

Construction Quality Assurance Report

Phase 1C-1 Construction

Red Rock Disposal, LLC C&D Landfill

NC Solid Waste Permit No. 92-28

Holly Springs, North Carolina



Prepared for:



Red Rock Disposal, LLC
7130 New Landfill Road
Holly Springs, North Carolina 27540

October 2005

By:

G.N. RICHARDSON
ASSOCIATES

14 N. Boylan Avenue
Raleigh, North Carolina 27603

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1.0 INTRODUCTION

This Construction Quality Assurance (CQA) Report has been prepared to document the CQA activities performed during the construction of Phase 1C - 1 at the Red Rock Disposal, LLC (Red Rock) Construction/Demolition (C&D) landfill in Holly Springs, North Carolina. This certification report is based on work associated with the area immediately inside the Phase 1C-1 limits of waste and does not include ancillary items such as supporting roads, cell access, and erosion and sedimentation control activities.

The facility is located on the south side of Rex Road approximately one (1) mile southeast of the intersection of Avent Ferry Road and Rex Road; further described as 7130 New Landfill Road in the Holly Springs Township, Wake County, North Carolina. The facility is owned and operated by Red Rock Disposal, LLC, whose parent company is a wholly-owned subsidiary of Waste Industries USA, a North Carolina Corporation under State Solid Waste Permit No. 92-28. The most current Permit To Construct a Construction and Demolition Landfill unit was issued on June 4, 2004 (Permit No. 92-28). A copy of the current Permit to Construct is provided in **Appendix A.1**.

2.0 REFERENCE DOCUMENTS

Phase 1C-1 was constructed in accordance with the following documents with modifications provided herein as **Appendix B**.

1. **Construction Permit - Red Rock Disposal, LLC - Permit 92-28 - Permit To Construct C&D Landfill Phase 1** by NCDENR dated on June 4, 2004. **(A copy of the permit is provided in Appendix A.1)**
2. **Revised Permit to Construct Application - Red Rock Disposal, LLC - Phase 1 - Wake County, North Carolina** prepared by GNRA dated October 2003.
3. **Construction & Demolition Debris (C&D) Landfill - Phase 1 Engineering Drawings** prepared by GNRA dated May 2001 with revisions through April 2004.
4. **Nationwide Permit No. 18 - Section 404 - Action ID 200120822** dated August 26, 2002 by the U.S. Army Corps of Engineers. **(A copy of the permit is provided in Appendix A.2)**
5. **Erosion and Sedimentation Control Plan - Red Rock Disposal, LLC C&D Landfill - Phase 1** prepared by GNRA dated January 2004 and approved March 11, 2004 by Wake County Environmental Services. **(A copy of the permit is provided in Appendix A.3)**

3.0 SCOPE OF PROJECT

The Red Rock Disposal, LLC facility permit for Phase 1 includes three (3) disposal cells (or sub-phases) over a total footprint of approximately 35 acres. (Sub) Phases 1A, 1B, and 1C cover approximately 7 acres, 13 acres, and 15 acres, respectively. In October, 2003, Phase 1C was further sub-divided (**Reference 2**) into (Sub) Phases 1C-1 and 1C-2 to coincide with wetland/stream impacts in accordance with the facility's Nationwide 18 Permit (**Appendix A.2**). Phase 1C-1 covers approximately 12 acres and Phase 1C-2 covers approximately 13 acres.

The initial phase of the facility, Cell 1A, was constructed and certified in November, 2001 and began receiving waste on or about November 20, 2001. The second phase, Cell 1B, of construction was completed and certified in May 2002 and began receiving waste on or about June 6, 2002.

This report documents activities for (Sub) Cell 1C-1 in Phase 1 of the facility. Cell 1C-1 is northwest of (Sub) Phases 1A and 1B, immediately adjacent and northwest of the existing closed LCID waste pile. Cell 1C-1 was constructed using soils obtained from on-site sources located within the limits of the facility, as well as, from an on-site stockpile along the northeast side of the facility. Detailed descriptions of construction activity, monitoring and testing activities for the construction of this cell is provided in this report.

A summary of major milestones associated with the construction of Cell 1C-1 is provided in **Table 1** (below).

Table 1 - Major Milestones

Date	Task
March 26, 2004	Pre-Construction Meeting (Wake County)
April 15, 2004	Pre-Construction Meeting (NCDENR)
June 14, 2004	Clearing and Grubbing
July 12, 2004	Soil Erosion & Sediment Control
August 23, 2004	Wetland/Stream Impacts
August 19, 2004	Earthwork (Excavation & Embankment)
October 19, 2004	Final Completion

4.0 PROJECT PARTICIPANTS

The following major parties were involved in the Cell 1C-1 construction:

Owner	<u>Waste Industries USA, Inc.</u> 3301 Benson Drive, Suite 601 Raleigh, NC 27609 Phone: (919) 325-3000 Fax: (919) 325-3012 Contact: Jerry Johnson, Vice President
Operator	<u>Red Rock Disposal, LLC.</u> 7130 New Landfill Road Holly Springs, NC 27540 Phone: (919) 557-9583 Contact: Fred Counts, Landfill Manager John Demary, Landfill Manager
Engineer	<u>G.N. Richardson & Associates, Inc.</u> 14 N. Boylan Avenue Raleigh, NC 27603 Phone: (919) 828-0577 Fax: (919) 828-3899 Contacts: Stacey Smith, P.E., Project Manager Joan Smyth, P.G., Senior Hydrogeologist
Contractor (Earthwork)	<u>John A. Powell Contracting, Inc.</u> 96 Randy Court Fuquay Varina, NC 27526 Phone: (919) 552-4220 Fax: (919) 577-1923 Contact: John Powell, President
Contractor (Wetland/Stream Impacts)	<u>Glover Construction Company, Inc.</u> P.O. Box 40 / Highway 301 North Pleasant Hill, NC 27866 Phone: (252) 536-2660 Fax: (252) 536-4600 Contacts: Ed Martin, P.E., Project Manager Wayne Clements, Superintendent

Surveying	<u>Surveying Solutions, P.C.</u> 5401 Hillsborough Street Raleigh, NC 27636 Phone: (919) 854-4833 Fax: (919) 854-4834 Contacts: John Thompson, P.L.S. Dwayne Kroeze, P.L.S.
Wetlands	<u>Soil & Environmental Consultants</u> 11010 Raven Ridge Road Raleigh, NC 27614 Phone: (919) 846-5900 Fax: (919) 846-9467 Contacts: Kevin Martin, Project Manager
Soil Testing	<u>Geotechnics</u> 2200 Westinghouse Blvd, Suite 105 Raleigh, NC 27604 Phone: (919) 876-0405 Fax: (919) 846-0460 Contacts: Mike Smith, P.G., Project Manager
Regulatory Agency	<u>North Carolina Department of Environment and Natural Resources - Solid Waste Section</u> 401 Oberlin Road, Suite 150 Raleigh, NC 27605 Phone: (919) 733-0692 Fax: (919) 733-4810 Contacts: Ed Mussler, III, P.E., Branch Head Ellen Lorscheider, Hydrogeologist

5.0 CONSTRUCTION SUMMARY

5.1 Monitoring Well Abandonment

Only one ground water monitoring well, MW-1, required abandonment prior to Cell 1C-1 construction. There are no other wells or piezometers within the footprint area. This well was abandoned in order to prevent the well from becoming a possible conduit from the surface to the aquifer. Monitoring well MW-1 was over-reamed to remove the well screen and casing. The resulting borehole was grouted from bottom to top in accordance with NCDENR regulations and guidelines. The abandonment took place on August 20, 2004 by Engineering Tectonics, P.A. with oversight from GNRA. Documentation is provided in **Appendix B**.

5.2 Site Preparation

The construction of Cell 1C-1 began in late March of 2004 with a pre-construction meeting with Wake County to discuss erosion and sediment control measures and permits followed by a second pre-construction meeting in mid April of 2004 with the Division of Waste Management of the NCDENR to discuss planned activities for cell construction. Red Rock conducted pre-site preparation activities by implementation of a logging phase with Monroe Timberland Consultants, Inc. Once logging activities were completed, site personnel and equipment began clearing and grubbing activities in June 2004. All clearing debris was burned on-site in accordance with an Open Burning Permit with the NC Division of Forest Resources provided in **Appendix A.4**.

5.3 Erosion and Sedimentation Control Measures

The construction of erosion and sedimentation control measures began in conjunction with site preparation activities and under site permits issued by Wake County Environmental Services Department for the Phase 1 landfill area. A copy of the permit is included in **Appendix A.3**. Initial erosion and control measures consisted of diversion ditches and drainage channels placed around the perimeter of the cell limits, a sediment basin, and protection of the wetland areas.

5.4 General Earthwork

Once portions of the site were cleared and grubbed and secured with erosion and sediment control measures, all of the topsoil and unsuitable soils were removed and placed in the soil stockpile outside the cell area to be used for vegetative soil layer. Embankment activities began with placement of soil at the southern end of the cell to construct the perimeter berm. All materials used in the structural fill for the cell were excavated from within the cell limits and/or obtained from the on-site soil stockpile. Fill placement activities were conducted from June 2004 through September 2005. Once fill placement reached plan grades and elevations, the cell area was surveyed by Surveying Solutions to document final grading conditions. An as-built drawing showing completed elevations is provided in **Appendix C**.

5.5 Wetlands and Stream Impacts

Construction of Cell 1C-1 included approximately 1000 linear feet of stream impact in accordance with a Nationwide No. 18 Permit with the USACE provided in **Appendix A.2**. The stream and wetland impacts included isolating the head of the stream, followed by undercutting of soft saturated soils, backfilling with clean structural materials, and compacting. Glover Construction Company, Inc. performed these operations for approximately two (2) weeks in mid-August of 2004.

5.6 Photographic Documentation

Photos documenting the construction of Cell 1C-1 can be found in **Appendix D**.

6.0 CQA PROGRAM

6.1 Scope of Services

In satisfying the requirements of the Project CQA Manual for the construction project, the following activities were performed:

- Observation and documentation of construction of erosion and sediment control measures, excavation and structural fill activities.
- Field and/or laboratory testing of structural fill.
- Review of submittals from the Contractor for conformance with project specification and CQA requirements.
- Review/preparation of record drawings.
- Preparation of the final CQA report.

6.2 Earthwork CQA

The criteria for construction of structural fill per the project specifications included the following:

- Materials: SM, SP, SC, ML, MH, CL-ML, CL, or CH (ASTM D 2488) with no topsoil or other deleterious material and no stones or rocks in excess of one half the lift thickness as compacted;
- Density: Minimum 95% Maximum Standard Proctor Dry Density (98% under roads and structures) (ASTM D 698);
- Moisture Content: As necessary for compaction; and
- Lift Thickness: 8-inch max. (compact).

The number and results of material control and record tests performed on the structural fill is summarized in **Table 1 (Structural Fill)**. Other tests performed on an on-going basis during construction included a visual classification of soils (ASTM D 2488) and monitoring of loose lift thickness. Note that the number of tests required was based on an approximate quantity of 75,000 CY of material placed (in-place measure). The results of field and laboratory testing of structural fill can be found in **Appendix E**.

7.0 MODIFICATIONS

During construction, it is typically necessary to make modifications to the design and construction documents to accommodate field conditions and/or improve constructability based on practical considerations. In the case of Phase 1C-1, no substantial modifications were made during construction. However, it is noted that this certification includes the area immediately inside the Phase 1C-1 limits of waste as shown in **Figure 1** and does not include ancillary items such as supporting roads, cell access, and erosion and sedimentation control activities.

8.0 RECORD DRAWINGS

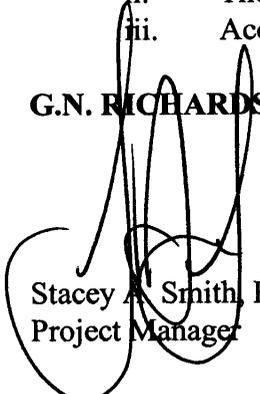
Following the completion of construction, an as-built survey was conducted by Surveying Solutions, Inc. and compared with permitted contours. All final grading, within the limits of certification, were within tolerances (± 0.15 feet). As-built drawings are provided in **Appendix D**.

9.0 PROJECT CERTIFICATION

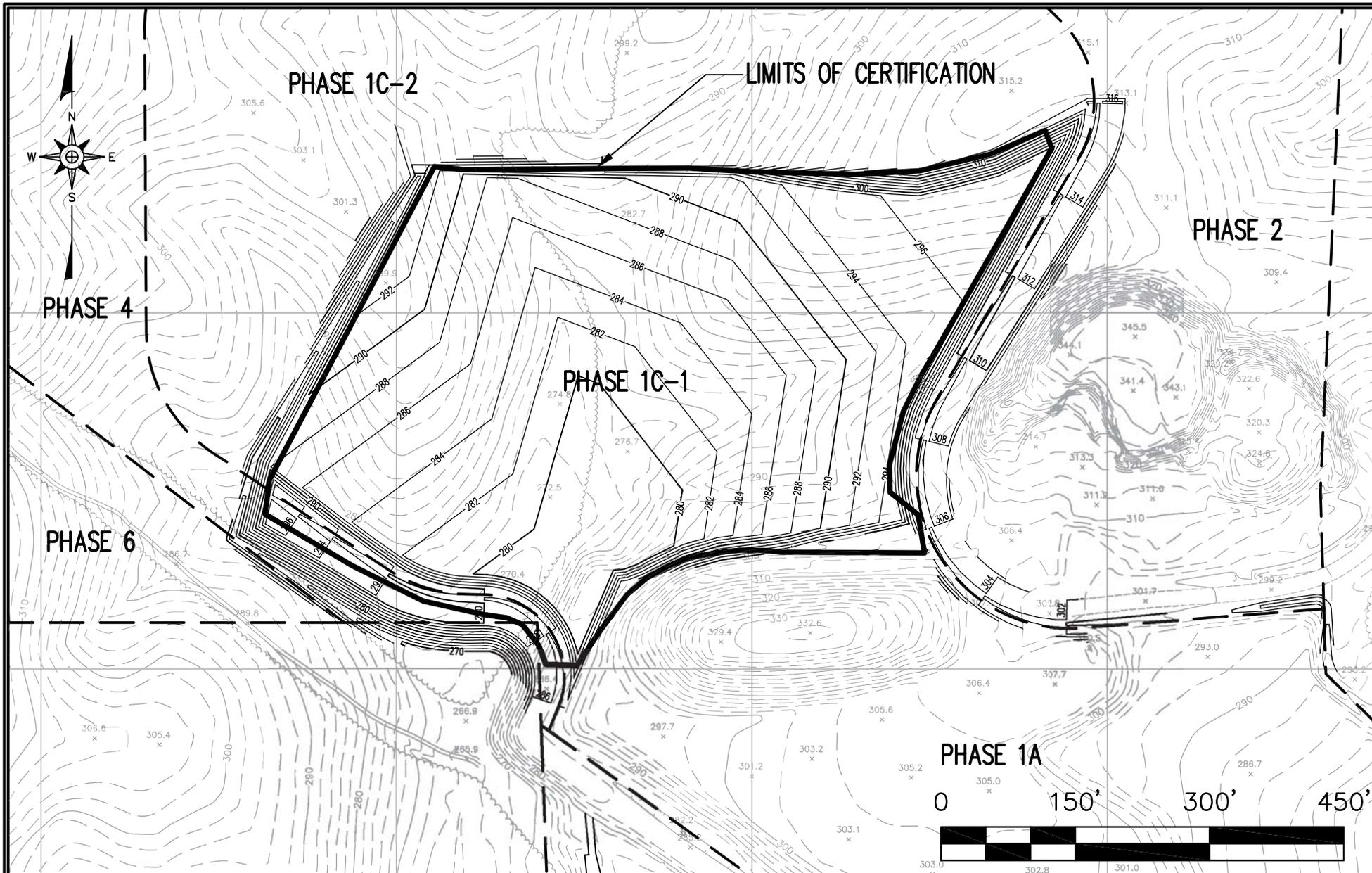
Based on the observations and results of the CQA program documented herein, it is our professional opinion that the construction of Cell 1C-1 of Phase 1 of the Red Rock Disposal, LLC C&D Landfill was completed in accordance with the following:

- i. The Project CQA Manual
- ii. The conditions of the Permit to Construct Phase 1;
- iii. Acceptable engineering practices.

G.N. RICHARDSON & ASSOCIATES, INC.


Stacey A. Smith, P.E.
Project Manager





REDROCK DISPOSAL, LLC C&D LANDFILL PHASE 1C-1 LIMITS OF CERTIFICATION	DRAWN BY: C.T.J.	CHECKED BY: S.A.S.	SCALE: AS SHOWN	FIGURE NO. 1	G. N. RICHARDSON & ASSOCIATES, INC. Engineering and Geological Services 14 N. Boylan Ave. Raleigh, N.C. 27603 www.gnra.com ph: 919-828-0577 fax: 919-828-3899
	DATE: Oct. 2005	PROJECT NO. REDROCK 04-5	FILE NAME REDROCK-A0035		

**TABLE 1
SUMMARY OF MATERIAL CONTROL
AND RECORD TESTS
STRUCTURAL FILL**

	Property		
	Control Tests	Record Tests	
	Moisture-Density Relationship (Proctor)	In-Place Density	In-Place Moisture Content
Units	-----	% Std. Proctor	%
Test Method	ASTM D 698	ASTM D 2922	ASTM D 3017
Required Test Frequency	5,000 CY per each soil	20,000 ft ² per lift & 1 per 500 LF of Berms (<200 ft. base width)	20,000 ft ² per lift & 1 per 500 LF of Berms < 200 base width)
No. of Tests Required	15	47	47
No. of Tests Performed	3 (See Note 1)	71	71
Specified Value	-----	≥ 95% Std. Proctor	As Required for Density
Minimum Value	-----	95.0	- 6.4% Opt.
Maximum Value	-----	107.1	+ 3.1% Opt.
Average Value	-----	99.8	+ 1.9 % Opt.
Quantity of Structural Fill (In-Place):		75,000 CY	

Notes:

1. Due to the uniformity in the materials used as structural fill, fewer tests were performed.

APPENDIX A
FACILITY PERMITS

APPENDIX A.1

NCDENR PERMIT TO CONSTRUCT



North Carolina Department of Environment and Natural Resources

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary

June 4, 2004

Mr. Jerry Johnson, Disposal Operations Manager
Red Rock Disposal, LLC
3301 Benson Drive
Raleigh, North Carolina 27609

Subject: Solid Waste Permit No. 92-28
Red Rock Disposal, LLC Construction and Demolition(C&D) Landfill
7130 New Landfill Drive, Holly Springs, Wake County, North Carolina.
Modification #2: Re-design and construction of Phase 1 (Cell 1C).

Dear Mr. Johnson:

The referenced PERMIT TO CONSTRUCT is issued in accordance with N.C.G.S. 130A-294 and the N.C. Solid Waste Management Rules, 15A NCAC 13B, .0201(b)(1)&(2) and .203(c)&(d). Enclosed is attachment 1, which lists documents included in the Approved Plan. The approved facility description includes the area described in the attached legal description, as part of the original Permit to Construct. Within the approved facility, the area identified for this Permit to Construct is Phase 1, (sub-phases 1A , 1B and 1C revised; consistent with drawings noted as sheet No. 6/Drawing E5, Sheet No. 8/Drawing X1, and Sheet No. 9/Drawing X2 dated October 2003. The specific drawings that were reviewed are sealed by Pieter K. Scheer dated 11/23/03 (full size and half size drawings) and 4/23/04 by John M. Gardner (full size and half size drawings).

This permit is for the construction of the first five-year phase, Phase 1 (sub- phase 1A, 1B and 1C revised) consistent with consistent with drawings noted as sheet No. 6/Drawing E5, Sheet No. 8/Drawing X1, and Sheet No. 9/Drawing X2 dated October 2003. At the end of the first five-year operational period, Red Rock Disposal, LLC may apply for an expansion into and construction of Phase 2, but will be subject to all rules in effect at that time. This permit is issued to Red Rock Disposal, LLC as the owner and operator of the facility.

Mr. Johnson
Page 2
June 4, 2004

Please refer to the **GENERAL CONDITIONS** of this permit for the definition of the approved plan, and for general terms of the Solid Waste Permit. The **CONSTRUCTION AND OPERATION** conditions describe permitted fill areas, acceptable waste types, landfill operation, and requirements which must be satisfied prior to operation of the facility as a Construction & Demolition landfill. Specific requirements for groundwater monitoring and facility record keeping and reporting are described in the **MONITORING AND REPORTING** conditions.

Please review the Conditions of Permit thoroughly, especially the following specific conditions:

- A. Monitoring and Reporting Requirement No. 12(e) requires that the groundwater quality monitoring wells must be installed and sampled prior to accepting waste at this landfill. Please consult with Ms. Ellen Lorscheider, Solid Waste Section Project Hydrogeologist at (919) 733-0692, Ext. 345 just prior to well construction to help ensure that completed wells meet well construction standards and will be acceptable for monitoring purposes. **ONCE ON-SITE SURFACE WATER FEATURES HAVE SUFFICIENT FLOW THAT ALLOWS SAMPLING; RED ROCK DISPOSAL SHALL SAMPLE ALL SURFACE WATER POINTS (SW-1, SW-2 AND SW-3) AND SUBMIT A COPY OF THE TRANSMITTAL LETTER WITH DATE SAMPLES AND SAMPLE RESULTS IN FUTURE UPON RECEIPT FROM YOUR CONTRACT LAB.**

Again, please review the Conditions of Permit thoroughly and contact me if you have any questions or if you require further clarification. Mr. Flint Worrell is the Solid Waste Section Waste Management Specialist for this area and can be contacted at the DENR Fayetteville Regional Office by phone at (910) 486-1541 or contact Mark Fry at the same number. Jim Barber can be contacted at the Raleigh Central Office at (919) 733-0692 Extension 255.

Respectfully,



Jim Barber
Eastern Area Engineer
Solid Waste Section
enclosure

cc: Jim Coffey Mark Fry
 Flint Worrell Ellen Lorscheider
 John Gardner Raleigh Central File: Wake County; 92-28 Permit File

PERMIT NO.: 92-28
DATE ISSUED(PTC mod #2): 06/04/2004

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT
1646 MAIL SERVICE CENTER; RALEIGH, NC 27699-1646

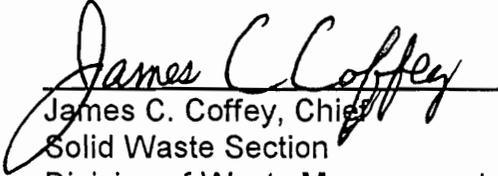
SOLID WASTE PERMIT

RED ROCK DISPOSAL, LLC

is hereby issued a PERMIT TO CONSTRUCT a

Construction and Demolition Landfill unit, PHASE 1 (sub-phases 1A, 1B & 1C revised)

located on the south side of Rex Road and further described as 7130 New Landfill Road in Holly Springs Township, Raleigh, Wake County, North Carolina in accordance with Article 9, Chapter 130A, of the General Statutes of North Carolina and all rules promulgated thereunder and subject to the conditions set forth in this permit. The facility is located and described by the legal description of the site included with this permit and further identified on the deed recorded for this property in Book: 8101 and Page(s): 0854 - 0586 in the Wake County Register of Deeds for Red Rock Disposal, LLC.


James C. Coffey, Chief
Solid Waste Section
Division of Waste Management

PERMIT NO.: 92-28
DATE ISSUED(PTC mod #2): 06/04/2004

SOLID WASTE PERMIT
PERMIT TO CONSTRUCT - RED ROCK DISPOSAL, LLC
Construction and Demolition Debris Landfill Unit
PHASE 1(phases 1A, 1B & 1C revised)

CONDITIONS OF PERMIT:

GENERAL

1. This PERMIT TO CONSTRUCT will be in effect for eighteen months from date of issuance and may be reviewed under rules in effect at that time if the facility is not constructed within this time frame. Modifications to the facility may be required in accordance with rules in effect at the time of review. This permit shall not be effective unless the PERMIT TO CONSTRUCT along with the certified copy is filed in the Register of Deeds Office, in the grantor index under the name of the owner of the land in the county or counties in which the land is located. The certified copy shall be returned to the Solid Waste Section and shall have indicated on it the page, book number, date of recordation and the Register's seal. When this property is sold, leased, transferred or conveyed, the deed or other instrument of transfer shall contain in the description section in no smaller type than that used in the body of the deed or instrument, a statement that the property has been used as a sanitary landfill.
2. The approved plan is described by Attachment 1, "List of Documents for Approved Plan". Where discrepancies may exist, the most recent submittal and the Conditions of Permit shall govern. Some components of the approved plan are reiterated in the Conditions of Permit.
3. This permit is not transferable.
4. This permit is for a period of five years from the date of the PERMIT TO OPERATE and is subject to review on or before the date of the PERMIT TO OPERATE as per 15A NCAC 13B .0201(c). Modifications to the facility may be required in accordance with the rules in effect at the time of the review.
5. The service area for this facility consists of the following counties: CHATHAM, DURHAM, FRANKLIN, GRANVILLE, HARNETT, JOHNSTON, NASH AND WAKE. The disposal capacity for the facility (PHASE 1) is approximately 3,450,000 cubic yards(sheet 2 of 4 analysis of life expectancy) and consistent with the final contours as shown on SHEET NO. 4/DRAWING E3 in the revised construction application dated 11/26/03. This capacity is based the receipt of 200 trucks/day and/or an average disposal rate of 2000 tons/day based on a 286 operating days per year, with a maximum variance in accordance with GS 130A-294(b1)(1).

CONSTRUCTION

6. This permit is for the construction of Red Rock Disposal, LLC Construction and Demolition(C&D) Landfill unit denoted as Phase 1(phases 1A, 1B & 1C revised) in accordance with the site plan SHEET NO. 6/DRAWING E5, titled " Phase 1 FINAL GRADING AND DRAINAGE PLAN" dated 11/26/03. Prior to placing waste in areas of Phase 1C revised, consistent with the above mentioned drawing, certification that Phase 1C revised has been constructed and graded in accordance with the approved plans will be required.
7. All sedimentation/erosion control activities will be conducted in accordance with the Sedimentation Control Act codified at 15 NCAC 4. Native vegetation shall be established on the completed C&D landfill unit in accordance with 15A NCAC 13B .0505 (3)(b)(c).
8. The following requirements shall be met prior to operation of PHASE 1(i.e. Prior to the issuance of a PERMIT TO OPERATE):
 - a. PHASE 1C revised preparation shall be in accordance with the construction plan, SHEET NO. 6/DRAWING E5 dated 11/16/03, and the conditions specified herein; and construction of PHASE 1C revised shall be certified by the design engineer to be constructed in accordance with the approved plans.
 - b. PHASE 1C revised unit inspection shall be made by a representative of the Division of Waste Management (DWM) with the owner/operator.
 - c. Signs shall be posted at the entrance of Red Rock Disposal, LLC landfill, in accordance with the Access and Safety Requirements under Operation Condition .0505(8).
 - d. Groundwater monitoring wells (see Monitoring and Reporting Requirements) shall be installed consistent with condition 14(a) thru (g). A baseline sampling for water quality shall be performed. Well construction records, soil boring logs and sample analysis results shall be submitted to the Section Hydrogeologist for review and approval prior to operation of the C&D unit. Additional interim ground water monitoring well(s) shall be installed to the south and east of the PHASE 1 footprint, within the review boundary for PHASE 1, at the design hydrogeologist recommended locations. A proposed location plan for the additional well(s) shall be submitted to the Solid Waste Section for review and concurrence.
 - e. Inspection and certification of the PHASE 1C revised subgrade, by the project hydrogeologist, to determine if subgrade conditions are consistent with the observations made during the initial site investigations and information provided in the site hydrogeology report. If conditions found are different than conditions stated in the hydrogeologic report or that would impact or have an effect on the proposed ground water monitoring system; then a revised ground watering monitoring plan will be required.

- f. Sedimentation basin SB-B needs to be relocated so that SB-B is not between the waste boundary and MW-5, as shown on Figure 1 - Phase 1; GROUND WATER MONITORING NETWORK drawing dated May 2001.
- g. No blasting shall take place on the site unless a pre-blast survey is performed and a blasting plan is submitted to the Solid Waste Section for review and concurrence.
- h. All well construction records and soil boring logs(for existing and new wells), along with sample analysis results shall be submitted to the Section Hydrogeologist for review and approval prior to operation of the C&D unit.

OPERATION:

- 9. This C&D unit (PHASE 1, sub-phases 1A, 1B and 1C revised) is permitted to receive the following waste types:
 - a. Land-clearing debris as defined in G.S. 130A-290, specifically, solid waste which is generated solely from land-clearing activities, such as stumps, trees;
 - b. Inert debris defined as solid waste which consists solely of material that is virtually inert, such as brick, concrete, rock and clean soil; and
 - c. Asphalt in accordance with G.S. 130-294(m).
 - d. Construction and demolition debris defined as solid waste resulting solely from construction, remodeling, repair or demolition operations on pavement, buildings, or other structures.

Yard trash as defined in G.S. 130A-290, shall not be disposed in the landfill area. However, yard trash, along with land-clearing debris, may be accepted for processing in the Yard Waste Composting Area or disposed of in a LCID landfill.
- 10. Operation of the C&D landfill unit shall conform to the operating procedures described in the approved plan, in accordance with Section .0505 of the Solid Waste Management Rules, and in accordance with the following requirements: Waste Acceptance and Disposal.
 - a. The C&D unit shall accept only those solid wastes which it is permitted to receive as outlined in condition 9.
 - b. No municipal solid waste, hazardous waste, or liquid waste shall be accepted for disposal in the C&D unit.
 - c. The permittee shall implement a program for the C&D unit for detecting and preventing the disposal of MSW, hazardous or liquid wastes. The program shall include, at a minimum:
 - (i) Random inspections of incoming loads or other comparable procedures;
 - (ii) Records of any inspections;
 - (iii) Training of personnel to recognize hazardous and liquid wastes;
 - (iv) Development of a contingency plan to properly manage any identified hazardous, liquid or MSW wastes; The plan must address identification, removal, storage, and final disposition of waste.

Cover Material Requirements

- d. Operational soil cover of at least six inches shall be placed at least once per week or when the active area reaches ½ acre in size, or more often as necessitated by the nature of the waste, as to prevent the site from becoming a visual nuisance and to prevent fire, windblown materials, vectors, or excessive water infiltration.
- e. Areas which will not have additional waste placed on them for 12 months or more, but where final termination of operations has not occurred, shall be covered with a minimum of one foot of soil cover [15A NCAC 13B .0505(3)(b)].
- f. After final termination of disposal operations at the C&D unit or major part thereof, or upon revocation of a permit, the fill areas shall be covered with at least two feet of suitable compacted earth [15A NCAC 13B .0505(3)(c)] or a cap as specified by the rules in effect at the time of closure.

Access and Safety

- g. The C&D unit shall be adequately secured by means of gates, chains, berms, fences, or other security measures approved by the DWM to prevent unauthorized entry.
- h. An attendant shall be on duty at the RED ROCK DISPOSAL, LLC landfill at all times while it is open for public use to ensure compliance with operational requirements.
- i. The access road from Rex Road to the C&D unit shall be of all-weather construction and maintained in good condition.
- j. Dust control measures shall be implemented when necessary.
- k. Signs providing information on dumping procedures, the hours of operation, the permit number, and other pertinent information shall be posted at the entrance to the RED ROCK DISPOSAL, LLC landfill.
- l. Signs shall be posted stating that no MSW, hazardous waste or liquid waste can be received in the C&D unit.
- m. Traffic signs or markers shall be provided as necessary to promote an orderly traffic pattern to and from the discharge area and to maintain efficient operating conditions.
- n. The removal of solid waste from the facility is prohibited unless the owner/operator approves and the removal is not performed on the working face. If C&D recycling is to take place in the future; amendment of the operations plan shall be submitted to the Solid Waste Section for approval.
- o. Barrels and drums shall not be disposed of unless they are empty and perforated sufficiently to ensure that no liquid or hazardous waste is contained therein, except fiber drums containing asbestos. Asbestos waste shall be managed in accordance with 40 CFR 61.

- p. Open burning of solid waste is prohibited. Fires shall be reported to the Solid Waste Section by phone within 24 hours of an incident and written notification shall be submitted within 14 working days addressing the events at the site and future actions to be taken in the future to avoid and or mitigate potential fire hazards.
- q. The concentration of explosive gases generated by the C&D unit shall not exceed:
 - i. twenty-five percent of the lower explosive limit(1.25% of CH₄) for gases in site structures (excluding gas control or recovery system components if necessary; and
 - ii. One hundred percent of the lower explosive limit(5% CH₄) for gases at the property boundary. Installation of permanent gas monitoring wells may be required in the future to demonstrate compliance.

Erosion and Sedimentation Control

- r. Adequate sedimentation and erosion control measures shall be practiced to prevent silt from leaving the site of the C&D unit.
- s. Adequate sedimentation and erosion control measures shall be practiced to prevent excessive on-site erosion.
- t. Provisions for a vegetative ground cover sufficient to restrain erosion must be accomplished within 30 working days or 120 calendar days upon completion of any phase of C&D landfill unit development or as addressed in the approved Sedimentation and Erosion Control permit.

Drainage Control and Water Protection Requirements

- u. Surface water shall be diverted from the operational area.
 - v. Surface water shall not be impounded over or in waste.
 - w. A separation distance of at least four feet shall be maintained between the C&D waste and the groundwater table; as addressed in the site suitability application, hydrologic assessment section.
 - x. Solid waste(C&D) shall not be disposed of in water.
 - y. Leachate shall be contained on site or properly treated prior to discharge. An NPDES permit may be required prior to discharge of leachate to surface waters and or for land disturbing activities greater than one acre.
11. All pertinent landfill operating personnel will receive training and supervision necessary to properly operate this C&D landfill unit in accordance with G.S. 130A-309.25 and addressed by memorandum dated 29 November 2000(enclosed).
 12. Ground water quality for the C&D landfill unit is subject to the classification and remedial action provisions referenced in Rule .0503 (2)(d) of 15A NCAC 13B.

13. A closure and post-closure plan must be submitted for approval at least 90 days prior to closure or partial closure of any landfill unit. The plan must include all steps and measures necessary to close and maintain the C&D unit in accordance with all rules in effect at that time. At a minimum, the plan shall address the following:
 - a. Design of a final cover system as required by the solid waste management rules in effect at the time of closure;
 - b. Construction and maintenance/operation of the final cover system and erosion control structures;
 - c. Surface water, ground water, and explosive gas monitoring.

MONITORING AND REPORTING REQUIREMENTS

14. Ground-water monitoring wells and monitoring requirements for the C&D landfill unit:
 - a. Monitoring well design and construction shall conform to the specifications outlined in, "North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities-DRAFT" and water quality sampling and analysis shall be done in accordance with Construction and Demolition landfills and Closed Sanitary Landfills
 - b. A total of ten locations for ground water wells(MW-2T, MW-3, MW-4, MW-5, MW-6T, MW-10, MW-11, MW-12, MW-13 and MW-14) and three surface water locations(SW-1, SW-2, SW-3) [in accordance with the approved Groundwater Monitoring Plan dated 26 November 2003 by Joan A. Smyth, P.G.] as outlined in Attachment G of the water quality monitoring plan located in the permit to construct application.
 - c. A geologist shall be in the field to supervise well installation. The exact locations, screened intervals, and nesting of the wells shall be established after consultation with the SWS Hydrogeologist at the time of well installation.
 - d. For each monitoring well constructed, a well completion record shall be submitted to DWM within 30 days upon completion.
 - e. Prior to the acceptance of any waste at the C&D unit, a baseline sampling event shall be completed and analysis submitted to the SWS Hydrogeologist.
 - f. Sampling equipment, procedures, and parameters shall conform to specifications outlined in the above-referenced guidance document,[Monitoring and Reporting Requirements, condition 14(a) pg. 9] or the current guidelines established by DWM at the time of sampling.
 - g. In order to determine ground-water flow directions and rates, each monitoring well shall be surveyed, and hydraulic conductivity values and effective porosity values shall be established for the screened intervals for each monitoring well.

- h. The permittee shall sample the monitoring wells semi-annually or as directed by the SWS Hydrogeologist. In addition to the wells described in condition 14(b); surface water locations SW-1, SW-2 and SW-3 shall, as shown on the Water Quality Monitoring Plan dated 26 November 2003, also be sampled semi-annually as part of the monitoring system.
 - i. A readily accessible unobstructed path shall be initially cleared and maintained so that four-wheel drive vehicles may access the monitoring wells at all times.
- 15. The permittee shall maintain a record of all monitoring events and analytical data. Reports of the analytical data for each water quality monitoring sampling event shall be submitted to DWM in a timely manner.
- 16. The permittee shall maintain a record of the amount of solid waste received at the C&D unit, compiled on a monthly basis. Scales shall be used to weigh the amount of waste received.
- 17. On or before 01 August 2004, and each year thereafter, the permittee shall report the amount of waste received (in tons) at the C&D unit and disposed of in the C&D landfill unit to the Solid Waste Section and to all counties from which waste was accepted, on forms prescribed by the Section. This report shall include the following information:
 - a. The reporting period shall be for the previous year, beginning 01 July and ending on 30 June;
 - b. The amount of waste received and landfilled in tons, compiled on a monthly basis, and;
 - c. Documentation that a copy of the report has been forwarded to all counties from which waste was accepted.
- 18. All records shall be maintained on-site and made available to the SWS upon request, specifically records generated by conditions 10, 11, 13, 14, 15, 16 & 17.

ATTACHMENTS

RED ROCK DISPOSAL, LLC

List of Documents for the Approved Plan

SITE SUITABILITY:

1. Report - Site Application - Red Rock Disposal, LLC - Construction & Demolition Landfill - Wake County, North Carolina; application dated 25 January 2001 and received 25 January 2001 from GNRA;
2. Response to Comments - Site Suitability Permit Application - Red Rock Disposal, LLC - Construction & Demolition Landfill - Wake County, North Carolina; application dated 15 May 2001 and received 17 May 2001 from GNRA;
3. Second Response to Comments - Site Suitability Permit Application - Red Rock Disposal, LLC - Construction & Demolition Landfill - Wake County, North Carolina; application dated June 2001 and received 13 June 2001 from GNRA;
4. Documents received on 19 September 2001 from Thomas C. Worth, Jr. addressing the franchise for Red Rock Disposal, LLC to include a affidavit from the Clerk to the Board of Commissioners, Ms. Gwendolyn I. Reynolds, and the agenda package from the January 22, 2002 Wake Board of Commissioners meeting;
5. Letter dated 29 August 2001 received on 4 September 2001 from Curtis Jones via fax addressing the issue of portable toilets at the site instead of a on-site septic system;
6. Transmittal document - Wake County BOA Documents, Red Rock Disposal, LLC cover letter dated 29 May 2001 from GNRA, received 29 May 2001;
7. E-mail dated 23 May 2001 from Ellen Lorscheider to Joan Smyth addressing site geologic and hydrogeologic issues for site suitability;
8. Letter dated 14 May 2001 from Thomas C. Worth, Jr. to John M. Gardner (w/GNRA) addressing Franchise granted to Red Rock Disposal, LLC on 5 February 2001, received 15 May 2001;
9. Certified minutes from Wake County dated 5 February 2001 and 22 January 2001 indicating the vote of the Wake County Commissioners in approving the franchise for Red Rock Disposal, LLC, received on 26 April 2001;
10. Transmittal letter dated 15 February 2001 from GNRA - Supplemental information - Site Suitability Report - Red Rock Disposal, LLC, received 15 February 2001;

11. Special Use Permit Petition and Wake County Ordinances obtained from Wake County web site on 15 March 2001;
12. Transmittal letter dated 15 September 2000 from GNRA - Supplemental information associated with the Special Use Petition - Site Suitability Report - Red Rock Disposal, LLC;
13. Transmittal letter dated 30 August 2000 from GNRA - Petition of Special Use Permit application - Proposed modification by expansion of C&D landfill - Site Suitability Report - Red Rock Disposal, LLC;

CONSTRUCTION APPLICATION:

14. Permit to Construct Application - Red Rock Disposal, LLC C&D Landfill - Phase 1; Wake County, North Carolina dated 27 June 2001, received 27 June 2001;
15. Erosion and Sedimentation control approval, received by fax dated 1 October 2001;
16. Access agreements for Red Rock Disposal, LLC provided with letter dated 13 September 2001, received 13 September 2001.
17. Construction site drawings dated 23 April 2004 by Pieter K. Scheer and John M. Gardner - C&D Landfill Phase 1 Engineering Drawings May 2001, revised October 2003 and April 2004.
18. Revised Permit to Construct Application, Red Rock Disposal LLC C&D Landfill - Phase 1 dated October 2003 and subsequent revisions included.
19. Policy review request letter dated 29 March 2004, concerning Erosion and Sedimentation Control, to Wake County Division of Water Quality.
20. Revised calculations for E&S design, transmittal form dated 23 April 2004.

APPENDIX A.2

USACOE NATIONWIDE PERMIT NO. 18 – SECTION 404



September 10, 2002
DWQ# 02-0128
Wake County

Red Rock Disposal, LLC
C/o Jennifer Burdette
7130 New Landfill Drive
Holly Springs, NC, 27540

APPROVAL of 401 Water Quality Certification with Additional Condition

Dear Ms. Burdette:

You have our approval, in accordance with the attached conditions, to place fill in 1,009 linear feet of intermittent and perennial streams in order to construct the Red Rock Landfill Expansion in Wake County, as described in your application received by the Division of Water Quality on January 28, 2002. After reviewing your application, we have determined that this fill is covered by General Water Quality Certification Number 3362, which can be downloaded from our web site at <http://h2o.enr.state.nc.us/ncwetlands>. This Certification allows you to use Nationwide Permit Number 18 when issued by the U.S. Army Corps of Engineers. In addition, you should get any other federal, state or local permits before you go ahead with your project including (but not limited to) Sediment and Erosion Control, Non-Discharge and Water Supply Watershed regulations. Also this approval will expire when the accompanying 404 permit expires unless otherwise specified in the General Certification. This Certification replaces the one issued to you on August 20, 2002.

This approval is only valid for the purpose and design that you described in your application. If you change your project, you must notify us in writing and you may be required to send us a new application for a new certification. If the property is sold, the new owner must be given a copy of the Certification and approval letter and is thereby responsible for complying with all conditions. If total wetland fills for this project (now or in the future) exceed one acre, compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h). For this approval to be valid, you must follow the conditions listed in the attached certification as well as the additional condition listed below:

1. We understand that you have contributed to the Wetland Restoration Program in order to compensate for these impacts to streams. In accordance with 15A NCAC 2R .0402 and 15A NCAC 2B .0242(7), this contribution will satisfy our compensatory mitigation requirements under 15A NCAC 2H .0506(h) and 15A NCAC 2B .0233(10). Mr. Ron Ferrell should be contacted at (919) 733-5208 if you have any questions concerning the Wetland Restoration Program. For accounting purposes, this Certification authorizes the fill of 1,009 linear feet of streams, in the Cape Fear river and sub-basin and 516 feet of stream mitigation are required. Please be aware that the Wetland Restoration Program (WRP) rules require rounding of stream impact amounts to one-foot increments (15A NCAC 2R .0503(b))."

If you do not accept any of the conditions of this certification, you may ask for an adjudicatory hearing. You must act within 60 days of the date that you receive this letter. To ask for a hearing, send a written petition which conforms to Chapter 150B of the North Carolina General Statutes to the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, N.C. 27699-6714. This certification and its conditions are final and binding unless you ask for a hearing.

This letter completes the review of the Division of Water Quality under Section 401 of the Clean Water Act. If you have any questions, please telephone Steve Mitchell in our Raleigh Regional Office at 919-571-4700 or Cyndi Karoly in the Central Office at 919-733-9721.

Sincerely,

Alan W. Klimek, P.E.



NORTH CAROLINA-DIVISION OF WATER QUALITY
401 WATER QUALITY CERTIFICATION
SUMMARY OF PERMITTED IMPACTS AND MITIGATION REQUIREMENTS

In accordance with 15A NCAC 2H .0500, the Red Rock Landfill, care of Ms. Jennifer Burdette, has permission as outlined below for the purpose of constructing an expansion to the Red Rock Landfill in Wake County, North Carolina. All activities associated with these authorized impacts must be conducted with the conditions listed in the attached certification. THIS CERTIFICATION IS NOT VALID WITHOUT THE ATTACHMENTS.

**COMPENSATORY MITIGATION REQUIREMENT
WETLAND RESTORATION PROGRAM**

LOCATION: Red Rock Landfill Expansion
COUNTY: Wake
BASIN/SUBBASIN Cape Fear (03-06-07)

Impacts:

1,009 linear feet of intermittent and perennial streams

As required by 15A NCAC 2H .0506, and the conditions of this certification, you are required to compensate for the above impacts through the restoration, creation, enhancement or preservation of surface waters as outlined below prior to conducting any activities that impact or degrade the waters of the state.

Mitigation:

516 linear feet of perennial streams by WRP

Note: Linear foot requirements proposed to be mitigated through the Wetland Restoration Program must be rounded to the nearest foot and acreage requirements must be rounded to one-quarter acre increments according to 15 2r .0503(b).

One of the options you have available to satisfy the compensatory mitigation requirements is through the payment of a fee to the Wetlands Restoration Fund per NCAC 2R .0503. If you choose this option, please sign this form and mail it to the Wetlands Restoration Fund at the address listed below. An invoice for the appropriate amount of payment will be sent to you upon receipt of this form. PLEASE NOTE, THE ABOVE IMPACTS ARE NOT AUTHORIZED UNTIL YOU RECEIVE NOTIFICATION THAT YOUR PAYMENT HAS BEEN PROCESSED BY THE WETLANDS RESTORATION PROGRAM.

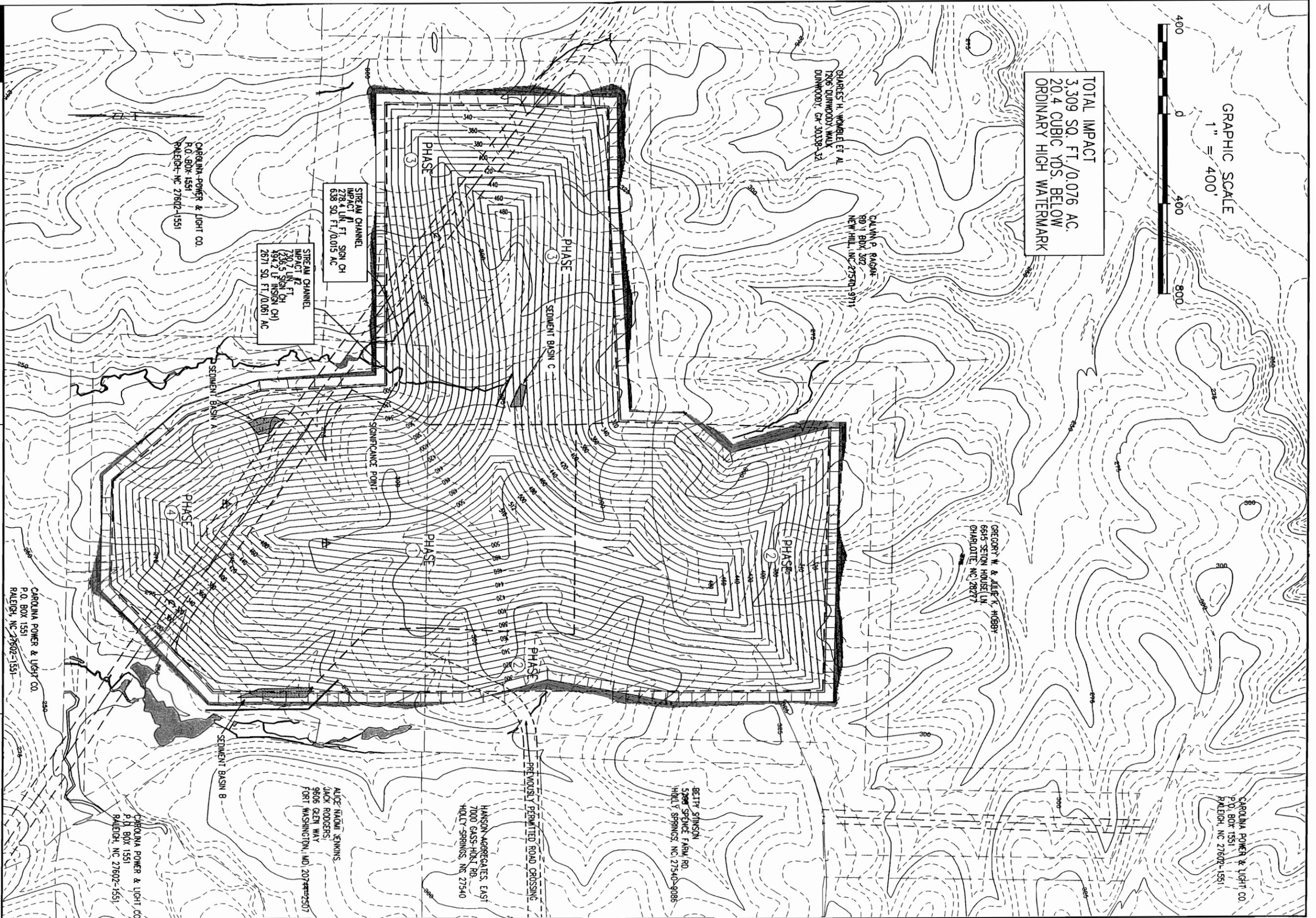
Signature

Date

WETLANDS RESTORATION PROGRAM
DIVISION OF WATER QUALITY
1619 Mail Service Center
RALEIGH, N.C. 27669-1619
(919) 733-5208

GRAPHIC SCALE
1" = 400'

TOTAL IMPACT
3,309 SQ. FT./0.076 AC.
20.4 CUBIC YDS. BELOW
ORDINARY HIGH WATERMARK



S&E C
Soil & Environmental Consultants, PA
11010 Raven Ridge Road • Raleigh, North Carolina 27614 • Phone: (919) 846-5900 • Fax: (919) 846-5467
www.SandEC.com

SHEET TITLE: **IMPACT MAP**
RED ROCK LANDFILL
HOLLY SPS, WAKE CO, NC

FIGURE 2

CAROLINA POWER & LIGHT CO.
P.O. BOX 1551
RALEIGH, NC 27602-1551

GREGORY W. & JILL K. HOBBS
6615 SEIGN HOUSE LN
CHARLOTTE, NC 28277

CALVIN P. RAGAN
RD 1 BOX 307
NEW HILL, NC 27581-9711

CHARLES H. WOMBLE ET AL
1706 DUNWOODY WALK
DUNWOODY, GA 30038-322

BETTY SIMMONS
5209 SPENCE FARM RD
HOLLY SPRINGS, NC 27540-9086

HANSON-AGGREGATES, EAST
7000 CASS-HOLL RD.
HOLLY SPRINGS, NC 27540

ALICE NAOMI JENKINS
JACK RODGERS
9606 GLEN WAY
FORT WASHINGTON, MD 20744-2507

CAROLINA POWER & LIGHT CO.
P.O. BOX 1551
RALEIGH, NC 27602-1551

CAROLINA POWER & LIGHT CO.
P.O. BOX 1551
RALEIGH, NC 27602-1551

CAROLINA POWER & LIGHT CO.
P.O. BOX 1551
RALEIGH, NC 27602-1551

STREAM CHANNEL
IMPACT 11
278' LIN. FT. SIGN CH
638 SQ. FT./0.015 AC

STREAM CHANNEL
IMPACT 12
730.7' LIN. FT.
236.5' SIGN CH
194.2' LF INSIGN CH
2671 SQ. FT./0.061 AC

APPENDIX A.3

NCDENR LAND DISTURBANCE PERMIT



Environmental Services

TEL 919 856 7449
FAX 919 856 5855

Erosion, Flood and Stormwater
336 Fayetteville St. • P.O. Box 550 • Raleigh, NC 27602

D. Stephen Grissom
3301 Benson Drive, Suite 600
Raleigh, NC 27603
Phone #: 919-325-3000
Fax #: 919-872-1474
ATTN: Mr.D. Stephen Grissom

RE: Sedimentation & Erosion Control Letter of Approval, March 11, 2004

Table with 2 columns: Project Name, Submitted By, Project #, Date Received, Date Processing Initiated, Disturbed Acres, Plan Review Fee, Land Disturbance Fee, Address, Phone/Fax, and Watershed.

Dear Mr. Grissom:

This office has reviewed the subject Erosion and Sedimentation Control Plan. We find the plan to be acceptable and hereby issue this letter or approval. If any modifications, performance reservations, or recommendation are applicable, a list is enclosed and is incorporated as a part of this letter of approval. If any modifications are not incorporated into the plan and implemented in the field, the site will be in violation of the Erosion and Sedimentation Control Ordinance of Wake County. In addition, Effective July 1, 2000 all projects issued Land-Disturbing Permits will have Article II Section 5(2) 5 (3), (4),(5) and (6) of the Ordinance applied. It should be noted that this plan approval shall expire two (2) years following the date of approval in accordance with Section 5.PERMITS, of the Ordinance. In summary permits over 2 years old may need to be renewed to avoid substantial civil penalties. For details consult the Erosion & Sedimentation Control Ordinance.

Plan Approval is limited to construction, maintenance and stabilization of both temporary and permanent sedimentation and erosion control devices only. Wake County Erosion, Flood and Stormwater Section is not responsible for subject approvals of other Local, State or Federal Agencies. The subject approvals are (but not limited to) Federal Emergency Management Area Flood regulations/requirements, Division of Water Quality under stormwater or other water quality regulations/requirements, U.S. Army Corps of Engineers under Article 404 (Wetlands) jurisdiction/requirements, and/or any Federal, State, County and Local municipal regulations or permit requirements. The approval issued in this letter cannot supersede any other required permit or approval.

Performance Reservations Are:

- 1. All temporary erosion control devices shall be removed and the site stabilized within two (2) years.
2. Any land disturbance outside of permitted area is prohibited.

Since this project disturbs five or more acres, one such approval relates to the Stormwater that will discharge from your project. This runoff is permitted pursuant to the National Pollutant Discharge Elimination System (NPDES) administered in North Carolina by the Division of Water Quality (DWQ). Attached is the General Stormwater NPDES Permit, NCG01000, as revised October 1, 2001, covering your activity. You are responsible for

complying with the General Permit requirements and are subject to enforcement by DWQ for any violations of the General Permit.

Wake County's sedimentation pollution control program is performance oriented, requiring protection of the natural resources and adjoining properties. If at any time during this project it is determined that the Erosion and Sedimentation Control Plan is inadequate to meet the requirements of the Erosion and Sedimentation Control Ordinance of Wake County, this office may require revisions in the plan and its implementation to ensure compliance with the Ordinance. Also, please consider this letter as notice in accordance with the requirements for Approval of Plans, Section 4(8), this office may require revisions in the plan and its implementation to ensure compliance with the Ordinance.

Please note that this approval is based in part on the accuracy of the information provided concerning financial responsibility. You are requested to file an amended Financial Responsibility Form if any changes become necessary.

Your cooperation is appreciated and we look forward to working with you on this project. If there are any questions, please do not hesitate to contact this office.

Sincerely,

David R. Parnell, 856-7549
Environmental Engineer/Planner I

cc:G.N. Richardson & Associates, Inc.
Mr. Ken Schuster, P.E.



Environmental Services

TEL 919 856 7449
FAX 919 856 5855

Erosion, Flood and Stormwater
336 Fayetteville St. • P.O. Box 550 • Raleigh, NC 27602

03/26/2004 14:41:00 EROSION/FLOOD/STORMWATER PERMIT WIS039
ASSGND TO: LAST UPDATED BY: DAVE PARNELL 856-7549
PERMIT#: S000412 STS: A APP DATE: 01/23/2004 COMP DATE:
PROJECT: REDROCK DISPOSAL, LANDFILL P1C DAY PHONE: (919) 828 - 0577
ADDRESS: 14 N BOYLAN AVE FAX#: (919) 828 - 3899
CITY: RALEIGH STATE: NC ZIP: 27603
OWNER: RED ROCK DISPOSAL LLC DAY PHONE: (919) 557 - 9583
ADDRESS: 7130 NEW LANDFILL DR FAX#: (919) 557 - 9523
CITY: HOLLY SPRINGS STATE: NC ZIP: 27540
HD USE: 600 GRADING PERMIT BLDG PRMT: WW PRMT:
EXIST USE: ORIG PERMIT#: REC?: Y
WATER: I WASTEWTR: I BK/PG: 9999 9999 TAX MAP#: 0833 0007
TOWNSHIP: 06 HOLLY SPRINGS JURIS: WC ZON: R80 PIN: 0627.04 94 6153 000
SUBD#: 000 000 00 SUBD NAME: LOT-SEC: ACRE: 51.00
%IMPERV: 15.00 LIMIT: 15.00 TYPE USE: C NEW?: Y DISTURB ACRE: 38.00
WATERSHED: C FLOOD STUDY REQ?: N COMP DATE:
RECEIPT#: 0006877 FEE: 2500.00

ST#: 7130 MI: DIR: NAME: NEW LANDFILL DIR: TYP: DR
DIRECTIONS: PLAN APPROVED BY DAVE PARNELL ON MAR. 11, 04 RCPT DAT:
03/26/2004

Name: FRED L. Counts

Signature: [Handwritten Signature]

Date: March 26, 2004

Phone #: 919-557-9583

RENEWAL OF LAND DISTURBING PERMIT:

*This policy does not apply to projects approved prior to July 1, 2000. The client was not notified during approval as was the case from July 1, 2000 to the present.

*This policy does not apply to Landfills. Landfills are seldom closed out within two years and the erosion control measures are to remain in place for several years.

*Land Disturbing Permits expire 2 (two) years from the date of issuance. The project is to be renewed 30 days before the expiration date by re-applying in the same procedure as the original application. If the Engineer/Planner discovers the permit for a project has expired, a site visit is required to determine the status of the site. If the project is *not* at a point that it can be closed out, the permit is to be renewed for one year by re-paying the plan review fee and the land disturbing permit fee. Until the Ordinance is changed, the renewal is for one year **only** (*This is the policy, which reflects the current ordinance. A change of the ordinance will be proposed to the Commissioners.*). Notify Katy Chen (or first floor support staff) by giving or e-mailing her a copy of the renewal letter so she knows what the fees are for when it has been submitted. The mainframe is now set up with a “tickler” which will alert the engineer/planner when the two-year limit is about to expire. It does not help with expiring permits that we are closing out now, however.

*An inspection of the project is required to assess what is required to be done in order to close out the project. If the project can be closed out, close it out; if not, send a letter demanding payment of the fees, citing Section 5(3), 5(4), 5(5) and 12(1)a of the Wake County Soil Erosion and Sediment Control Ordinance. Depending on seasonal growing conditions and the condition of easements and ditches, etc., a short time extension may be granted.

*When the renewal fees are paid (in a time required by the renewal letter), a submission of one copy of the most up to date construction plan, Form 101 and a Financial Responsibility Form (if there are changes since approval) is required. The Environmental Engineer/Planner will review the construction plan to make sure it agrees with what has been constructed.

*Upon receipt of the payment of fees and required documents, a renewal receipt form is issued to the owner by the first floor support staff. A copy is put in the file, as well. This form states the final date for close out. If the project is not issued a Certificate of Completion within the one year renewal period the project is in violation of Section 12(1)a and is subject to a civil penalty.

Effective May 6, 2004

APPENDIX A.4

NC DIVISION
OF FOREST RESOURCES
BURN PERMIT

**OPEN BURNING PERMIT
NON-HIGH HAZARD COUNTIES**

DATE 6-24-04

Under the provisions of and in accordance with N.C. General Statute 113-60.21, 113-60.24, 113-60.28,

M. Fred L. Counts of 7130 New Langdell
is authorized to start, or cause to be started a fire as specified below upon land under his/her control in

_____ Community Wake County,

approximately 7 miles from City Limits This fire shall be started between dates of

6/25/04 and 7/29/04 between the hours of midnight and ending at 4:00p.m..

Type of burning tree brush stumps Number of acres to be burned 20
(new ground, brush, field, etc.)

if your fire becomes dangerous, contact Holly Springs or Telephone 911

Vicki Dumbaugh Fire Dept. Chief forker
Division of Forest Resources Permit Agent Approved: Chief Jones

INSTRUCTIONS TO PERMITEE This permit does NOT relieve the permittee of:

1. His/Her responsibility for complying with all air pollution laws, regulations and ordinances (such as the North Carolina "Control and Prohibition of Open Burning" Regulations as codified in 15 NCAC 2D .1900 which prohibits the open burning of some materials).
2. His/Her responsibility for complying with all other State and Federal forest fire laws (such as notifying adjoining landowners, keeping a competent watch over the fire, etc.).
3. His/Her responsibility for any damage the fire may cause to other parties or their property. Good judgment should be used when burning even though a permit has been obtained.

Note: The proper time to burn is: (1) following a rain when the wind is calm; (2) after grasses are green and hardwood leaves are mature.

Attention: Many counties have additional burning ordinances. Contact your local county authorities before burning.

As permittee, I certify: That the proposed fire is within 500' of State protected woodland.

Pursuant to G.S. 113-60.29, convictions of violating the Open Fire Laws of this permit is a Class 3 misdemeanor. These penalties may be imposed in addition to any civil or criminal penalties sanctioned under G.S. 143-215.114 of Article 21B.

I understand that should this permit be cancelled in accordance with G.S. 113-60.25 or G.S. 113-60.27 or if written notice (order) is given by any forest ranger pursuant to G.S. 113-60.28, I must take reasonable steps to extinguish or control the fire or reimburse the Department for expenses incurred therefore on my behalf.

SEE BACK OF PERMIT: I have read and understand the air pollution regulations on the back of this permit.

Fred L. Counts Permittee Signature
Telephone No. 919-557-9583 Date 6/24/04

NOTE: UNDER NO CIRCUMSTANCES SHALL ANYTHING OTHER THAN PLANT GROWTH BE BURNED

(See Regulation 15A NCAC 2D.1900 "Open Burning" for details)

Permissible Residential Burning

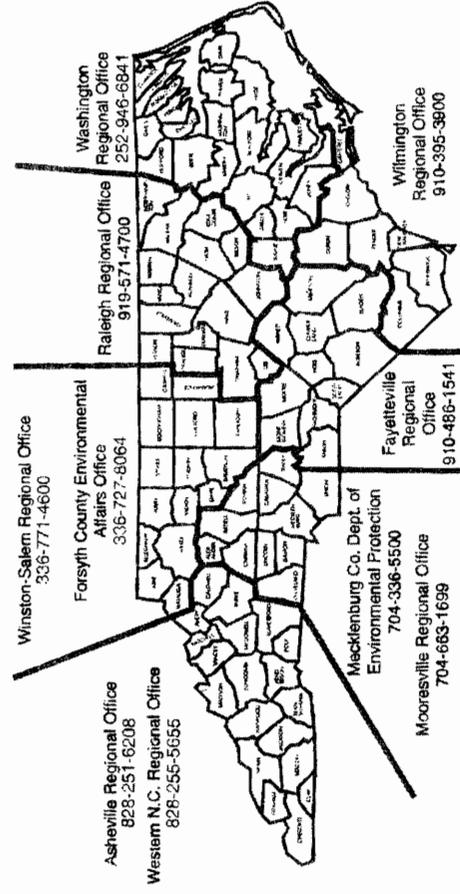
Open burning of leaves, tree branches or yard trimmings originating on the premises of private residences and burned on those premises in areas where no public pickup is available and such burning is done between 8:00a.m. and 6:00p.m. and shall not create a nuisance.

Permissible Land-Clearing

Open burning for land clearing or right-of-way maintenance is permissible provided that: (1) prevailing winds are away from built up areas; (2) the location of the burn is at least 1000 feet from any occupied structure; (3) the location of the burn is at least 250 feet from the edge of a roadway, if the prevailing wind is towards the roadway; (4) only kerosene, distillate, or diesel fuel is used to start the fire; (5) burning shall commence between 8:00a.m. and 6:00p.m. and no additional material is added other than during those hours.

If you have any additional questions or concerns, you are encouraged to contact the Regional Office covering the county in which the burn will occur (see below):

Division of Air Quality - Regional Offices & Local Programs



North Carolina Division of
Forest Resources

APPENDIX B

GEOLOGIST INSPECTION AND MONITORING WELL ABANDONMENT



G.N. RICHARDSON & ASSOCIATES, INC.

Engineering and Geological Services

MEMORANDUM

Date October 24, 2005

To: Stacey Smith, P.E.
 G.N. Richardson & Associates, Inc.

From: Joan A. Smyth, P.G. *JS.*
 G.N. Richardson & Associates, Inc.

Re: **Red Rock Disposal C&D Landfill**
 Phase 1C-1 Subgrade Inspection
 Sampson County, North Carolina

On Thursday, October 20, 2005 I conducted an inspection of the Phase 1C-1 subgrade at the Red Rock Disposal C&D Landfill. My inspection indicated the soils at the subgrade elevations are consistent with those encountered during site drilling (clayey silts), and no unexpected soil types, bedrock outcrops or geologic features were encountered.

Additionally, it should be noted that monitoring well MW-1 (which was previously located in the Phase 1C-1 area) has been abandoned in accordance with NCDENR requirements by over-reaming and filling the borehole from bottom to top with grout. A copy of the well abandonment log is attached for your review.

Department of Natural Resources and Community Development
Division of Environmental Management

P. O. Box 27687 Raleigh, N. C. 27611

WELL ABANDONMENT
RECORD MW-1

CONTRACTOR Engineering Tectonics

REG. NO. 2091

1. LOCATION: (Show a sketch of the location on back of form.)

Nearest Town: Holly Springs

County: WAKE

7130 New Landfill Drive, 27540

Quadrangle No. _____

(Road, Community, Subdivision, Lot No.)

2. OWNER: Waste Industries

ADDRESS: 3301 Benson Dr. Suite 601 Raleigh NC 27609

4. TOPOGRAPHY: draw slope hilltop valley flat

5. USE OF WELL: Monitoring Date: 8-20-04

6. TOTAL DEPTH: 30.0' DIAMETER: 2"

7. CASING REMOVED:

feet	diameter
<u>30.0</u>	<u>2"</u>
<u>n/a</u>	<u>n/a</u>

8. SEALING MATERIAL:

<u>Neat cement</u>	<u>Sand cement</u>
bags of cement: <u>5</u>	bags of cement: _____
gals. of water: <u>25</u>	yds. of sand: _____
Other: _____	gals. of water: _____

Type Material _____

Amount _____

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL

Tremie grouted well pipe from bottom to top. Proceeded to pull 2" well pipe with screen out of bore hole. Proceeded to over drill to top of rock at 7.0". Proceeded to tremie grout open hole from 7.0' to ground surface.

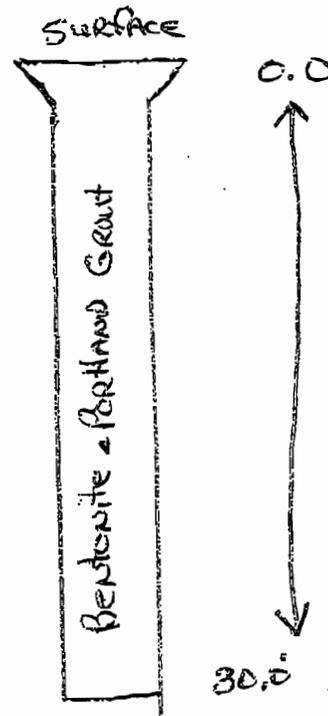
I do hereby certify that this well abandonment record is true and exact.

Ronald Barron

8-20-04

Signature of contractor or Agent Date

WELL DIAGRAM: Draw a detailed sketch of the well showing total depth, depth and diameter of screens remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.



FILE

04-605-D

submit original to the Division of Environmental Management, one copy to the Driller, and one copy to the Owner.



the HUTCHINSON GROUP, Ltd.
Consulting Earth Scientists

Murrysville, PA

MONITORING WELL LOG

WELL NO. MW-1

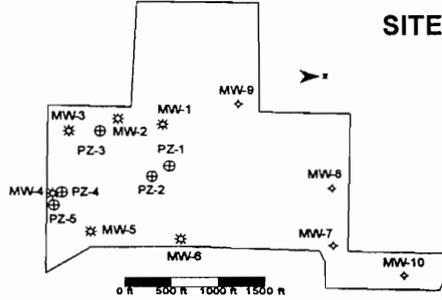
TOTAL DEPTH 30'

PROJECT INFORMATION

PROJECT Red Rock Landfill
 SITE LOCATION Holly Springs, North Carolina
 ADDRESS Rex Road (State Route 1127)
 ELEVATION GS 277.33 PVC 280.60 ft amsl
 LOGGED BY Peter Weir
 DRILLING DATES October 3 and 4, 2000
 DRILLER & CO. Richard Simmons Drlg.
 RIG TYPE Canterra 250
 DRILLING METHOD HSA 2.25" Air rotary
 SAMPLING METHOD Split-spoon
 NOTES: Drilled dry; WL 10/04/00 12.7' bgs

DRILLING INFORMATION

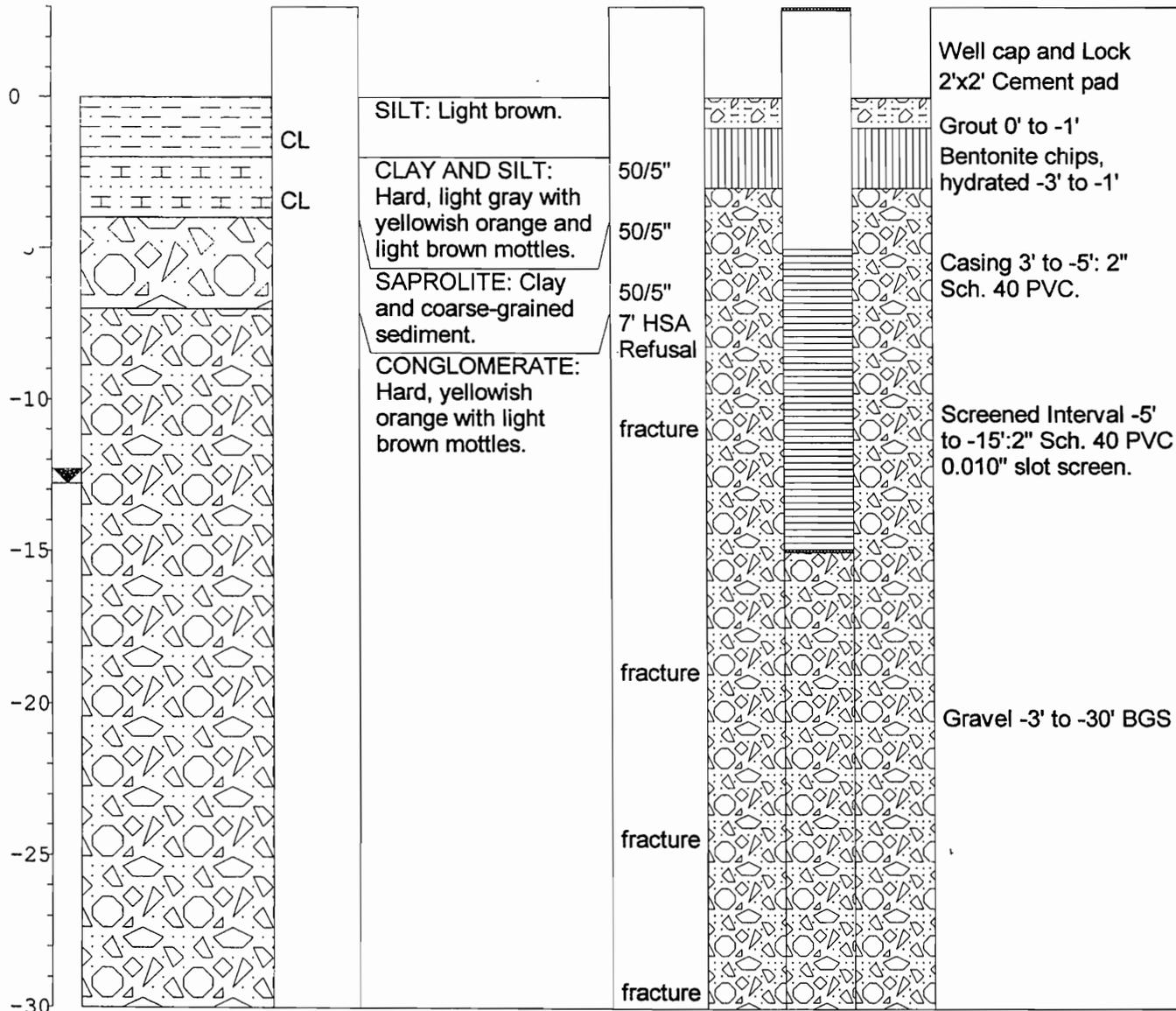
SITE LOCATION



▽ Water level during drilling
 ▼ Water level in completed well

Page 1 of 1

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	BLOWS/6"	WELL COMPLETION	WELL DESCRIPTION
-------	--------------	------	------------------	----------	-----------------	------------------



APPENDIX C
AS-BUILT SURVEYS

APPENDIX D
CONSTRUCTION PHOTOGRAPHS



Photo 1 - Cell area after clearing view to southwest (August 23, 2004)



Photo 2 - Cell area after clearing view to the west (August 23, 2004)



Photo 3 - Wetland protection at southern end (August 24, 2004)



Photo 4 - Wetland stream impact area after removal (August 24, 2005)



Photo 5 - Berm along southern end of the cell (September 1, 2005)



Photo 6 - Berm along southwest end of the cell (September 5, 2005)



Photo 7 - Interior of southern berm (October 5, 2005)



Photo 8 - View to the southeast across the cell (October 5, 2005)

APPENDIX E
EARTHWORK DATA

APPENDIX E.1

SOIL CLASSIFICATION & MOISTURE DENSITY RELATIONSHIP

ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	G.N. RICHARDSON & ASSOC.	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCK PILE
Project No.	2004-559-01	Sample No.	WEST SIDE
Lab ID	2004-559-01-01	Soil Description	RED LEAN CLAY

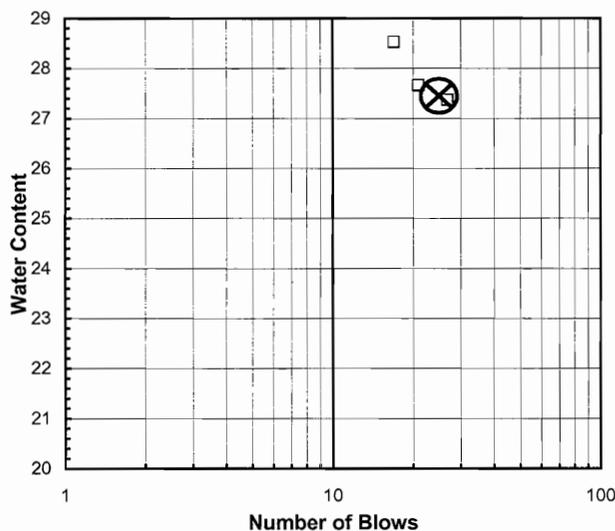
Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description. (Minus No. 40 sieve material, Airdried)

Liquid Limit Test	1	2	3	
Tare Number	A-P	G	E	M U L T I P O I N T
Wt. of Tare & WS (gm)	35.75	31.78	35.98	
Wt. of Tare & DS (gm)	31.43	28.16	31.40	
Wt. of Tare (gm)	15.64	15.07	15.34	
Wt. of Water (gm)	4.3	3.6	4.6	
Wt. of DS (gm)	15.8	13.1	16.1	
Moisture Content (%)	27.4	27.7	28.5	
Number of Blows	27	21	17	

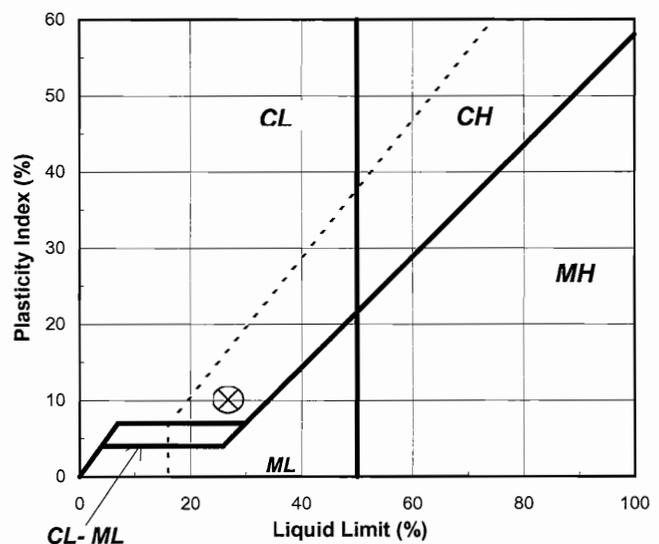
Plastic Limit Test	1	2	Range	Test Results	
Tare Number	U	A-C		Liquid Limit (%)	27
Wt. of Tare & WS (gm)	21.77	23.08		Plastic Limit (%)	17
Wt. of Tare & DS (gm)	20.79	21.96		Plasticity Index (%)	10
Wt. of Tare (gm)	15.20	15.35		USCS Symbol	CL
Wt. of Water (gm)	1.0	1.1			
Wt. of DS (gm)	5.6	6.6			
Moisture Content (%)	17.5	16.9	0.6		

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

Flow Curve



Plasticity Chart



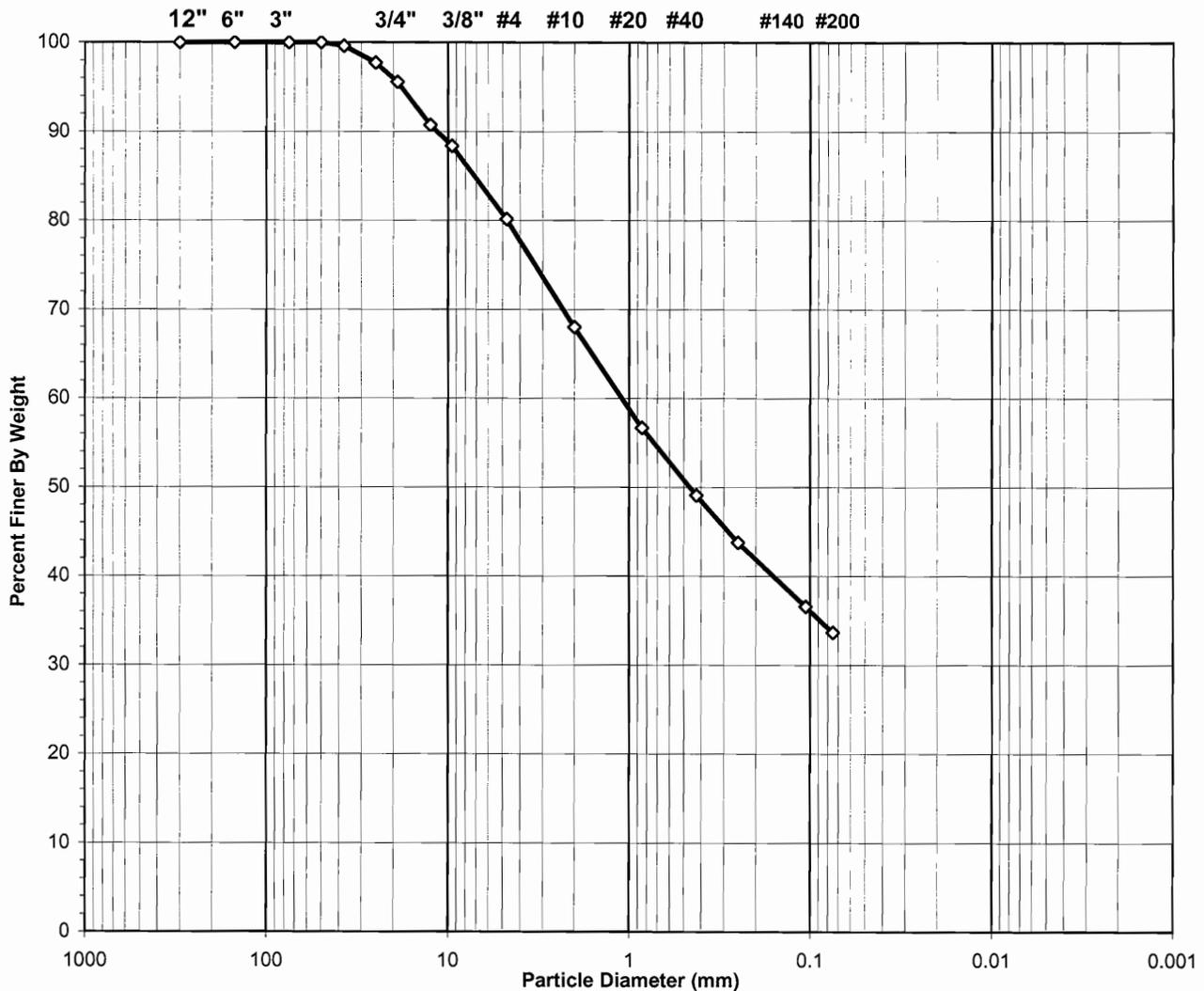
Tested By BA Date 6/21/2004 Checked By *gan* Date 6-24-04

page 1 of 1 DCN: CT-S4B DATE: 10/8/2001 REVISION: 2

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

Client	G.N. RICHARDSON & ASSOCIATES	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCKPILE
Project No.	2004-559-01	Sample No.	WEST SIDE
Lab ID	2004-559-01-01	Soil Color	RED

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol **SC, TESTED**

USCS Classification **CLAYEY SAND WITH GRAVEL**

Tested By **KAW** Date **6/18/2004** Checked By **GEM** Date **6-24-04**

WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	G.N. RICHARDSON & ASSOCIATES	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCKPILE
Project No.	2004-559-01	Sample No.	WEST SIDE
Lab ID	2004-559-01-01	Soil Color	RED

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	G-12	Tare No.	G-15
Wgt. Tare + Wet Specimen (gm)	758.71	Wgt. Tare + Wet Specimen (gm)	1146.09
Wgt. Tare + Dry Specimen (gm)	720.44	Wgt. Tare + Dry Specimen (gm)	1042.23
Weight of Tare (gm)	153.64	Weight of Tare (gm)	152.46
Weight of Water (gm)	38.27	Weight of Water (gm)	103.86
Weight of Dry Soil (gm)	566.80	Weight of Dry Soil (gm)	889.77
Moisture Content (%)	6.8	Moisture Content (%)	11.7

Wet Weight -3/4" Sample (gm)	21471.1	Weight of the Dry Specimen (gm)	566.80
Dry Weight - 3/4" Sample (gm)	20113.1	Weight of minus #200 material (gm)	199.53
Wet Weight +3/4" Sample (gm)	1042.23	Weight of plus #200 material (gm)	367.27
Dry Weight + 3/4" Sample (gm)	933.29		
Total Dry Weight Sample (gm)	21046.4	J - Factor (Percent Finer than 3/4")	0.9557

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	100.0	100.0
1 1/2"	37.5	96.87	0.4	0.4	99.6	99.6
1"	25	440.17	1.9	2.3	97.7	97.7
3/4"	19	505.19	2.1	4.4	95.6	95.6
1/2"	12.5	28.69	5.1	5.1	94.9	90.7
3/8"	9.5	13.98	2.5	7.5	92.5	88.4
#4	4.75	48.83	8.6	16.1	83.9	80.1
#10	2	72.04	12.7	28.9	71.1	68.0
#20	0.85	67.05	(**)	40.7	59.3	56.7
#40	0.425	45.08	8.0	48.6	51.4	49.1
#60	0.25	31.55	5.6	54.2	45.8	43.8
#140	0.106	42.77	7.5	61.7	38.3	36.6
#200	0.075	17.28	3.0	64.8	35.2	33.6
Pan	-	199.53	35.2	100.0	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
 (**) The - 3/4" sieve analysis is based on the Weight of the Dry Specimen

Tested By KAW Date 6/18/2004 Checked By *GEM* Date *6-24-04*

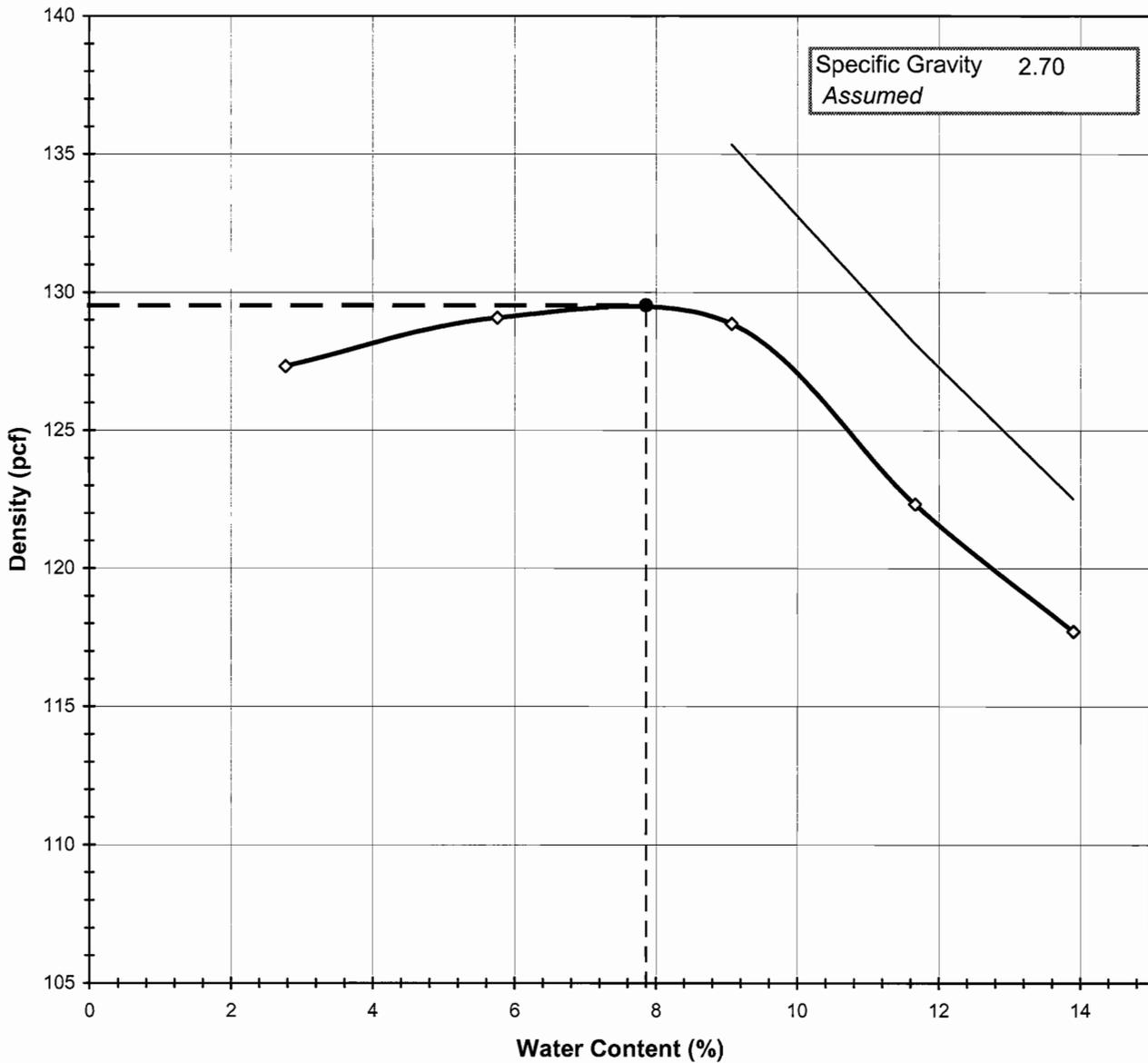
MOISTURE DENSITY RELATIONSHIP

ASTM D698-91 SOP-S12

Client	G.N. RICHARDSON & ASSOC.	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCK PILE
Project No.	2004-559-01	Sample No.	WEST SIDE
Lab ID	2004-559-01-01	Test Method	STANDARD

Visual Description RED CLAYEY SAND W/ GRAVEL

Optimum Water Content 7.9
Maximum Dry Density 129.5



Tested By ETS Date 6/21/2004 Checked By Gem Date 6-24-04

MOISTURE - DENSITY RELATIONSHIP

ASTM D698-91 SOP-S12

Client	G.N. RICHARDSON & ASSOC.	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCK PILE
Project No.	2004-559-01	Sample No.	WEST SIDE
Lab ID	2004-559-01-01		

Visual Description RED CLAYEY SAND W/ GRAVEL

Total Weight of the Sample (gm)	22466	TestType	STANDARD
As Received Water Content(%)	NA	Rammer Weight (lbs)	5.5
Assumed Specific Gravity	2.70	Rammer Drop (in)	12
Percent Retained on 3/4"	4	Rammer Type	MECHANICAL
Percent Retained on 3/8"	NA	Machine ID	R174
Percent Retained on #4	NA	Mold ID	R173
Oversize Material	Not included	Mold diameter	6"
Procedure Used	C	Weight of the Mold	5567
		Volume of the Mold(cc)	2124

Mold / Specimen

Point No.	1	2	3	4	5
Wt. of Mold & WS (gm)	10022	10214	10351	10217	10131
Wt. of Mold (gm)	5567	5567	5567	5567	5567
Wt. of WS	4454	4647	4784	4649	4564
Mold Volume (cc)	2124	2124	2124	2124	2124

Moisture Content / Density

Tare Number	Z-9	B-2	SS-1	Z-11	SS-6
Wt. of Tare & WS (gm)	515.13	527.69	568.06	440.44	470.19
Wt. of Tare & DS (gm)	503.93	504.31	529.20	404.93	425.15
Wt. of Tare (gm)	100.18	98.22	100.59	100.38	101.05
Wt. of Water (gm)	11.20	23.38	38.86	35.51	45.04
Wt. of DS (gm)	403.75	406.09	428.61	304.55	324.10

Wet Density (gm/cc)	2.10	2.19	2.25	2.19	2.15
Wet Density (pcf)	130.9	136.5	140.5	136.6	134.1
Moisture Content (%)	2.8	5.8	9.1	11.7	13.9
Dry Density (pcf)	127.3	129.1	128.9	122.3	117.7

Zero Air Voids

Moisture Content (%)	9.1	11.7	13.9
Dry Unit Weight (pcf)	135.3	128.1	122.5

Tested By ETS Date 6/21/2004 Checked By GEM Date 6-24-04

ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	G.N. RICHARDSON & ASSOC.	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCK PILE
Project No.	2004-559-01	Sample No.	EAST SIDE 1
Lab ID	2004-559-01-02	Soil Description	GRAY/BROWN SILT (Minus No. 40 sieve material, Airdried)

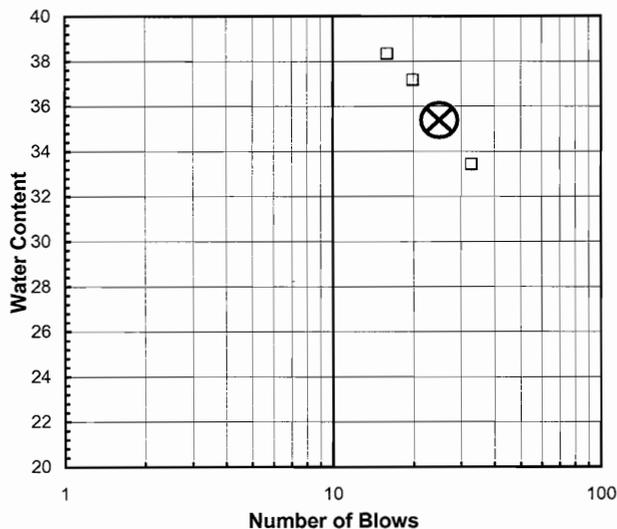
Note: The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.

Liquid Limit Test	1	2	3	
Tare Number	L	R	Q	M
Wt. of Tare & WS (gm)	28.60	34.50	30.91	U
Wt. of Tare & DS (gm)	25.26	29.27	26.57	L
Wt. of Tare (gm)	15.26	15.19	15.24	T
Wt. of Water (gm)	3.3	5.2	4.3	I
Wt. of DS (gm)	10.0	14.1	11.3	P
Moisture Content (%)	33.4	37.1	38.3	O
Number of Blows	33	20	16	N
				T

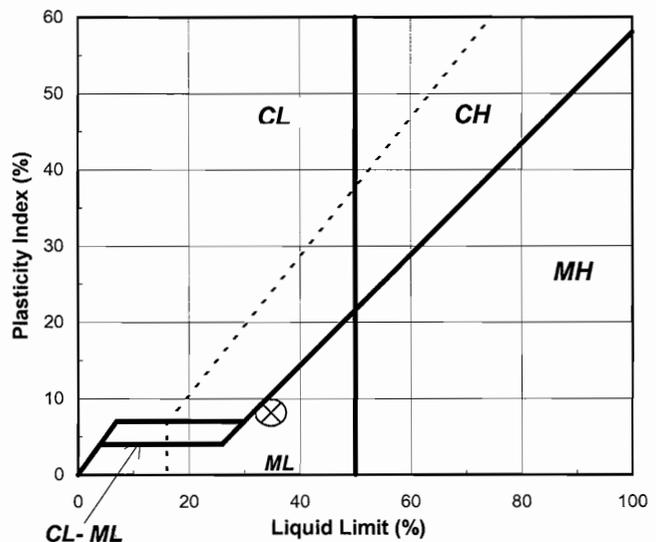
Plastic Limit Test	1	2	Range	Test Results
Tare Number	P	D		Liquid Limit (%) 35
Wt. of Tare & WS (gm)	21.20	22.96		Plastic Limit (%) 27
Wt. of Tare & DS (gm)	19.97	21.27		Plasticity Index (%) 8
Wt. of Tare (gm)	15.24	15.24		USCS Symbol ML
Wt. of Water (gm)	1.2	1.7		
Wt. of DS (gm)	4.7	6.0		
Moisture Content (%)	26.0	28.0	-2.0	

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

Flow Curve



Plasticity Chart

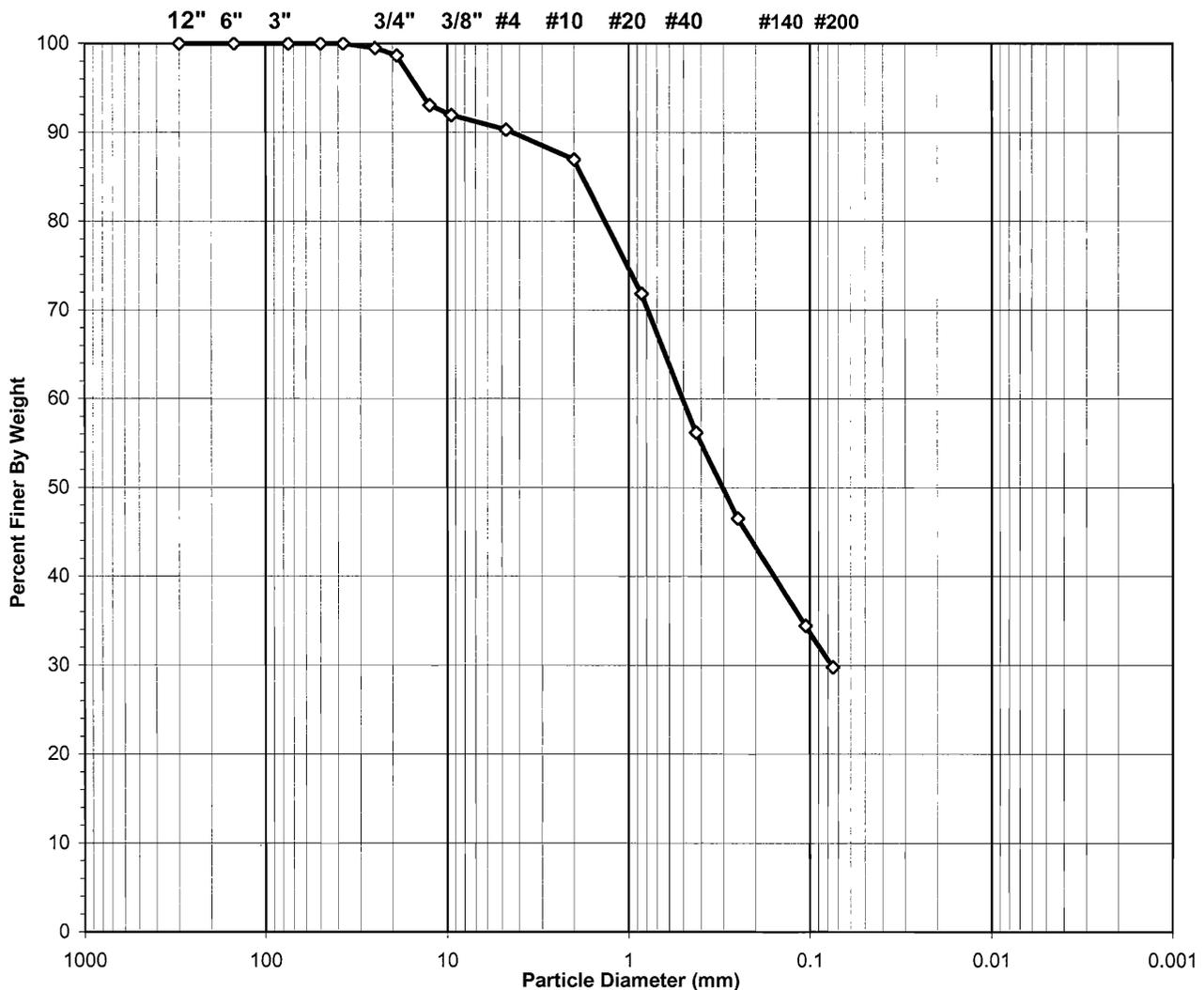


Tested By BA Date 6/21/2004 Checked By *CSM* Date 6-24-04

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

Client	G.N. RICHARDSON & ASSOCIATES	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCKPILE
Project No.	2004-559-01	Sample No.	EAST SIDE 1
Lab ID	2004-559-01-02	Soil Color	GRAY-BROWN

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol **SM, TESTED**

USCS Classification **SILTY SAND**

Tested By KAW Date 6/18/2004 Checked By *GEM* Date 6-24-04

WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	G.N. RICHARDSON & ASSOCIATES	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCKPILE
Project No.	2004-559-01	Sample No.	EAST SIDE 1
Lab ID	2004-559-01-02	Soil Color	GRAY-BROWN

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	H-5	Tare No.	Z-11
Wgt. Tare + Wet Specimen (gm)	644.13	Wgt. Tare + Wet Specimen (gm)	352.22
Wgt. Tare + Dry Specimen (gm)	585.72	Wgt. Tare + Dry Specimen (gm)	350.08
Weight of Tare (gm)	152.16	Weight of Tare (gm)	100.37
Weight of Water (gm)	58.41	Weight of Water (gm)	2.14
Weight of Dry Soil (gm)	433.56	Weight of Dry Soil (gm)	249.71
Moisture Content (%)	13.5	Moisture Content (%)	0.9

Wet Weight -3/4" Sample (gm)	18623.52	Weight of the Dry Specimen (gm)	433.56
Dry Weight - 3/4" Sample (gm)	16412.4	Weight of minus #200 material (gm)	130.78
Wet Weight +3/4" Sample (gm)	227.95	Weight of plus #200 material (gm)	302.78
Dry Weight + 3/4" Sample (gm)	226.01		
Total Dry Weight Sample (gm)	16638.4	J - Factor (Percent Finer than 3/4")	0.9864

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	100.0	100.0
1 1/2"	37.5	0.00		0.0	100.0	100.0
1"	25	85.93		0.5	99.5	99.5
3/4"	19	142.02		0.8	98.6	98.6
1/2"	12.5	24.62		5.7	94.3	93.0
3/8"	9.5	4.90		1.1	93.2	91.9
#4	4.75	7.28		1.7	91.5	90.3
#10	2	14.77		3.4	88.1	86.9
#20	0.85	66.33	(**)	15.3	72.8	71.8
#40	0.425	68.84		15.9	56.9	56.2
#60	0.25	42.55		9.8	47.1	46.5
#140	0.106	53.05		12.2	34.9	34.4
#200	0.075	20.44		4.7	30.2	29.8
Pan	-	130.78		30.2	-	-

Notes : (*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample
(**) The - 3/4" sieve analysis is based on the Weight of the Dry Specimen

Tested By KAW Date 6/18/2004 Checked By *GEM* Date *6/24/04*

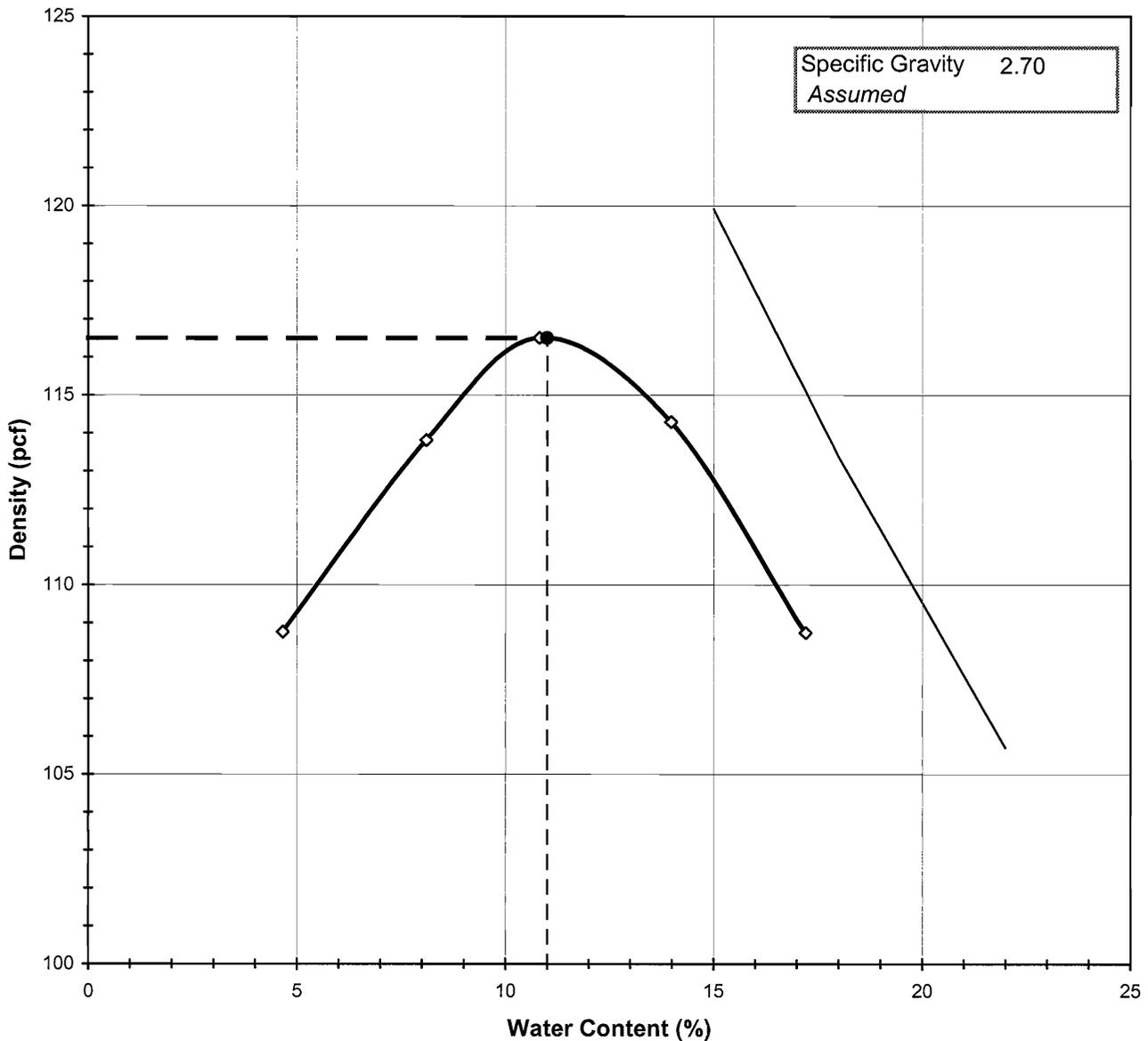
MOISTURE DENSITY RELATIONSHIP

ASTM D698-91 SOP-S12

Client	G.N. RICHARDSON & ASSOC.	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCK PLE
Project No.	2004-559-01	Sample No.	EAST SIDE 1
Lab ID	2004-559-01-02	Test Method	STANDARD

Visual Description GRAY-BROWN SILTY SAND

Optimum Water Content 11.0
Maximum Dry Density 116.5



Tested By ETS Date 06/21/04 Checked By DAJ Date 6-28-04

MOISTURE - DENSITY RELATIONSHIP

ASTM D698-91 SOP-S12

Client	G.N. RICHARDSON & ASSOC.	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCK PLE
Project No.	2004-559-01	Sample No.	EAST SIDE 1
Lab ID	2004-559-01-02		

Visual Description GRAY-BROWN SILTY SAND

Total Weight of the Sample (gm)	18876	TestType	STANDARD
As Received Water Content(%)	NA	Rammer Weight (lbs)	5.5
Assumed Specific Gravity	2.70	Rammer Drop (in)	12
Percent Retained on 3/4"	1	Rammer Type	MECHANICAL
Percent Retained on 3/8"	3	Machine ID	R174
Percent Retained on #4	6	Mold ID	R172
Oversize Material	Not included	Mold diameter	4"
Procedure Used	A	Weight of the Mold	4223
		Volume of the Mold(cc)	940

Mold / Specimen

Point No.	1	2	3	4	5
Wt. of Mold & WS (gm)	5938	6077	6169	6186	6143
Wt. of Mold (gm)	4223	4223	4223	4223	4223
Wt. of WS	1715	1854	1946	1963	1920
Mold Volume (cc)	940	940	940	940	940

Moisture Content / Density

Tare Number	Z-12	Y-13	S-9	B-1	B-4
Wt. of Tare & WS (gm)	557.14	463.23	469.67	491.39	468.74
Wt. of Tare & DS (gm)	536.78	435.94	433.65	443.45	414.51
Wt. of Tare (gm)	100.07	99.25	100.80	100.52	99.23
Wt. of Water (gm)	20.36	27.29	36.02	47.94	54.23
Wt. of DS (gm)	436.71	336.69	332.85	342.93	315.28

Wet Density (gm/cc)	1.82	1.97	2.07	2.09	2.04
Wet Density (pcf)	113.8	123.0	129.1	130.3	127.4
Moisture Content (%)	4.7	8.1	10.8	14.0	17.2
Dry Density (pcf)	108.8	113.8	116.5	114.3	108.7

Zero Air Voids

Moisture Content (%)	15.0	18.0	22.0
Dry Unit Weight (pcf)	119.9	113.4	105.7

Tested By ETS Date 06/21/04 Checked By DAS Date 6-28-04

ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	G.N. RICHARDSON & ASSOC.	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCK PILE
Project No.	2004-559-01	Sample No.	EAST SIDE 2
Lab ID	2004-559-01-03	Soil Description	BROWN LEAN CLAY

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. (Minus No. 40 sieve material, Wet method)

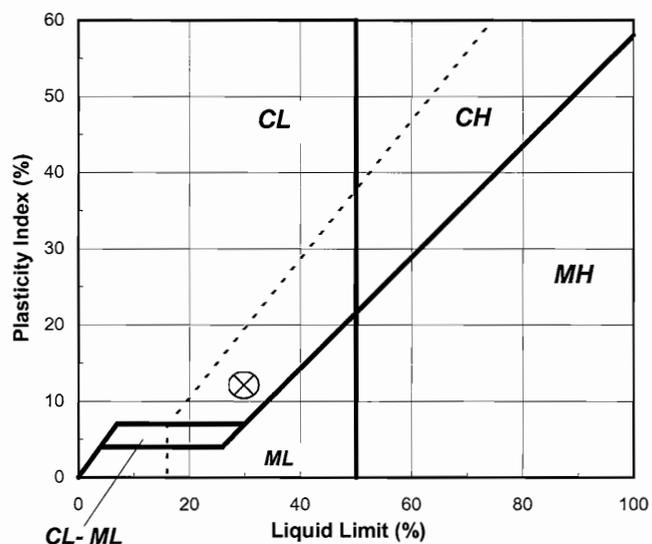
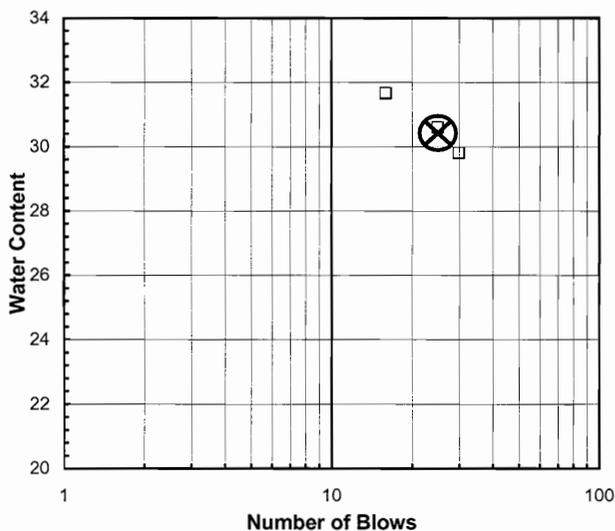
Liquid Limit Test	1	2	3	
Tare Number	A-M	A-L	Z-Y	M
Wt. of Tare & WS (gm)	34.31	34.17	32.30	U
Wt. of Tare & DS (gm)	29.97	29.81	28.35	L
Wt. of Tare (gm)	15.40	15.55	15.87	T
Wt. of Water (gm)	4.3	4.4	4.0	I
Wt. of DS (gm)	14.6	14.3	12.5	P
Moisture Content (%)	29.8	30.6	31.7	O
Number of Blows	30	25	16	I
				N
				T

Plastic Limit Test	1	2	Range	Test Results
Tare Number	H	N		Liquid Limit (%) 30
Wt. of Tare & WS (gm)	22.18	22.57		Plastic Limit (%) 18
Wt. of Tare & DS (gm)	21.11	21.43		Plasticity Index (%) 12
Wt. of Tare (gm)	15.14	15.36		USCS Symbol CL
Wt. of Water (gm)	1.1	1.1		
Wt. of DS (gm)	6.0	6.1		
Moisture Content (%)	17.9	18.8	-0.9	

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

Flow Curve

Plasticity Chart



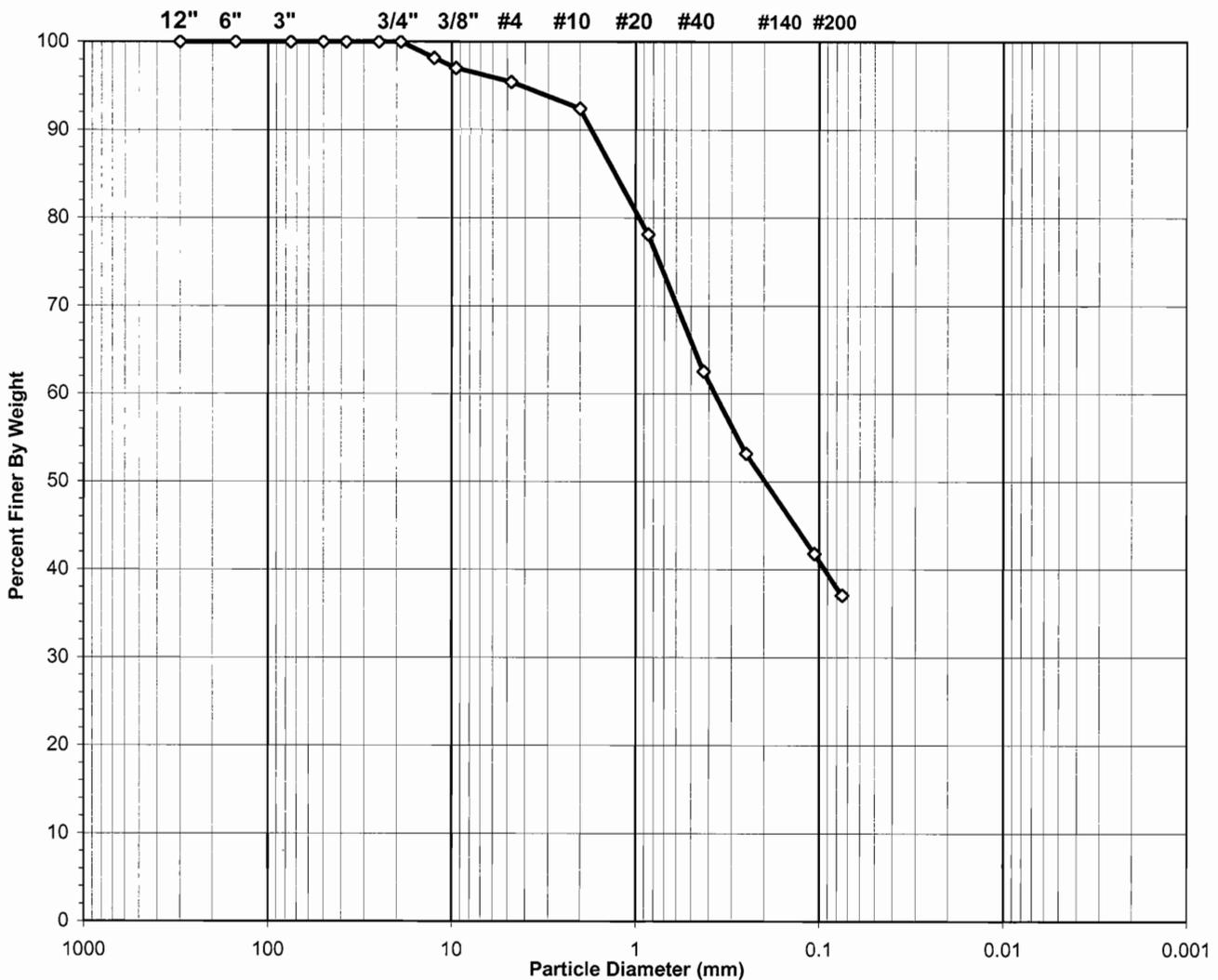
Tested By BA Date 6/23/2004 Checked By GEM Date 6-24-04

page 1 of 1 DCN: CT-S4B DATE: 10/8/2001 REVISION: 2

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

Client	G.N. RICHARDSON & ASSOC.	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCKPILE
Project No.	2004-559-01	Sample No.	EAST SIDE 2
Lab ID	2004-559-01-03	Soil Color	BROWN

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol **SC, TESTED**

USCS Classification **CLAYEY SAND**

Tested By KAW Date 6/18/2004 Checked By *gom* Date 6-24-04

WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	G.N. RICHARDSON & ASSOC.	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCKPILE
Project No.	2004-559-01	Sample No.	EAST SIDE 2
Lab ID	2004-559-01-03	Soil Color	BROWN

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	G-14	Tare No.	NA
Wgt. Tare + Wet Specimen (gm)	666.24	Wgt. Tare + Wet Specimen (gm)	NA
Wgt. Tare + Dry Specimen (gm)	599.62	Wgt. Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	152.98	Weight of Tare (gm)	NA
Weight of Water (gm)	66.62	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	446.64	Weight of Dry Soil (gm)	NA
Moisture Content (%)	14.9	Moisture Content (%)	NA

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	446.64
Dry Weight - 3/4" Sample (gm)	281.2	Weight of minus #200 material (gm)	165.41
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	281.23
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	8.31	1.9	1.9	98.1	98.1
3/8"	9.50	5.01	1.1	3.0	97.0	97.0
#4	4.75	7.09	1.6	4.6	95.4	95.4
#10	2.00	13.53	3.0	7.6	92.4	92.4
#20	0.850	63.79	14.3	21.9	78.1	78.1
#40	0.425	69.64	15.6	37.5	62.5	62.5
#60	0.250	41.79	9.4	46.8	53.2	53.2
#140	0.106	50.93	11.4	58.2	41.8	41.8
#200	0.075	21.14	4.7	63.0	37.0	37.0
Pan	-	165.41	37.0	100.0	-	-

Tested By **KAW** Date **6/18/2004** Checked By **GEM** Date **6-24-04**

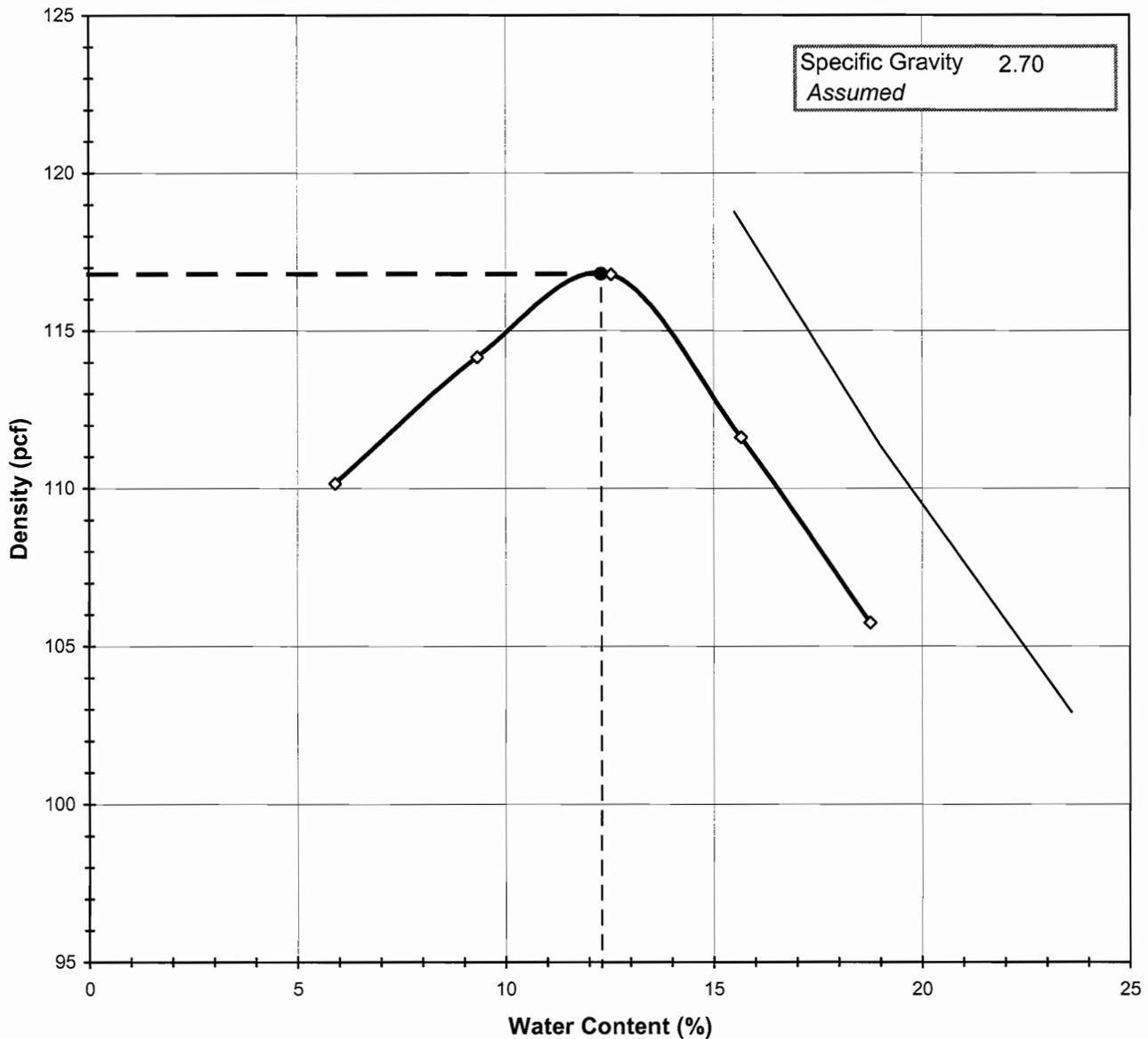
MOISTURE DENSITY RELATIONSHIP

ASTM D698-91 SOP-S12

Client	G.N. RICHARDSON & ASSOC.	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCK PLE
Project No.	2004-559-01	Sample No.	EAST SIDE 2
Lab ID	2004-559-01-03	Test Method	STANDARD

Visual Description BROWN CLAYEY SAND WITH GRAVEL

Optimum Water Content 12.3
Maximum Dry Density 116.8



Tested By ETS Date 06/17/04 Checked By DAJ Date 6-28-04

MOISTURE - DENSITY RELATIONSHIP

ASTM D698-91 SOP-S12

Client	G.N. RICHARDSON & ASSOC.	Boring No.	NA
Client Reference	RED ROCK C&D PHS. 1C-1	Depth (ft)	STOCK PLE
Project No.	2004-559-01	Sample No.	EAST SIDE 2
Lab ID	2004-559-01-03		

Visual Description BROWN CLAYEY SAND WITH GRAVEL

Total Weight of the Sample (gm)	20882	TestType	STANDARD
As Received Water Content(%)	NA	Rammer Weight (lbs)	5.5
Assumed Specific Gravity	2.70	Rammer Drop (in)	12
Percent Retained on 3/4"	0	Rammer Type	MECHANICAL
Percent Retained on 3/8"	2	Machine ID	R174
Percent Retained on #4	3	Mold ID	R172
Oversize Material	Not included	Mold diameter	4"
Procedure Used	A	Weight of the Mold	4223
		Volume of the Mold(cc)	940

Mold / Specimen

Point No.	1	2	3	4	5
Wt. of Mold & WS (gm)	5981	6104	6203	6168	6115
Wt. of Mold (gm)	4223	4223	4223	4223	4223
Wt. of WS	1758	1881	1980	1945	1892
Mold Volume (cc)	940	940	940	940	940

Moisture Content / Density

Tare Number	SS-4	SS-6	A-5	B-3	Z-14
Wt. of Tare & WS (gm)	476.02	432.86	510.67	452.25	470.42
Wt. of Tare & DS (gm)	455.08	404.56	464.89	404.29	412.06
Wt. of Tare (gm)	100.53	101.07	99.73	97.96	100.81
Wt. of Water (gm)	20.94	28.30	45.78	47.96	58.36
Wt. of DS (gm)	354.55	303.49	365.16	306.33	311.25

Wet Density (gm/cc)	1.87	2.00	2.11	2.07	2.01
Wet Density (pcf)	116.7	124.8	131.4	129.1	125.6
Moisture Content (%)	5.9	9.3	12.5	15.7	18.8
Dry Density (pcf)	110.1	114.2	116.8	111.6	105.7

Zero Air Voids

Moisture Content (%)	15.5	19.0	23.6
Dry Unit Weight (pcf)	118.8	111.4	102.9

Tested By ETS Date 06/17/04 Checked By DAJ Date 6-28-04

APPENDIX E.2

DAILY ACTIVITY LOGS AND IN- PLACE DENSITY TESTING



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: TUESDAY TIME(S) ON SITE: ARRIVED 1:00 DEPARTED 3:00	
GENERAL CONTRACTOR: WASTE INDUSTRIES		GENERAL CONTRACTOR'S REP.: BRYAN	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): N/A	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS:		TEMPERATURE:	F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 1 VOLVO HAUL TRUCK, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			
<ul style="list-style-type: none"> ▪ Geotechnics arrived on site and met with Bryan of Waste Industries and discussed what areas he had recently placed fill. Bryan stated he had placed approximately four feet of fill in the deepest section of the berm and approximately 2 feet in the deepest area of the cell floor. ▪ The materials consisted of red to brown clayey sands with some gravel and rock present. All fill was observed to be well compacted with no signs of rutting or pumping under loaded construction truck. ▪ Several tests were taken with nuclear densometer, results are attached. Samples for one point proctor evaluation were taken back to the lab to verify proctors being utilized. ▪ Bryan of Waste Industries requested Geotechnics return for testing the following week. He also stated the work would progress slowly due to the amount of equipment being used and to call next week before heading to site. 			
Prepared By: MPS	Date: 7/12/05	Reviewed By: KAW	Date: 8-8-05



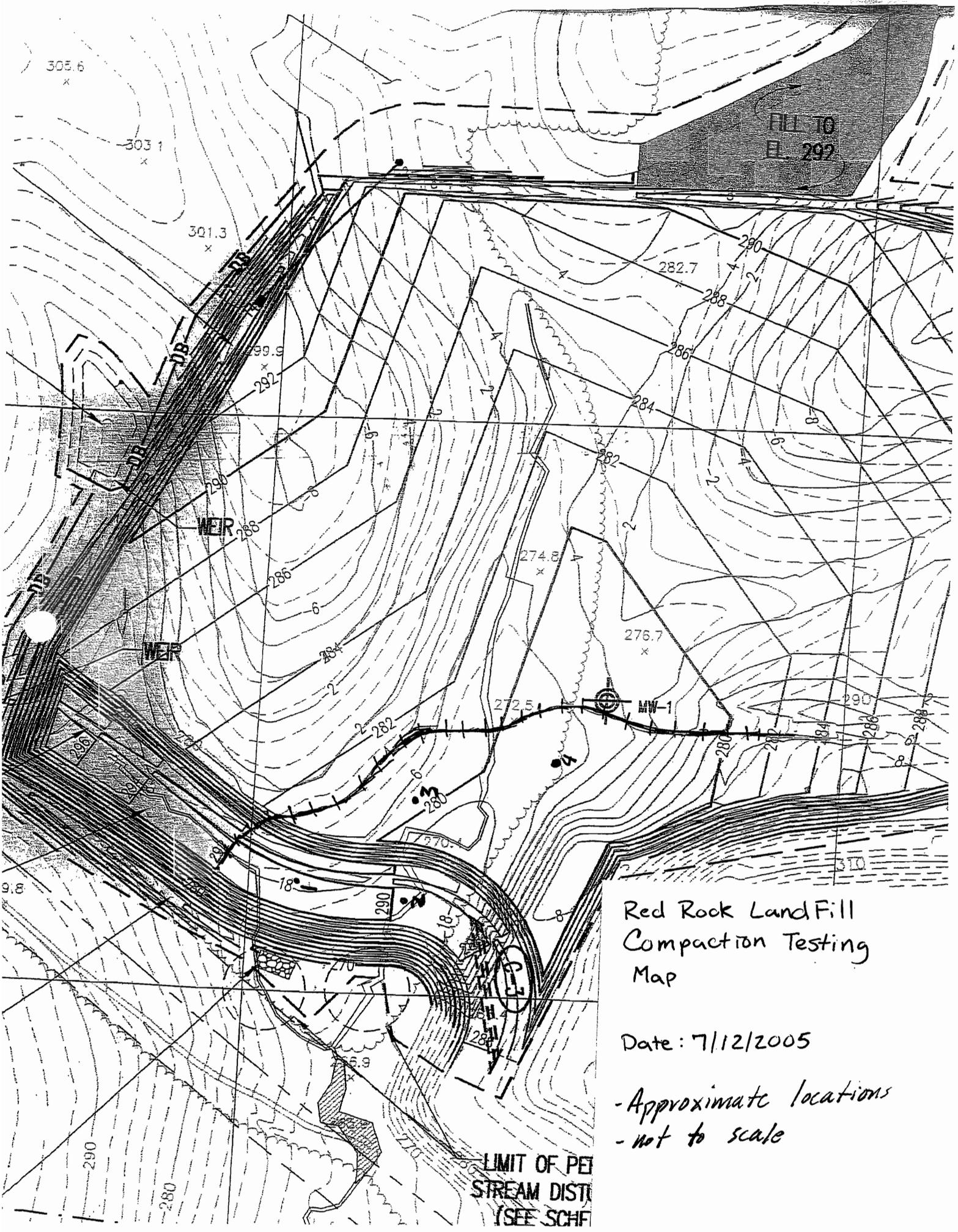
Nuclear Relative Compaction Test Data

Project Information			
Project:	Red Rock Land Fill	Tested By: MPS	Date: 7-12-2005
Client :	G.N. Richardson & Assoc.	Checked By: KAW	Date: 8-8-05
Project No:		Reviewed By:	Date:

Material & Equipment Information	
Borrow Source	On Site
Compaction Equipment	Sheep's Foot Roller and Hauling Traffic from a Volvo A30C Off Road Truck

Density Test Data										
Test Number	1	2	3	4	5	6	7	8	9	10
Location:	Refer to map	Refer to map	Refer to map	Refer to map						
Elevation	-17'	-18'	-2'	-1'						
Lift Thickness	12"	12"	12"	12"						
Rod Depth (inches)	12"	12"	12"	12"						
Density Count	1152	1417	1184	1406						
Wet Density (pcf)	133.3	125.0	132.1	125.7						
Moisture Count	125	149	155	819						
Moisture (pcf)	11.8	14.5	15.1	7.8						
Dry Density (pcf)	121.5	110.6	117.0	117.8						
Proctor ID Number	3	2	3	3						
Moisture (%)	9.7%	13.1%	12.9%	6.6%						
% Compaction	104	95	100	101						
Project Requirement %	95	95	95	95						
Comments										

Compaction Standards				
Proctor ID Number	Soil Description	Max. Dry Density (pcf)	Opt. Moisture Content (%)	
1	Red Clayey Sand w/ Gravel	129.5	7.9%	
2	Grey Brown Silt Sand	116.5	11.0%	
3	Brown Clayey Sand w/ Gravel	116.8	12.3%	
Gauge #	Density Standard	Moisture Standard		
35717	2486	565		



Red Rock Landfill
 Compaction Testing
 Map

Date: 7/12/2005

- Approximate locations
- not to scale

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Date 7/19/05

Log Number

Sheet

1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: TUESDAY	
		TIME(S) ON SITE: ARRIVED 1:00 DEPARTED 4:00	
GENERAL CONTRACTOR: WASTE INDUSTRIES		GENERAL CONTRACTOR'S REP.: BRYAN	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): N/A	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS:		TEMPERATURE:	F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 1 VOLVO HAUL TRUCK, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			
<ul style="list-style-type: none"> ▪ Geotechnics arrived on site and met with Bryan of Waste Industries and discussed what areas he had recently placed fill. ▪ The materials consisted of red to brown and some grey clayey sands with some gravel and rock present. All fill was observed to be well compacted with no signs of rutting or pumping under loaded construction truck. ▪ Several tests were taken with a nuclear densometer, results are attached. ▪ Bryan of Waste Industries requested Geotechnics return for testing the following week. 			
Prepared By: JGC	Date: 7/19/05	Reviewed By: KAW	Date: 8-8-05



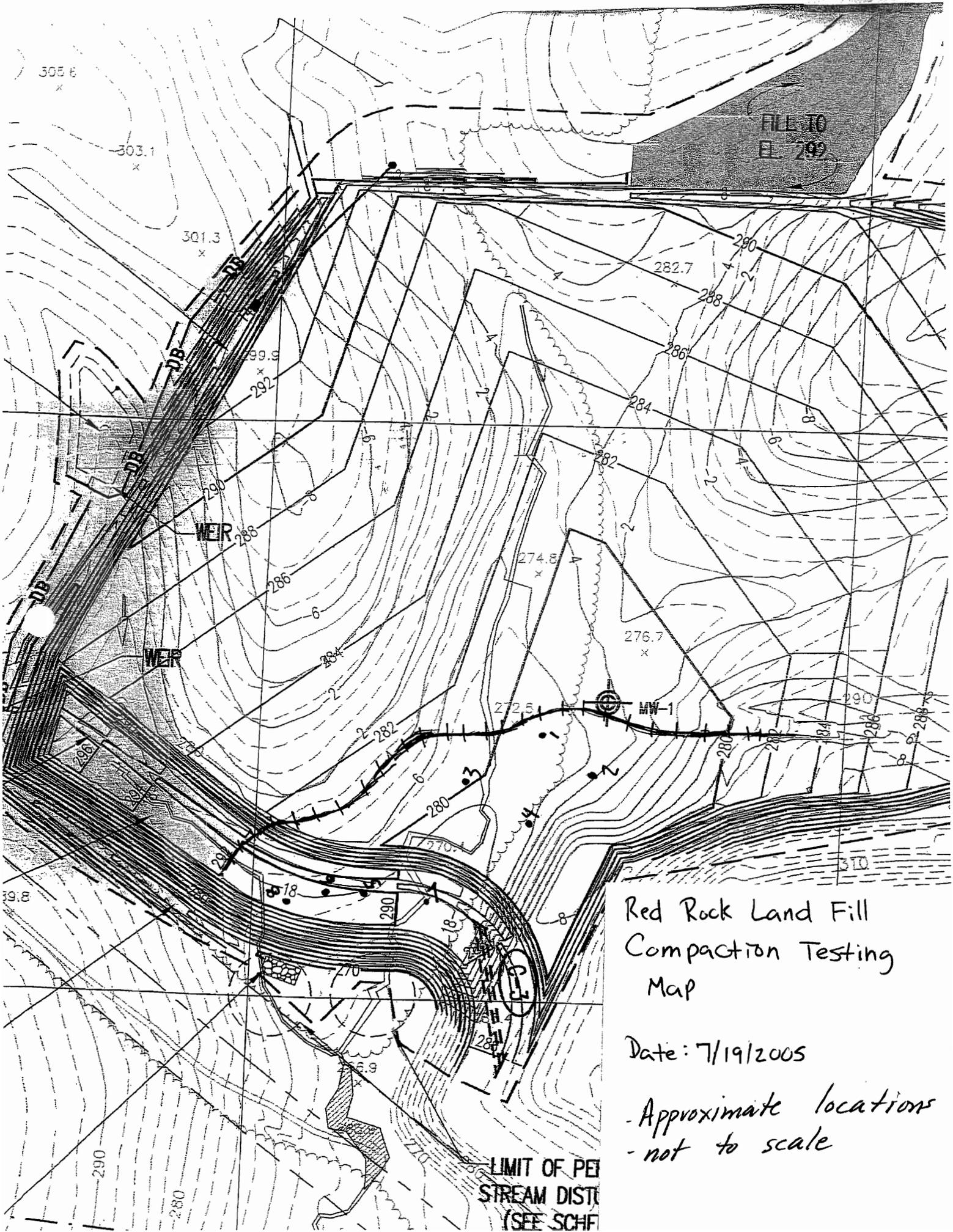
Nuclear Relative Compaction Test Data

Project Information			
Project:	Red Rock Land Fill	Tested By: JGC	Date: 7-19-2005
Client :	G.N. Richardson & Assoc.	Checked By: KAW	Date: 8-8-05
Project No:		Reviewed By:	Date:

Material & Equipment Information	
Borrow Source	On Site
Compaction Equipment	Sheep's Foot Roller and Hauling Traffic from a Volvo A30C Rock Truck

Density Test Data								
Test Number	1	2	3	4	5	6	7	8
Location:	Refer to map							
Elevation	Grade	Grade	Grade	Grade	-11'	-10'	-13'	-12'
Lift Thickness	12"	12"	12"	12"	12"	12"	12"	12"
Rod Depth (inches)	8"	8"	8"	8"	8"	8"	8"	8"
Density Count	1103	1127	1297	1093	1567	1149	1226	1726
Wet Density (pcf)	135.9	135.0	129.3	136.3	124.9	134.1	131.3	136.8
Moisture Count	53	67	93	53	146	86	136	62
Moisture (pcf)	3.7	5.2	8.0	3.7	13.8	7.3	12.7	4.7
Dry Density (pcf)	132.2	129.8	121.3	132.6	110.7	126.9	118.6	132.1
Proctor ID Number	1	1	2	1	2	1	3	1
Moisture (%)	2.8%	4.0%	6.6%	2.8%	12.8%	5.7%	10.7%	3.5%
% Compaction	102	100	104	102	95	98	102	102
Project Requirement %	95	95	95	95	95	95	95	95
Comments								

Compaction Standards			
Proctor ID Number	Soil Description	Max. Dry Density (pcf)	Opt. Moisture Content (%)
1	Red Clayey Sand w/ Gravel	129.5	7.9%
2	Grey Brown Silt Sand	116.5	11.0%
3	Brown Clayey Sand w/ Gravel	116.8	12.3%
Gauge #	Density Standard	Moisture Standard	
24656	2516	579	



Red Rock Land Fill
Compaction Testing
Map

Date: 7/19/2005

- Approximate locations
- not to scale

LIMIT OF PEI
STREAM DIST
(SEE SCHF



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: WEDNESDAY TIME(S) ON SITE: ARRIVED 3:00PM DEPARTED 4:30PM	
GENERAL CONTRACTOR: WASTE INDUSTRIES, INC.		GENERAL CONTRACTOR'S REP.: FRED COUNTS	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): N/A	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: PARTLY CLOUDY		TEMPERATURE:	95 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

- This Geotechnics representative was on-site at the above-specified location to perform density compaction testing.
- Five compaction density tests were performed along the south perimeter berm, which passed compaction requirements.
- Spoke with Bryan (Waste Industries) he stated that material had been placed in 18" lifts and proof rolled to 12" lifts.

Prepared By: **Matt Wilson-Gudat**

Date: **08/10/05**

Reviewed By: *MWS*

Date: *8-31-05*



Nuclear Relative Compaction Test Data

Project Information			
Project:	Red Rock Land Fill	Tested By:	MCW
Client :	G.N. Richardson & Assoc.	Checked By:	MRS
Project No:		Reviewed By:	
		Date:	8-10-2005
		Date:	8-31-05
		Date:	

Material & Equipment Information	
Borrow Source	On Site
Compaction Equipment	Sheep's Foot Roller and Hauling Traffic from a Volvo A30C Rock Truck

Density Test Data					
Test Number	1	2	3	4	5
Location:	Refer to map				
Elevation	-9	-8.5	-8	-7	-6
Lift Thickness	12"	12"	12"	12"	12"
Rod Depth (inches)	10"	10"	10"	10"	10"
Density Count	784	786	913	817	956
Wet Density (pcf)	134.0	134.0	128.6	132.3	126.9
Moisture Count	118	109	144	176	163
Moisture (pcf)	8.8	8.0	11.1	14.0	12.8
Dry Density (pcf)	125.2	126	117.5	118.5	114.1
Proctor ID Number	P-1	P-1	P-2	P-2	P-2
Moisture (%)	7.0%	6.4%	9.5%	11.8%	11.2%
% Compaction	96.7	97.3	100.9	101.6	98
Project Requirement %	95	95	95	95	95
Comments					

Compaction Standards			
Proctor ID Number	Soil Description	Max. Dry Density (pcf)	Opt. Moisture Content (%)
1	Red Clayey Sand w/ Gravel	129.5	7.9%
2	Grey Brown Silt Sand	116.5	11.0%

Gauge #	Density Standard	Moisture Standard
35717	2587	687



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: FRIDAY TIME(S) ON SITE: ARRIVED 10:15PM DEPARTED 1:45PM	
GENERAL CONTRACTOR: WASTE INDUSTRIES, INC.		GENERAL CONTRACTOR'S REP.: FRED COUNTS	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): N/A	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: PARTLY CLOUDY		TEMPERATURE:	80-87 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			

- This Geotechnics representative was on-site at the above-specified location to perform density compaction testing.
- Eleven compaction density tests were performed along the south perimeter berm, and the cell floor. All compaction tests performed today passed project requirements of 95% or higher.
- Q.A. was observed along the demolition access road along the north end of the cell in construction.
- This Geotechnics representative observed an off-road loaded Volvo A30C truck (Proof Roll) along the demolition road. There was no pumping of road observed while the (Proof Roll) was performed. The demolition access road is composed of soil, concrete block, asphalt, and brick.

Prepared By: Matt Wilson-Gudat	Date: 08/26/05	Reviewed By: <i>MWJ</i>	Date: 8-31-05
--------------------------------	----------------	-------------------------	---------------



Nuclear Relative Compaction Test Data

Project Information			
Project:	Red Rock Land Fill	Tested By: MCW	Date: 8-26-2005
Client :	G.N. Richardson & Assoc.	Checked By: <i>MMS</i>	Date: <i>8-31-05</i>
Project No:		Reviewed By:	Date:

Material & Equipment Information	
Borrow Source	On Site
Compaction Equipment	Sheep's Foot Roller and Hauling Traffic from a Volvo A30C Rock Truck

Density Test Data										
Test Number	1	2	3	4	5	6	7	8	9	10
Location:	Refer to map									
Elevation	-5	-5	-4	-4	-4	-5	-1	@grade	-1	@grade
Lift Thickness	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
Rod Depth (inches)	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"
Density Count	671	679	703	715	839	664	656	609	737	575
Wet Density (pcf)	134.0	133.3	132.3	131.5	126.2	134.3	134.4	137.2	130.5	139.2
Moisture Count	91	140	100	141	98	93	166	116	127	113
Moisture (pcf)	8.4	13.8	9.4	13.9	9.1	8.6	16.7	11.1	12.3	10.8
Dry Density (pcf)	125.6	119.5	123.0	117.1	117.1	125.8	117.7	126.1	118.2	128.4
Proctor ID Number	P-1	P-2	P-1	P-2	P-2	P-1	P-2	P-1	P-2	P-1
Moisture (%)	6.7%	11.5%	7.6%	11.8%	7.8%	6.8%	14.1%	8.8%	10.4%	8.4%
% Compaction	97.0	102.6	95	101.0	100.5	97.1	101.0	97.4	101.5	99.2
Project Requirement %	95	95	95	95	95	95	95	95	95	95
Comments										

Compaction Standards			
Proctor ID Number	Soil Description	Max. Dry Density (pcf)	Opt. Moisture Content (%)
1	Red Clayey Sand w/ Gravel	129.5	7.9%
2	Gray Brown Silt Sand	116.5	11.0%
Gauge #	Density Standard	Moisture Standard	
35717	2396	563	



Nuclear Relative Compaction Test Data

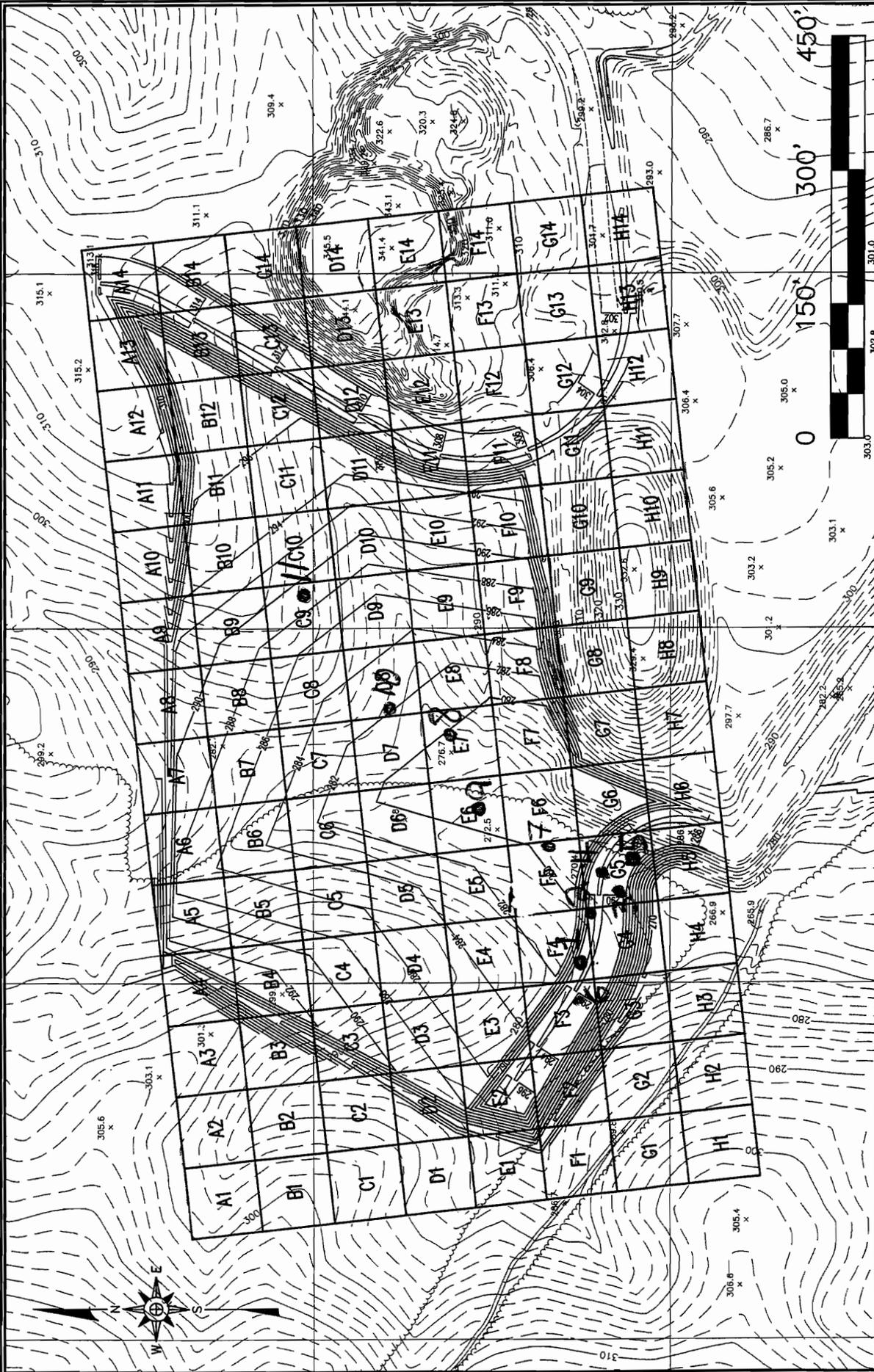
Project Information			
Project:	Red Rock Land Fill	Tested By:	MCW
Client :	G.N. Richardson & Assoc.	Checked By:	<i>MMW</i>
Project No:		Reviewed By:	
		Date:	8-26-2005
		Date:	8-31-05
		Date:	

Material & Equipment Information	
Borrow Source	On Site
Compaction Equipment	Sheep's Foot Roller and Hauling Traffic from a Volvo A30C Rock Truck

Density Test Data	
Test Number	1
Location:	Refer to map
Elevation	@grade
Lift Thickness	12"
Rod Depth (inches)	10"
Density Count	678
Wet Density (pcf)	133.3
Moisture Count	147
Moisture (pcf)	14.6
Dry Density (pcf)	118.8
Proctor ID Number	P-2
Moisture (%)	12.3%
% Compaction	101.9
Project Requirement %	95
Comments	

Compaction Standards			
Proctor ID Number	Soil Description	Max. Dry Density (pcf)	Opt. Moisture Content (%)
2	Gray Brown Silt Sand	116.5	11.0%
Gauge #	Density Standard	Moisture Standard	
35717	2396	563	

8-26-05



RED ROCK DISPOSAL, LLC
C&D LANDFILL PHASE 1C-1
SOIL TEST GRID

DRAWN BY: C.T.J.	CHECKED BY:	SCALE: AS SHOWN	FIGURE NO. 1
DATE: AUG. 2005	PROJECT NO. REDROCK 04-5	FILE NAME REDROCK-A0	

G. N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geotechnical Services
 14 N. Boylan Ave.
 Raleigh, N.C. 27603
 www.gnra.com
 ph: 919-828-0577
 fax: 919-828-3899

Date 8/30/05

Log Number 5

Sheet 1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: TUESDAY TIME(S) ON SITE: ARRIVED 2:45PM DEPARTED 5:00PM	
GENERAL CONTRACTOR: WASTE INDUSTRIES		GENERAL CONTRACTOR'S REP.: BRYAN	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): N/A	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: SUNNY		TEMPERATURE:	90 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 1 VOLVO HAUL TRUCK, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			
<ul style="list-style-type: none"> ▪ Geotechnics arrived on site and met with Bryan of Waste Industries and discussed what areas he had recently placed fill. ▪ The materials consisted of red to brown and some grey clayey sands with some gravel and rock present. All fill was observed to be well compacted with no signs of rutting or pumping under loaded construction truck. ▪ Several tests were taken in the cell floor and along the south west end of the southern perimeter berm with a nuclear densometer, results are attached. ▪ Geotechnics departed the site. 			
Prepared By: JGC		Date: 8/30/05	Reviewed By: <i>MMS</i> Date: 8-31-05



Nuclear Relative Compaction Test Data

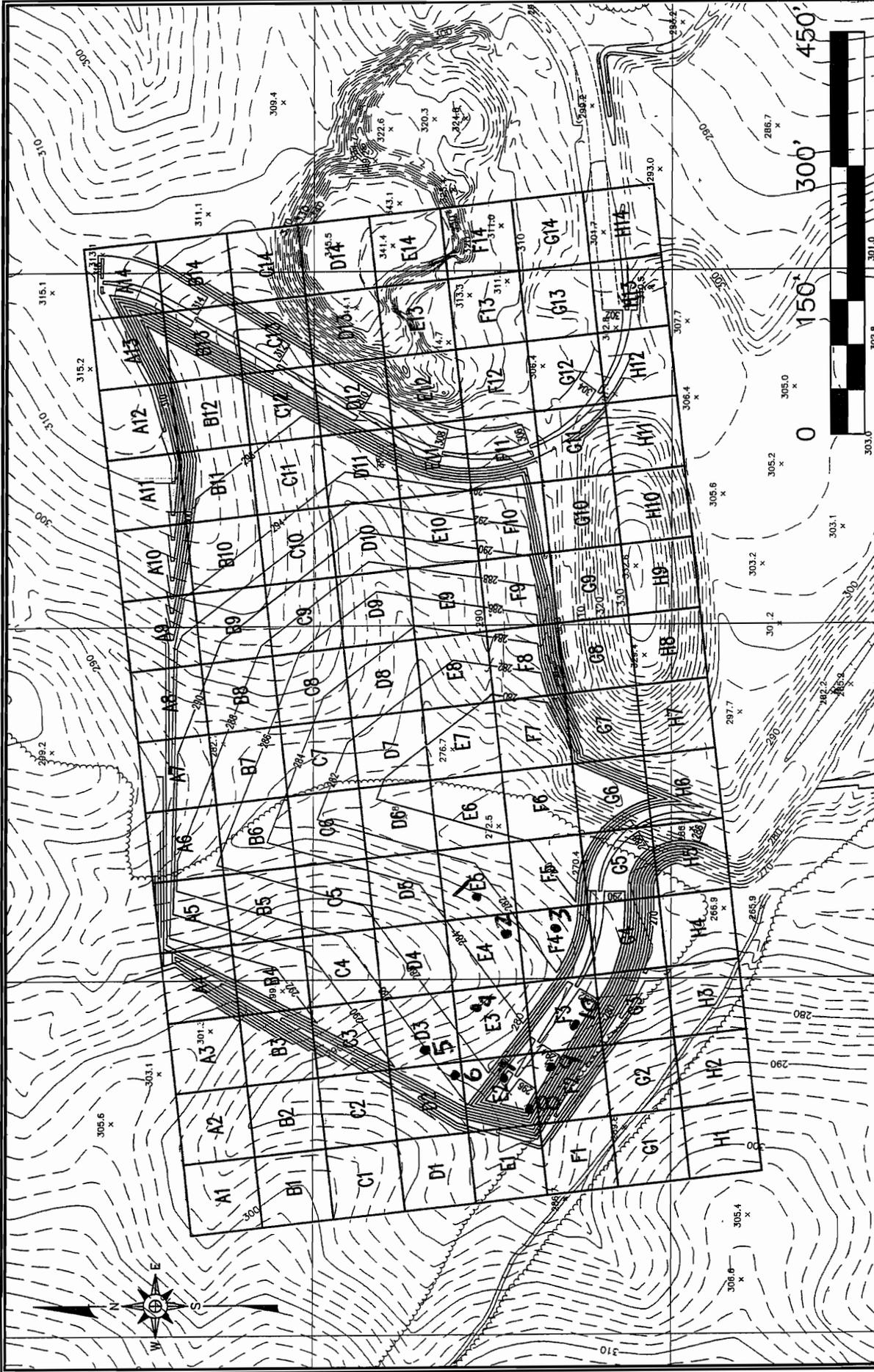
Project Information			
Project:	Red Rock Land Fill	JGC	Date: 8-30-2005
Client :	G.N. Richardson & Assoc.	<i>MWJ</i>	Date: <i>9-9-05</i>
Project No:			Date:

Material & Equipment Information	
Borrow Source	On Site
Compaction Equipment	Sheep's Foot Roller and Hauling Traffic from a Volvo A30C Rock Truck

Density Test Data										
Test Number	1	2	3	4	5	6	7	8	9	10
Location:	Refer to map									
Elevation	@grade	-3'	-3'							
Lift Thickness	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
Rod Depth (inches)	8"	6"	10"	10"	10"	10"	10"	10"	10"	10"
Density Count	1101	2031	886	876	875	970	894	928	1017	726
Wet Density (pcf)	143.2	137.3	130.3	130.9	131.1	127.4	130.0	128.7	125.4	137.4
Moisture Count	150	128	149	98	71	103	135	153	171	98
Moisture (pcf)	11.7	9.7	11.6	7.0	4.6	7.5	10.3	11.9	13.6	7.0
Dry Density (pcf)	131.5	127.6	118.7	123.9	126.4	119.9	119.7	116.7	111.9	130.4
Proctor ID Number	P-1	P-1	P-2	P-1	P-1	P-2	P-2	P-2	P-2	P-1
Moisture (%)	8.9%	7.6%	9.8%	5.7%	3.7%	6.2%	8.6%	10.2%	12.1%	5.4%
% Compaction	101.5%	98.5%	101.9%	95.7%	97.6%	102.9%	102.7%	100.2%	96.1%	100.7%
Project Requirement %	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Comments	Cell Floor	SW Berm	SW Berm	SW Berm	SW Berm					

Compaction Standards			
Proctor ID Number	Soil Description	Max. Dry Density (pcf)	Opt. Moisture Content (%)
1	Red Clayey Sand w/ Gravel	129.5	7.9%
2	Gray Brown Silt Sand	116.5	11.0%
Gauge #	Density Standard	Moisture Standard	
35717	2636	686	

81-0105



RED ROCK DISPOSAL, LLC C&D LANDFILL PHASE 1C-1 SOIL TEST GRID		G. N. RICHARDSON & ASSOCIATES, INC. Engineering and Geotechnical Services 14 N. Boylan Ave. Raleigh, N.C. 27603 www.gnra.com ph: 919-928-0577 fax: 919-928-3999	
DRAWN BY: C.T.J.	CHECKED BY:	SCALE: AS SHOWN	FIGURE NO. 1
DATE: AUG. 2005	PROJECT NO. REDROCK 04-5	FILE NAME REDROCK-A0	

Date 9/9/05
 Log Number 6
 Sheet 1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: FRIDAY	
		TIME(S) ON SITE: ARRIVED 10:30AM DEPARTED 12:00PM	
GENERAL CONTRACTOR: WASTE INDUSTRIES		GENERAL CONTRACTOR'S REP.: BRYAN	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): N/A	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: SUNNY		TEMPERATURE:	90 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 2 VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			
<ul style="list-style-type: none"> ▪ Geotechnics arrived on site and met with Bryan of Waste Industries and discussed what areas he had recently placed fill. ▪ The materials consisted of red to brown and some grey clayey sands with some gravel and rock present. All fill was observed to be well compacted with no signs of rutting or pumping under loaded construction traffic. ▪ Several tests were taken along the south west end of the southern perimeter berm with a nuclear densometer, results are attached. ▪ Geotechnics departed the site. 			
Prepared By: MPS		Date: 9/9/05	Reviewed By: <i>MPS</i>
			Date: 9-12-05



Nuclear Relative Compaction Test Data

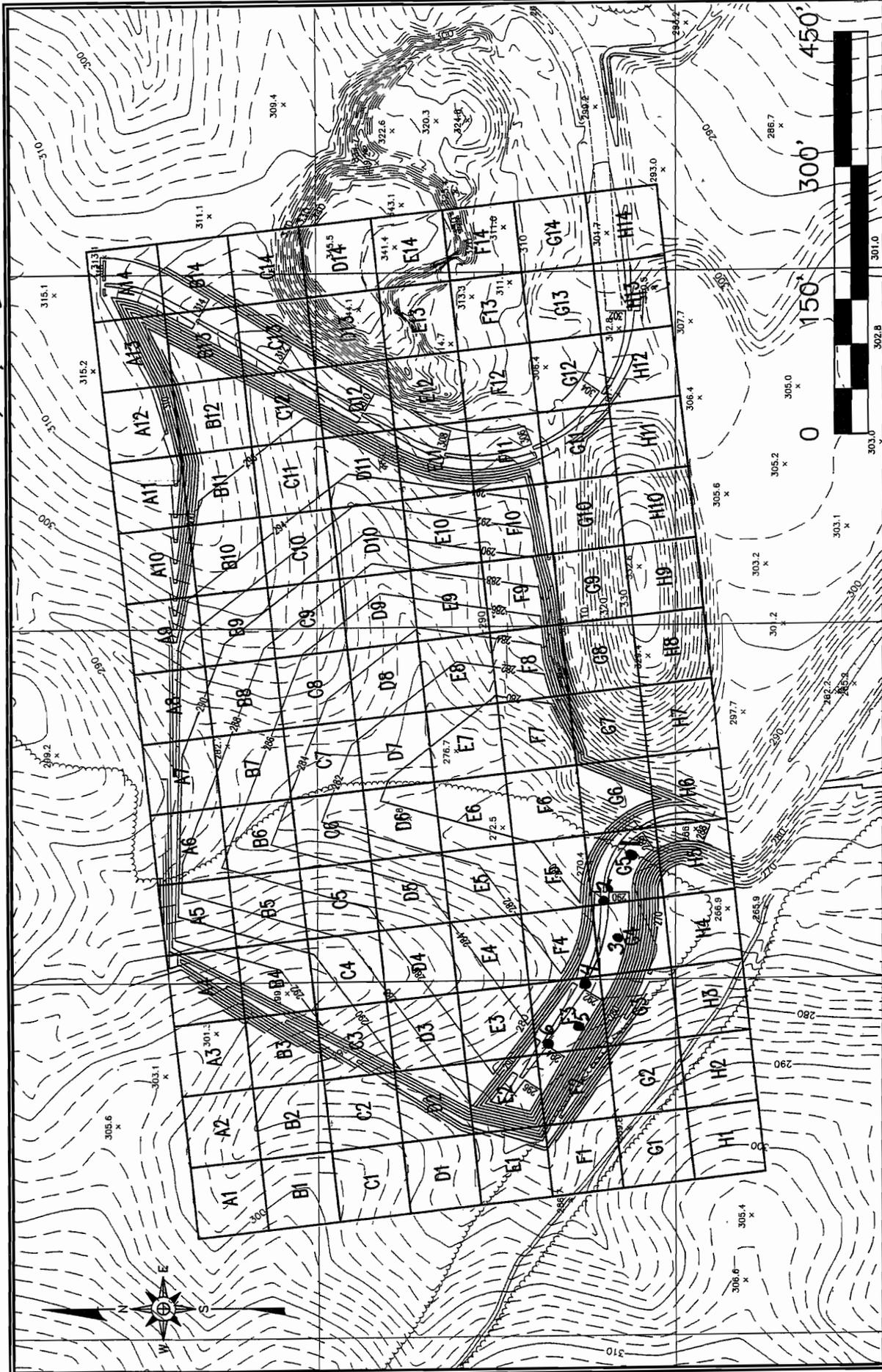
Project Information			
Project:	Red Rock Land Fill	Tested By:	MPS
Date:	9-9-2005	Checked By:	MWS
Client :	G.N. Richardson & Assoc.	Reviewed By:	
Project No:		Date:	9-9-05
		Date:	

Material & Equipment Information	
Borrow Source	On Site
Compaction Equipment	Sheep's Foot Roller and Hauling Traffic from a Volvo A30C Rock Truck

Density Test Data						
Test Number	1	2	3	4	5	6
Location:	Refer to map					
Elevation	@grade	-1'	@grade	-1'	@grade	-1'
Lift Thickness	12"	12"	12"	12"	12"	12"
Rod Depth (inches)	8"	10"	10"	8"	10"	10"
Density Count	2268	1508	2287	1527	1438	1453
Wet Density (pcf)	133.9	139.8	133.2	138.7	140.0	140.7
Moisture Count	258	185	237	291	214	217
Moisture (pcf)	9.9	6.1	9.0	11.2	7.4	7.5
Dry Density (pcf)	121.8	131.7	122.2	124.8	130.5	130.9
Proctor ID Number	2	1	2	2	1	1
Moisture (%)	12.1	8.1	13.9	11.0	9.7	9.9
% Compaction	104.5	101.7	104.9	107.1	100.8	101.1
Project Requirement %	95%	95%	95%	95%	95%	95%
Comments	Berm	Berm	Berm	Berm	Berm	Berm

Compaction Standards			
Proctor ID Number	Soil Description	Max. Dry Density (pcf)	Opt. Moisture Content (%)
1	Red Clayey Sand w/ Gravel	129.5	7.9%
2	Gray Brown Silt Sand	116.5	11.0%
Gauge #	Density Standard	Moisture Standard	
00017	2034	1183	

9-9-05



<p>RED ROCK DISPOSAL, LLC C&D LANDFILL PHASE 1C-1 SOIL TEST GRID</p>		<p>DRAWN BY: C.T.J.</p>	<p>CHECKED BY:</p>	<p>SCALE: AS SHOWN</p>	<p>FIGURE NO. 1</p>
<p>DATE: AUG. 2005</p>		<p>PROJECT NO. REDROCK 04-5</p>		<p>FILE NAME REDROCK-A0</p>	

G. N. RICHARDSON & ASSOCIATES, INC.
 14 N. Boylan Ave.
 Raleigh, N.C. 27603
 www.gnra.com
 ph: 919-828-0577
 fax: 919-828-3899



Date 9/19/05
 Log Number 7
 Sheet 1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: MONDAY TIME(S) ON SITE: ARRIVED 2:45PM DEPARTED 3:45PM	
GENERAL CONTRACTOR: JOHN A. POWELL CONTRACTING INC.		GENERAL CONTRACTOR'S REP.: JOHN POWELL	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): N/A	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: SUNNY		TEMPERATURE:	90 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 2 VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

- Geotechnics arrived on site and met with John Powell of John A. Powell Contracting Inc. and discussed what their projected schedule was, for the remainder of the new cell construction.
- The contractor was observed excavating an area of top soil material in the middle of the cell around grids B-6 thru D-6.
- Material was undercut to about a depth of 2', and was to be back filled the following day.
- Geotechnics departed the site.

Prepared By: JGC Date: 9/19/05 Reviewed By: *MRS* Date: *10-12-05*

Date 9/20/05
 Log Number 8
 Sheet 1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: TUESDAY TIME(S) ON SITE: ARRIVED 1:15PM DEPARTED 4:00PM	
GENERAL CONTRACTOR: JOHN A. POWELL CONTRACTING INC.		GENERAL CONTRACTOR'S REP.: JOHN POWELL	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): ROBERT	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: SUNNY		TEMPERATURE:	90 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 2 VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			

- Geotechnics arrived on site and met with Robert of John A. Powell Contracting Inc. and discussed the construction process for the day and what areas he had recently placed fill.
- The materials used as fill for the undercut areas, grids B6 thru D6, were obtained from areas of cut in grids F7 and F8. The materials consisted of red to brown and some grey clayey sands with some gravel and rock present. All fill was observed to be well compacted with no signs of rutting or pumping under loaded construction traffic.
- Several tests were taken in the areas of back fill with a nuclear densometer, results are attached.
- Geotechnics departed the site.

Prepared By: JGC Date: 9/20/05 Reviewed By: *RMS* Date: *10-12-05*



Nuclear Relative Compaction Test Data

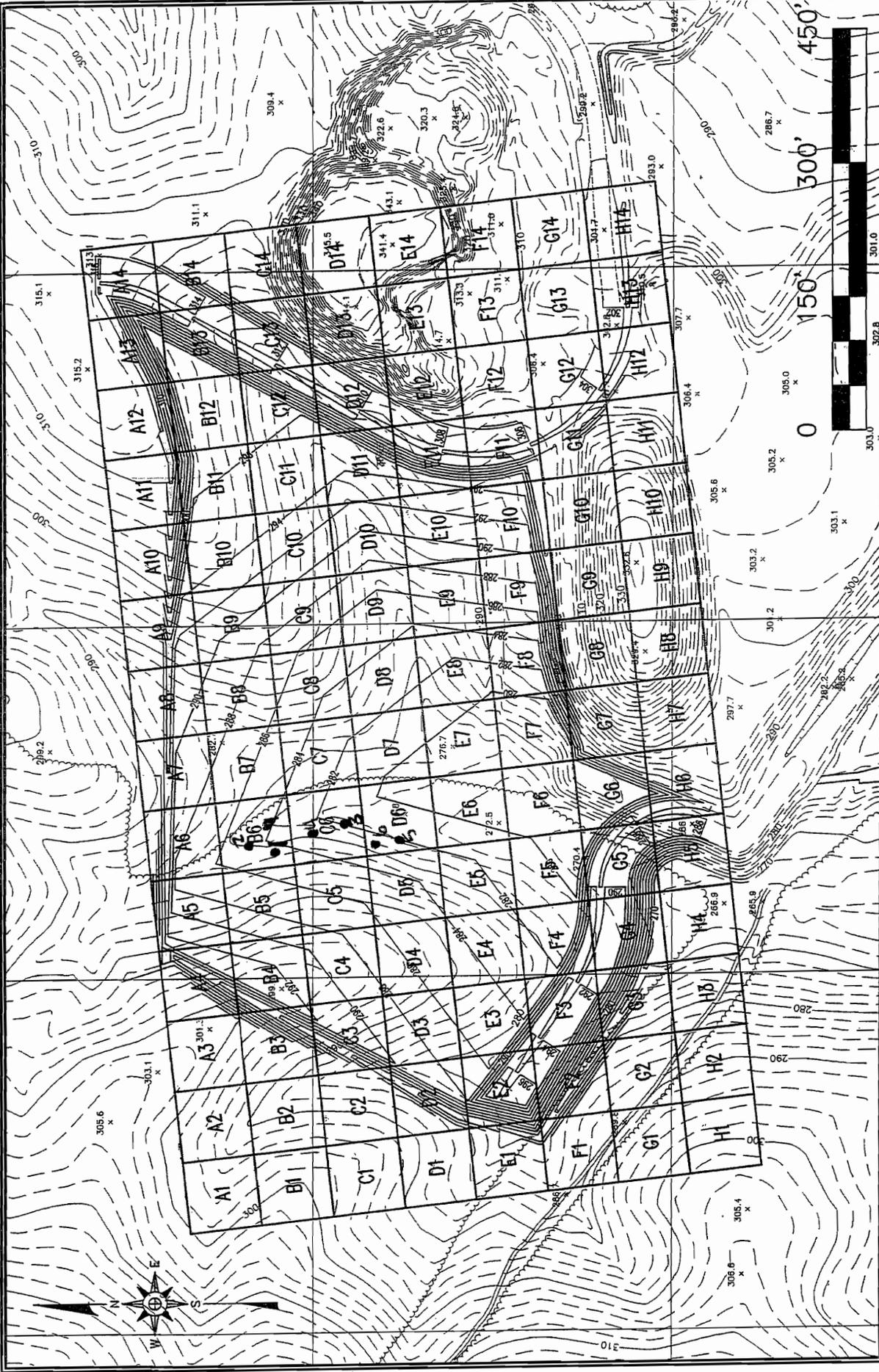
Project Information			
Project:	Red Rock Land Fill	JGC	Date: 9-20-2005
Client :	G.N. Richardson & Assoc.	<i>MRS</i>	Date: <i>10-12-05</i>
Project No:			Date:

Material & Equipment Information	
Borrow Source	On Site
Compaction Equipment	Sheep's Foot Roller and Hauling Traffic from a Volvo A30C Rock Truck

Density Test Data						
Test Number	1	2	3	4	5	6
Location:	Grid B6	Grid B6	Grid C6	Grid C6	Grid D6	Grid D6
Elevation	-1'	-2'	@grade	-1'	@grade	-1'
Lift Thickness	12"	12"	12"	12"	12"	12"
Rod Depth (inches)	12"	12"	8"	12"	12"	12"
Density Count	449	474	1393	591	642	485
Wet Density (pcf)	131.8	130.1	133.2	123.5	121.0	129.4
Moisture Count	108	97	108	80	84	97
Moisture (pcf)	7.9	7.0	7.9	5.4	5.8	7.0
Dry Density (pcf)	123.8	123.2	125.3	118.0	115.2	122.5
Proctor ID Number	1	1	1	2	2	2
Moisture (%)	6.4%	5.6%	6.3%	4.6%	5.0%	5.7%
% Compaction	95.6%	95.1%	96.7%	101.3%	98.9%	105.1%
Project Requirement %	95%	95%	95%	95%	95%	95%
Comments	Cell Floor					

Compaction Standards			
Proctor ID Number	Soil Description	Max. Dry Density (pcf)	Opt. Moisture Content (%)
1	Red Clayey Sand w/ Gravel	129.5	7.9%
2	Gray Brown Silt Sand	116.5	11.0%
Gauge #	Density Standard	Moisture Standard	
35717	2573	685	

9/20/05



<p>RED ROCK DISPOSAL, LLC C&D LANDFILL PHASE 1C-1 SOIL TEST GRID</p>		<p>DRAWN BY: C.T.J.</p>	<p>CHECKED BY:</p>	<p>SCALE: AS SHOWN</p>	<p>FIGURE NO. 1</p>
		<p>DATE: AUG. 2005</p>	<p>PROJECT NO. REDROCK 04-5</p>	<p>FILE NAME REDROCK-A0</p>	
<p>G. N. RICHARDSON & ASSOCIATES, INC. 14 N. Boylan Ave. Raleigh, N.C. 27603 www.gnra.com ph: 919-828-0577 fax: 919-828-3899</p>					

Date 9/21/05
 Log Number 9
 Sheet 1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: WEDNESDAY TIME(S) ON SITE: ARRIVED 9:15AM DEPARTED 10:00AM	
GENERAL CONTRACTOR: JOHN A. POWELL CONTRACTING INC.		GENERAL CONTRACTOR'S REP.: JOHN POWELL	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): ROBERT	

VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:

<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>

WEATHER CONDITIONS: PARTLY CLOUDY	TEMPERATURE:	90	F
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CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 2 VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER

CHANGES FROM PLANS AND SPECIFICATIONS	IMPORTANT TELEPHONE CALLS
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DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

- Geotechnics arrived on site and met with John Powell of John A. Powell Contracting Inc. and discussed the construction process for the day.
- John Powell said that he planned on fine grading the areas that were not under water.
- Majority of the cell floor at the 280 elevation had been fine bladed but was under standing water from the storm the night before.
- The large area of standing water was observed being pumped out.
- Geotechnics departed the site.

Prepared By: JGC	Date: 9/21/05	Reviewed By: <i>MWS</i>	Date: <i>10-12-05</i>
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Date 9/26/05
 Log Number 11
 Sheet 1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: MONDAY TIME(S) ON SITE: ARRIVED 2:30PM DEPARTED 4:30PM	
GENERAL CONTRACTOR: JOHN A. POWELL CONTRACTING INC.		GENERAL CONTRACTOR'S REP.: JOHN POWELL	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): ROBERT	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: SUNNY		TEMPERATURE:	90 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 2 VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

- Geotechnics arrived on site and met with John Powell of John A. Powell Contracting Inc. to discuss the construction process for the day.
- John A. Powell Contracting was observed placing fill in grids A5 thru A8.
- The fill material was observed being excavated from areas of cut in the south west end of the cell floor.
- Approximately 2' to 3' of fill is needed in grids A5 thru A8.
- John A. Powell Contracting was observed placing and compacting fill at the proper lift thickness.
- Geotechnics departed the site.

Prepared By: JGC Date: 9/26/05 Reviewed By: *MPS* Date: 10-12-05

Date 9/28/05
 Log Number 12a
 Sheet 1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: WEDNESDAY TIME(S) ON SITE: ARRIVED 9:30AM DEPARTED 11:30AM	
GENERAL CONTRACTOR: JOHN A. POWELL CONTRACTING INC.		GENERAL CONTRACTOR'S REP.: JOHN POWELL	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): ROBERT	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: SUNNY		TEMPERATURE:	90 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 2 VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			

- Geotechnics arrived on site and met with Robert of John A. Powell Contracting Inc. to discuss the construction process for the day and what areas he had recently placed fill.
- Robert said that they planned on spend majority of their time fine grading the cell floor out to the 286 elevation line.
- Approximately 1' of fill had been placed and compacted in grids A5 thru A8, and was ready for density testing. The materials consisted of red to brown and some grey clayey sands with some gravel and rock present.
- Several tests were taken in the areas of back fill with a nuclear densometer, results are attached.
- Geotechnics departed the site.

Prepared By: JGC Date: 9/28/05 Reviewed By: *MMJ* Date: *10-12-05*



Nuclear Relative Compaction Test Data

Project Information			
Project:	Red Rock Land Fill	Tested By: JGC	Date: 9-28-2005
Client :	G.N. Richardson & Assoc.	Checked By: <i>AMMS</i>	Date: <i>10-12-05</i>
Project No:		Reviewed By:	Date:

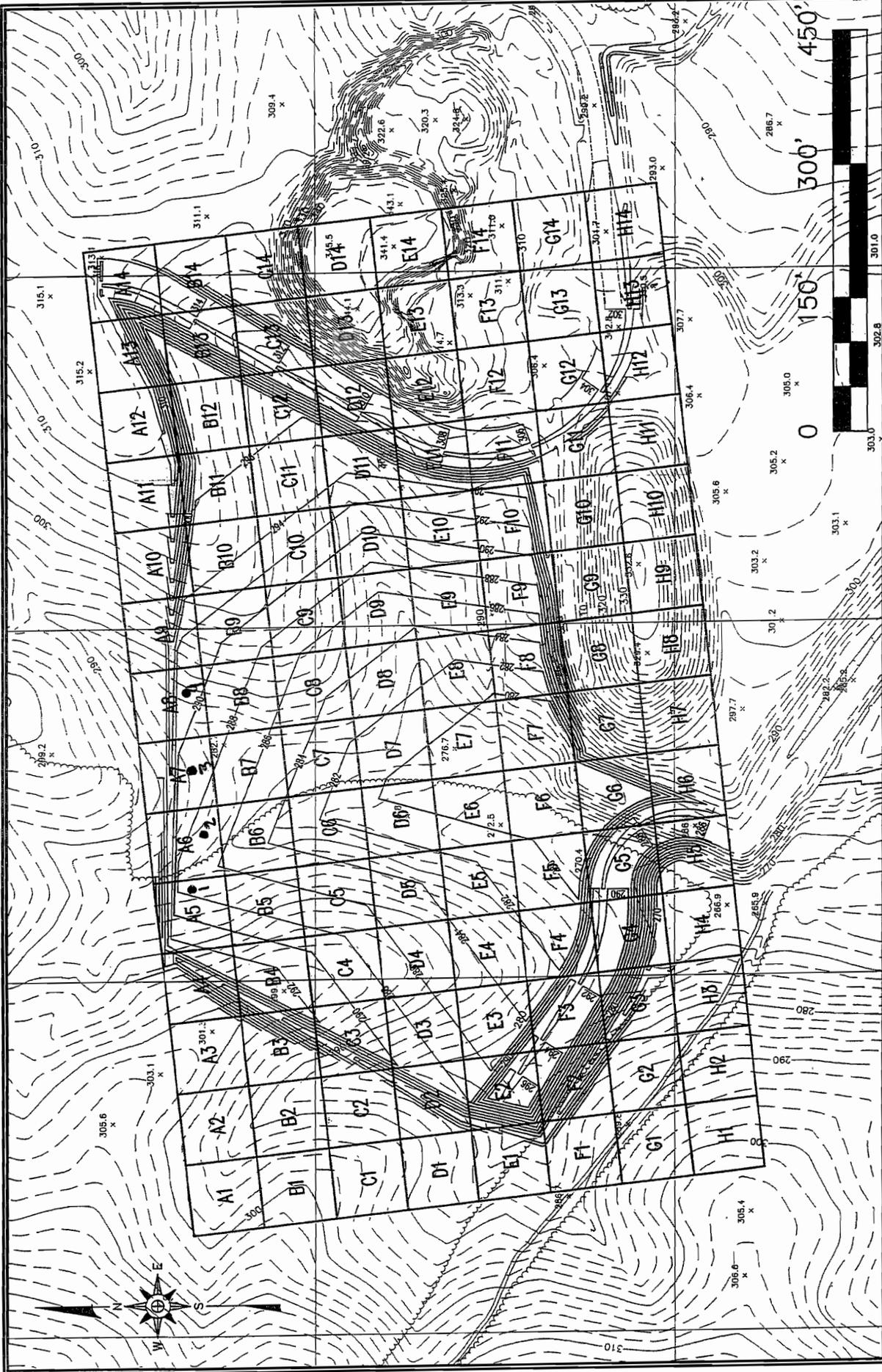
Material & Equipment Information	
Borrow Source	On Site
Compaction Equipment	Sheep's Foot Roller and Hauling Traffic from a Volvo A30C Rock Truck

Density Test Data				
Test Number	1	2	3	4
Location:	Grid A5	Grid A6	Grid A7	Grid A8
Elevation	-2'	-3'	-2'	-1'
Lift Thickness	12"	12"	12"	12"
Rod Depth (inches)	12"	12"	12"	12"
Density Count	545	428	560	393
Wet Density (pcf)	126.4	134.0	125.8	136.8
Moisture Count	146	114	109	91
Moisture (pcf)	11.3	8.4	8.0	6.4
Dry Density (pcf)	115.2	125.6	117.8	130.4
Proctor ID Number	2	1	2	1
Moisture (%)	9.8%	6.7%	6.8%	4.9%
% Compaction	98.9%	96.9%	101.1%	100.7%
Project Requirement %	95%	95%	95%	95%
Comments	Cell Floor	Cell Floor	Cell Floor	Cell Floor

Compaction Standards			
Proctor ID Number	Soil Description	Max. Dry Density (pcf)	Opt. Moisture Content (%)
1	Red Clayey Sand w/ Gravel	129.5	7.9%
2	Gray Brown Silt Sand	116.5	11.0%

Gauge #	Density Standard	Moisture Standard
35717	2642	688

9/28/05



RED ROCK DISPOSAL, LLC
C&D LANDFILL PHASE 1C-1
SOIL TEST GRID

DRAWN BY: C.T.J.	CHECKED BY:	SCALE: AS SHOWN	FIGURE NO. 1
DATE: AUG. 2005	PROJECT NO. REDROCK 04-5	FILE NAME REDROCK-A0	

G. N. RICHARDSON & ASSOCIATES, INC.
 14 N. Boylan Ave.
 Raleigh, N.C. 27603
 www.gnra.com
 ph: 919-828-0577
 fax: 919-828-3899

Date 9/29/05
 Log Number 12b
 Sheet 1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: THURSDAY TIME(S) ON SITE: ARRIVED 11:00AM DEPARTED 11:45AM	
GENERAL CONTRACTOR: JOHN A. POWELL CONTRACTING INC.		GENERAL CONTRACTOR'S REP.: JOHN POWELL	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): ROBERT	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: PARTLY CLOUDY		TEMPERATURE:	80 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 2 VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			

- Geotechnics arrived on site and met with John Powell of John A. Powell Contracting Inc. to discuss the construction process for the day.
- John said that since the track hoe was still out of commission, they would not proceed with any fill, and expects to need testing the first of next week.
- John of Surveying Solutions, stated that majority of the cell floor was on grade.
- Geotechnics departed the site.

Prepared By: **MCW** Date: **9/2905** Reviewed By: *MMS* Date: *10-12-05*

Date 10/04/05
 Log Number 13
 Sheet 1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: TUESDAY	
		TIME(S) ON SITE: ARRIVED 10:15AM DEPARTED 12:15PM	
GENERAL CONTRACTOR: JOHN A. POWELL CONTRACTING INC.		GENERAL CONTRACTOR'S REP.: JOHN POWELL	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): ROBERT	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: SUNNY		TEMPERATURE:	90 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 2 VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

- Geotechnics arrived on site and met with John Powell of John A. Powell Contracting Inc. to discuss the construction process for the day.
- The cell floor was surveyed and all grades out to the 286 elevation line were on grade, and majority of the 288 elevation line had been fine graded.
- John A Powell Contracting was observed fine grading areas of the 290 elevation line, and placing fill in grids A5 thru A8.
- Approximately 1' to 2' of fill is still required in grids A5 thru A8.
- John A. Powell Contracting was observed placing and compacting fill at the proper lift thickness.
- Geotechnics departed the site.

Prepared By: JGC	Date: 10/04/05	Reviewed By: <i>MMS</i>	Date: 10-12-05
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Nuclear Relative Compaction Test Data

Project Information			
Project:	Red Rock Land Fill	Tested By: JGC	Date: 10-05-2005
Client :	G.N. Richardson & Assoc.	Checked By: <i>Mps</i>	Date: <i>10-12-05</i>
Project No:		Reviewed By:	Date:

Material & Equipment Information	
Borrow Source	On Site
Compaction Equipment	Sheep's Foot Roller and Hauling Traffic from a Volvo A30C Rock Truck

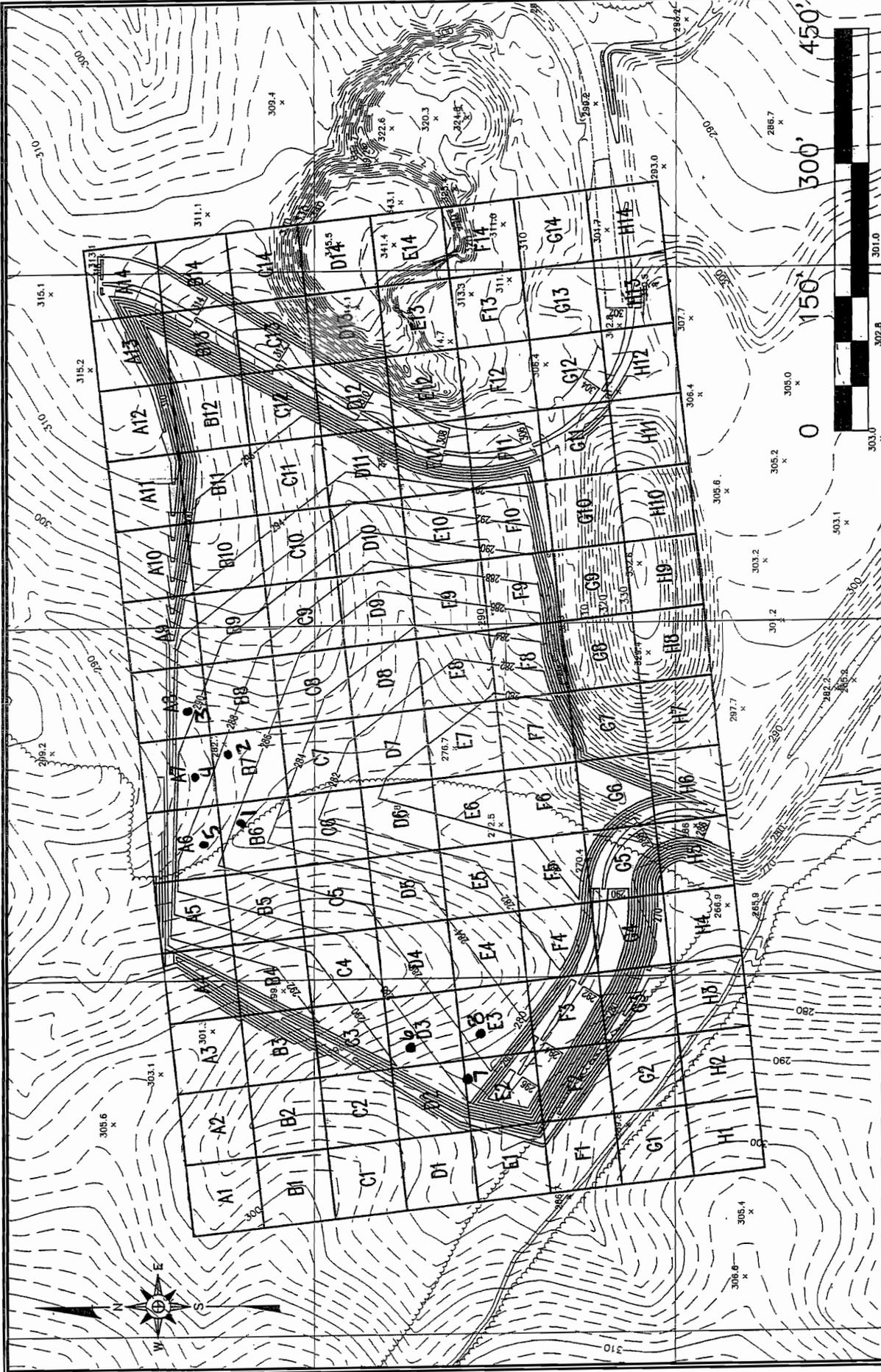
Density Test Data									
Test Number	1	2	3	4	5	6	7	8	
Location:	Grid B6	Grid B7	Grid A8	Grid A7	Grid A6	Grid D3	Grid E2	Grid E3	
Elevation	@ Grade 12"	@ Grade 12"	@ Grade 12"	-1' 12"	-2' 12"	@ Grade 12"	@ Grade 12"	@ Grade 12"	
Lift Thickness	12"	10"	12"	12"	12"	10"	10"	12"	
Rod Depth (inches)	431	948	432	430	381	904	925	599	
Density Count	134.0	128.4	133.9	134.0	137.8	130.0	129.2	123.7	
Wet Density (pcf)	68	56	79	89	80	67	78	108	
Moisture Count	4.3	3.3	5.3	6.2	5.4	4.3	5.2	7.9	
Dry Density (pcf)	129.7	125.2	128.6	127.8	132.4	125.8	123.9	115.8	
Proctor ID Number	1	1	1	1	1	1	1	2	
Moisture (%)	3.3%	2.6%	4.1%	4.9%	4.1%	3.4%	4.2%	6.8%	
% Compaction	100.1%	96.7%	99.3%	98.7%	102.2%	97.1%	95.7%	99.4%	
Project Requirement %	95%	95%	95%	95%	95%	95%	95%	95%	
Comments	Cell Floor	Cell Floor	Cell Floor	Cell Floor	Cell Floor	Cell Floor	Cell Floor	Cell Floor	

Compaction Standards			
Proctor ID Number	Soil Description	Max. Dry Density (pcf)	Opt. Moisture Content (%)
1	Red Clayey Sand w/ Gravel	129.5	7.9%
2	Gray Brown Silt Sand	116.5	11.0%

Gauge #	Density Standard	Moisture Standard
35717	2641	687

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10-5-05



<p>RED ROCK DISPOSAL, LLC C&D LANDFILL PHASE 1C-1 SOIL TEST GRID</p>		<p>DRAWN BY: C.T.J.</p>	<p>CHECKED BY:</p>	<p>SCALE: AS SHOWN</p>	<p>FIGURE NO. 1</p>
<p>DATE: AUG. 2005</p>		<p>PROJECT NO. REDROCK 04-5</p>		<p>FILE NAME REDROCK-A0</p>	
<p>G. N. RICHARDSON & ASSOCIATES, INC. Engineering and Geologic Services 14 N. Boylan Ave. Raleigh, N.C. 27603 www.gnra.com ph: 919-828-0577 fax: 919-828-3899</p>					

Date 10/06/05
 Log Number 15
 Sheet 1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: THURSDAY	
		TIME(S) ON SITE: ARRIVED 9:45AM DEPARTED 11:45AM	
GENERAL CONTRACTOR: JOHN A. POWELL CONTRACTING INC.		GENERAL CONTRACTOR'S REP.: JOHN POWELL	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): ROBERT	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: SUNNY		TEMPERATURE:	90 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 2 VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			

- Geotechnics arrived on site and met with Robert of John A. Powell Contracting Inc. to discuss the construction process for the day and what areas he had recently placed fill.
- Approximately 1' of fill had been placed and compacted in grids A5 thru A7, and was ready for density testing. The materials consisted of red to brown and some grey clayey sands with some gravel and rock present.
- Several tests were taken in the areas of fill with a nuclear densometer, results are attached.
- Geotechnics departed the site.

Prepared By: JGC	Date: 10/06/05	Reviewed By:	Date:
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Nuclear Relative Compaction Test Data

Project Information			
Project:	Red Rock Land Fill	Tested By: JGC	Date: 10-06-2005
Client :	G.N. Richardson & Assoc.	Checked By: <i>MPS</i>	Date: <i>10-12-05</i>
Project No:		Reviewed By:	Date:

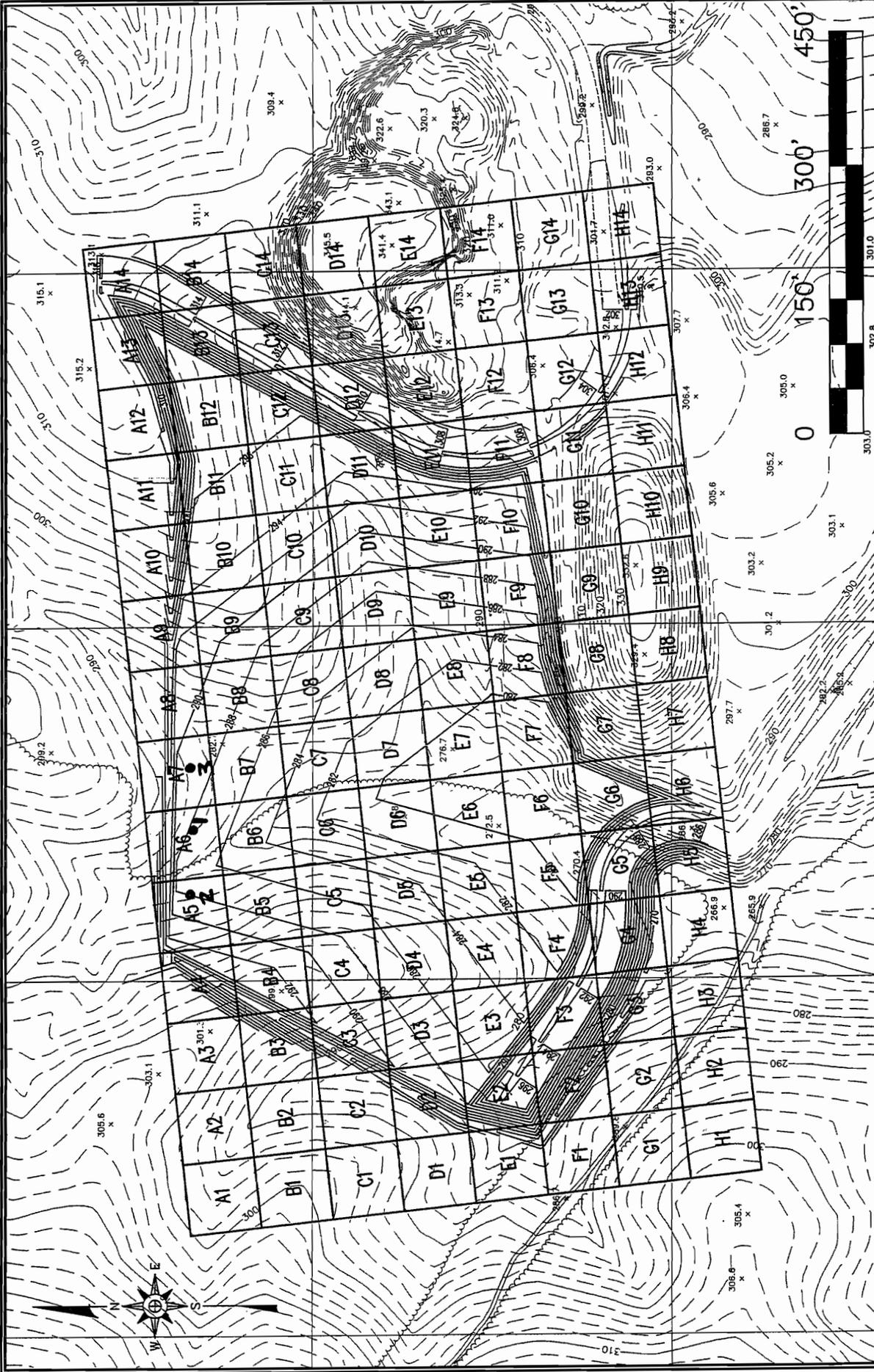
Material & Equipment Information	
Borrow Source	On Site
Compaction Equipment	Sheep's Foot Roller and Hauling Traffic from a Volvo A30C Rock Truck

Density Test Data			
Test Number	1	2	3
Location:	Grid A6	Grid A5	Grid A7
Elevation	-1'	-1'	@ Grade
Lift Thickness	12"	12"	12"
Rod Depth (inches)	12"	10"	12"
Density Count	448	1105	687
Wet Density (pcf)	132.0	122.3.0	138.9
Moisture Count	96	84	53
Moisture (pcf)	6.8	5.8	3.0
Dry Density (pcf)	125.2	116.5	135.9
Proctor ID Number	1	2	1
Moisture (%)	5.5%	5.0%	2.2%
% Compaction	96.7%	100.0%	104.9%
Project Requirement %	95%	95%	95%
Comments	Cell Floor	Cell Floor	Cell Floor

Compaction Standards			
Proctor ID Number	Soil Description	Max. Dry Density (pcf)	Opt. Moisture Content (%)
1	Red Clayey Sand w/ Gravel	129.5	7.9%
2	Gray Brown Silt Sand	116.5	11.0%

Gauge #	Density Standard	Moisture Standard
35717	2587	687

10/6/05



RED ROCK DISPOSAL, LLC C&D LANDFILL PHASE 1C-1 SOIL TEST GRID		G. N. RICHARDSON & ASSOCIATES, INC. 14 N. Boylan Ave. Raleigh, N.C. 27603 www.gnra.com ph: 919-828-0577 fax: 919-828-3899	
DRAWN BY: C.T.J.	CHECKED BY:	SCALE: AS SHOWN	FIGURE NO. 1
DATE: AUG. 2005	PROJECT NO. REDROCK 04-5	FILE NAME REDROCK-A0	

Date 10/12/05

Log Number 16

Sheet

1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: WEDNESDAY TIME(S) ON SITE: ARRIVED 9:45AM DEPARTED 10:15AM	
GENERAL CONTRACTOR: JOHN A. POWELL CONTRACTING INC.		GENERAL CONTRACTOR'S REP.: JOHN POWELL	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): ROBERT	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: PARTLY CLOUDY		TEMPERATURE:	80 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 2 VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			
<ul style="list-style-type: none"> ▪ Geotechnics arrived on site to see what progress, if any, had been made due to the rainy conditions from the past 4 to 5 days. ▪ Upon arrival no representatives from John A. Powell Contracting Inc were present on the site. ▪ Standing water was observed to be out past the 284 elevation line down in the cell floor. ▪ Geotechnics departed the site. 			
Prepared By: JGC	Date: 10/12/05	Reviewed By: <i>NHS</i>	Date: <i>10-20-05</i>

Date 10/17/05

Log Number 17

Sheet 1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: MONDAY TIME(S) ON SITE: ARRIVED 10:45AM DEPARTED 11:45AM	
GENERAL CONTRACTOR: JOHN A. POWELL CONTRACTING INC.		GENERAL CONTRACTOR'S REP.: JOHN POWELL	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): ROBERT	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: SUNNY		TEMPERATURE:	80 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 2 VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			
<ul style="list-style-type: none"> ▪ Geotechnics arrived on site and met with John Powell to discuss the construction schedule for the week. ▪ After speaking with John, it was brought to my attention that the service road on the north east side of the cell was placed approximately 10' to 15' off from the site plans. ▪ John A. Powell Contracting Inc was observed extracting cut and fine grading the north east corner of the cell floor. ▪ Standing water was observed to be out past the 282 elevation line down in the cell floor. ▪ Geotechnics departed the site. 			
Prepared By: JGC		Date: 10/17/05	Reviewed By: <i>AMS</i> Date: <i>10-20-05</i>

Date 10/19/05

Log Number 18

Sheet

1 of 1



FIELD ACTIVITY DAILY LOG

PROJECT NAME: RED ROCK LANDFILL		PROJECT NO.	
CLIENT NAME: G. N. RICHARDSON & ASSOCIATES		CLIENT CONTACT: MR. STACEY SMITH	
SITE LOCATION: WAKE COUNTY, NORTH CAROLINA		WEEKDAY: WEDNESDAY TIME(S) ON SITE: ARRIVED 9:00AM DEPARTED 11:00AM	
GENERAL CONTRACTOR: JOHN A. POWELL CONTRACTING INC.		GENERAL CONTRACTOR'S REP.: JOHN POWELL	
SPECIALTY CONTRACTOR: N/A		SPECIALTY CONTRACTOR'S REP. (FOREMAN/SUPT.): ROBERT	
VISITORS AND OTHER FIRM(S) REPRESENTED ON SITE:			
<u>FIRM NAME</u>	<u>REPRESENTATIVE'S TITLE</u>	<u>REPRESENTATIVE'S NAME</u>	
WEATHER CONDITIONS: SUNNY		TEMPERATURE:	80 F
CONTRACTOR'S EQUIPMENT: CAT D6 DOZER, 2 VOLVO HAUL TRUCKS, SHEEPS FOOT ROLLER			
CHANGES FROM PLANS AND SPECIFICATIONS		IMPORTANT TELEPHONE CALLS	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			
<ul style="list-style-type: none"> ▪ Geotechnics arrived on site and met with Robert of John A. Powell Contracting Inc. to discuss the construction process for the day. ▪ Robert informed me that the area of cut on the west side of the cell was no longer required to be cut out due to the presence of rock; instead it was to be fine graded at the existing elevations. ▪ John A. Powell Contracting Inc was observed fine grading the North West corner of the cell floor. ▪ Some additional density test were performed along cell floor, and the material present consisted of red to brown and some grey clayey sands with some gravel and rock present. ▪ Several tests were taken in the areas of fill with a nuclear densometer, results are attached. ▪ Standing water was observed being pumped out of the cell floor and dumped on the back side of the southern berm. ▪ Geotechnics departed the site. 			
Prepared By: JGC	Date: 10/19/05	Reviewed By: <i>AMS</i>	Date: 10-20-05



Nuclear Relative Compaction Test Data

Project Information			
Project:	Red Rock Land Fill	Tested By:	JGC
Client:	G.N. Richardson & Assoc.	Checked By:	AMS
Project No:		Reviewed By:	
		Date:	10-19-2005
		Date:	10-20-05
		Date:	

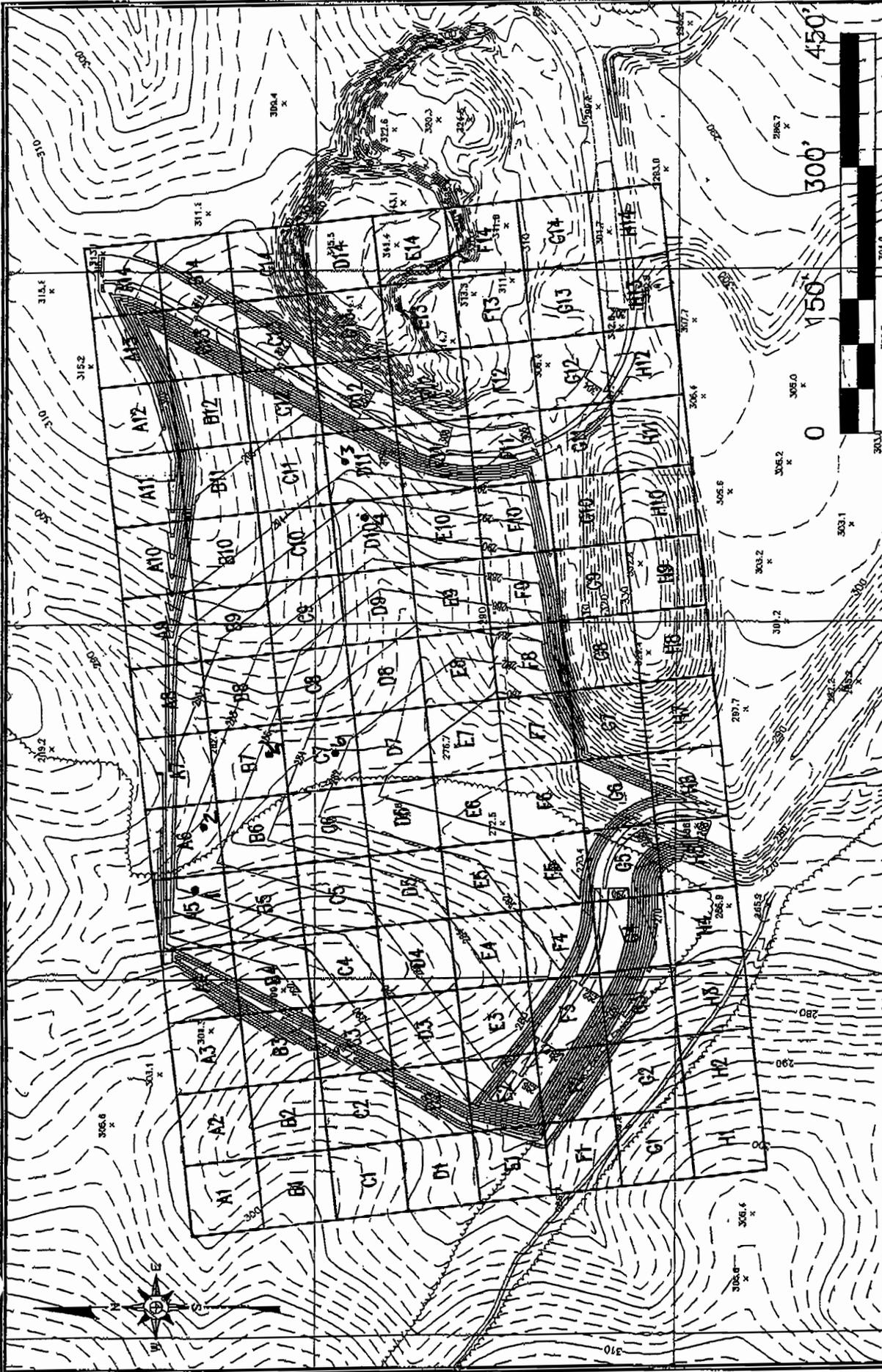
Material & Equipment Information	
Borrow Source	On Site
Compaction Equipment	Sheep's Foot Roller and Hauling Traffic from a Volvo A30C Rock Truck

Density Test Data						
Test Number	1	2	3	4	5	6
Location:	Grid A5	Grid A6	Grid D11	Grid D10	Grid B7	Grid C7
Elevation	@ Grade	@ Grade	@ Grade	-1' Grade	@ Grade	@ Grade
Lift Thickness	12"	12"	12"	12"	12"	12"
Rod Depth (inches)	12"	12"	10"	10"	12"	12"
Density Count	463	417	876	763	380	347
Wet Density (pcf)	131.0	134.0	130.2	134.9	137.2	139.9
Moisture Count	77	134	94	102	77	115
Moisture (pcf)	5.1	10.2	6.6	7.3	5.1	8.5
Dry Density (pcf)	125.9	123.8	123.6	127.6	132.1	131.4
Proctor ID Number	1	1	1	1	1	1
Moisture (%)	4.1%	8.2%	5.4%	5.8%	3.9%	6.5%
% Compaction	97.2%	95.6%	95.4%	98.5%	102.0%	101.5%
Project Requirement %	95%	95%	95%	95%	95%	95%
Comments	Cell Floor	Cell Floor	Cell Floor	Cell Floor	Cell Floor	Cell Floor

Compaction Standards			
Proctor ID Number	Soil Description	Max. Dry Density (pcf)	Opt. Moisture Content (%)
1	Red Clayey Sand w/ Gravel	129.5	7.9%
2	Gray Brown Silt Sand	116.5	11.0%

Gauge #	Density Standard	Moisture Standard
35717	2581	689

10/19/05



RED ROCK DISPOSAL, LLC C&D LANDFILL PHASE 1C-1 SOIL TEST GRID		DRAWN BY: C.T.J.	CHECKED BY: AS SHOWN	SCALE: AS SHOWN	FIGURE NO. 1
		DATE: AUG. 2005	PROJECT NO. REDROCK 04-5	FILE NAME REDROCK-A0	
G. N. RICHARDSON & ASSOCIATES, INC. 14 N. Boylan Ave. Raleigh, N.C. 27603 www.gnra.com ph: 919-828-0577 fax: 919-828-3899					