 11033-01

SHEET
 1 OF 1

Wilson, Donna

From: Hannu Kemppinen [hkemppin@joyceengineering.com]
Sent: Tuesday, November 22, 2011 3:50 PM
To: Wilson, Donna
Cc: Nick Marotta (nmarotta@wcamerica.com); Dennis Gehle (dgehle@wcamerica.com); Evan Andrews
Subject: WCA Cell 1 of Phase 2A RTC 1
Attachments: Figure B Modified Facility Plan.pdf; RTC 1 Permit No 92-31 CQA Report.pdf; WCA Brownfield Rd Cell 1 of Phase 2A CQA Report.pdf; WCA Certification Letter.pdf; Cover 11-22-11.pdf; Figure A Facility Layout.pdf

Dear Donna,

On behalf of WCA of North Carolina, Joyce Engineering has prepared the responses to your comments regarding the CQA report for Cell 1 of Phase 2A of the Brownfield Road Material Recovery C&D Landfill. Attached you will find the responses letter (RTC1) to your comments, engineer's certification letter, revised report cover and CQA report with Figures A and B. Appendices were included with the original CQA report submittal.

If you need further assistance regarding the CQA report please feel free to contact by phone or email.

Hannu Kemppinen, P.G.
Senior Project Consultant

JOYCE ENGINEERING, INC.
2211 W. Meadowview Road, Suite 101
Greensboro, NC 27407
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November 18, 2011

Donna J. Wilson, Environmental Engineer
Solid Waste Section/Division of Waste Management/NC DENR
1646 Mail Service Center
Raleigh NC 27699-1646

On behalf of WCA of North Carolina, Joyce Engineering has prepared the below responses to your comments regarding the CQA report for Cell 1 of Phase 2A of the Brownfield Road Material Recovery C&D Landfill. Your comments are below as they appeared in your letter dated October 19, 2011. Our responses are in **bold font**.

1. Cover letter, report cover, and report text – specify that this report is for Cell 1 of Phase 2A, not the entire Phase 2A area.

The requested corrections are made in the cover letter, report cover and report text.

2. Since only a portion of Phase 2A was constructed, provide a drawing showing the boundaries of Cell 1 and the other planned cells in Phase 2A, making up the total boundary of Phase 2A. Also provide the acreage of the cells and the approximate volume of each cell.

Figure A- Facility Layout; from the permit application and Figure B - Modified Facility Plan for Cell 1 Phase 2A; are included to address requested information. Joyce Engineering does not have permit drawings in our possession, thus the Figures A and B are included to clarify the Phase 1 and 2 boundaries, and the constructed Cell 1 of Phase 2A.

3. Text should address compliance with the soil requirements of Rule .0540 (2)(b).

The requested reference to the Rule has been made in the text.

4. Provide CQA test results in accordance with the CQA plan.

Section 3.0 Construction Quality Assurance Program, subsection 3.3 - Earthwork has been expanded to discuss compliance with the CQA Plan. Laboratory test results of the upper two feet of the subgrade soil testing are included in Appendix 3

5. Address compliance and provide documentation for the pre-operative conditions in the Permit to Construct.

Section 5 has been added to the report to address preoperative conditions in the Permit to Construct, Doc ID 12346, January 28, 2011, Attachment 2 – Conditions of Permit to Construct, items 6 a through h.

Donna Wilson
November 18, 2011
Page 2 of 2

6. Certification should state that Cell 1 of Phase 2A was constructed in accordance with the construction requirements of Rule .0540, the construction quality assurance requirements of Rule .0541, the approved CQA plan (stamped approved 1-28-11), conditions of the Permit to Construct and acceptable engineering practices.

The certification letter has been revised to address the requested references.

We hope the above responses and revisions to the CQA report clarify adequately your comments. If you have further comments or questions concerning this letter, please call me at your convenience.

Sincerely,
JOYCE ENGINEERING, INC.

Hannu Kempainen, P.G.
Senior Project Consultant

Attachments

C: Dennis Gehle, General manager WCA
Nick Marotta, Regional Engineer WCA

Wilson, Donna

From: Hannu Kemppinen [hkemppin@joyceengineering.com]
Sent: Monday, December 19, 2011 3:43 PM
To: Wilson, Donna
Cc: Dennis Gehle; Nick Marotta (nmarotta@wcamerica.com); Evan Andrews; Matthew Fountain; Heather Wilburn
Subject: RE: Material Recovery C&D Landfill CQA Phase 2A cell 1
Attachments: WCA Brownfield Rd Cell 1 of Phase 2A CQA Report.pdf; Certification Letter.pdf; Certification Report Cover.pdf; Figure B revised 12-2012.pdf; RTC 2 Permit No 92-31.pdf

Dear Donna,

Attached please find electronic submittal documents for the second revision of the WCA Brownfield Road C&DLF CQA report.

Enclosed are letter for the Response to Comments 2 (RTC 2)

Certification letter

Certification report cover

CQA Report revised December 2011

Figure B revised

We hope this submittal revision will provide you with all concerns in your comments dated December 7, 2011. Thank you for your assistance in the review and comment process of the report and the final issuance of the permit to operate the Cell 1 of Phase 2 A. Should you have further questions, please contact me to discuss.

Sincerely,

Hannu Kemppinen, P.G.
Senior Project Consultant

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From: Wilson, Donna [<mailto:donna.wilson@ncdenr.gov>]
Sent: Wednesday, December 07, 2011 5:17 PM
To: Hannu Kemppinen; Dennis Gehle; Evan Andrews; Nick Marotta (nmarotta@wcamerica.com)
Subject: Material Recovery C&D Landfill CQA Phase 2A cell 1

Hello – I've reviewed the response to comments for the CQA report of Phase 2A Cell 1. Please address the following comments pertaining to the CQA report:

1. Figure B is confusing in that the waste footprint shown is not accurate for Phase 2A and 2B; the eastern boundary should extend further east. Please label Cell 1 as-built on a drawing that also shows the boundary for Phase 2A.

2. The report indicates that Cell 1 is 6.1 acres, but the area appears to be approximately 4.9 acres, as was listed in the first submittal. Please clarify. In the table, there is really not a need for a vertical cell because a cell is tied to construction of the base liner footprint – it is a partially constructed area of the footprint of a phase. A phase is defined as a five year volume. See Rule .0547 (c). It is acceptable for the table to list Phase 2A Cell 1 and Phase 2A remaining cells.
3. For construction CQA, please address compliance with the testing requirements listed in Table 6 A of the CQA Plan, Doc ID 12363. What was the volume of soil placed?
4. The cover letter/certification should certify that Cell 1 of Phase 2A was constructed in accordance with the construction requirements of Rule .0540, the construction quality assurance requirements of Rule .0541, the approved CQA plan (stamped approved 1-28-11), conditions of the Permit to Construct, and acceptable engineering practices.

The owner should address the pre-operative conditions, as listed in the permit.

The following conditions must be met prior to operation of Phase 2A:

- a. Construction Quality Assurance (CQA) documentation and a certification by the project engineer that the landfill was built in accordance with approved plans and the conditions of the permit must be submitted to the Section for review and approval.
- b. The edge of the waste footprint must be identified with permanent physical markers, for both existing units and the new unit.
- c. The Permittee must contact the appropriate regional environmental specialist and permitting engineer to determine whether the Section chooses to hold a pre-operative meeting with key landfill personnel and representatives of the Section.
- d. Documentation of financial assurance mechanisms must be submitted to the Section. The financial assurance amount must include closure and post-closure costs including the new phase to receive the PTO, in accordance with 15A NCAC 13B .0546, and must include costs for potential assessment and corrective action, in accordance with NCAC 13A 295.2 (h).
- e. The Permittee must obtain a Permit to Operate for the phase from the Section in accordance with 15A NCAC 13B .0201(d).
- f. New groundwater monitoring wells for Phase 2A, as shown on Drawing MP1 (Doc ID 10041), must be installed and monitored, in accordance with the approval letter (Doc ID 10047).
- g. New landfill gas monitoring wells, as shown on Drawing MP1 (Doc ID 10041), must be installed and monitored.
- h. An electronic (pdf) copy of the Sedimentation and Erosion Control permit or approval letter from Wake County for Phase 2A must be submitted to the Section.

Please submit the permit fee of \$2500 if it has not yet been submitted.

If you have any questions please let me know.

Thanks, Donna

Donna J. Wilson
Environmental Engineer
Solid Waste Section/Division of Waste Management/NC DENR
1646 Mail Service Center
Raleigh NC 27699-1646
**New Phone 919-707-8255
Email - donna.wilson@ncdenr.gov

Section webpage - <http://portal.ncdenr.org/web/wm/sw>

DWM offices have moved to the Green Square complex, 217 W. Jones St, Raleigh.
Mailing and delivery address is 1646 Mail Service Center, Raleigh NC 27699.

E-mail correspondence to and from this address may be subject to the
North Carolina Public Records Law and may be disclosed to third parties.



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December 19, 2011

Donna J. Wilson, Environmental Engineer
Solid Waste Section/Division of Waste Management/NC DENR
1646 Mail Service Center
Raleigh NC 27699-1646

Dear Donna,

On behalf of WCA of North Carolina, Joyce Engineering has prepared the below responses to your comments regarding the CQA report for Cell 1 of Phase 2A of the Brownfield Road Material Recovery C&D Landfill. Your comments are below as they appeared in your email dated December 7, 2011. Our responses are in **bold font**.

1. Figure B is confusing in that the waste footprint shown is not accurate for Phase 2A and 2B; the eastern boundary should extend further east. Please label Cell 1 as-built on a drawing that also shows the boundary for Phase 2A.

Figure B has been revised to reflect permitted waste limits.

2. The report indicates that Cell 1 is 6.1 acres, but the area appears to be approximately 4.9 acres, as was listed in the first submittal. Please clarify. In the table, there is really not a need for a vertical cell because a cell is tied to construction of the base liner footprint – it is a partially constructed area of the footprint of a phase. A phase is defined as a five year volume. See Rule .0547 (c). It is acceptable for the table to list Phase 2A Cell 1 and Phase 2A remaining cells.

Section 2.0 Project Description of the CQA Report has been revised to state that the limits of disturbance for Cell 1 Phase 2A is approximately 6.1 acres and that the waste limit boundary encompasses only 4.8 acres. The table within Section 3.3 of the CQA Report has been revised to clarify cell capacities.

3. For construction CQA, please address compliance with the testing requirements listed in Table 6 A of the CQA Plan, Doc ID 12363. What was the volume of soil placed?

Section 3.3 Earthwork has been revised to address compliance with testing and placed soil volume.

4. The cover letter/certification should certify that Cell 1 of Phase 2A was constructed in accordance with the construction requirements of Rule .0540, the construction quality assurance requirements of Rule .0541, the approved CQA plan (stamped approved 1-28-11), conditions of the Permit to Construct, and acceptable engineering practices.

The certification letter has been revised to address the requested references.

Donna Wilson
December 15, 2011
Page 2 of 2

The owner will address comments 4 a-h for the pre-operative conditions, as listed in the permit.

We hope the above responses and revisions to the CQA report clarify adequately your comments. If you have further comments or questions concerning this letter, please call me at your convenience.

Sincerely,

JOYCE ENGINEERING, INC.



Hannu Kemppinen, P.G.

Senior Project Consultant

Attachments

C: Dennis Gehle, General manager WCA
Nick Marotta, Regional Engineer WCA