



APPENDIX A

FIELD REPORTS  
(BORROW PIT NO. 2 AND SOUTH CELL)























**Western Technologies Inc.**

The Quality People  
Since 1955

400 South Lorena Avenue  
Farmington, New Mexico 87401  
(505) 327-4966 • fax 327-5293

**REPORT ON  
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

JOB NO: 3145JB031  
LAB/INVOICE NO: 31450145  
DATE OF REPORT: 06/16/95

Project 1995 Reclamation  
Location Church Rock New Mexico  
Contractor Nielson Inc. Report By H. Kuebler Date 06/13/95  
Subject Observations/Tests Superintendent James Harris

Observations and Action Taken: UNC furnished Western Technologies Inc. with elevations of compaction tests (from 05-10-95 till present). Western Technologies Inc. work on paperwork. Nielson Inc. continued to excavate Swale I.

[Empty table grid for additional observations and action taken]

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Copies: Client (3), Billing (1), Field File (1).  
6-13/rgo:UNC031

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REVIEWED BY Thomas Kuebler

















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**REPORT ON  
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

JOB NO: 3145JB031  
LAB/INVOICE NO: 31450185  
DATE OF REPORT: 07/17/95

Project 1995 Reclamation  
Location Church Rock New Mexico  
Contractor Nielson Inc. Report By H. Kuebler Date 07/12/95  
Subject Testing/Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to place R. A. C. in south cell and recompacted Swales H, I, and C. Western Technologies informed UNC the gradation for D50 - 3.0 failed specifications, UNC informed Hamilton Brothers. Moisture samples were taken on R.A.C material from H line to I line in south cell.

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Copies: Client (3), Billing (1), Field File (1).  
7-12/rgo:UNC031

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REVIEWED BY *Thomas Kuebler*









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**REPORT ON  
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

JOB NO: 3145JB031  
LAB/INVOICE NO: 31450185  
DATE OF REPORT: 07/21/95

Project 1995 Reclamation  
Location Church Rock New Mexico  
Contractor Nielson Inc. Report By \_\_\_\_\_ Date 07/20/95  
Subject Testing/Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to place .35 aggregate in Swale B. Measurements indicated .35 aggregate met thickness requirements. Nielson Inc. continued to place R.A.C. material in south cell.

Comments: \_\_\_\_\_

Copies: Client (3), Billing (1), Field File (1).  
7-20/rgo:UNC031

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REVIEWED BY Thomas Huckle





















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**REPORT ON  
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling  
Attn: Mr. Ed Morales  
P.O. Box 3077  
Gallup, NM 87305

JOB NO: 3145JB031  
LAB/INVOICE NO: 31450243  
DATE OF REPORT: 08/03/95

Project 1995 Reclamation

Location CHurch Rock, NM

Contractor Nielson Inc. Report By H. Kuebler Date 08/03/95

Subject \_\_\_\_\_ Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to place D50-1.5 aggregate in South cell and repair West section in borrow pit #2. Western Technologies measured thickness of D50-1.5 aggregate in West section of borrow pit #2. Thickness appeared to have met job specifications.

Empty table rows for additional observations and action taken.

Comments: \_\_\_\_\_

Copies: Client (3), Billing (1), Field File (1)  
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REVIEWED BY Thomas Kuebler











































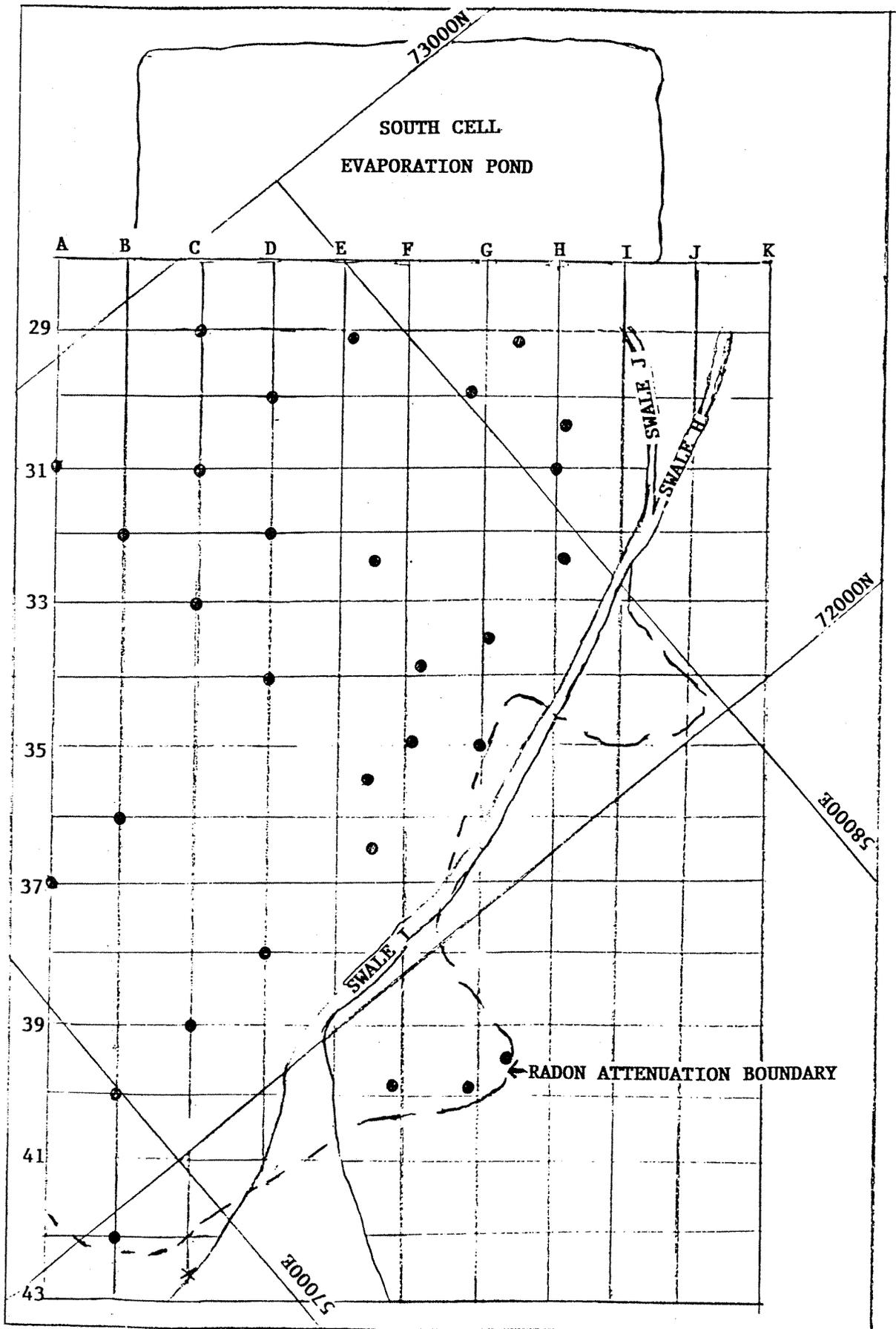




**APPENDIX  
B**

APPENDIX B

PHYSICAL PROPERTIES OF SOILS, RADON ATTENUATION COVER



SIEVE LOCATION SOUTH CELL

**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

WT JOB NO. 3145JB031

**TEST SUMMARY FOR RADON ATTENUATION MATERIAL**

DATE OF REPORT 12/07/95

SOUTH CELL

DATE	SAMPLE LOCATION	% PASS 3/4" SPEC. 95-100%	% PASS #4 SPEC. 90-100%	% PASS #10 SPEC. 85-100%	% PASS #40 SPEC. 65-100%	% PASS 100 SPEC. 50-100%	% PASS 200 SPEC. 40-85%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. ?
03/02/95	S. of S. Cell Borrow Area	100	100	99	95	77	51.0	7	CL	Yes
03/02/95	Center of S. Cell Borrow Area	100	99	97	90	71	41.0	7	CL	Yes
03/02/95	N. of S. Cell Borrow Area	100	96	92	86	77	63.0	14	CL	Yes
07/13/95	F.8 + 39.8	100	94	90	85	52	40.3	11	CL	Yes
07/13/95	H.2 + 30.4	99	98	97	88	63	51.2	29	CL	Yes
07/18/95	C + 39	100	95	93	87	60	43.8	3	SM	Yes
07/18/95	G.3 + 33.4	100	100	95	93	78	58.7	11	CL	Yes
07/18/95	F.9 + 29.7	100	100	96	94	80	57.2	11	CL	Yes
07/18/95	G.5 + 29.2	100	99	98	96	81	57.1	13	CL	Yes
07/18/95	F.1 + 34.9	100	100	98	96	80	56.1	12	CL	Yes
07/18/95	E.3 + 29.2	100	95	94	91	76	54.0	10	CL	Yes
07/18/95	E.5 + 32.5	100	98	96	93	75	52.4	13	CL	Yes

**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

WT JOB NO. 3145JB031

**TEST SUMMARY FOR RADON ATTENUATION MATERIAL**

DATE OF REPORT 12/07/95

SOUTH CELL

DATE	SAMPLE LOCATION	% PASS 3/4" SPEC. 95-100%	% PASS #4 SPEC. 90-100%	% PASS #10 SPEC. 85-100%	% PASS #40 SPEC. 65-100%	% PASS 100 SPEC. 50-100%	% PASS 200 SPEC. 40-85%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. 7
07/19/95	E.5 + 36	100	97	95	91	75	47.5	4	CL	Yes
07/19/95	E.8 + 39.8	100	95	93	83	73	48.6	12	CL	Yes
07/19/95	G.5 + 39.5	100	97	95	92	65	53.1	11	CL	Yes
07/21/95	D + 34	100	98	97	85	72	58.6	17	CL	Yes
07/27/95	C + 33	100	98	96	93	80	53.4	10	CL	Yes
07/27/95	C + 29	100	95	94	92	61	39.8	2	ML	Yes
07/29/95	C + 31	99	930	91	88	59	46.0	16	CL	Yes
07/95	H + 31	100	100	97	95	74	55.9	14	CL	Yes
07/95	H.2 + 32.3	100	99	98	96	83	61.8	20	CL	Yes
07/95	A + 31	100	98	96	93	73	56.8	11	CL	Yes
07/95	G + 35	100	99	96	94	79	55.9	7	CL	Yes
07/95	C + 43	100	92	91	84	48	43.3	NP	SM	Yes

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR RADON ATTENUATION MATERIAL

DATE OF REPORT 12/07/95

SOUTH CELL

DATE	SAMPLE LOCATION	% PASS 3/4" SPEC. 95-100%	% PASS #4 SPEC. 90-100%	% PASS #10 SPEC. 85-100%	% PASS #40 SPEC. 65-100%	% PASS 100 SPEC. 50-100%	% PASS 200 SPEC. 40-85%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. ?
07/95	A + 37	96	92	90	84	48	41.7	NP	SM	Yes
07/95	D + 38	100	97	94	90	66	53.2	15	CL	Yes
07/95	D + 30	100	100	94	91	69	47.0	NP	SM	Yes
07/95	D + 32	100	98	96	93	76	51.0	10	CL	Yes
07/95	B + 32	100	96	92	86	68	47.3	10	CL	Yes
07/95	B + 42	100	94	89	78	54	40.2	NP	SM	Yes
07/95	B + 38	96	87	85	78	53	40.3	NP	SM	Yes
09/01/95	F.2 + 33.8	100	98	97	95	80	56.0	7	CL	Yes
09/30/95	B + 36	100	95	92	89	63	42.3	4	ML-CL	Yes



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 03/07/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy/silty Clay      Sampled By: H. Kuebler      Date: 03/02/95

Source: S of S cell, borrow area      Submitted By: H. Kuebler      Date: 03/02/95

Authorized By: Client      Date: 03/02/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"	100	
No. 4	100	90-100
8	99	
10	99	85-100
16	98	
30	96	
40	95	65-100
50	93	
100	77	50-100
200	51	40-85

Plasticity Index, ASTM D4318

Liquid Limit 27  
Plasticity Index 7

Copies: Client (3), Billing (1), Field File (1)  
1:unc.031

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REVIEWED BY Thomas Kuebler



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 03/07/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty/clay Sand      Sampled By: H. Kuebler      Date: 03/02/95

Source: Center of S cell, borrow area      Submitted By: H. Kuebler      Date: 03/02/95

Authorized By: Client      Date: 03/02/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"	100	
1/4"		
No. 4	99	90-100
8	97	
10	97	85-100
16	94	
30	91	
40	90	65-100
50	88	
100	71	50-100
200	41.0	40-85

Plasticity Index, ASTM D4318

Liquid Limit 25  
Plasticity Index 7

Copies: Client (3), Billing (1), Field File (1)  
n:unc.031

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REVIEWED BY *Thomas Morales*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 12/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Lean Clay      Sampled By: H. Kuebler /WT      Date: 03/02/95

Source: N of S Cell, Borrow Area      Submitted By: H. Kuebler /WT      Date: 03/02/95

Authorized By: Client      Date: 03/02/95

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
15"	100	100
10"	88	45 - 58
5"	35	10 - 33
3"	2.4	0 - 23
3/4"	100	95 - 100
1/2"	99	
3/8"	98	
1/4"	---	
No. 4	96	90 - 100
8	93	
10	92	85 - 100
16	90	
30	87	
40	86	65 - 100
50	84	
100	77	50 - 100
200	63.0	40 - 85

**Moisture Density Relations, pcf (ASTM D698 Method A)**

Maximum Dry Density, pcf      N/A

Optimum Moisture, %      N/A

**Plasticity Index, ASTM D4318**

Liquid Limit      34

Plasticity Index      14

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 10/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: <u>Sandy Lean Clay</u>	Sampled By: <u>C.P. &amp; H.K.</u>	Date: <u>07/13/95</u>	
Source: <u>F.8 + 39.8 72820N &amp; 57370E</u>	Submitted By: <u>C. Padilla</u>	Date: <u>07/14/95</u>	
<u>Elevation 6957.0</u>	Authorized By: <u>Client</u>	Date: <u>07/13/95</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	
3/4"	100	95-100
1/2"	98	
3/8"	97	
1/4"		
No. 4	94	90-100
8	91	
10	90	85-100
16	88	
30	86	
40	85	65-100
50	83	
100	52	50-100
200	40.3	40-85

Plasticity Index, ASTM D4318

Liquid Limit	30
Plasticity Index	11

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 10/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: <u>Sandy Silty Clay</u>	Sampled By: <u>C.P. &amp; H.K.</u>	Date: <u>07/13/95</u>
Source: <u>(H.2 + 30.4) 72450N &amp; 58070E</u>	Submitted By: <u>C. Padilla</u>	Date: <u>07/14/95</u>
<u>Elevation 6953.1</u>	Authorized By: <u>Client</u>	Date: <u>07/13/95</u>

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	
3/4"	99	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	95	
30	92	
40	88	65-100
50	83	
100	63	50-100
200	21.5	40-85

**Plasticity Index, ASTM D4318**

Liquid Limit 34  
Plasticity Index 29

Copies: Client (3), Billing (1), Field File (1)  
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REVIEWED BY *[Signature]*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM

Job No. 3145JB031

Lab/Inv. No. 31450292

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Sand

Sampled By: H.K./WT Date 7-18-95

Source: C+39

Submitted By: H.K./WT Date 7-18-95

72150 N and 57130 E Elev. 6952.2

Authorized By: Client Date 7-18-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	99	
3/8"	98	
1/4"		
No. 4	95	90-100
8	93	
10	93	85-100
16	92	
30	90	
40	87	65-100
50	82	
100	60	50-100
200	43.8	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

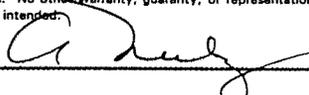
Maximum Dry Density, pcf	<u>NA</u>
Optimum Moisture, %	<u>NA</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>20</u>
Plasticity Index	<u>3</u>

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8\ha:UNC031

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**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450145  
Report Date: 12/08/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/18/95</u>	
Source: <u>G.3+33.4, 72320N &amp; 57830E</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/18/95</u>	
<u>Elev. 6950.9</u>	Authorized By: <u>Client</u>	Date: <u>07/18/95</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"		
2"		
1 1/2"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	100	90-100
8	95	
10	95	85-100
16	94	
30	93	
40	93	65-100
50	92	
100	78	50-100
200	58.7	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>N/A</u>
Optimum Moisture, %	<u>N/A</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>30</u>
Plasticity Index	<u>11</u>

Copies: Client (3), Billing (1) Field File (1)  
10.1/cb:UNC.031

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM

Job No. 3145JB031  
Lab/Inv. No. 31450292  
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay      Sampled By: H.K./WT      Date: 7-18-95

Source: F-9+29.7      Submitted By: H.K./WT      Date: 7-18-95

72630 N and 57950 E Elev. 6951.6      Authorized By: Client      Date: 7-18-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	100	90-100
8	97	
10	96	85-100
16	96	
30	94	
40	94	65-100
50	93	
100	80	50-100
200	57.2	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 28

Plasticity Index 11

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM

Job No. 3145JB031  
Lab/Inv. No. 31450292  
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H.K./WT Date 7-18-95

Source: G.5+29.2

Submitted By: H.K./WT Date 7-18-95

72580 N and 58100 E Elev. 6952.8

Authorized By: Client Date 7-18-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	99	90-100
8	98	
10	98	85-100
16	98	
30	97	
40	96	65-100
50	95	
100	81	50-100
200	57.1	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA  
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 13

Copies: Client (3), Billing (1), Field File (1).

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM

Job No. 3145JB031  
Lab/Inv. No. 31450292  
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay</u>	Sampled By: <u>H.K./WT</u>	Date: <u>7-18-95</u>	
Source: <u>F-1+34.9</u>	Submitted By: <u>H.K./WT</u>	Date: <u>7-18-95</u>	
<u>72250 N and 57620 E Elev. 6951.5</u>	Authorized By: <u>Client</u>	Date: <u>7-18-95</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	100	90-100
8	98	
10	98	85-100
16	97	
30	96	
40	96	65-100
50	95	
100	80	50-100
200	56.1	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>NA</u>
Optimum Moisture, %	<u>NA</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>28</u>
Plasticity Index	<u>12</u>

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-15-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Clay	Sampled By: H.K./WT	Date: 7-18-95
Source: E 0.3+29.2	Submitted By: H.K./WT	Date: 7-18-95
72800 N and 57930 E Elev. 6951.5	Authorized By: Client	Date: 7-18-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	98	
3/8"	97	
1/4"		
No. 4	95	90-100
8	94	
10	94	85-100
16	93	
30	92	
40	91	65-100
50	90	
100	76	50-100
200	54.0	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

Plasticity Index, ASTM D4318

Liquid Limit	30
Plasticity Index	10

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-15-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material:	Clay	Sampled By:	H.K./WT	Date	7-19-95
Source:	E 0.5+36	Submitted By:	H.K./WT	Date	7-19-95
	72230 N and 57480 E Elev. 6951.4	Authorized By:	Client	Date	7-19-95

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"		95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	97	90-100
8	95	
10	95	85-100
16	94	
30	92	
40	91	65-100
50	90	
100	75	50-100
200	47.5	40-85

**Moisture Density Relations, pcf (ASTM D698 Method A)**

Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

**Plasticity Index, ASTM D4318**

Liquid Limit	26
Plasticity Index	4

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client:	UNC Mining and Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM	Job No.	3145JB031
		Lab/Inv. No.	31450185
		Report Date:	10-9-95
Project:	1995 Reclamation		Revised 11-14-95
Location:	Church Rock, NM		
Material:	Sandy Lean Clay	Sampled By:	H.K./WT Date 7-19-95
Source:	E 0.8+39.8	Submitted By:	H.K./WT Date 7-19-95
	72900 N and 57300 E Elev. 6952.7	Authorized By:	Client Date 7-19-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	95	90-100
8	94	
10	93	85-100
16	91	
30	85	
40	83	65-100
50	82	
100	73	50-100
200	48.6	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

Plasticity Index, ASTM D4318

Liquid Limit	28
Plasticity Index	12

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-15-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Clay</u>	Sampled By: <u>H.K./WT</u>	Date: <u>7-19-95</u>
Source: <u>G.5 + 39.5 Elev. 6957.8</u>	Submitted By: <u>H.K./WT</u>	Date: <u>7-19-95</u>
<u>71820 N and 57410 E</u>	Authorized By: <u>Client</u>	Date: <u>7-19-95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	99	
3/8"	98	
1/4"		
No. 4	97	90-100
8	95	
10	95	85-100
16	94	
30	93	
40	92	65-100
50	91	
100	65	50-100
200	53.1	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

Plasticity Index, ASTM D4318

Liquid Limit	28
Plasticity Index	11

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 10/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: <u>Sandy Silty Clay</u>	Sampled By: <u>C.P. &amp; H.K.</u>	Date: <u>07/21/95</u>
Source: <u>(D + 34) 72410N &amp; 57320E</u>	Submitted By: <u>C. Padilla</u>	Date: <u>07/21/95</u>
Elevation <u>6950.3</u>	Authorized By: <u>Client</u>	Date: <u>07/21/95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	98	
10	97	85-100
16	95	
30	93	
40	85	65-100
50	82	
100	72	50-100
200	58.6	40-85

Plasticity Index, ASTM D4318

Liquid Limit	24
Plasticity Index	17

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 10/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: <u>Sandy Lean Clay</u>	Sampled By: <u>C. Padilla</u>	Date: <u>07/27/95</u>	
Source: <u>(C + 33) 72430N &amp; 57400E</u>	Submitted By: <u>C. Padilla</u>	Date: <u>07/27/95</u>	
<u>Elevation 6951.2</u>	Authorized By: <u>Client</u>	Date: <u>07/27/95</u>	

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"	100	
1/4"		
No. 4	98	90-100
8	97	
10	96	85-100
16	95	
30	94	
40	93	65-100
50	92	
100	80	50-100
200	53.4	40-85

**Plasticity Index, ASTM D4318**

Liquid Limit	25
Plasticity Index	10

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 10/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: <u>Silt</u>	Sampled By: <u>C. Padilla</u>	Date: <u>07/27/95</u>
Source: <u>(C + 29) 72880N &amp; 57780E</u>	Submitted By: <u>C. Padilla</u>	Date: <u>07/27/95</u>
<u>Elevation 6955.8</u>	Authorized By: <u>Client</u>	Date: <u>07/27/95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	98	
3/8"	97	
1/4"		
No. 4	95	90-100
8	94	
10	94	85-100
16	94	
30	92	
40	92	65-100
50	90	
100	61	50-100
200	39.8	40-85

Plasticity Index, ASTM D4318

Liquid Limit	20
Plasticity Index	2

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 10/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Lean Clay

Sampled By: C. Padilla Date 07/28/95

Source: (C + 31) 72730N & 57650E

Submitted By: C. Padilla Date 07/29/95

Elevation 6952.6

Authorized By: Client Date 07/27/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	
3/4"	99	95-100
1/2"	95	
3/8"	94	
1/4"		
No. 4	93	90-100
8	91	
10	91	85-100
16	90	
30	89	
40	88	65-100
50	87	
100	59	50-100
200	46.0	40-85

Plasticity Index, ASTM D4318

Liquid Limit	<u>26</u>
Plasticity Index	<u>16</u>

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No.	3145JB031
Lab/Inv. No.	31450185
Report Date:	11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay	Sampled By: H.K./WT	Date: 7-95
Source: (H+31) 72420 N & 58040 E	Submitted By: H.K./WT	Date: 7-95
Elev. 6951.7	Authorized By: Client	Date: 7-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4		90-100
8	97	
10	97	85-100
16	96	
30	95	
40	95	65-100
50	94	
100	74	50-100
200	55.9	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

Plasticity Index, ASTM D4318

Liquid Limit	30
Plasticity Index	14

Copies: Client (3), Billing (1), Field File (1).  
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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay</u>	Sampled By: <u>H.K./WT</u>	Date: <u>7-95</u>	
Source: <u>(H.2+32.3) 72230 N &amp; 57980 E</u>	Submitted By: <u>H.K./WT</u>	Date: <u>7-95</u>	
<u>Elev. 6951.7</u>	Authorized By: <u>Client</u>	Date: <u>7-95</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	99	90-100
8	98	
10	98	85-100
16	97	
30	96	
40	96	65-100
50	95	
100	83	50-100
200	61.8	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>NA</u>
Optimum Moisture, %	<u>NA</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>31</u>
Plasticity Index	<u>20</u>

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 12/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Lean Clay	Sampled By:	H. Kuebler /WT	Date	July 1995
Source: (A + 31), 72900N & 57500E	Submitted By:	H. Kuebler /WT	Date	July 1995
Elevation 6956.2	Authorized By:	Client	Date	July 1995

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95 - 100
1/2"	---	
3/8"	99	
1/4"	---	
No. 4	98	90 - 100
8	97	
10	96	85 - 100
16	96	
30	94	
40	93	65 - 100
50	92	
100	73	50 - 100
200	56.8	40 - 85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A

Plasticity Index, ASTM D4318

Liquid Limit	26
Plasticity Index	11

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-28-95

Project: 1995 Reclamation  
Location: Church Rock, NM  
Material: Clayey Sand  
Source: (A+35) 72580 N & 57290 E  
Elev. 6956.2

Sampled By: H.K./WT Date 7-95  
Submitted By: H.K./WT Date 7-95  
Authorized By: Client Date 7-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	98	90-100
8	96	
10	96	85-100
16	95	
30	92	
40	82	65-100
50	67	
100	44	50-100
200	37.7	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA  
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 19  
Plasticity Index 6

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Silty Clay	Sampled By: H.K./WT	Date: 7-95
Source: (G+35) 71800 N & 57600 E	Submitted By: H.K./WT	Date: 7-95
Elev. 6952.3	Authorized By: Client	Date: 7-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	99	90-100
8	97	
10	96	85-100
16	95	
30	94	
40	94	65-100
50	93	
100	79	50-100
200	55.9	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

Plasticity Index, ASTM D4318

Liquid Limit	25
Plasticity Index	7

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450415  
Report Date: 12/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: <u>Silty Sand</u>	Sampled By: <u>H. Kuebler /WT</u>	Date: <u>July 1995</u>	
Source: <u>UNC C + 43, 71840N &amp; 56880E</u>	Submitted By: <u>H. Kuebler /WT</u>	Date: <u>July 1995</u>	
<u>Elevation 6955.7</u>	Authorized By: <u>Client</u>	Date: <u>July 1995</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95 - 100
1/2"	98	
3/8"	95	
1/4"	---	
No. 4	92	90 - 100
8	91	
10	91	85 - 100
16	89	
30	87	
40	84	65 - 100
50	77	
100	48	50 - 100
200	43.3	40 - 85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>N/A</u>
Optimum Moisture, %	<u>N/A</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>NV</u>
Plasticity Index	<u>NP</u>

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 12/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: <u>Silty Sand</u>	Sampled By: <u>H. Kuebler /WT</u>	Date: <u>July 1995</u>
Source: <u>(A + 37), 72410N &amp; 57110E</u>	Submitted By: <u>H. Kuebler /WT</u>	Date: <u>July 1995</u>
Elevation <u>6956.4</u>	Authorized By: <u>Client</u>	Date: <u>July 1995</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	96	95 - 100
1/2"	95	
3/8"	95	
1/4"	---	
No. 4	92	90 - 100
8	91	
10	90	85 - 100
16	89	
30	87	
40	84	65 - 100
50	77	
100	48	50 - 100
200	41.7	40 - 85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A

Plasticity Index, ASTM D4318

Liquid Limit	NV
Plasticity Index	NP

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Sand      Sampled By: H.K./WT      Date: 7-95

Source: (A+41) 72110 N & 56860 E      Submitted By: H.K./WT      Date: 7-95

Elev. 6956.6      Authorized By: Client      Date: 7-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	98	
3/8"	96	
1/4"		
No. 4	94	90-100
8	93	
10	92	85-100
16	91	
30	89	
40	86	65-100
50	78	
100	44	50-100
200	30.2	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA  
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NV  
Plasticity Index NP

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Dark Brown Fine Sand</u>	Sampled By: <u>H.K./WT</u>	Date: <u>7-95</u>
Source: <u>(C+43) 71840 N &amp; 56880 E</u>	Submitted By: <u>H.K./WT</u>	Date: <u>11-9-95</u>
<u>Elev. 6955.7</u>	Authorized By: <u>Client</u>	Date: <u>7-95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	100	90-100
8	91	
10	91	85-100
16	90	
30	87	
40	85	65-100
50	77	
100	43	50-100
200	39.7	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA  
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 19  
Plasticity Index NP

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay      Sampled By: H.K./WT      Date 7-95

Source: (D+38) 72150 N & 57280 E      Submitted By: H.K./WT      Date 7-95

Elev. 6951.1      Authorized By: Client      Date 7-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"	99	
1/4"		
No. 4	97	90-100
8	94	
10	94	85-100
16	92	
30	91	
40	90	65-100
50	89	
100	66	50-100
200	53.2	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

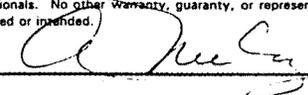
Maximum Dry Density, pcf NA  
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 15

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Sand

Sampled By: H.K./WT Date 7-95

Source: (D+30) 72750 N & 57800 E

Submitted By: H.K./WT Date 7-95

Elev. 6950.5

Authorized By: Client Date 7-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	100	90-100
8	94	
10	94	85-100
16	93	
30	92	
40	91	65-100
50	90	
100	69	50-100
200	47.0	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 23

Plasticity Index NP

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay      Sampled By: H.K./WT      Date: 7-95

Source: (D+32) 72600 N & 57670 E      Submitted By: H.K./WT      Date: 7-95

Elev. 6951.3      Authorized By: Client      Date: 7-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	93	65-100
50	92	
100	76	50-100
200	51.0	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA  
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 10

Copies: Client (3), Billing (1), Field File (1).

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Clayey Sand</u>	Sampled By: <u>H.K./WT</u>	Date: <u>7-95</u>	
Source: <u>(B+32) 72760 N &amp; 57510 E</u>	Submitted By: <u>H.K./WT</u>	Date: <u>7-95</u>	
<u>Elev. 6955.0</u>	Authorized By: <u>Client</u>	Date: <u>7-95</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"	98	
1/4"		
No. 4	96	90-100
8	93	
10	92	85-100
16	91	
30	89	
40	86	65-100
50	80	
100	68	50-100
200	47.3	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>NA</u>
Optimum Moisture, %	<u>NA</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>24</u>
Plasticity Index	<u>10</u>

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Sand      Sampled By: H.K./WT      Date: 7-95

Source: (B+42) 71980 N & 57860 E      Submitted By: H.K./WT      Date: 7-95

Elev. 6956.4      Authorized By: Client      Date: 7-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	94	90-100
8	89	
10	89	85-100
16	87	
30	83	
40	78	65-100
50	65	
100	54	50-100
200	40.2	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

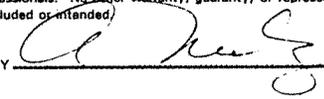
Maximum Dry Density, pcf NA  
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NV  
Plasticity Index NP

Copies: Client (3), Billing (1), Field File (1).  
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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
\_\_\_\_\_  
Lab/Inv. No. 31450185  
\_\_\_\_\_  
Report Date: 11-28-95  
\_\_\_\_\_

Project: 1995 Reclamation  
\_\_\_\_\_

Location: Church Rock, NM  
\_\_\_\_\_

Material: Silty Sand                      Sampled By: H.K./WT                      Date 7-95  
\_\_\_\_\_

Source: (B+38) 72280 N & 57130 E                      Submitted By: H.K./WT                      Date 7-95  
\_\_\_\_\_

Elev. 6954.1                      Authorized By: Client                      Date 7-95  
\_\_\_\_\_

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	
3/4"	96	95-100
1/2"	92	
3/8"	90	
1/4"		
No. 4	87	90-100
8	86	
10	85	85-100
16	85	
30	82	
40	78	65-100
50	63	
100	53	50-100
200	40.3	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf                      NA  
Optimum Moisture, %                      NA

Plasticity Index, ASTM D4318

Liquid Limit                      NV  
Plasticity Index                      NP

Copies: Client (3), Billing (1), Field File (1).  
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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM

Job No. 3145JB031  
Lab/Inv. No. 31450292  
Report Date: 9-25-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Clay      Sampled By: H.K./WT      Date: 9-1-95

Source: F.2+33.8 Elev.6950.9      Submitted By: H.K./WT      Date: 9-1-95

72400 N & 57620 E      Authorized By: Client      Date: 9-1-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"		
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	
8	98	
10	97	
16	97	
30	96	
40	95	
50	95	
100	80	
200	56.0	

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

Plasticity Index, ASTM D4318

Liquid Limit	25
Plasticity Index	7

Moisture Content

39.5

Copies: Client (3), Billing (1), Field File (1).  
ha:UNC031

The above services and report were performed pursuant to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM

Job No. 3145JB031  
Lab/Inv. No. 31450292  
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay</u>	Sampled By: <u>H.K./WT</u>	Date: <u>9-30-95</u>
Source: <u>B+36</u>	Submitted By: <u>H.K./WT</u>	Date: <u>9-30-95</u>
<u>72400 N and 57250 E Elev. 6953.2</u>	Authorized By: <u>Client</u>	Date: <u>9-30-95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	97	
3/8"	97	
1/4"		
No. 4	95	90-100
8	93	
10	92	85-100
16	92	
30	91	
40	89	65-100
50	86	
100	63	50-100
200	42.3	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>NA</u>
Optimum Moisture, %	<u>NA</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>23</u>
Plasticity Index	<u>4</u>

Copies: Client (3), Billing (1), Field File (1).  
Vha:UNC031

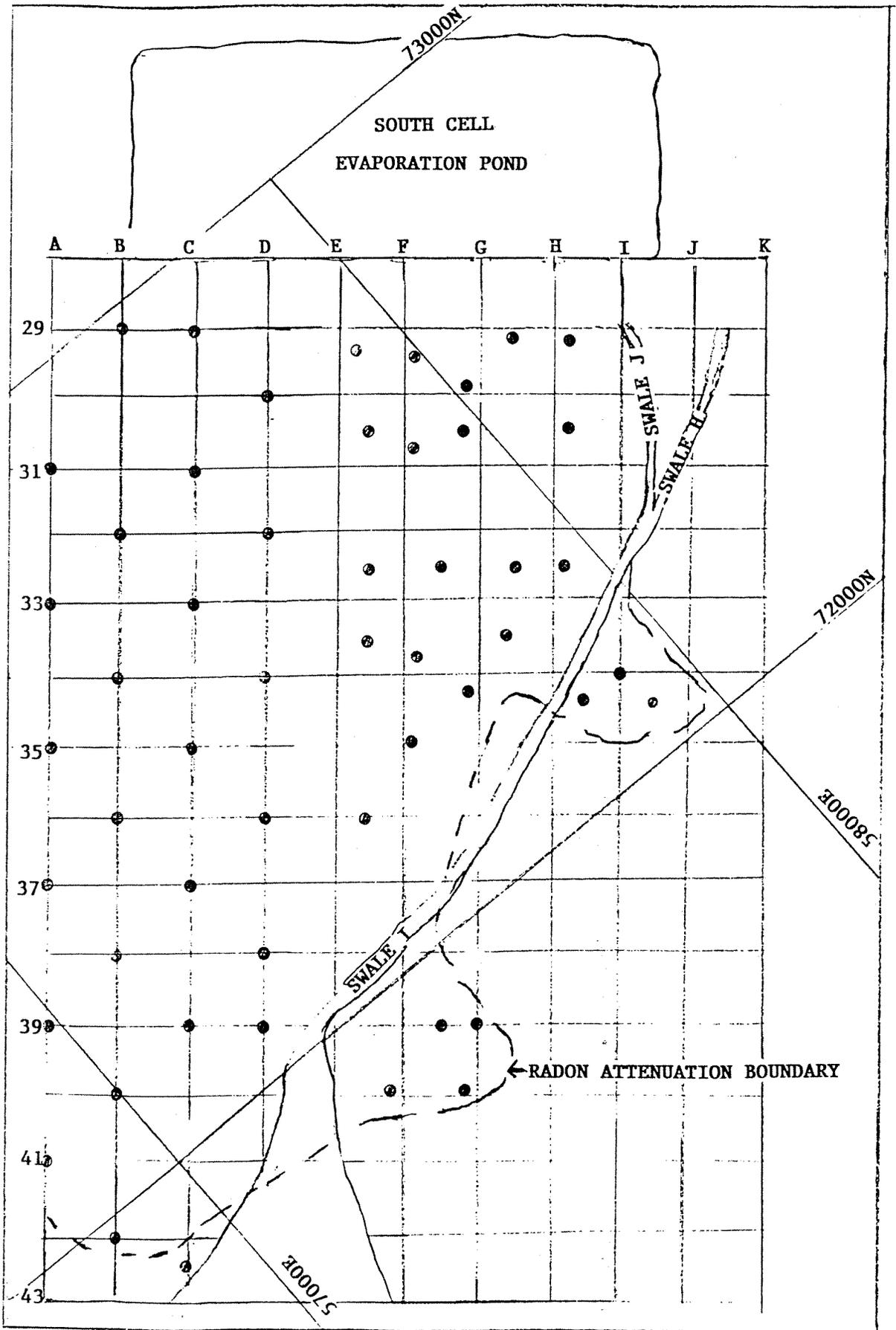
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REVIEWED BY

**APPENDIX  
C**

APPENDIX C

FIELD DENSITY TESTS, RADON ATTENUATION COVER



RAC DENSITIES SOUTH CELL

**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

WT JOB NO. 3145JB031

**TEST SUMMARY FOR SOUTH CELL**

DATE OF REPORT 12/06/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/17/95	Sandcone	I+34	72130.0	57980.0	6960.7	RAC	104.8	15.4	96	CL	Yes
07/17/95	Sandcone	G+39	71880.0	57450.0	6952.7	RAC	109.9	15.2	98	CL	Yes
07/17/95	Sandcone	E.5+39	71970.0	57340.0	6951.4	RAC	107.6	14.9	96	CL	Yes
07/17/95	Sandcone	I.5+34.5	72050.0	57930.0	6951.8	RAC	107.1	16.2	99	CL	Yes
07/17/95	Sandcone	H.5+34.5	72130.0	57850.0	6952.2	RAC	104.4	17.1	96	CL	Yes
07/18/95	Sandcone	G.5+29.2	72600.0	58120.0	6953.5	RAC	106.3	15.7	98	CL	Yes
07/18/95	Sandcone	H.2+29.3	72560.0	58170.0	6954.6	RAC	108.4	16.1	100	CL	Yes
07/18/95	Sandcone	F.9+29.7	72600.0	58040.0	6951.5	RAC	111.5	14.6	99	CL	Yes
07/18/95	Sandcone	F.2+29.5	72820.0	57980.0	6952.7	RAC	113.5	15.9	100	CL	Yes
07/18/95	Sandcone	E.3+29.2	72740.0	57940.0	6951.6	RAC	108.0	14.3	96	CL	Yes
07/18/95	Sandcone	E.5+30.5	72630.0	57870.0	6951.1	RAC	109.9	15.6	98	CL	Yes
07/18/95	Sandcone	F.2+30.7	72570.0	57900.0	6951.4	RAC	108.1	15.5	96	CL	Yes

RAC = Radon Attenuation Cover

cb/UNC.031/12

Dist: Client (3) Field File (1) Billing (1)

**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

WT JOB NO. 3145JB031

**TEST SUMMARY FOR SOUTH CELL**

DATE OF REPORT 12/06/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/18/95	Sandcone	F.9 + 30.5	72500.0	57960.0	6951.4	RAC	111.5	14.9	99	CL	Yes
07/18/95	Sandcone	H.2 + 30.4	72450.0	58070.0	6953.1	RAC	106.3	15.6	98	CL	Yes
07/18/95	Sandcone	H.2 + 32.3	72320.0	57980.0	6951.7	RAC	107.1	16.1	99	CL	Yes
07/18/95	Sandcone	G.5 + 32.5	72350.0	57900.0	6951.8	RAC	108.5	15.8	100	CL	Yes
07/18/95	Sandcone	F.5 + 32.5	72240.0	57820.0	6950.5	RAC	109.3	14.3	97	CL	Yes
07/18/95	Sandcone	E.5 + 32.5	72480.0	57730.0	6950.9	RAC	108.9	14.6	97	CL	Yes
07/18/95	Sandcone	G.3 + 33.4	72320.0	57830.0	6950.9	RAC	106.4	15.7	98	CL	Yes
07/18/95	Sandcone	F.2 + 33.8	72340.0	57710.0	6951.1	RAC	107.4	15.1	96	CL	Yes
07/18/95	Sandcone	E.5 + 33.5	72400.0	57680.0	6951.1	RAC	106.6	14.2	95	CL	Yes
07/18/95	Sandcone	F.9 + 34.3	72240.0	57730.0	6951.3	RAC	107.7	15.4	95	CL	Yes
07/18/95	Sandcone	F.1 + 34.9	72250.0	57640.0	6951.3	RAC	113.7	16.2	100	CL	Yes
07/18/95	Sandcone	E.5 + 36	72200.0	57520.0	6951.3	RAC	110.9	15.8	98	CL	Yes

RAC = Radon Attenuation Cover

cb/UNC.031/13

Dist: Client (3) Field File (1) Billing (1)

**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

WT JOB NO. 3145JB031

**TEST SUMMARY FOR SOUTH CELL**

DATE OF REPORT 12/06/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/18/95	Sandcone	E + 39.8	72900.0	57300.0	6952.7	RAC	109.8	15.9	97	CL	Yes
07/18/95	Sandcone	F + 39.8	72820.0	57370.0	6957.0	RAC	113.2	16.1	100	CL	Yes
07/28/95	Sandcone	C + 37	72280.0	57260.0	6951.1	RAC	108.0	14.6	96	CL	Yes
07/28/95	Sandcone	C + 35	72460.0	57410.0	6950.2	RAC	107.6	13.5	95	CL	Yes
07/28/95	Sandcone	C + 33	72430.0	57400.0	6951.2	RAC	106.3	15.6	92	CL	No
07/28/95	Sandcone	C + 31	72730.0	57650.0	6952.7	RAC	104.1	14.8	92	CL	No
07/28/95	Sandcone	C + 29	72880.0	57780.0	6955.8	RAC	108.9	14.6	97	CL	Yes
07/28/95	Sandcone	D + 38	72150.0	57280.0	6951.1	RAC	110.6	14.6	98	CL	Yes
07/28/95	Sandcone	D + 36	72290.0	57400.0	6951.6	RAC	113.5	14.3	100	CL	Yes
07/28/95	Sandcone	D + 34	72410.0	57320.0	6950.3	RAC	108.4	14.9	96	CL	Yes
07/28/95	Sandcone	D + 32	72600.0	57670.0	6951.3	RAC	107.0	15.6	95	CL	Yes
07/28/95	Sandcone	D + 30	72750.0	57800.0	6950.5	RAC	106.6	13.0	95	CL	Yes

RAC = Radon Attenuation Cover

cb/UNC.031/14

Dist: Client (3) Field File (1) Billing (1)

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SOUTH CELL

DATE OF REPORT 12/06/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
08/02/95	Sandcone	C + 43	71840.0	56880.0	6955.7	RAC	109.7	14.4	97	CL	Yes
08/02/95	Sandcone	C + 39	72150.0	57130.0	6952.2	RAC	108.0	14.8	96	CL	Yes
08/02/95	Sandcone - Retest	C + 33	72430.0	57400.0	6951.3	RAC	106.6	13.7	95	CL	Yes
08/02/95	Sandcone - Retest	C + 31	72730.0	57650.0	6952.6	RAC	111.7	13.2	99	CL	Yes
08/02/95	Sandcone	B + 36	72440.0	57270.0	6953.1	RAC	111.1	11.6	95	CL	Yes
08/02/95	Sandcone	B + 38	72280.0	57130.0	6954.1	RAC	112.3	12.3	96	CL	Yes
08/02/95	Sandcone	B + 40	72120.0	57000.0	6954.9	RAC	112.6	12.3	96	CL	Yes
08/02/95	Sandcone	B + 42	71980.0	57860.0	6956.4	RAC	111.8	12.7	95	CL	Yes
08/02/95	Sandcone	B + 32	72760.0	57510.0	6955.0	RAC	112.8	12.1	96	CL	Yes
08/02/95	Sandcone	B + 34	72610.0	57400.0	6953.0	RAC	111.1	11.4	95	CL	Yes
08/03/95	Sandcone	A + 41	72110.0	56860.0	6956.6	RAC	113.2	11.0	96	CL	Yes
08/03/95	Sandcone	A + 39	72130.0	56970.0	6956.6	RAC	117.0	10.7	100	CL	Yes

RAC = Radon Attenuation Cover

cb/UNC.031/15

Dist: Client (3) Field File (1) Billing (1)





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**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
**POST OFFICE BOX 3077**  
**GALLUP, NM 87305**

Date of Report **08-28-95**  
Job No. **3145JB031** Page **1** of **1**  
Event/Invoice No. **31450185-10**  
Authorized By **E. MORALES** Date **07-17-95**  
Tested By **H. KUEBLER/WT** Date **07-17-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**

Test Locations Designated By **CLIENT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**

Calibrated Volume of Sand Cone Apparatus **0.0387** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
1	0.0376	15.4	105.1	0.0	46	108.7	15.3	97	15.3 TO 17.3	95	YES
2	0.0291	15.2	110.6	0.0	44	112.3	14.1	98	14.1 TO 16.1	95	YES
3	0.0299	14.9	108.0	0.0	44	112.3	14.1	96	14.1 TO 16.1	95	YES
4	0.0391	16.2	108.2	0.0	46	108.7	15.3	100	15.3 TO 17.3	95	YES
5	0.0395	17.1	105.5	0.0	46	108.7	15.3	97	15.3 TO 17.3	95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
1	I+ 34, 72130 N & 57930 E		6960.7	SUBGRADE
2	G+ 39, 71880 N & 57450 E		6952.7	SUBGRADE
3	E.5+ 39, 71970 N & 57340 E		6951.4	SUBGRADE
4	I.5+ 34.5, 72050 N & 57930 E		6961.8	SUBGRADE
5	H.5+ 34.5, 72130 N & 57850 E		6952.2	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
46	31450185	CLAY - H.2+ 30.4	72450N & 58070E, 6973.1	15.3	108.7	D698-A
44	31450185	CLAY	F8+ 39.872820N57370E6957.0	14.1	112.3	D698-A

Comments: **CB**

\* DATUM Test Elevation = Top of RAC

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY

**A. McHaney**

(SIGNED COPY ON FILE)



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**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
**POST OFFICE BOX 3077**  
**GALLUP, NM 87305**

Date of Report **11-15-95**  
Job No. **3145JB031** Page 1 of 2  
Event/Invoice No. **31450185-13**  
Authorized By **E. MORALES** Date **07-18-95**  
Tested By **C. PADILLA/WT** Date **07-18-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**  
Test Locations Designated By **C. PADILLA/WT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**  
Calibrated Volume of Sand Cone Apparatus **0.0383 cu. ft.** Bulk Unit Weight of Sand **94.8 lbf/cu. ft.**

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
1	0.0413	15.7	106.2	0.0	46	108.7	15.3	98	15.3 TO 17.3	95	YES
2	0.0339	16.1	108.6	0.0	46	108.7	15.3	100	15.3 TO 17.3	95	YES
3	0.0402	14.6	111.5	0.0	42	112.4	14.0	99	14.0 TO 16.0	95	YES
4	0.0358	15.9	113.6	0.0	42	112.4	14.0	100+	14.0 TO 16.0	95	YES
5	0.0388	14.3	108.0	0.0	42	112.4	14.0	96	14.0 TO 16.0	95	YES
6	0.0372	15.6	109.9	0.0	42	112.4	14.0	98	14.0 TO 16.0	95	YES
7	0.0382	15.5	108.1	0.0	42	112.4	14.0	96	14.0 TO 16.0	95	YES
8	0.0390	14.9	111.5	0.0	42	112.4	14.0	99	14.0 TO 16.0	95	YES
9	0.0438	15.6	106.3	0.0	46	108.7	15.3	98	15.3 TO 17.3	95	YES
10	0.0449	16.1	107.2	0.0	46	108.7	15.3	99	15.3 TO 17.3	95	YES

TEST NO.	TEST LOCATION, HORIZONTAL		TEST LOCATION, VERTICAL		MATERIAL TESTED
			Approximate Fill Depth, ft.	Elevation *	
1	G.5 + 29.2,	72600 N & 58120 E		6953.5	SUBGRADE
2	H.2 + 29.3,	72560 N & 58170 E		6954.6	SUBGRADE
3	F.9 + 29.7,	72600 N & 58040 E		6951.5	SUBGRADE
4	F.2 + 29.5,	72820 N & 57980 E		6952.7	SUBGRADE
5	E.3 + 29.2,	72740 N & 57940 E		6951.6	SUBGRADE
6	E.5 + 30.5,	72630 N & 57870 E		6951.1	SUBGRADE
7	F.2 + 30.7,	72570 N & 57900 E		6951.4	SUBGRADE
8	F.9 + 30.5,	72500 N & 57960 E		6951.4	SUBGRADE
9	H.2 + 30.4,	72450 N & 58070 E		6953.1	SUBGRADE
10	H.2 + 32.3,	72320 N & 57980 E		6951.7	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
46	31450185	CLAY - H.2+30.4	72450N & 58070E, 6973.1	15.3	108.7	D698-A
42	31850185	CLAY	D + 34,72410N&57320E,6950.3	14.0	112.4	D698-A
44	31450185	CLAY	F8 + 39.872820N57370E6957.0	14.1	112.3	D698-A

Comments: **CB**  
\* DATUM Elevation of Test = Top of RAC

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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**A. Neely**

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**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
**POST OFFICE BOX 3077**  
**GALLUP, NM 87305**

Date of Report **10-17-95**  
Job No. **3145JB031** Page 1 of 1  
Event/Invoice No. **31450185-17**  
Authorized By **E. MORALES** Date **07-28-95**  
Tested By **H. KUEBLER/WT** Date **07-28-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**  
Test Locations Designated By **H. KUEBLER/WT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**  
Calibrated Volume of Sand Cone Apparatus **0.0383** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
1	0.0355	14.6	108.0	0.0	45	112.8	13.0	96	13.0 TO 15.0	95	YES
2	0.0370	13.5	107.6	0.0	45	112.8	13.0	95	13.0 TO 15.0	95	YES
3	0.0378	15.6	107.2	0.0	45	112.8	13.0	95	13.0 TO 15.0	95	NO
4	0.0329	14.8	104.0	0.0	45	112.8	13.0	92	13.0 TO 15.0	95	NO
5	0.0373	14.6	108.9	0.0	45	112.8	13.0	97	13.0 TO 15.0	95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
1	C + 37, 72280 N & 57260 E		6951.1	SUBGRADE
2	C + 35, 72460 N & 57410 E		6950.2	SUBGRADE
3	C + 33, 72430 N & 57400 E		6951.2	SUBGRADE
4	C + 31, 72730 N & 57650 E		6952.7	SUBGRADE
5	C + 29, 72880 N & 57780 E		6955.8	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
45	31450185	CLAY	C + 31,72730N&57650E,6952.6	13.0	112.8	D698-A

Comments: **CB**  
\* DATUM Test Elevation = Top of RAC

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

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**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
POST OFFICE BOX 3077  
GALLUP, NM 87305

Date of Report **10-17-95**  
Job No. **3145JB031** Page 1 of 1  
Event/Invoice No. **31450185-18**  
Authorized By **E. MORALES** Date **07-28-95**  
Tested By **H. KUEBLER/WT** Date **07-28-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**  
Test Locations Designated By **H. KUEBLER/WT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**  
Calibrated Volume of Sand Cone Apparatus **0.0387** cu. ft. Bulk Unit Weight of Sand **94.6** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
6	0.0317	14.6	110.7	0.0	43	113.2	14.0	98	14.0 TO 16.0	95	YES
7	0.0354	14.3	113.4	0.0	43	113.2	14.0	100	14.0 TO 16.0	95	YES
8	0.0330	14.9	108.4	0.0	42	112.4	14.0	96	14.0 TO 16.0	95	YES
9	0.0294	15.6	107.1	0.0	42	112.4	14.0	95	14.0 TO 16.0	95	YES
10	0.0336	13.0	106.7	0.0	45	112.8	13.0	95	13.0 TO 15.0	95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
6	D + 38, 72150 N & 57280 E		6951.1	SUBGRADE
7	D + 36, 72290 N & 57400 E		6951.6	SUBGRADE
8	D + 34, 72410 N & 57320 E		6950.3	SUBGRADE
9	D + 32, 72600 N & 57670 E		6951.3	SUBGRADE
10	D + 30, 72750 N & 57800 E		6950.5	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
43	31450185	CLAY	D-38,72150N&57280E,6951.1	14.0	113.2	D698-A
42	31850185	CLAY	D + 34,72410N&57320E,6950.3	14.0	112.4	D698-A
45	31450185	CLAY	C + 31,72730N&57650E,6952.6	13.0	112.8	D698-A

Comments: **CB**  
\* DATUM Test Elevation = Top of RAC

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY

**A. McHaney**

(SIGNED COPY ON FILE)



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(505) 327-4966 • fax 327-5293

**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
POST OFFICE BOX 3077  
GALLUP, NM 87305

Date of Report **10-18-95**  
Job No. **3145JB031** Page 1 of 1  
Event/Invoice No. **31450243**  
Authorized By **E. MORALES** Date **08-02-95**  
Tested By **H. KUEBLER/WT** Date **08-02-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**

Test Locations Designated By **CLIENT**  
Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**  
Calibrated Volume of Sand Cone Apparatus **0.0387** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
1	0.0348	14.4	109.4	0.0	45	112.8	13.0	97	13.0 TO 15.0	95	YES
2	0.0336	14.8	108.2	0.0	45	112.8	13.0	96	13.0 TO 15.0	95	YES
3	0.0334	13.7	106.7	0.0	45	112.8	13.0	95	13.0 TO 15.0	95	YES
4	0.0282	13.2	111.8	0.0	45	112.8	13.0	99	13.0 TO 15.0	95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
1	C + 43, 71840 N & 56880 E		6955.7	SUBGRADE
2	C + 39, 72150 N & 57130 E		6952.2	SUBGRADE
3	RETEST OF #3 (07/28/95)		6951.3	SUBGRADE
4	RETEST OF #4 (07/28/95)		6952.6	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
45	31450185	CLAY	C + 31,72730N&57650E,6952.6	13.0	112.8	D698-A

Comments: **CB**  
\* DATUM Test Elevation = Top of RAC

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY A. McHaney



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**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
**POST OFFICE BOX 3077**  
**GALLUP, NM 87305**

Date of Report **10-18-95**  
Job No. **3145JB031** Page 1 of 1  
Event/Invoice No. **31450243-1**  
Authorized By **E. MORALES** Date **08-02-95**  
Tested By **H. KUEBLER/WT** Date **08-02-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**  
Test Locations Designated By **H. KUEBLER/WT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**  
Calibrated Volume of Sand Cone Apparatus **0.0387** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
5	0.0404	11.6	111.1	0.0	40	117.5	11.2	95	11.2 TO 13.2	95	YES
6	0.0381	12.3	112.4	0.0	40	117.5	11.2	96	11.2 TO 13.2	95	YES
7	0.0256	12.3	114.9	0.0	40	117.5	11.2	98	11.2 TO 13.2	95	YES
8	0.0361	12.7	111.8	0.0	40	117.5	11.2	95	11.2 TO 13.2	95	YES
9	0.0229	12.1	115.3	0.0	40	117.5	11.2	98	11.2 TO 13.2	95	YES
10	0.0340	11.4	111.1	0.0	40	117.5	11.2	95	11.2 TO 13.2	95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
5	B + 38, 72440 N & 57270 E		6953.1	SUBGRADE
6	B + 38, 72280 N & 57130 E		6954.1	SUBGRADE
7	B + 40, 72120 N & 57000 E		6954.9	SUBGRADE
8	B + 42, 71980 N & 57860 E		6956.4	SUBGRADE
9	B + 32, 72760 N & 57510 E		6955.0	SUBGRADE
10	B + 34, 72610 N & 57400 E		6953.0	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
40	31450185	CLAY	B + 32, 72760N & 57510E, 6955.0	11.2	117.5	D698-A

Comments: **CB**  
\* DATUM Test Elevation = Top of RAC

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

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REVIEWED BY

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**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
**POST OFFICE BOX 3077**  
**GALLUP, NM 87305**

Date of Report **11-15-95**  
Job No. **3145JB031** Page **1** of **1**  
Event/Invoice No. **31450243-2**  
Authorized By **E. MORALES** Date **08-03-95**  
Tested By **H. KUEBLER/WT** Date **08-03-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**  
Test Locations Designated By **CLIENT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**  
Calibrated Volume of Sand Cone Apparatus **0.0387** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
1	0.0309	11.0	113.0	0.0	38	117.5	9.8	96	9.8 TO 11.8	95	YES
2	0.0254	10.7	116.8	0.0	38	117.5	9.8	99	9.8 TO 11.8	95	YES
3	0.0270	10.1	118.3	0.0	38	117.5	9.8	100+	9.8 TO 11.8	95	YES
4	0.0304	11.6	115.8	0.0	38	117.5	9.8	99	9.8 TO 11.8	95	YES
5	0.0318	12.1	111.4	0.0	39	117.3	12.1	95	12.1 TO 14.1	95	YES
6	0.0295	12.5	111.0	0.0	39	117.3	12.1	95	12.1 TO 14.1	95	YES
7	0.0299	12.3	115.0	0.0	39	117.3	12.1	98	12.1 TO 14.1	95	YES
8	0.0309	14.1	110.5	0.0	45	112.8	13.0	98	13.0 TO 15.0	95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation •	
1	A + 41, 72110 N & 56860 E		6956.6	SUBGRADE
2	A + 39, 72130 N & 56970 E		6956.6	SUBGRADE
3	A + 37, 72410 N & 57110 E		6956.4	SUBGRADE
4	A + 35, 72580 N & 57290 E		6956.2	SUBGRADE
5	A + 33, 72570 N & 57240 E		6956.2	SUBGRADE
6	A + 31, 72900 N & 57500 E		6956.4	SUBGRADE
7	B + 29, 72960 N & 57700 E		6953.8	SUBGRADE
8	D + 39, 72060 N & 57220 E		6951.9	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS

LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
38	31450243	CLAY	A+41,72110N&56860E,6956.6	9.8	117.5	D698-A
39	31450243	CLAY	A+31,72900N&57500E,6956.4	12.1	117.3	D698-A
45	31450185	CLAY	C+31,72730N&57650E,6952.6	13.0	112.8	D698-A

Comments: **CB**

\* DATUM Test Elevation = Top of RAC

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

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REVIEWED BY \_\_\_\_\_

**A. Neely**

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87301

Job No.	3145JB031
Lab/Inv. No.	31450051
Report Date:	04/17/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Clayey Sand	Sampled By: H. Kuebler	Date: 03/06/95
-----------------------	------------------------	----------------

Source: Composite of S. Cell, Borrow Area	Submitted By: H. Kuebler	Date: 03/06/95
---	--------------------------	----------------

Authorized By: Client		Date: 03/06/95
-----------------------	--	----------------

Coefficient of Permeability, Constant Head

5.7 X 10<sup>-7</sup> cm/sec

0.59 ft/yr

Sample was compacted to 95% of ASTM 698

Copies to: Addressee (3), Billing (1), Field File (1)  
362/dn:unc031

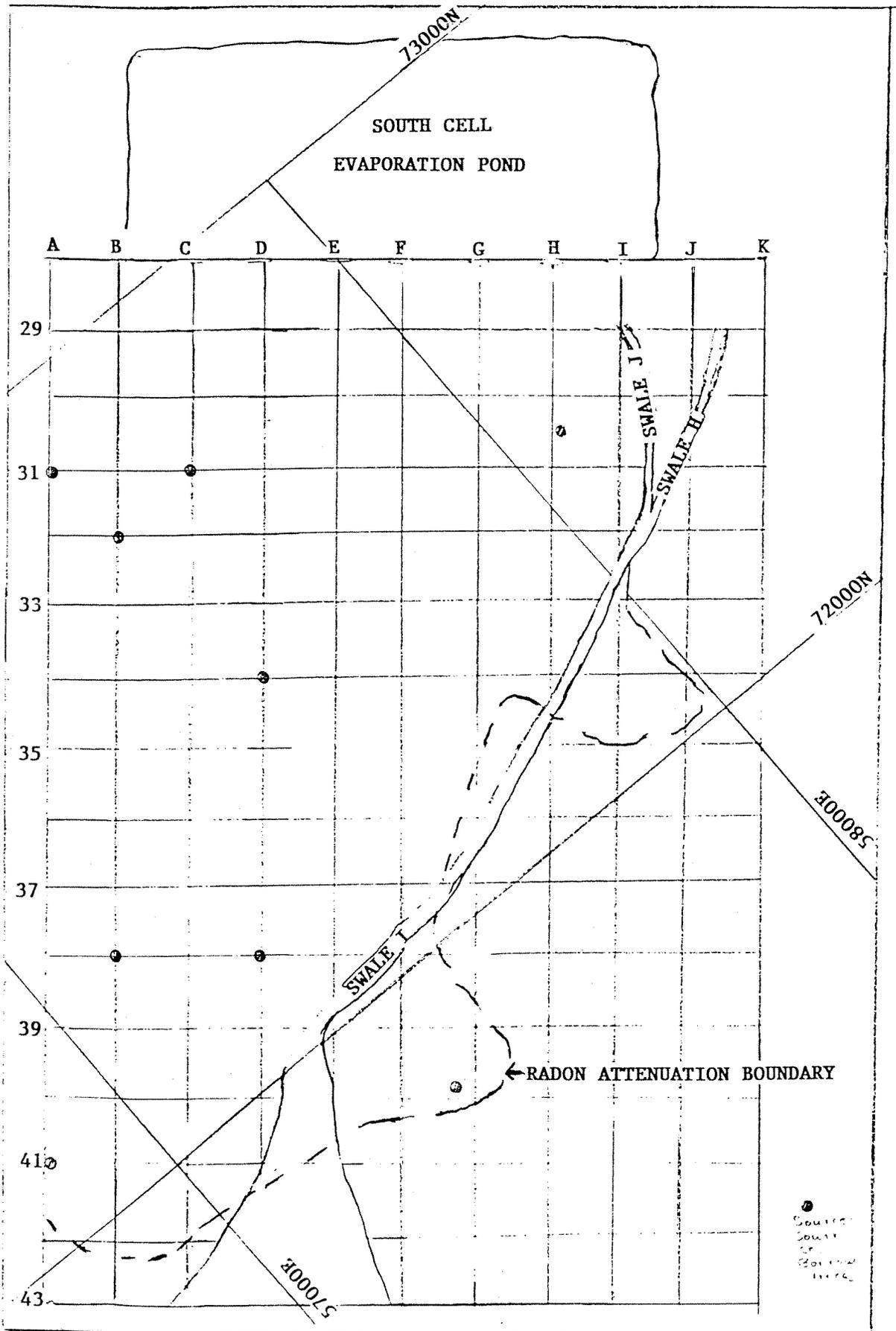
The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

REVIEWED BY Thomas Huake

**APPENDIX  
D**

APPENDIX D

PROCTOR TESTS, RADON ATTENUATION COVER



PROCTOR LOCATION SOUTH CELL

**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

WT JOB NO. 3145JB031

**TEST SUMMARY FOR SOUTH CELL**

DATE OF REPORT 12/06/95

TK

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
03/02/95	Proctor	Composite of	South Cell	Borrow Area		RAC	109.0	16.6		SC	Yes
07/13/95	Proctor	H.2 + 30.4	72450.0	58070.0	6953.1	RAC	108.7	15.3		CL	Yes
07/13/95	Proctor	D + 38	72150.0	57280.0	6951.1	RAC	113.2	14.0		CL	Yes
07/18/95	Proctor	F.8 + 39.8	72820.0	57370.0	6957.0	RAC	112.3	14.1		CL	Yes
07/21/95	Proctor	C + 31	72730.0	57650.0	6952.6	RAC	112.8	13.0		CL	Yes
07/21/95	Proctor	D + 34	72410.0	57320.0	6950.3	RAC	112.4	14.0		CL	Yes
07/21/95	Proctor	B + 38	72280.0	57130.0	6954.1	RAC	117.0	12.3		CL	Yes
07/28/95	Proctor	B + 32	72760.0	57510.0	6955.0	RAC	117.5	11.2		CL	Yes
08/03/95	Proctor	A + 31	72900.0	57500.0	6956.4	RAC	117.3	12.1		CL	Yes
08/03/95	Proctor	A + 41	72110.0	56860.0	6956.4	RAC	117.5	9.8		ML	Yes

RAC = Radon Attenuation Cover

cb/UNC.031/11

Dist: Client (3) Field File (1) Billing (1)

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450051

Type of Material Clayey Sand

Sampled By H. Kuebler/WT Date 03/02/9

Source of Material Composite of South Cell Borrow Area

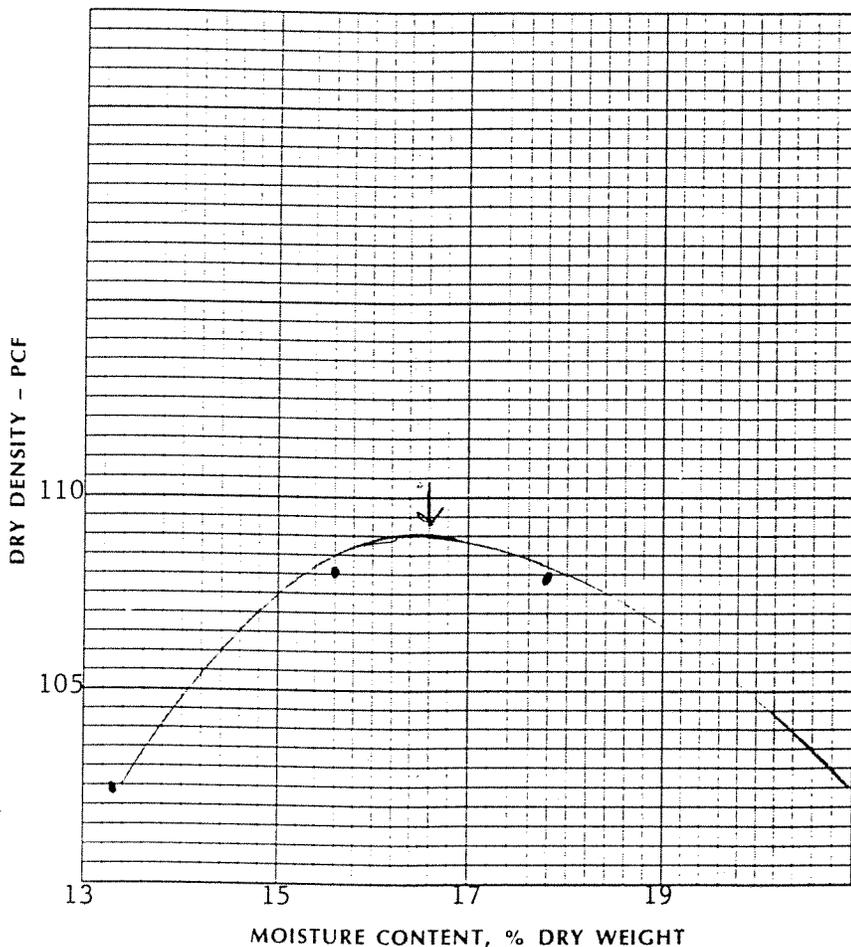
Submitted By H. Kuebler/WT Date 03/02/9

Tested/Calc. By H. Kuebler/WT Date 03/02/9

Test Procedure ASTM D698A

Reviewed By *[Signature]* Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	100	50	150	0			
Sample + Mold Weight, gms	6177.5	6144.9	6115.1	6011.5			
Mold Weight, gms	4257.9	4257.9	4257.9	4257.9			
Wet Sample Weight, gms	1919.6	1887	1857.2	1753.6			
Wet Sample Weight, lbs	4.232	4.160	4.094	3.866			
Wet Density, pcf	127.0	124.8	122.8	116.0			
Moisture Sample Wet, gms	210.4	324.3	360.7	270.1			
Moisture Sample Dry, gms	178.6	280.6	299.8	238.3			
Weight of Water, gms	31.8	43.7	60.9	31.8			
Moisture, %	17.8	15.6	20.3	13.3			
Dry Density, pcf	107.8	108.0	102.1	102.4			



Maximum Dry Density, pcf 109.0

Optimum Moisture Content, % 16.6

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450185

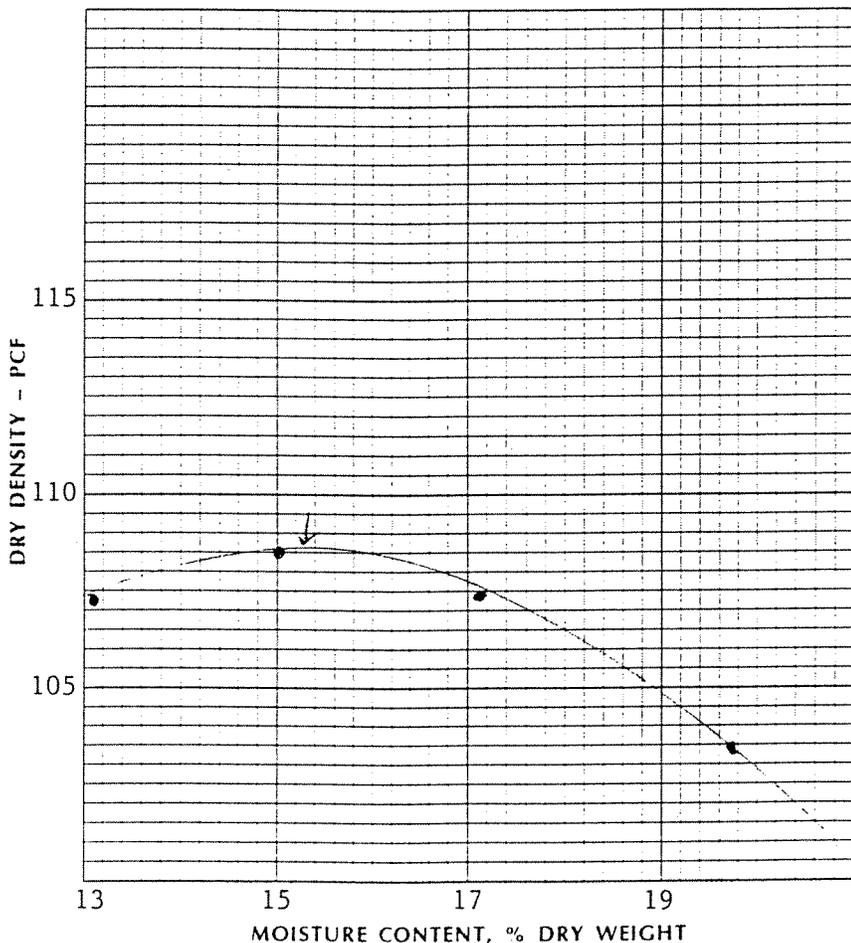
Type of Material Clay Sampled By C. Padilla/WT Date 07/13/95

Source of Material H.2 + 30.4 (72450N & 58070E) Submitted By C. Padilla/WT Date 07/14/95

Elev 6953.1 Tested/Calc. By C. Padilla/WT Date 07/14/95

Test Procedure ASTM D698A Reviewed By  Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	150	100	200	50			
Sample + Mold Weight, gms	6174.6	6159.5	6145.2	6106.4			
Mold Weight, gms	4273.0	4273.0	4273.0	4273.0			
Wet Sample Weight, gms	1901.6	1886.5	1872.2	1833.4			
Wet Sample Weight, lbs	4.192	4.159	4.127	4.042			
Wet Density, pcf	125.8	124.8	123.8	121.3			
Moisture Sample Wet, gms	367.1	355.1	379.2	368.5			
Moisture Sample Dry, gms	313.6	308.9	316.7	325.8			
Weight of Water, gms	53.5	46.2	62.5	42.7			
Moisture, %	17.1	15.0	19.7	13.1			
Dry Density, pcf	107.4	108.5	103.4	107.3			



Maximum Dry Density, pcf 108.7

Optimum Moisture Content, % 15.3

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450185

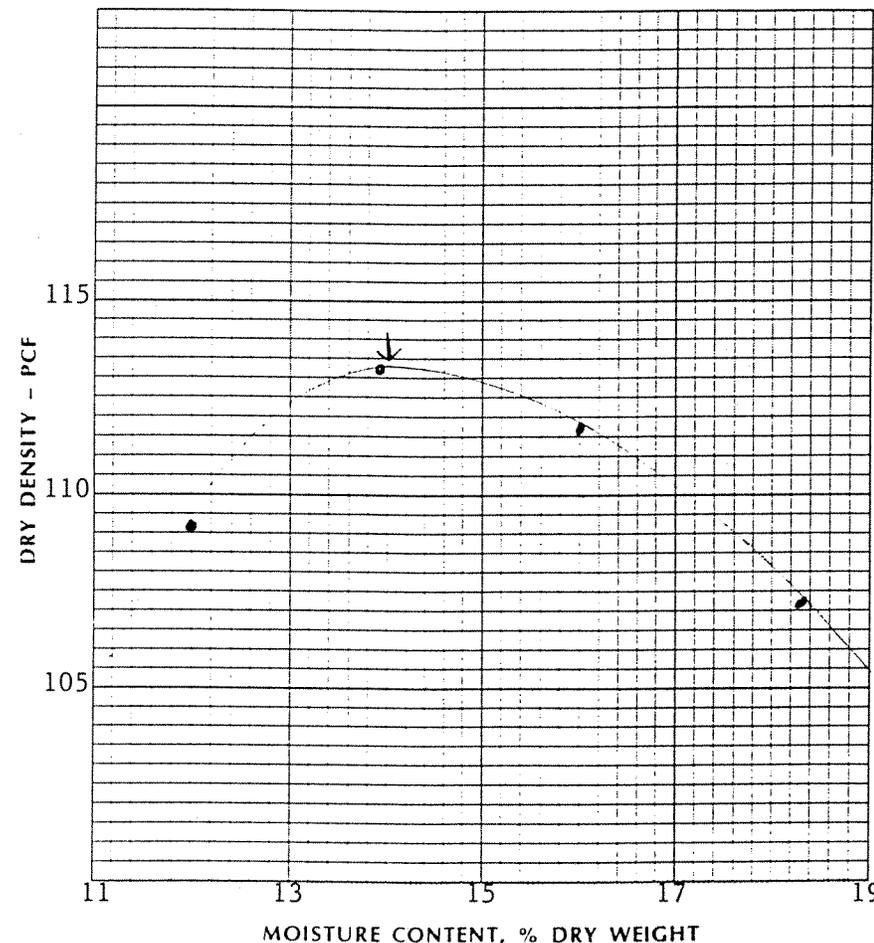
Type of Material Clay Sampled By C. Padilla/WT Date 07/13/9

Source of Material D + 38 (72150N & 57280E) Elev 6951.1 Submitted By C. Padilla/WT Date 07/14/9

Tested/Calc. By N. Smith/WT Date 07/17/9

Test Procedure ASTM D698A Reviewed By *[Signature]* Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	0	50	100	150			
Sample + Mold Weight, gms	6123.8	6225.7	6230.1	6180.0			
Mold Weight, gms	4272.6	4272.6	4272.6	4272.6			
Wet Sample Weight, gms	1851.2	1953.1	1957.5	1907.4			
Wet Sample Weight, lbs	4.081	4.306	4.315	4.205			
Wet Density, pcf	122.4	129.2	129.5	126.2			
Moisture Sample Wet, gms	402.5	403.4	619.8	466.5			
Moisture Sample Dry, gms	359.5	354.2	534.1	394.4			
Weight of Water, gms	43.0	49.2	85.7	72.1			
Moisture, %	12.0	13.9	16.0	18.3			
Dry Density, pcf	109.3	113.4	111.6	106.7			



Maximum Dry Density, pcf 113.2

Optimum Moisture Content, % 14.0

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

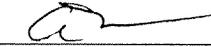
Job No. 3145JB031

Lab/Invoice No. 31450185

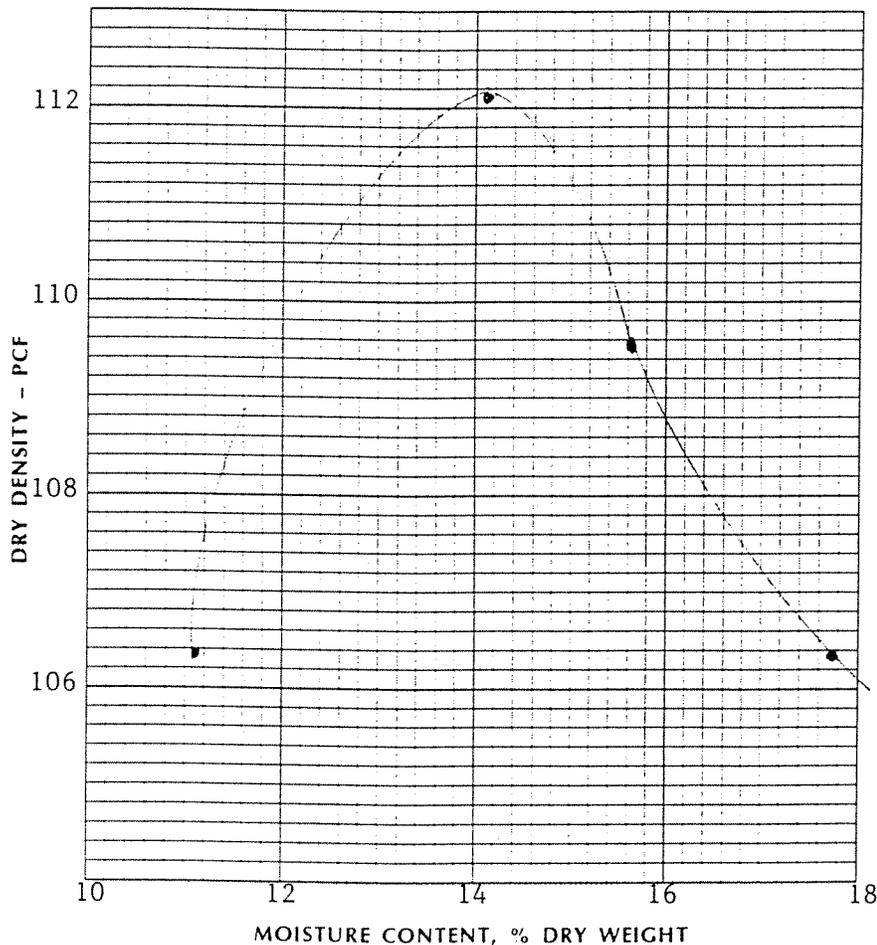
Type of Material Clay Sampled By H. Kuebler/WT Date 07/18/95

Source of Material F.8 + 39.8 (72820N & 57370E) Submitted By H. Kuebler/WT Date 07/18/95

Elev 6957.0 Tested/Calc. By M. Krake/WT Date 07/18/95

Test Procedure ASTM D698A Reviewed By  Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	100	150	50	200			
Sample + Mold Weight, gms	6116.6	6082.7	5975.8	6080.0			
Mold Weight, gms	4179.7	4179.7	4179.7	4179.7			
Wet Sample Weight, gms	1936.9	1903.0	1796.1	1900.3			
Wet Sample Weight, lbs	4.27	4.195	3.96	4.189			
Wet Density, pcf	128.1	125.9	118.8	125.7			
Moisture Sample Wet, gms	424.3	419.6	459.4	429.0			
Moisture Sample Dry, gms	372.0	363.1	413.5	364.4			
Weight of Water, gms	52.3	56.5	45.9	64.6			
Moisture, %	14.1	15.6	11.1	17.7			
Dry Density, pcf	112.3	108.9	106.9	106.8			



Maximum Dry Density, pcf 112.3

Optimum Moisture Content, % 14.1

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab / Invoice No. 31450185

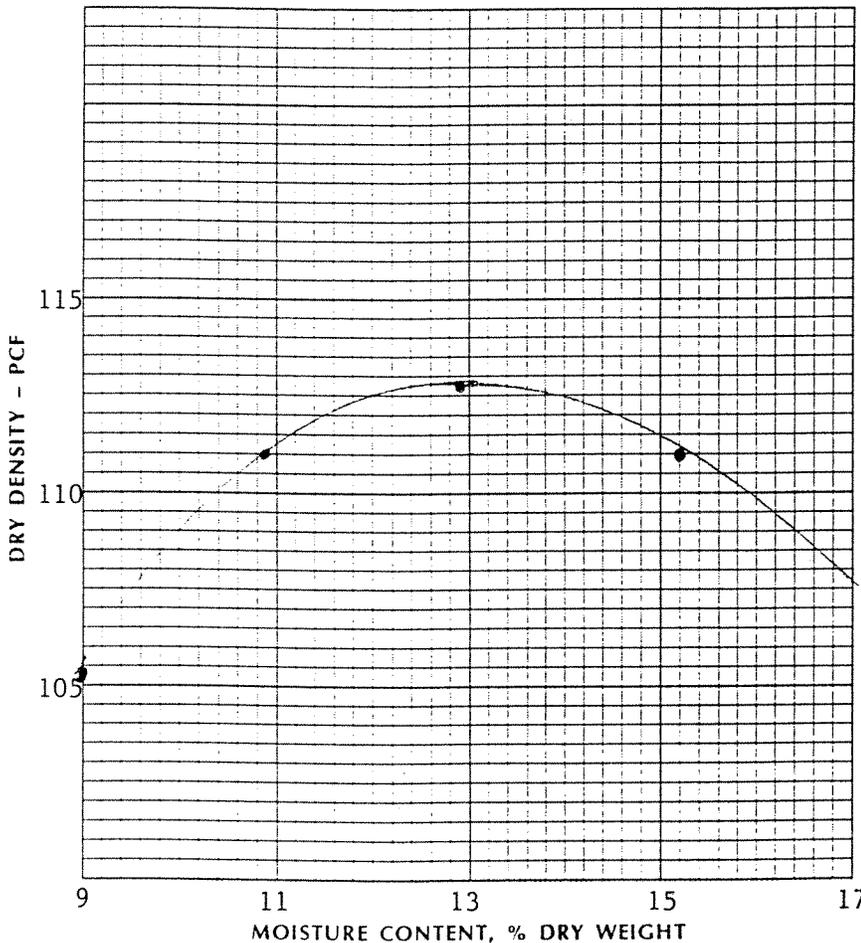
Type of Material Clay Sampled By C. Padilla/WT Date 07/21/9

Source of Material C + 31 (72730N & 57650E) Elev 6952.6 Submitted By C. Padilla/WT Date 07/22/9

Tested / Calc. By N. Smith/WT Date 07/25/9

Test Procedure ASTM D698A Reviewed By *[Signature]* Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	200	250	300	350	400		
Sample + Mold Weight, gms	5896.3	6025.1	6086.4	6097.2	6074.1		
Mold Weight, gms	4163.3	4163.3	4163.3	4163.3	4163.3		
Wet Sample Weight, gms	1733.0	1861.8	1923.1	1933.9	1910.8		
Wet Sample Weight, lbs	3.870	4.104	4.240	4.263	4.213		
Wet Density, pcf	114.6	123.1	127.2	127.9	126.4		
Moisture Sample Wet, gms	414.5	468.1	432.7	478.1	428.1		
Moisture Sample Dry, gms	380.2	422.1	383.1	414.9	364.5		
Weight of Water, gms	34.3	46.0	49.6	63.2	63.6		
Moisture, %	9.0	10.9	12.9	15.2	17.4		
Dry Density, pcf	105.1	111.0	112.7	111.0	107.7		



Maximum Dry Density, pcf 112.8

Optimum Moisture Content, % 13.0

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450185

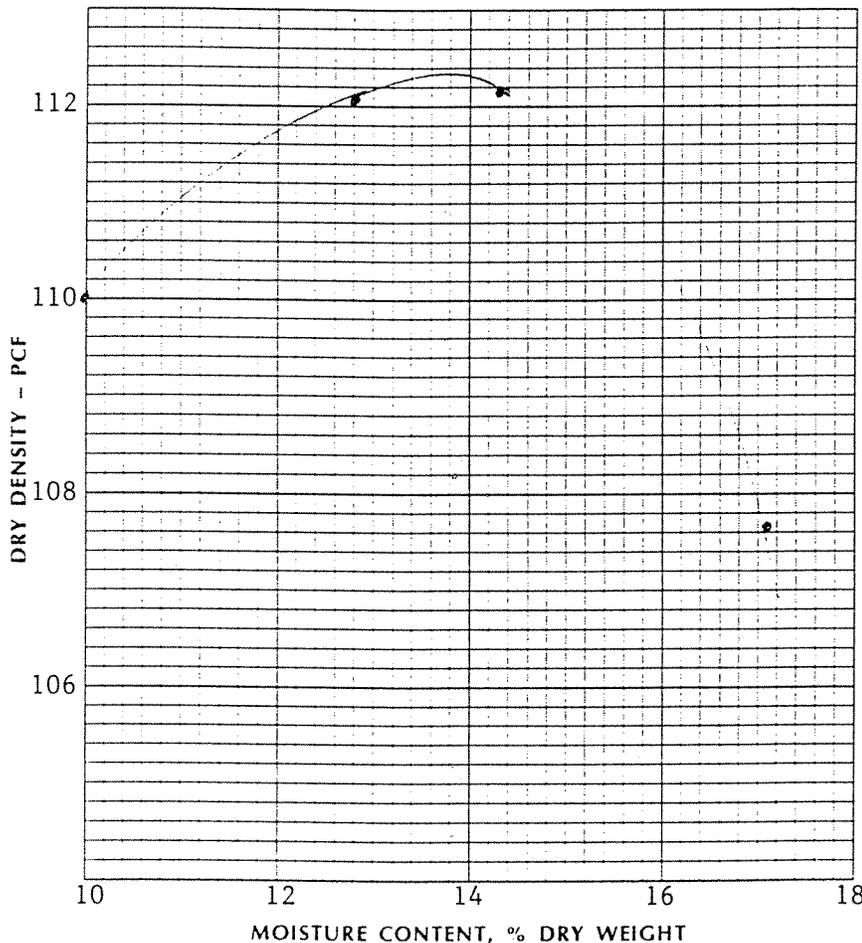
Type of Material Clay Sampled By C. Padilla/WT Date 07/21/95

Source of Material D + 34 (72410N & 57320E) Elev 6950.3 Submitted By C. Padilla/WT Date 07/22/95

Tested/Calc. By R. Griffith/WT Date 07/24/95

Test Procedure ASTM D698A Reviewed By *[Signature]* Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	150	200	250	300			
Sample + Mold Weight, gms	5983.1	6074.7	6106.7	6061.5			
Mold Weight, gms	4163.2	4163.2	4163.2	4163.2			
Wet Sample Weight, gms	1829.9	1911.5	1943.5	1898.3			
Wet Sample Weight, lbs	4.034	4.21	4.30	4.20			
Wet Density, pcf	121.0	126.4	128.5	125.5			
Moisture Sample Wet, gms	490.5	382.9	379.6	430.1			
Moisture Sample Dry, gms	446.1	339.6	332.0	367.0			
Weight of Water, gms	44.4	43.3	47.6	63.1			
Moisture, %	10.0	12.8	14.3	17.2			
Dry Density, pcf	110.0	112.1	112.4	107.1			



Maximum Dry Density, pcf 112.4

Optimum Moisture Content, % 14.0

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450185

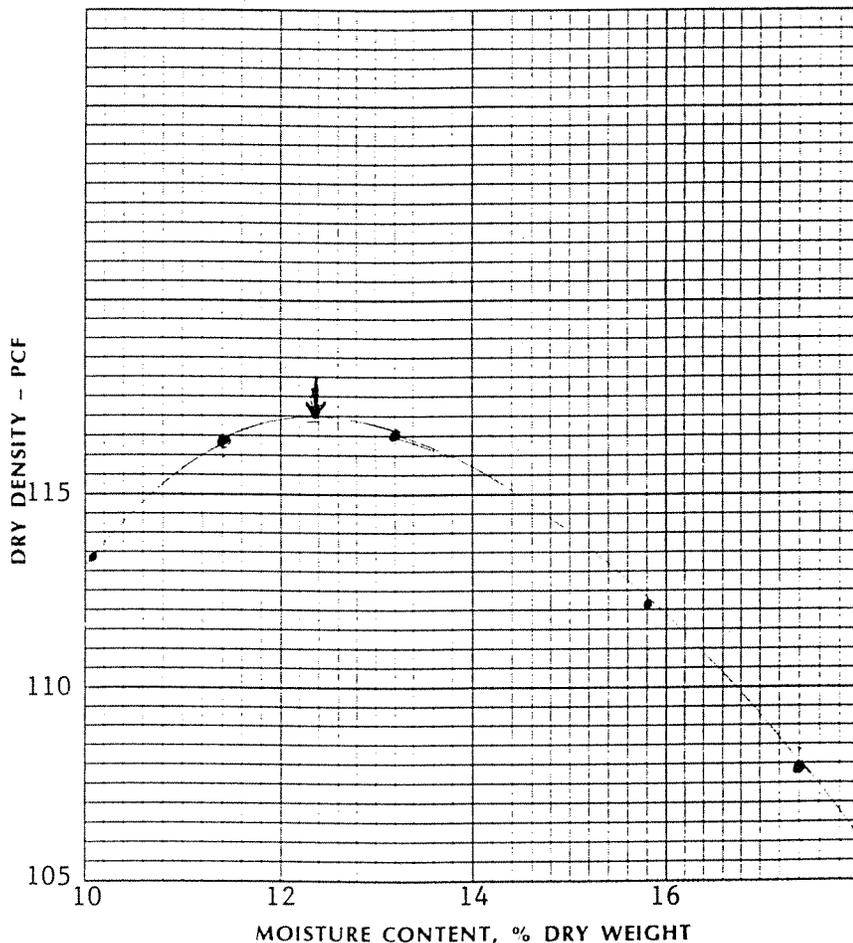
Type of Material Clay Sampled By C. Padilla/WT Date 07/21/95

Source of Material B + 38 (72280N & 57130E) Elev 6954.1 Submitted By C. Padilla/WT Date 07/22/95

Tested/Calc. By N. Smith/WT Date 07/24/95

Test Procedure ASTM D698A Reviewed By *[Signature]* Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	100	150	200	250	50		
Sample + Mold Weight, gms	6122.8	6157.8	6127.0	6078.1	6049.0		
Mold Weight, gms	4163.2	4163.2	4163.2	4163.2	4163.2		
Wet Sample Weight, gms	1959.6	1994.6	1963.8	1914.9	1885.8		
Wet Sample Weight, lbs	4.320	4.397	4.329	4.221	4.157		
Wet Density, pcf	129.6	131.9	129.9	126.6	124.7		
Moisture Sample Wet, gms	494.0	674.0	432.6	489.8	447.0		
Moisture Sample Dry, gms	443.3	595.6	373.5	417.1	405.9		
Weight of Water, gms	50.7	78.4	59.1	72.7	41.1		
Moisture, %	11.4	13.2	15.8	17.4	10.1		
Dry Density, pcf	116.3	116.5	112.2	107.8	113.3		



Maximum Dry Density, pcf 117.0

Optimum Moisture Content, % 12.3

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

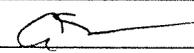
Job No. 3145JB031

Lab/Invoice No. 31450185

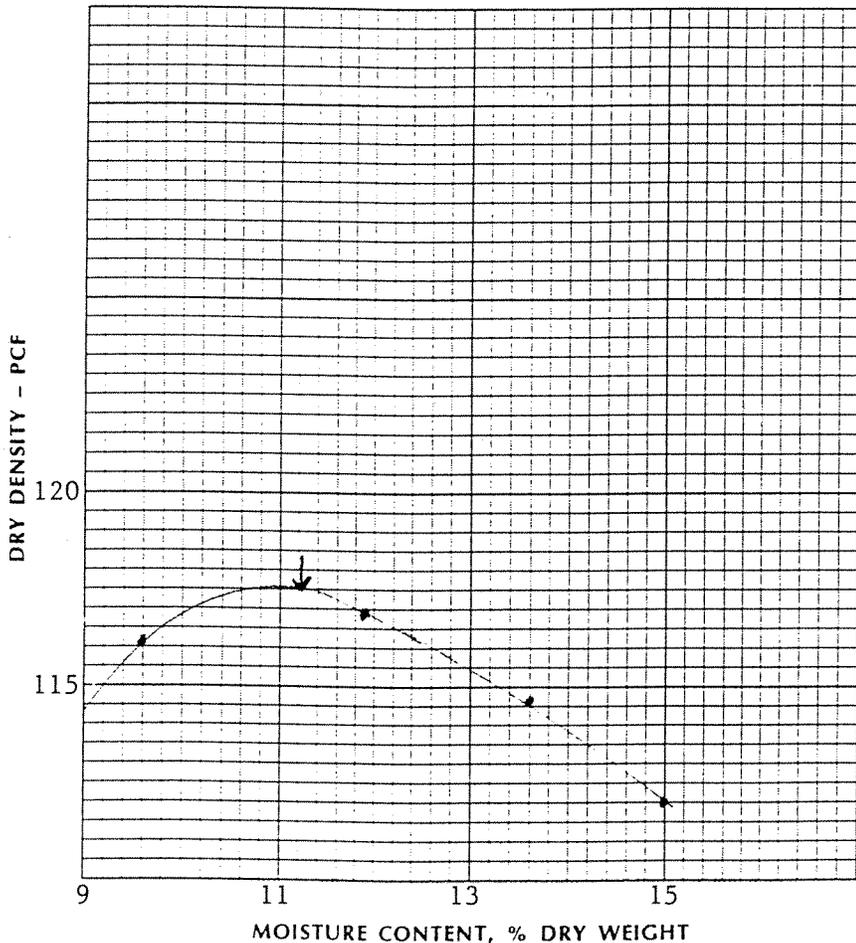
Type of Material Clay Sampled By H. Kuebler/WT Date 07/28/9

Source of Material B + 32 (72760N & 57510E) Elev 6955.0 Submitted By H. Kuebler/WT Date 07/28/9

Tested/Calc. By H. Kuebler/WT Date 07/28/9

Test Procedure ASTM D698A Reviewed By  Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	150	200	250	300			
Sample + Mold Weight, gms	6180.5	6236.0	6224.6	6202.3			
Mold Weight, gms	4256.4	4256.4	4256.4	4256.4			
Wet Sample Weight, gms	1924.1	1979.6	1968.2	1945.9			
Wet Sample Weight, lbs	4.24	4.36	4.34	4.29			
Wet Density, pcf	127.2	130.8	130.2	128.7			
Moisture Sample Wet, gms	390.4	429.1	430.0	430.6			
Moisture Sample Dry, gms	356.1	383.5	378.5	374.4			
Weight of Water, gms	34.3	45.6	51.5	56.2			
Moisture, %	9.6	11.9	13.6	15.0			
Dry Density, pcf	116.1	116.9	114.6	111.9			



Maximum Dry Density, pcf 117.5

Optimum Moisture Content, % 11.2

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450243

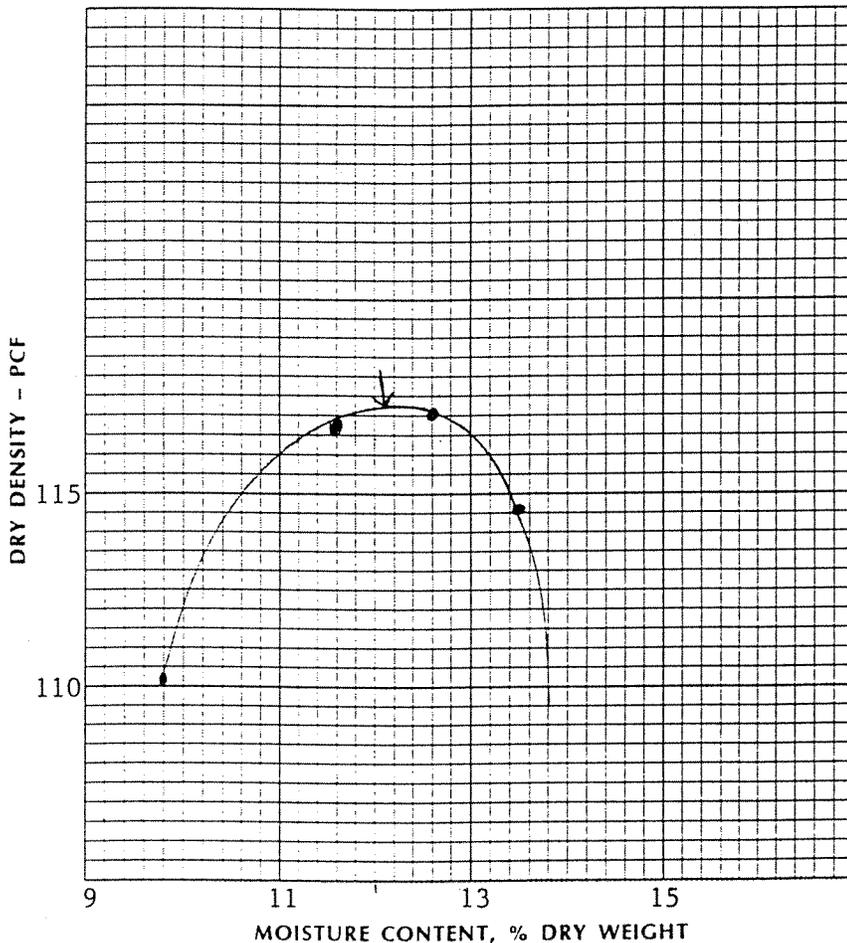
Type of Material Clay Sampled By H. Kuebler/WT Date 08/03/95

Source of Material A + 31 (72900N & 57500E) Elev 6956.4 Submitted By H. Kuebler/WT Date 08/03/95

Tested/Calc. By H. Kuebler/WT Date 08/03/95

Test Procedure ASTM D698A Reviewed By *[Signature]* Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	200	250	150	225			
Sample + Mold Weight, gms	6223.7	6226.1	6085.3	6247.7			
Mold Weight, gms	4256.4	4256.4	4256.4	4256.4			
Wet Sample Weight, gms	1967.3	1969.7	1828.8	1991.3			
Wet Sample Weight, lbs	4.34	4.34	4.03	4.39			
Wet Density, pcf	130.2	130.2	120.9	131.7			
Moisture Sample Wet, gms	487.5	367.3	317.5	317.9			
Moisture Sample Dry, gms	436.9	323.5	289.1	282.3			
Weight of Water, gms	50.6	43.8	28.4	35.6			
Moisture, %	11.6	13.5	9.8	12.6			
Dry Density, pcf	116.7	114.7	110.1	117.0			



Maximum Dry Density, pcf 117.3

Optimum Moisture Content, % 12.1

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450243

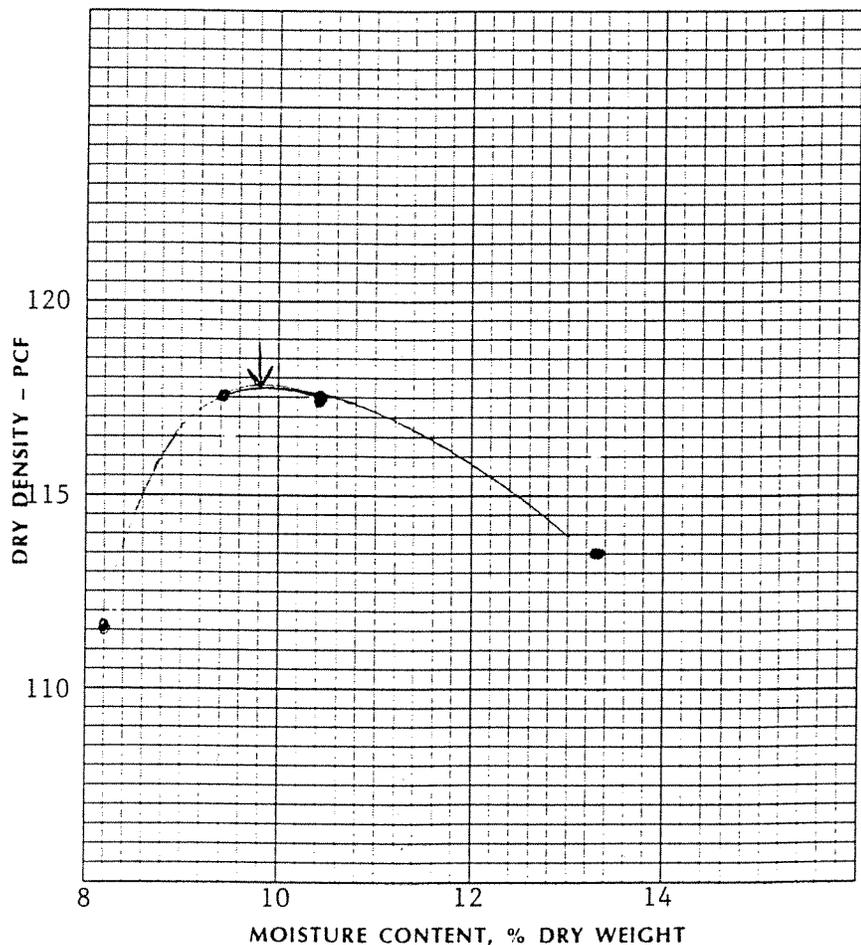
Type of Material Silt Sampled By H. Kuebler/WT Date 08/03/9

Source of Material A + 41 (72110N & 56860E) Elev 6956.6 Submitted By H. Kuebler/WT Date 08/03/9

Tested/Calc. By H. Kuebler/WT Date 08/03/9

Test Procedure ASTM D698A Reviewed By *[Signature]* Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	50	100	0	-50			
Sample + Mold Weight, gms	6217.5	6201.9	6082.0	6199.3			
Mold Weight, gms	4256.4	4256.4	4256.4	4256.4			
Wet Sample Weight, gms	1961.1	1945.5	1825.6	1942.9			
Wet Sample Weight, lbs	4.32	4.289	4.03	4.28			
Wet Density, pcf	129.7	128.7	120.9	128.5			
Moisture Sample Wet, gms	353.8	293.8	310.5	311.1			
Moisture Sample Dry, gms	320.5	259.4	287.0	284.4			
Weight of Water, gms	33.3	34.4	23.5	26.7			
Moisture, %	10.4	13.3	8.2	9.4			
Dry Density, pcf	117.5	113.6	111.7	117.5			



Maximum Dry Density, pcf 117.5

Optimum Moisture Content, % 9.8

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4



APPENDIX E

ROCK QUALITY DETERMINATIONS, ROCK MULCH AND RIPRAP



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### ROCK QUALITY DETERMINATION

United Nuclear Corporation  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, New Mexico 87305-3077

Job No. 3145JB031  
Inv. No. 31450084  
Date of Report 12/05/95  
Reviewed By [Signature]

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project  
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 04/06/95  
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 04/06/95  
Material Type: Basaltic 1.5 Aggregate Intended Use \_\_\_\_\_

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.735	9.4	9	84.6
Absorption, %	1.21	9.8	2	11.7
L.A. Abrasion, 100 rev, %	6	7.6	1	7.6
Sodium Soundness Loss, %	2.74	9.7	11	106.7

Total = 210.6, Rock Quality Score =  $210.6/230 \times 100 = 92$

Dist: Client (3) Field File (1)

/cb:RQD.UNC12



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Farmington, New Mexico 87401  
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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client:	UNC Mining & Milling Attn: Ed Morales PO Box 3077 Gallup, NM 87305		Job No.	3145JB031
			Lab/Inv. No.	31450084
			Report Date:	04/24/95
Project:	1996 Reclamation			
Location:	Church Rock, NM			
Material:	1.5 Aggregate	Sampled By:	H. Kuebler	Date 04/06/95
Source:	Hamilton Brothers	Submitted By:	H. Kuebler	Date 04/06/95
		Authorized By:	Client	Date 04/06/95

Coarse Aggregate, ASTM C127

Weight of Oven-Dry Specimen in Air, gms. - 4369.6

Bulk Specific Gravity	2.703
Bulk Specific Gravity (SSD)	2.735
Apparent Specific Gravity	2.794
Absorption, Percent	1.21

Copies to: Addressee (3), Billing (1)  
46.4/dn:unc031

The above services and report were performed pursuant to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

REVIEWED BY *H. Kuebler*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450084  
Report Date: 04/24/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>1.5 Aggregate</u>	Sampled By: <u>H. Kuebler</u>	Date: <u>04/06/95</u>
Source: <u>Hamilton Brothers</u>	Submitted By: <u>H. Kuebler</u>	Date: <u>04/06/95</u>
Supplier: <u>Hamilton Brothers</u>	Authorized By: <u>Client</u>	Date: <u>04/06/95</u>

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 6

Copies to: Addressee (3), Billing (1)  
46.2/unc031

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REVIEWED BY *Thomas Drake*

**LABORATORY REPORT**

SOUNDNESS OF AGGREGATES

Client: UNC Mining & Milling  
Attn: Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
 Lab/Inv. No. 31450084  
 Report Date: 04/24/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: 1.5 Aggregate      Sampled By: H. Kuebler      Date: 04/06/95

Source: Hamilton Brothers      Submitted By: H. Kuebler      Date: 04/06/95

Procedure: ASTM C88      Authorized By: Client      Date: 04/06/95

Solution: Sodium Sulfate (Used)

FINE AGGREGATE

<u>Fine Fraction Size</u>	<u>Grading of Original Sample Percent</u>	<u>Wt. of Test Fractions Before Test, grams</u>	<u>Percentage Passing Designated Sieve</u>	<u>Weight Percentage Loss, %</u>
Minus No. 100				
No. 50 to No. 100				
No. 30 to No. 50				
No. 16 to No. 30				
No. 8 to No. 16				
No. 4 to No. 8				
3/8 to No. 4				
Totals				

COARSE AGGREGATE

<u>Coarse Fraction Size</u>	<u>Grading of Original Sample Percent</u>	<u>Wt. of Test Fractions Before Test, grams</u>	<u>Percentage Passing Designated Sieve</u>	<u>Weighted Percentage Loss, %</u>
2-1/2" to 2"				
2" to 1-1/2"				
1-1/2" to 1"	76		2.48	1.88
1" to 3/4"				
3/4" to 1/2"	24			.86
1/2" to 3/8"				
3/8" to No. 4				
Minus No. 4				
Totals				2.74

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1)  
 46.3/dn:unc031

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REVIEWED BY Thomas Buale



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### ROCK QUALITY DETERMINATION

United Nuclear Corporation  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, New Mexico 87305-3077

Job No. 3145JB031  
Inv. No. 31450145  
Date of Report 11/14/95  
Reviewed By JR

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project  
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 06/07/95  
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 06/07/95  
Material Type: D50 1.5" Intended Use Swale Aggregate

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.753	10	9	90
Absorption, %	2.66	1.5	2	3
L.A. Abrasion, 100 rev, %	3.0	9.0	1	9
Sodium Soundness Loss, %	3.77	8.5	11	93.5

Total = 195.5, Rock Quality Score =  $195.5/230 \times 100 = 85$

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No.	3145JB031
Lab/Inv. No.	31450145
Report Date:	11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D <sup>50</sup> 1.5 Aggre.	Sampled By: <u>H.K./WT</u>	Date: <u>6-7-95</u>
Source: <u>Hamilton Brothers</u>	Submitted By: <u>H.K./WT</u>	Date: <u>6-7-95</u>
Supplier: _____	Authorized By: <u>Client</u>	Date: <u>6-7-95</u>

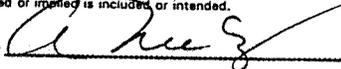
L.A. Abrasion, ASTM C535, Grading 2

% Loss at 100 Revs.    3.0

% Loss at 500 Revs.    —

Copies to: Addressee (3), Billing (1), Field File (1).  
67.2\ha:UN031

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No.	3145JB031
Lab/Inv. No.	31450145
Report Date:	11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Crushed Basalt D<sup>50</sup> 1.5 Aggre.</u>	Sampled By: <u>H.K./WT</u>	Date: <u>6-7-95</u>
Source: <u>Hamilton Brothers</u>	Submitted By: <u>H.K./WT</u>	Date: <u>6-7-95</u>
	Authorized By: <u>Client</u>	Date: <u>6-7-95</u>

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	2.682
Bulk Specific Gravity (SSD)	2.753
Apparent Specific Gravity	2.888
Absorption, Percent	2.66

Copies to: Client (3), Billing (1), Field File (1).  
67.1\ha:UN031

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**LABORATORY REPORT**

SOUNDNESS OF AGGREGATES

Client:	UNC Mining and Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305	Job No.	3145JB031
		Lab/Inv. No.	31450145
		Report Date:	11-14-95
Project:	1995 Reclamation		
Location:	Church Rock, NM		
Material:	Crushed Basalt D <sup>50</sup> 1.5 Aggre.	Sampled By:	H.K./WT
		Date	6-7-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT
		Date	6-7-95
Procedure:	ASTM C88	Authorized By:	Client
		Date	6-7-95
		Solution:	Sodium Sulfate (Used) 5 Cycles

COARSE AGGREGATE

Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %
2-1/2" to 2" 2" to 1-1/2"	38	2015.4	1.1	.41
1-1/2" to 1" 1" to 3/4"	46 9	1022.5 508.5	4.6 10.9	2.116 .981
3/4" to 1/2" 1/2" to 3/8"	4 0	671.8 330.6	6.6 8.8	.264 0
3/8" to No. 4 Minus No. 4	0	300.6	10.0	0
Totals				3.77

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1).  
67.3\ha:UN031

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REVIEWED BY \_\_\_\_\_



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### ROCK QUALITY DETERMINATION

United Nuclear Corporation  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, New Mexico 87305-3077

Job No. 3145JB031  
Inv. No. 31450243  
Date of Report 08/29/95  
Reviewed By AW

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project  
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 07/05/95  
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 07/05/95  
Material Type: Crushed Basalt Intended Use D50 - 1.5"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.747	10	9	90
Absorption, %	.61	7.2	2	14.4
L.A. Abrasion, 100 rev, %	5.6	7.63	1	7.63
Sodium Soundness Loss, %	2.30	9.375	11	103.1

Total = 214.5, Rock Quality Score =  $214.5/230 \times 100 = 93$

/cb:ROD.UNC2



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling  
Attn: Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No.	3145JB031
Lab/Inv. No.	31450185
Report Date:	11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D <sup>50</sup> 1.5 Aggregate	Sampled By: H.K./WT	Date: 7-5-95
Source: Hamilton Brothers	Submitted By: H.K./WT	Date: 7-5-95
	Authorized By: Client	Date: 7-5-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	2.730
Bulk Specific Gravity (SSD)	2.747
Apparent Specific Gravity	2.776
Absorption, Percent	0.61

Copies to: Client (3), Billing (1), Field File (1).  
75\ha:UN031

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client:	UNC Mining & Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305	Job No.	3145JB031
		Lab/Inv. No.	31450243
		Report Date:	8-28-95
Project:	1995 Reclamation		
Location:	Church Rock, NM		
Material:	1.5 Aggregate	Sampled By:	HK Date 7-5-95
Source:		Submitted By:	HK Date 7-5-95
Supplier:		Authorized By:	Client Date 7-5-95

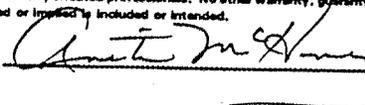
L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 5.6

% Loss at 500 Revs.

Copies to: Addressee (3), Billing (1), Field File (1).  
75\ha:UNC031

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REVIEWED BY: 

**LABORATORY REPORT**

SOUNDNESS OF AGGREGATES

Client: UNC Mining & Milling  
 Attn: Mr. Ed Morales  
 PO Box 3077  
 Gallup, NM 87305

Job No. 3145JB031  
 Lab/Inv. No. 31450243  
 Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: 1.5 Aggregate      Sampled By: HK      Date: 7-5-95

Source: Hamilton Brothers      Submitted By: HK      Date: 7-5-95

Procedure: ASTM C88      Authorized By: Client      Date: 7-5-95

Solution: Sodium Sulfate (Fresh) 5 cycles

COARSE AGGREGATE

<u>Coarse Fraction Size</u>	<u>Grading of Original Sample Percent</u>	<u>Wt. of Test Fractions Before Test, grams</u>	<u>Percentage Passing Designated Sieve</u>	<u>Weighted Percentage Loss, %</u>
2-1/2" to 2" 2" to 1-1/2"	39	2109.7	2.803	1.093
1-1/2" to 1" 1" to 3/4"	61	1015.3	1.983	1.210
3/4" to 1/2" 1/2" to 3/8"				
3/8" to No. 4 Minus No. 4				
Totals	100			2.30

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1).  
 75\ha:unc031

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REVIEWED BY *Ant McPhy*



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**ROCK QUALITY DETERMINATION**

United Nuclear Corporation  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, New Mexico 87305-3077

Job No. 3145JB031  
Inv. No. 31450122  
Date of Report 11/14/95  
Reviewed By \_\_\_\_\_

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project  
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 05/23/95  
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 05/23/95  
Material Type: D50 .35 Aggregate Intended Use Swale Aggregate

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.756	10	9	90
Absorption, %	2.1	3	2	6
L.A. Abrasion, 100 rev, %	2.7	9	1	9
Sodium Soundness Loss, %	4.93	8	11	88

Total = 193.0, Rock Quality Score =  $193.0/230 \times 100 = 84$

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450122  
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D<sup>50</sup> .35 Aggre.      Sampled By: H.K./WT      Date 5-23-95

Source: Hamilton Brothers      Submitted By: H.K./WT      Date 5-23-95

Authorized By: Client      Date 5-23-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	2.699
Bulk Specific Gravity (SSD)	2.756
Apparent Specific Gravity	2.863
Absorption, Percent	2.1

Copies to: Client (3), Billing (1), Field File (1).  
523.1\ha:UN031

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REVIEWED BY *A. Kelly*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No.	3145JB031
Lab/Inv. No.	31450122
Report Date:	11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D <sup>50</sup> .35 Aggre.	Sampled By: H.K./WT	Date	5-23-95
Source: Hamilton Brothers	Submitted By: H.K./WT	Date	5-23-95
Supplier:	Authorized By: Client	Date	5-23-95

L.A. Abrasion, ASTM C131, Grading

% Loss at 100 Revs. 2.7

% Loss at 500 Revs. —

Copies to: Addressee (3), Billing (1), Field File (1).  
523.2\ha:UN031

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**LABORATORY REPORT**

**SOUNDNESS OF AGGREGATES**

Client:	UNC Mining and Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305	Job No.	3145JB031
		Lab/Inv. No.	31450122
		Report Date:	11-14-95
Project:	1995 Reclamation		
Location:	Church Rock, NM		
Material:	Crushed Basalt	Sampled By:	H.K./WT
		Date	5-23-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT
		Date	5-23-95
Procedure:	ASTM C88	Authorized By:	Client
		Date	5-23-95
		Solution:	Sodium Sulfate (Used) 5 Cycles

**COARSE AGGREGATE**

Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %
2-1/2" to 2" 2" to 1-1/2"				
1-1/2" to 1" 1" to 3/4"	28 11	1004.3 503.0	4.0 5.1	1.12 .56
3/4" to 1/2" 1/2" to 3/8"	14 7	670.1 330.6	9.6 12.9	1.34 .90
3/8" to No. 4 Minus No. 4	11	300.9	9.2	1.01
Totals				4.93

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Copies to: Addressee (3), Billing (1), Field File (1).  
523/ha:UN031

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### ROCK QUALITY DETERMINATION

United Nuclear Corporation  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, New Mexico 87305-3077

Job No. 3145JB031  
Inv. No. 31450145  
Date of Report 11/14/95  
Reviewed By [Signature]

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project  
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 06/12/95  
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 06/12/95  
Material Type: D50 .35 Aggregate Intended Use Swale Aggregate

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.75	10	9	90
Absorption, %	1.5	4	2	8
L.A. Abrasion, 100 rev, %	2.6	9.0	1	9
Sodium Soundness Loss, %	6.38	7.0	11	77.0

Total = 184.0, Rock Quality Score =  $184.0/230 \times 100 = 80$

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450145  
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D<sup>50</sup> .35 Aggre.      Sampled By: H.K./WT      Date 6-12-95

Source: Hamilton Brothers      Submitted By: H.K./WT      Date 6-12-95

Authorized By: Client      Date 6-12-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	2.709
Bulk Specific Gravity (SSD)	2.750
Apparent Specific Gravity	2.824
Absorption, Percent	1.50

Copies to: Client (3), Billing (1), Field File (1).  
612\ha:UN031

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450145  
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Crushed Basalt D<sup>50</sup> .35 aggre.</u>	Sampled By: <u>H.K./WT</u>	Date: <u>6-12-95</u>
Source: <u>Hamilton Brothers</u>	Submitted By: <u>H.K./WT</u>	Date: <u>6-12-95</u>
Supplier: _____	Authorized By: <u>Client</u>	Date: <u>6-12-95</u>

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 2.6

% Loss at 500 Revs. —

Copies to: Addressee (3), Billing (1), Field File (1).  
612.3\ha:UN031

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**LABORATORY REPORT**

SOUNDNESS OF AGGREGATES

Client:	UNC Mining & Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305	Job No.	3145JB031
		Lab/Inv. No.	31450145
		Report Date:	11-15-95
Project:	1995 Reclamation		
Location:	Church Rock, NM		
Material:	Crushed Basalt	Sampled By:	H.K./WT
		Date	6-12-95
Source:	D <sup>50</sup> .35 Aggre.	Submitted By:	H.K./WT
		Date	6-12-95
Procedure:	ASTM C88	Authorized By:	Client
		Date	6-12-95
		Solution:	Sodium Sulfate (Used) Cycles 5

COARSE AGGREGATE

Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %
2-1/2" to 2" 2" to 1-1/2"				
1-1/2" to 1" 1" to 3/4"	28 11	1007.2 500.8	9.1 6.0	2.55 .66
3/4" to 1/2" 1/2" to 3/8"	14 7	670.2 331.3	6.9 15.9	.97 1.11
3/8" to No. 4 Minus No. 4	11	300.5	9.9	1.09
Totals				6.38

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1).  
628\h:unc031

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### ROCK QUALITY DETERMINATION

United Nuclear Corporation  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, New Mexico 87305-3077

Job No. 3145JB031  
Inv. No. 31450185  
Date of Report 12/05/95  
Reviewed By *[Signature]*

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project  
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 07/10/95  
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 07/10/95  
Material Type: D50 .35 Aggregate Intended Use Swales

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.718	9.3	9	83.7
Absorption, %	2.07	2.9	2	5.8
L.A. Abrasion, 100 rev, %	5.4	7.6	1	7.6
Sodium Soundness Loss, %	.99	10	11	110

Total = 207.1, Rock Quality Score =  $207.1/230 \times 100 = 90$

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-27-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material:	<u>Crushed Basalt D<sup>50</sup> .35 Aggre.</u>	Sampled By:	<u>H.K./WT</u>	Date	<u>7-10-95</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H.K./WT</u>	Date	<u>7-10-95</u>
		Authorized By:	<u>Client</u>	Date	<u>7-10-95</u>

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.663</u>
Bulk Specific Gravity (SSD)	<u>2.718</u>
Apparent Specific Gravity	<u>2.818</u>
Absorption, Percent	<u>2.07</u>

Copies to: Client (3), Billing (1), Field File (1).  
710.1\ha:UN031

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REVIEWED BY *A. Rudy*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No.	3145JB031
Lab/Inv. No.	31450185
Report Date:	11-27-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D <sup>50</sup> .35 Aggre.	Sampled By: H.K./WT	Date: 7-10-95
Source: Hamilton Brothers	Submitted By: H.K./WT	Date: 7-10-95
Supplier:	Authorized By: Client	Date: 7-10-95

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs.    5.4

% Loss at 500 Revs.      

Copies to: Addressee (3), Billing (1), Field File (1).  
710.2\ha:UN031

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REVIEWED BY *A. Kelly*



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**LABORATORY REPORT**

SOUNDNESS OF AGGREGATES

Client:	UNC Mining and Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305	Job No.	3145JB031
		Lab/Inv. No.	31450185
		Report Date:	11-27-95
Project:	1995 Reclamation		
Location:	Church Rock, NM		
Material:	Basalt D <sup>50</sup> .35 Aggre.	Sampled By:	H.K./WT Date 7-10-95
Source:		Submitted By:	H.K./WT Date 7-10-95
Procedure:	ASTM C88	Authorized By:	Client Date 7-10-95
		Solution:	Sodium Sulfate (Used) 5 Cycles

COARSE AGGREGATE

Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %
2-1/2" to 2" 2" to 1-1/2"				
1-1/2" to 1" 1" to 3/4"	17 7	1009.7 500.7	.05 .04	.01 .00
3/4" to 1/2" 1/2" to 3/8"	14 10	670.3 330.7	.03 .36	.4 .04
3/8" to No. 4 Minus No. 4	17	300.0	3.2	.54
Totals				.99

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1).  
710\ha:UN031

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**ROCK QUALITY DETERMINATION**

United Nuclear Corporation  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, New Mexico 87305-3077

Job No. 3145JB031  
Inv. No. 31450243  
Date of Report 08/29/95  
Reviewed By *[Signature]*

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project  
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 06/20/95  
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 06/20/95  
Material Type: Crushed Basalt Intended Use D50 - 3

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.728	9.5	9	85.5
Absorption, %	1.45	4	2	8.0
L.A. Abrasion, 100 rev, %	6.1	7.6	1	7.6
Sodium Soundness Loss, %	1.85	9.6	11	105.6

**Total = 206.7, Rock Quality Score = 206.7/230 x 100 = 90**



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450243  
Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Basalt Rock                      Sampled By: HK                      Date 6-20-95

Source: D50-3                                      Submitted By: HK                      Date 6-20-95

Authorized By: Client                      Date 6-20-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	2.689
Bulk Specific Gravity (SSD)	2.728
Apparent Specific Gravity	2.798
Absorption, Percent	1.45

Copies: Client (3), Billing & Field File (2).  
620\ha:UNC031

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No.	3145JB031
Lab/Inv. No.	31450243
Report Date:	8-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Basalt Rock	Sampled By: HK	Date: 6-20-95
Source: D50-3	Submitted By: HK	Date: 6-20-95
Supplier:	Authorized By: Client	Date: 6-20-95

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs.    6.1

% Loss at 500 Revs.

Copies to: Addressee (3), Billing (1), Field File (1).  
620\ha:UNC031

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REVIEWED BY *Armit McHenry*

**LABORATORY REPORT**

SOUNDNESS OF AGGREGATES

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
 Lab/Inv. No. 31450243  
 Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Basalt Rock      Sampled By: HK      Date: 6-20-95

Source: D50-3      Submitted By: HK      Date: 6-20-95

Procedure: ASTM C88      Authorized By: Client      Date: 6-20-95

Solution: Sodium Sulfate

COARSE AGGREGATE

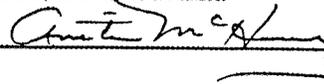
<u>Coarse Fraction Size</u>	<u>Grading of Original Sample Percent</u>	<u>Wt. of Test Fractions Before Test, grams</u>	<u>Percentage Passing Designated Sieve</u>	<u>Weighted Percentage Loss, %</u>
2-1/2" to 2" 2" to 1-1/2"	64	3053.3 2018.4	1.97	1.26
1-1/2" to 1" 1" to 3/4"	19	1015.0 509.5	.60	.11
3/4" to 1/2" 1/2" to 3/8"	13	674.9 332.9	2.28	.30
3/8" to No. 4 Minus No. 4	4	302.2	.46	.18
Totals				1.85

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1).  
 620\h:unc031

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### ROCK QUALITY DETERMINATION

United Nuclear Corporation  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, New Mexico 87305-3077

Job No. 3145JB031  
Inv. No. 31450243  
Date of Report 11/14/95  
Reviewed By \_\_\_\_\_

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project  
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 07/19/95  
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 07/19/95  
Material Type: D50 -3" Intended Use Swale Aggregate

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.710	9	9	81
Absorption, %	1.76	3.5	2	7.0
L.A. Abrasion, 100 rev, %	2.6	8.5	1	8.5
Sodium Soundness Loss, %	3.78	8.5	11	93.5

Total = 190.0, Rock Quality Score =  $190.0/230 \times 100 = 83$

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D<sup>50</sup> 3 inch      Sampled By: H.K./WT      Date 7-19-95

Source: Hamilton Brothers      Submitted By: H.K./WT      Date 7-19-95

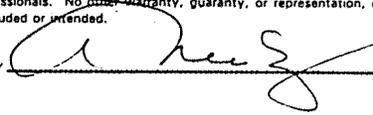
Authorized By: Client      Date 7-19-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.663</u>
Bulk Specific Gravity (SSD)	<u>2.71</u>
Apparent Specific Gravity	<u>2.794</u>
Absorption, Percent	<u>1.76</u>

Copies to: Client (3), Billing (1), Field File (1).  
719\ha:UN031

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No.	3145JB031
Lab/Inv. No.	31450185
Report Date:	11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Crushed Basalt D<sup>50</sup> 3 inch</u>	Sampled By: <u>H.K./WT</u>	Date: <u>7-19-95</u>
Source: <u>Hamilton Brothers</u>	Submitted By: <u>H.K./WT</u>	Date: <u>7-19-95</u>
Supplier: _____	Authorized By: <u>Client</u>	Date: <u>7-9-95</u>

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs.    2.6

% Loss at 500 Revs.      

Copies to: Addressee (3), Billing (1), Field File (1).  
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**LABORATORY REPORT**

**SOUNDNESS OF AGGREGATES**

Client:	UNC Mining & Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305	Job No.	3145JB031
		Lab/Inv. No.	31450185
		Report Date:	11-15-95
Project:	1995 Reclamation		
Location:	Church Rock, NM		
Material:	Crushed Basalt D <sup>50</sup> 3 inch	Sampled By:	H.K./WT Date 7-19-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT Date 7-19-95
Procedure:	ASTM C88	Authorized By:	Client Date 7-19-95
		Solution:	Sodium Sulfate (Used) Cycles 5

**COARSE AGGREGATE**

Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %
2-1/2" to 2"	20	3007.3	3.56	.71
2" to 1-1/2"	26	2010.2	1.9	.49
1-1/2" to 1"	20	1003.2	11.9	2.38
1" to 3/4"	2	501.2	10.0	.2
3/4" to 1/2"	0	670.7	6.0	0
1/2" to 3/8"	0	330.8	14.5	0
3/8" to No. 4 Minus No. 4	0	300.8	8.9	0
Totals				3.78

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1).  
719.2\h:unc031

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*[Signature]*



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**ROCK QUALITY DETERMINATION**

United Nuclear Corporation  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, New Mexico 87305-3077

Job No. 3145JB031  
Inv. No. 31450243  
Date of Report 11/14/95  
Reviewed By \_\_\_\_\_

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project  
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 07/26/95  
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 07/26/95  
Material Type: D50 -3" Intended Use Swale Aggregate

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.781	10	9	90
Absorption, %	1.93	3	2	6
L.A. Abrasion, 100 rev, %	3.1	9	1	9
Sodium Soundness Loss, %	2.20	9	11	99

Total = 204.0, Rock Quality Score = 204.0/230 x 100 = 89

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

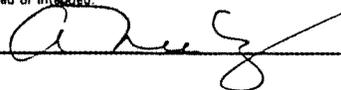
Client:	UNC Mining and Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305	Job No.	3145JB031
		Lab/Inv. No.	31450185
		Report Date:	11-14-95
Project:	1995 Reclamation		
Location:	Church Rock, NM		
Material:	Crushed Basalt D <sup>50</sup> 3 inch	Sampled By:	H.K./WT      Date 7-26-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT      Date 7-26-95
		Authorized By:	Client      Date 7-26-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	2.728
Bulk Specific Gravity (SSD)	2.781
Apparent Specific Gravity	2.880
Absorption, Percent	1.93

Copies to: Client (3), Billing (1), Field File (1).  
726.1\ha:UN031

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Crushed Basalt D<sup>50</sup> 3 inch</u>	Sampled By: <u>H.K./WT</u>	Date: <u>7-26-95</u>
Source: <u>Hamilton Brothers</u>	Submitted By: <u>H.K./WT</u>	Date: <u>7-26-95</u>
Supplier: _____	Authorized By: <u>Client</u>	Date: <u>7-26-95</u>

L.A. Abrasion, ASTM C535, Grading 1

% Loss at 100 Revs. 3.1

% Loss at 500 Revs. —

Copies to: Addressee (3), Billing (1), Field File (1).  
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**LABORATORY REPORT**

SOUNDNESS OF AGGREGATES

Client:	UNC Mining & Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305	Job No.	3145JB031
		Lab/Inv. No.	31450185
		Report Date:	11-15-95
Project:	1995 Reclamation		
Location:	Church Rock, NM		
Material:	Crushed Basalt D <sup>50</sup> 3 inch	Sampled By:	H.K./WT
		Date	7-26-95
Source:	Hamilton Brothers	Submitted By:	H.K./WT
		Date	7-26-95
Procedure:	ASTM C88	Authorized By:	Client
		Date	7-26-95
		Solution:	Sodium Sulfate (Used) Cycles 5

COARSE AGGREGATE

Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %
2-1/2" to 2"	25	3064.4	4.10	1.03
2" to 1-1/2"	21	2025.6	3.17	.67
1-1/2" to 1"	7	1022.8	7.18	.50
1" to 3/4"	0	505.3	8.41	0
3/4" to 1/2"	0	671.4	11.3	0
1/2" to 3/8"	0	330.3	23.3	0
3/8" to No. 4 Minus No. 4	0	300.4	18.0	0
Totals				2.20

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

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REVIEWED BY *A. Neely*

APPENDIX F

ROCK GRADATION TESTS, ROCK MULCH AND RIPRAP

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR D50 1.5 MATERIAL

DATE OF REPORT 12/07/95

DATE	SAMPLE LOCATION	% PASS 3" SPEC. 100%	% PASS 1" SPEC. 8-37%	% PASS #4 SPEC. 0-8%	WITHIN SPECS. 7
03/09/95	Hamilton Brothers	100	14	1	Yes
03/14/95	Hamilton Brothers	100	16	1	Yes
03/21/95	Hamilton Brothers	100	27	1	Yes
03/31/95	UNC Stockpile	100	19	.6	
04/06/95	Rock Score				
04/06/95	Hamilton Brothers	100	40	3	No*
05/23/95	UNC Windrow	100	15	.1	Yes
06/07/95	Rock Score				Yes
07/05/95	Rock Score				
07/05/95	UNC	100	22	1	Yes
09/07/95	Hamilton Brothers	100	35	.8	Yes

\*Material was wasted.

cb/1995.UNC/3

Dist: Client (3) Field File (1) Billing (1)



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 04/04/95

Project: 1995 Reclamation

Location: Chruch Rock, New Mexico

Material: 1.5 Aggregate      Sampled By: H. Kuebler /WT      Date 03/09/95

Source: Hamilton Brothers      Submitted By: H. Kuebler /WT      Date 03/09/95

Authorized By: Client      Date 03/09/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"	100	100
1"	14	8 - 37
No. 4	1	0 - 8

Copies: Client (3), Billing (1), Field File (1)  
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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 04/04/95

Project: 1995 Reclamation

Location: Chruch Rock, New Mexico

Material: 1.5 Aggregate

Sampled By: P. Christensen/WT Date 03/14/95

Source: Hamilton Brothers Crusher

Submitted By: P. Christensen/WT Date 03/14/95

Authorized By: Client Date 03/14/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"	100	100
1"	16	8 - 37
No. 4	1	0 - 8

Copies: Client (3), Billing (1), Field File (1)  
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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 04/04/95

Project: 1995 Reclamation

Location: Chruch Rock, New Mexico

Material: 1.5 Aggregate, Sample #83	Sampled By:	H. Kuebler /WT	Date	03/21/95
Source: Hamilton Brothers Belt Sample	Submitted By:	H. Kuebler /WT	Date	03/21/95
	Authorized By:	H. Kuebler /WT	Date	03/21/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"	100	100
1"	27	8 - 37
No. 4	1	0 - 8

opies: Client (3), Billing (1), Field File (1)  
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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 04/04/95

Project: 1995 Reclamation

Location: Chruch Rock, New Mexico

Material: 1.5 Aggregate, Sample #83      Sampled By: H. Kuebler /WT      Date 03/31/95

Source: UNC Stockpile      Submitted By: H. Kuebler /WT      Date 03/31/95

Authorized By: H. Kuebler /WT      Date 03/31/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"	100	100
1"	19	8 - 37
No. 4	.6	0 - 8

Copies: Client (3), Billing (1), Field File (1)  
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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450084  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>1.5 Aggregate</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>04/06/95</u>
Source: <u>Hamilton Brothers</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>04/06/95</u>
	Authorized By: <u>Client</u>	Date: <u>04/06/95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"	100	100
1-1/2"		
1-1/8"		
1"	40	8-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	3	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>N/A</u>
Optimum Moisture, %	<u>N/A</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>N/A</u>
Plasticity Index	<u>N/A</u>

Copies: Client (3), Billing (1) Field File (1)  
06/cb:UNC.031

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450122  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>D<sup>50</sup> 1.5 Aggregate</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>05/23/95</u>
Source: <u>UNC Wind Row</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>05/23/95</u>
	Authorized By: <u>Client</u>	Date: <u>05/23/95</u>

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"	100	100
1-1/2"		
1-1/8"		
1"	15	8-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	0.1	0-8
8		
10		
16		
30		
40		
50		
100		
200		

**Moisture Density Relations, pcf (ASTM D698 Method A)**

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

**Plasticity Index, ASTM D4318**

Liquid Limit N/A  
Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)  
123.2/cb:UNC.031

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REVIEWED BY *[Signature]*



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(505) 327-4966 • fax 327-5293

**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450145  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D<sup>50</sup> 1.5 Aggregate

Sampled By: H. Kuebler/WT Date 07/05/95

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 07/05/95

Authorized By: Client Date 07/05/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"	100	100
1-1/2"		
1-1/8"		
1"	22	8-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	1	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A  
Plasticity Index N/A

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>D<sup>50</sup> 1.5</u>	Sampled By: <u>Hamilton Brothers</u>	Date: <u>09/07/95</u>
Source: <u>Hamilton Brothers</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>09/07/95</u>
	Authorized By: <u>Client</u>	Date: <u>09/07/95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
4"		
3"		
2"	100	100
1"	35	20-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	0.8	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A  
Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)  
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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR D50 3" MATERIAL

DATE OF REPORT 12/07/95

JK

DATE	SAMPLE LOCATION	% PASS 6" SPEC. 100%	% PASS 3" SPEC. 40-50%	% PASS 1" SPEC. 0-22%	WITHIN SPECS. 7
06/14/95	Stockpile	100	45	.1	Yes
06/21/95	Hamilton Brothers	100	18*	0	No
06/20/95	Rock Score				
07/06/95	Hamilton Brothers	100	21*	.1	No
07/07/95	Hamilton Brothers	100	60*	9	No
07/10/95	Hamilton Brothers	100	32*	2.6	No
07/11/95	Hamilton Brothers	100	54	2.0	Yes
07/19/95	Belt Sample	100	46	1.0	Yes
07/19/95	Rock Score				
07/26/95	Belt Sample	100	49	1.1	Yes
07/26/95	Rock Score				

\*MATERIAL WAS DISCARDED

cb/1995.UNC/1

Dist: Client (3) Field File (1) Billing (1)



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
P.O. Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450145  
Report Date: 06/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D50 - 3"      Sampled By: H. Kuebler      Date: 06/14/95

Source: Stock Pile      Submitted By: H. Kuebler      Date: 06/14/95

Authorized By: Client      Date: 06/14/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
6"	100	100
4"		
3"	45	40-50
1"	.1	0-22
3/4"		
1/2"		
3/8"		
1/4"		
No. 4		
8		
10		
16		
30		
40		
50		
100		
200		

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REVIEWED BY Thomas Morales



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
P.O. Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450145  
Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D50-3" Aggregate      Sampled By: Jim Golding      Date: 6-21-95

Source: Hamilton Brothers Crusher      Submitted By: Jim Golding      Date: 6-21-95

Authorized By: Client      Date: 6-21-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
6		100
4	100	
3	18	40-50
2	18	
1 1/2	18	
1 1/8	18	
1	0	0-22
3/4		
1/2		
3/8		
1/4,3		
#4		
8		
10		
16		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % A

Plasticity Index, ASTM D4318

Liquid Limit N/A  
Plasticity Index N/A

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
P.O. Box 3077  
Gallup, NM 87305

Job No. **3145JB031**

Lab/Inv. No. **31450185**

Report Date: **07/06/95**

Project: **1995 Reclamation**

Location: **Church Rock, NM**

Material: **D50 - 3" Aggregate**

Sampled By: **J. Golding** Date **07/05/95**

Source: **Hamilton Crusher**

Submitted By: **J. Golding** Date **07/05/95**

Authorized By: **Client** Date **07/05/95**

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
6"	100	100
4"	100	
3"	21	40-50
2"		
1 1/2"		
1 1/8"		
1"	0.1	0-22
3/4"		
No. 4		
8		
10		
16		
30		
40		
50		
100		
200		

Copies: Client (3), Billing (1), Field File (1)  
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*Thomas Morales*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
P.O. Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D50-3" Aggregate

Sampled By: HP Date 7-7-95

Source: Hamilton Brothers Crusher

Submitted By: HP Date 7-7-95

Authorized By: Client Date 7-7-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
6	100	
4		
3	60	40-50
2		
1 1/2		
1 1/8		
1	9	0-22
3/4	0	
1/2		
3/8		
1/4, 3		
#4		
8		
10		
16		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

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REVIEWED BY *Christine McHenry*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
P.O. Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D50-3" Aggregate

Sampled By: HD Date 7-10-95

Source: Hamilton Brothers Crusher

Submitted By: HD Date 7-10-95

Authorized By: Client Date 7-10-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
6	100	100
4		
3	32	40-50
2		
1 1/2		
1 1/8		
1	2.6	0-22
3/4		
1/2		
3/8		
1/4, 3		
#4		
8		
10		
16		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A  
Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)  
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REVIEWED BY *Amie McHenry*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
P.O. Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D50-3"      Sampled By: WTI Crew      Date: 7-11-95

Source: Hamilton Brothers Stockpile      Submitted By: WTI Crew      Date: 7-11-95

Authorized By: Client      Date: 7-11-95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
6	100	
4		
3	54	40-50
2		
1 1/2		
1 1/8		
1	2	0-22
3/4		
1/2		
3/8		
1/4,3		
#4		
8		
10		
16		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A  
Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)  
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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
P.O. Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>3" Rock</u>	Sampled By: <u>Paul/Hamilton Bro.</u>	Date: <u>7-19-95</u>
Source: <u>Belt - 121:45pm</u>	Submitted By: <u>CP</u>	Date: <u>7-19-95</u>
	Authorized By: <u>Client</u>	Date: <u>7-19-95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
6	100	100
4		
3	46	40-50
2		
1 1/2		
1 1/8		
1	1	0-22
3/4		
1/2		
3/8		
1/4, 3		
#4		
8		
10		
16		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>N/A</u>
Optimum Moisture, %	<u>N/A</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>N/A</u>
Plasticity Index	<u>N/A</u>

Copies: Client (3), Billing (1), Field File (1)  
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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
P.O. Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 07/27/95

Project: 1995 Reclamation

Location: Church Rock, N.M.

Material: D50 - 3inch      Sampled By: H. Kuebler      Date 07/26/95

Source: Hamilton Belt Sample      Submitted By: H. Kuebler      Date 07/26/95

Authorized By: Client      Date 07/26/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
6"	100	100
4"		
3"	49	40-50
1"	1.1	0-22
3/4"		
1/2"		
3/8"		
1/4"		
No. 4		
8		
10		
16		
30		
40		
50		
100		
200		

Copies: Client (3), Billing (1), Field File (1)  
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REVIEWED BY Thomas Kuebler



APPENDIX G

ROCK MULCH THICKNESS

## **D 50 1.5 AGGREGATE PLACEMENT**

After the additional radon cover was placed and accepted by UNC, the D50 1.5 aggregate was placed on the site. The majority of D50 1.5 aggregate was placed in wind rows on site by Hamilton Brothers Inc. Nielson's, Inc. used a motor grader to place the D50 1.5 aggregate. WT measured the thickness of in-place D50 1.5 aggregate. If the required minimum 3" thickness had not been achieved, Nielson's, Inc. would rework the area of the failing tests. D50 1.5 aggregate thickness measurement ranged from 3" to 5". WT measured the thickness to determine if in-place thickness at the specific locations checked, met the project requirements for thickness.





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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/05/95**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
South Cell Haul Road**

Location	Grid Point	Thickness
29 + 00	A-100'	3"
29 + 50	A-50'	3 1/2"
30 + 00	A-100'	2 1/2"
30 + 50	A-50'	3 1/4"
31 + 00	A-100'	3 3/4"
31 + 50	A-50'	3 1/2"
32 + 00	A-100'	3 1/2"
32 + 50	A-50'	2 1/2"
33 + 00	A-100'	5"
33 + 50	A-50'	5"
34 + 00	A-100'	4"
34 + 50	A-50'	3"
35 + 00	A-100'	4"
35 + 50	A-50'	3 1/2"

Dist: Client (3) Field File (1) Billing (1)  
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TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY *H. Hecker*



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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/05/95**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
South Cell Haul Road**

Location	Grid Point	Thickness
36 + 00	A-100'	3 1/2"
36 + 50	A-50'	3 1/2"
37 + 00	A-100'	4 1/4"
37 + 50	A-50'	3"
38 + 00	A-100'	3 1/2"
38 + 50	A-50'	4"
39 + 00	A-100'	3"
39 + 50	A-50'	3 1/4"
40 + 00	A-100'	2 1/4"
40 + 50	A-50'	3 1/4"
41 + 00	A-100'	3"
41 + 50	A-50'	3"
42 + 00	A-100'	3"

Dist: Client (3) Field File (1) Billing (1)  
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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/05/95**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
A + 29	3"	A + 30	4 1/2"
A + 31	3 1/4"	A + 32	3 1/4"
A + 33	3 3/4"	A + 34	3 1/2"
A + 35	3"	A + 36	3 1/2"
A + 37	4 1/2"	A + 38	3 1/4"
A + 39	4"	A + 40	3 3/4"
A + 41	4 1/2"	A + 42	3 3/4"
B + 29	3"	B + 30	3 1/2"
B + 31	3"	B + 32	3"
B + 33	4"	B + 34	4"
B + 35	4"	B + 36	4"
B + 37	4"	B + 38	4"
B + 39	3 3/4"	B + 40	4 1/4"
B + 41	3"	B + 42	3"

Dist: Client (3) Field File (1) Billing (1)  
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TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY J. Kubler



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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/05/95**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
C + 29	3 1/2"	C + 30	3"
C + 31	3"	C + 32	3 1/2"
C + 33	4"	C + 34	3"
C + 35	3 1/4"	C + 36	3 1/2"
C + 37	3 3/4"	C + 38	4"
C + 39	3"	C + 40	3"
C + 41	3 1/2"	C + 42	3 1/2"
D + 29	3 1/2"	D + 30	4"
D + 31	3"	D + 32	4"
D + 33	4"	D + 34	3 1/2"
D + 35	3 1/4"	D + 36	3 1/4"
D + 37	3"	D + 38	4"
D + 39	3"	D + 40	3 1/2"
D + 41	3 1/2"	E + 29	3 3/4"

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/12

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REVIEWED BY J. Kueler



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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/05/95**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
E + 30	4 1/4"	E + 31	3 1/2"
E + 32	3 1/4"	E + 33	3 1/4"
E + 34	3 1/4"	E + 35	4"
E + 36	3 3/4"	E + 37	3 1/4"
E + 38	3"	F + 29	3 1/4"
F + 30	4"	F + 31	4"
F + 32	4"	F + 33	4"
F + 34	3 1/2"	F + 35	3 3/4"
F + 36	3 1/2"	F + 37	4"
F + 38	3 1/4"	F + 39	3 1/2"
F + 40	4"	G + 29	3 1/4"
G + 30	3"	G + 31	4"
G + 32	3 1/2"	G + 33	3 1/2"
G + 34	4"	G + 35	3 3/4"

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/13

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**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/05/95**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
H + 29	4"	H + 30	4"
H + 31	3"	H + 32	4"
H + 33	3 1/2"	H + 34	3 1/2"
I + 29	4"	I + 30	4"
I + 31	3"	I + 32	4"
I + 33	In Swale	I + 34	3 1/2"
I + 35	4"	H.5 + 32.5	3"
H.5 + 33.5	3 1/2"	H.5 + 34.5	3 1/4"
I + 33.5	3"	I + 34.5	3 1/2"
E + 39	4"	E + 40	4"

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/14

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**WT JOB NO. 3145JB031**

**DATE OF REPORT 11/21/95**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
A.5 + 29.5	3 1/4"	A.5 + 30.5	4 1/4"
A.5 + 31.5	3 1/4"	A.5 + 32.5	4"
A.5 + 33.5	3 1/4"	A.5 + 34.5	4"
A.5 + 35.5	4"	A.5 + 36.5	3 1/2"
A.5 + 37.5	4"	A.5 + 38.5	3"
A.5 + 39.5	4"	A.5 + 40.5	4"
A.5 + 41.5	3 1/2"	B.5 + 29.5	3"
B.5 + 30.5	3 3/4"	B.5 + 31.5	4"
B.5 + 32.5	4 1/2"	B.5 + 33.5	4"
B.5 + 34.5	4"	B.5 + 35.5	4"
B.5 + 36.5	3"	B.5 + 37.5	3"
B.5 + 38.5	3"	B.5 + 39.5	3 3/4"
B.5 + 40.5	4"	B.5 + 41.5	3 1/2"
C.5 + 29.5	4"	C.5 + 30.5	4"

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/8

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REVIEWED BY

*J. Kuebler*



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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 11/21/95**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
C.5 + 31.5	3 1/2"	C.5 + 32.5	3 1/4"
C.5 + 33.5	3 1/2"	C.5 + 34.5	4 1/2"
C.5 + 35.5	3 3/4"	C.5 + 36.5	3 1/4"
C.5 + 37.5	3"	C.5 + 38.5	3 3/4"
C.5 + 39.5	3"	C.5 + 40.5	3 1/2"
C.5 + 41.5	4"	D.5 + 29.5	3 1/2"
D.5 + 30.5	3 1/2"	D.5 + 31.5	3 1/2"
D.5 + 32.5	3 1/4"	D.5 + 33.5	3 3/4"
D.5 + 34.5	3"	D.5 + 35.5	3 1/4"
D.5 + 36.5	3 1/4"	D.5 + 37.5	3 1/4"
D.5 + 38.5	3 1/4"	D.5 + 39.5	3 1/4"
D.5 + 40.5	3"	E.5 + 29.5	3 3/4"
E.5 + 30.5	3 1/4"	E.5 + 31.5	5"
E.5 + 32.5	3"	E.5 + 33.5	3 1/4"

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/9

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*J. Kuebler*



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**WT JOB NO. 3145JB031**

**DATE OF REPORT 11/21/95**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
E.5 + 34.5	3 1/2"	E.5 + 35.5	3"
E.5 + 36.5	4 1/2"	E.5 + 37.5	3 1/4"
E.5 + 38.5	3"	E.5 + 39.5	3"
E.5 + 40.5	3"	F.5 + 29.5	4"
F.5 + 30.5	4"	F.5 + 31.5	4"
F.5 + 32.5	3"	F.5 + 33.5	4"
F.5 + 34.5	4"	F.5 + 35.5	3"
F.5 + 36.5	4"	F.5 + 37.5	4"
G.5 + 29.5	3"	G.5 + 30.5	3 1/2"
G.5 + 31.5	3"	G.5 + 32.5	3 1/2"
G.5 + 33.5	3 1/4"	G.5 + 34.5	3 1/2"
H.5 + 29.5	3 1/2"	H.5 + 30.5	3"
H.5 + 31.5	4"		

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/10

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REVIEWED BY

*J. Kubler*



APPENDIX H

SOIL/ROCK MATRIX MEASUREMENTS

## SOIL COVER ON D50 1.5 AGGREGATE

After D50 1.5 aggregate thickness was accepted by UNC, Nielson's, Inc. placed soil material on top of D50 1.5 aggregate. Soil material was obtained from the South Cell Borrow Area. The method of placement of the soil material was accomplished with a scraper. Contour of the soil material was completed with a motor grader. A pneumatic compactor was utilized in an attempt to achieve soil cover penetration into the D50 1.5 aggregate material.

Soil cover was required by the project specifications to penetrate the top 2" of D50 1.5 aggregate with an addition 3" to 4" placed on top of the D50 1.5 aggregate. Isolated areas were thickened to provide adequate drainage. WT performed thickness measurements to assist in determining penetration depth and thickness of soil material on top of the D50 1.5 aggregate.





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**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/05/95**

**SOIL ON MULCH PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
A + 29	3 3/4"	A + 30	3 1/4"
A + 31	3"	A + 32	4 1/2"
A + 33	3"	A + 34	4 1/2"
A + 35	3 1/2"	A + 36	4 1/2"
A + 37	4 1/2"	A + 38	3"
A + 39	3 1/2"	A + 40	5"
A + 41	4 1/4"	A + 42	6"
B + 29	3 1/2"	B + 30	5"
B + 31	5 3/4"	B + 32	4 1/2"
B + 33	4 1/2"	B + 34	6"
B + 35	5"	B + 36	5 1/4"
B + 37	3"	B + 38	5"
B + 39	5"	B + 40	5"
B + 41	3"	B + 42	5"

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/15

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**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/05/95**

**SOIL ON MULCH PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
C + 29	3"	C + 30	4 3/4"
C + 31	3 3/4"	C + 32	3"
C + 33	4 1/2"	C + 34	8"
C + 35	9"	C + 36	5"
C + 37	5"	C + 38	5"
C + 39	5 1/2"	C + 40	6"
C + 41	3 1/2"	C + 42	3"
D + 29	3 1/4"	D + 30	8 3/4"
D + 31	3 1/2"	D + 32	4 1/2"
D + 33	4 1/2"	D + 34	4 1/2"
D + 35	3 1/2"	D + 36	5"
D + 37	3 1/4"	D + 38	8"
D + 39	3 1/4"	D + 40	3"
D + 41	3 1/2"	E + 29	3"

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/16

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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/05/95**

**SOIL ON MULCH PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
E + 30	3"	E + 31	3"
E + 32	3"	E + 33	3 1/2"
E + 34	3"	E + 35	3 3/4"
E + 36	7"	E + 37	3 3/4"
E + 38	3 3/4"	F + 29	4 1/2"
F + 30	4"	F + 31	3"
F + 32	5 1/2"	F + 33	3 1/2"
F + 34	7"	F + 35	3"
F + 36	3"	F + 37	3"
F + 38	3"	F + 39	3"
F + 40	5"	G + 29	3 1/2"
G + 30	3"	G + 31	4 1/2"
G + 32	5"	G + 33	4"
G + 34	4"	G + 35	4"

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/17

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**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/05/95**

**SOIL ON MULCH PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
G + 36	4"	H + 29	4"
H + 30	6"	H + 31	8"
H + 32	8 1/2"	H + 33	4 1/2"
H + 34	4 1/2"	I + 29	3 1/2"
I + 30	9"	I + 31	7"
I + 32	6"	I + 33	In Swale
I + 34	5"	I + 35	4"
H.5 + 32.5	10"	H.5 + 33.5	4"
H.5 + 34.5	4"	I + 33.5	3 3/4"
I + 34.5	3 1/2"		

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/18

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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/05/95**

**SOIL ON MULCH PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
A.5 + 29.5	4"	A.5 + 30.5	5"
A.5 + 31.5	5 1/4"	A.5 + 32.5	5 1/2"
A.5 + 33.5	5 1/4"	A.5 + 34.5	6"
A.5 + 35.5	5"	A.5 + 36.5	4 1/2"
A.5 + 37.5	3 1/2"	A.5 + 38.5	6"
A.5 + 39.5	3 1/2"	A.5 + 40.5	3"
A.5 + 41.5	7 1/2"	B.5 + 29.5	5"
B.5 + 30.5	4"	B.5 + 31.5	4"
B.5 + 32.5	4"	B.5 + 33.5	3"
B.5 + 34.5	3"	B.5 + 35.5	3 1/2"
B.5 + 36.5	5 1/2"	B.5 + 37.5	3"
B.5 + 38.5	3"	B.5 + 39.5	3"
B.5 + 40.5	5"	B.5 + 41.5	4"
C.5 + 29.5	3 3/4"	C.5 + 30.5	3"

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/19

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**DATE OF REPORT 12/05/95**

**SOIL ON MULCH PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
C.5 + 31.5	6"	C.5 + 32.5	3 1/2"
C.5 + 33.5	3 3/4"	C.5 + 34.5	4 1/2"
C.5 + 35.5	3"	C.5 + 36.5	3"
C.5 + 37.5	3 1/4"	C.5 + 38.5	3"
C.5 + 39.5	5 1/2"	C.5 + 40.5	4"
C.5 + 41.5	3 1/4"	D.5 + 29.5	6"
D.5 + 30.5	3"	D.5 + 31.5	3"
D.5 + 32.5	4 1/2"	D.5 + 33.5	3"
D.5 + 34.5	3 3/4"	D.5 + 35.5	4 1/4"
D.5 + 36.5	3 1/4"	D.5 + 37.5	5"
D.5 + 38.5	5"	D.5 + 39.5	4 1/2"
D.5 + 40.5	3"	E.5 + 29.5	4 1/2"
E.5 + 30.5	4"	E.5 + 31.5	3"
E.5 + 32.5	4 1/2"	E.5 + 33.5	4 1/2"

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/20

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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/05/95**

**SOIL ON MULCH PLACEMENT THICKNESS  
South Cell**

Location	Thickness	Location	Thickness
E.5 + 34.5	4 1/2"	E.5 + 35.5	3"
E.5 + 36.5	4 1/2"	E.5 + 37.5	4 1/4"
E.5 + 38.5	4"	E.5 + 39.5	3 1/2"
E.5 + 40.5	5 1/2"	F.5 + 29.5	4 1/2"
F.5 + 30.5	4"	F.5 + 31.5	3"
F.5 + 32.5	5 1/2"	F.5 + 33.5	3 1/2"
F.5 + 34.5	7"	F.5 + 35.5	3"
F.5 + 36.5	3"	F.5 + 37.5	4"
F.5 + 38.5	4"	F.5 + 39.5	6"
G.5 + 29.5	3 1/2"	G.5 + 30.5	6 1/4"
G.5 + 31.5	6"	G.5 + 32.5	10"
G.5 + 33.5	3 1/2"	G.5 + 34.5	4"
H.5 + 29.5	5"	H.5 + 30.5	5"
H.5 + 31.5	8"		

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/21

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REVIEWED BY *J. Keel*



APPENDIX I

FIELD MODIFICATIONS, SOUTH CELL SWALES

June 26, 1995

86-060-20

Mr. Edward M. Morales  
United Nuclear Corporation  
P.O. Box 3077  
Gallup, NM 87305-3077

Transmittal  
Field Design Modifications  
Central and South Cell Reclamation

Dear Ed:

This letter summarizes the minor field modifications made in the reclamation design of the Central and South Cells of the tailings disposal area in conjunction with 1995 reclamation activities. These field modifications were designed in accordance with NRC guidelines and serve to fit the approved reclamation design to actual site conditions encountered during reclamation.

Branch Swales B and C

Branch Swale B of the Central Cell was originally designed to pass through the area where the North Cross-Dike Pump-Back Wells are located prior to discharging into the North Cell Drainage Channel. This design was based on the assumption that ground water remediation in Zone 1 would be completed by this time and that the North Cross-Dike Pump-Back Wells would be decommissioned. This was a reasonable design assumption given the limited ground water impacts in Zone 1 and concurrence by the regulatory agencies that extensive remediation in this formation was infeasible. Unfortunately, regulatory delays have caused the remediation of Zone 1 to be extended, and the wells, although currently inactive, have not been approved for decommissioning.

To avoid unnecessary delays in the reclamation of the tailings disposal area, United Nuclear has proposed rerouting the final 367 feet of Swale B around the North Cross-Dike Pump-Back Wells by combining Swale B with Swale C at Survey Station 30+00, as

shown on the enclosed sketch. The grade of Swales B and BC are to be 0.0102 from Stations SB 27 to SBC 31 and 0.083 from Stations SB 31 to SB 33+61.7. Canonie/Smith Environmental Technologies Corporation has reviewed this field modification to the reclamation design and has determined that it is consistent with the NRC's reclamation guidelines and the approved reclamation plan, provided that the modified design incorporates the following:

1. The combined swale is to be 20 feet wide at its base and armored with riprap having a  $D_{50}$  of 3.0 inches.
2. The combined swale is to be 2.1 feet deep or deeper to allow for adequate freeboard during the design event.

A copy of the supporting calculations for the change in configuration of Swales B and C is enclosed.

#### Branch Swales H, I and J

The lower portion of Branch Swale H was originally designed to pass through the bedrock outcrop area southeast of the South Cell of the tailings area. However, this design requires substantial excavation in the bedrock to construct the swale to the design grade. United Nuclear has proposed moving Swale H closer to the tailings areas as shown on the enclosed modified Figure 5-1. The invert elevation where Swale I flows into the South Cell Drainage Channel will also require modification from an elevation of 6951 feet to approximately 6947.85 feet (assuming a 3.5-foot deep swale) to match Swale I to the South Cell as-built contours.

These two field modifications result in moving the juncture between Swales J and H approximately 200 feet further to the northeast and increasing the grades of Swale I from 0.0040 to 0.0067 and Swale H from 0.0085 to 0.010. The grade of Swale J will remain the same at 0.0047. These modifications will not require any change in specified swale depths, bedding material or riprap because the calculated safety factors remain above 1.0. A copy of the supporting calculations for the changes in configuration of Swales H, I and J is enclosed.

#### South Cell Drainage Channel

Lowering the invert elevation where Swale I flows into the South Cell Drainage Channel will also reduce the grade in the South Cell Drainage Channel. The optimum place to make this grade change is the first 450 feet of channel because, after this point, the channel is to be constructed in bedrock. This would result in a grade reduction from

June 26, 1995

0.0244 to 0.0174 over the 450-foot section. As shown in the enclosed calculations, the  $D_{50}$  of the riprap could also be reduced from 1.25 feet (i.e., 15 inches) to 0.83 foot (i.e., 10 inches). Alternately, the channel could be widened from 10 to 12 feet and the  $D_{50}$  reduced to 0.75 foot (i.e., 9 inches) if a smaller sized riprap is desired.

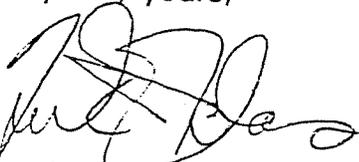
### Bedding Layer 2

The reclamation plan calls for the placement of Bedding Layer 2 in a number of channels and swales, including Branch Swales H and I, which are to be completed this year. The bedding gradation specification listed in Table 5.7 of the reclamation plan calls for 5 to 12 percent passing the No. 40 screen size. However, the bedding material produced by the quarry is typically running about 14 percent passing the No. 40 screen.

Review of the original gradation calculations presented in United Nuclear's March 1991 response to NRC comments shows that Bedding Layer 2 (also called Filter Layer No. 2) can have up to 20 percent passing the No. 40 screen size in Swales H and I and the Lower Reach of the Runoff Control Ditch. Therefore, use of the finer gradation is acceptable for these areas, but would be unacceptable for the South and North Cell Drainage Channels and the North Diversion Ditch. Figure 1 of the original gradation calculations is enclosed for reference purposes.

If you have any questions or need further information, please call me at (303) 790-1747.

Very truly yours,



Frank J. Filas, P.E.  
Project Engineer

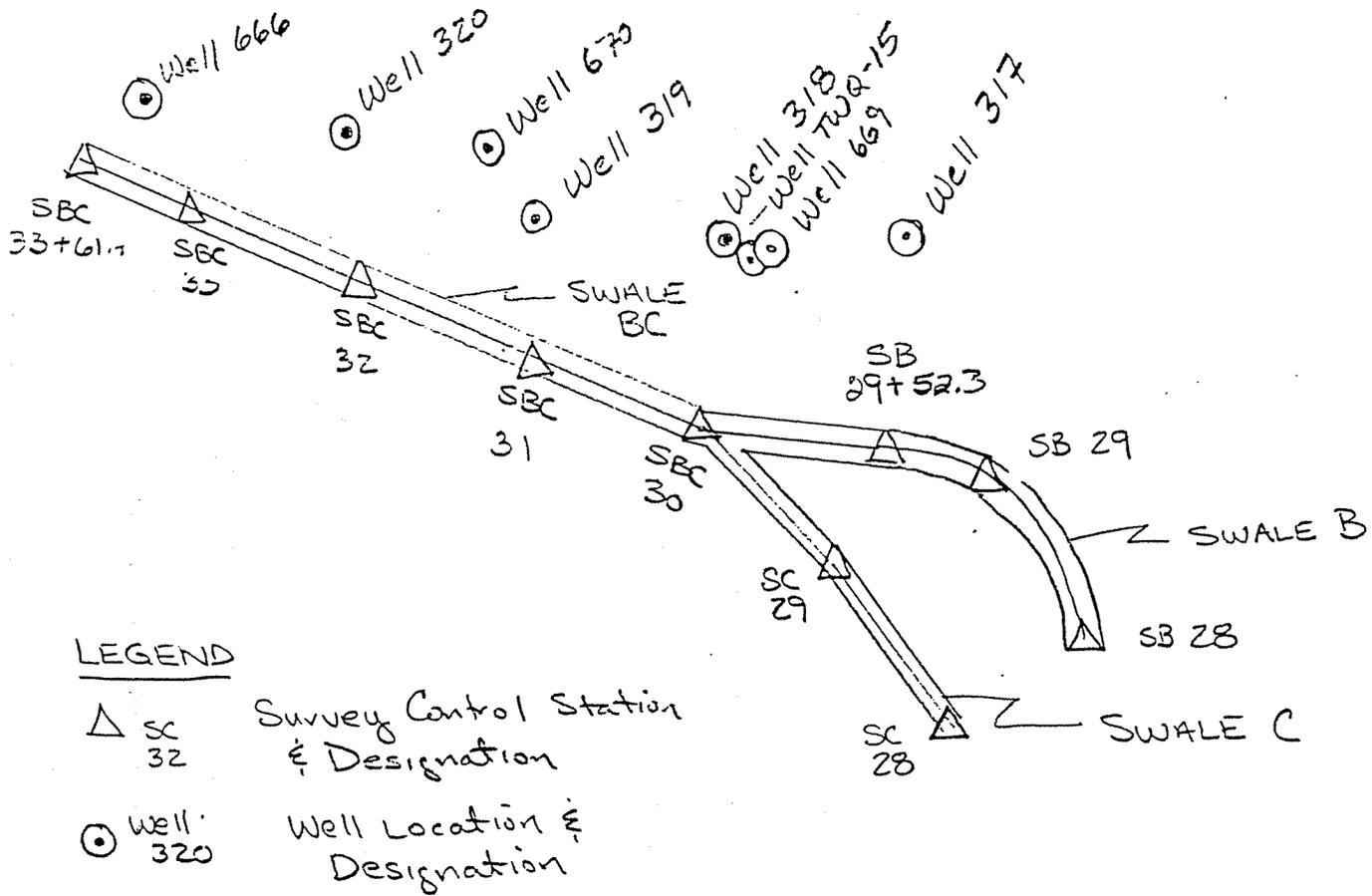
FJF/wde

Enclosures

cc: Mr. Juan Velasquez, United Nuclear Corporation

CALCULATIONS  
BRANCH SWALES B AND C

CHURCH ROCK SITE  
CENTRAL CELL RECLAMATION



LEGEND

- △ SC 32 Survey Control Station & Designation
- Well 320 Well Location & Designation

MODIFIED DESIGN OF SWALES B & C  
Scale : 1" = 100'

RIPRAP DETERMINATION B. SAFETY FACTOR METHOD  
 REF: "Applied Hydrology and Sedimentology  
 for Disturbed Areas", pages 185-194

LOCATION: UNC -- DRAINAGE SWALE B FIELD MODIFICATION

DISCHARGE = 137 CFS (Drainage swales A+B)  
 BOTTOM WIDTH = 20 FT  
 Z (SIDE SLOPE) = 3 Alpha = 18.43 Degrees  
 CHANNEL SLOPE = 0.0102 Theta = 0.58 Degrees  
 RIPRAP S.G. = 2.72 Phi = 37.00 Degrees  
 COEF FOR t = 0.75 see Fig 3.16, ref.

CHANNEL BOTTOM

D50 (ASSUM) = 0.25 FT  
 n = 0.031  
 d = 1.20 FT -  
 A = 28.32 FT<sup>2</sup>  
 R = 1.03 FT  
 Q (CALC) = 138.0 CFS -  
 v = 4.87 FPS  
 t = 0.76 PSF  
 nb = 0.598  
 SFb = 1.64

CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.25 FT  
 n = 0.031  
 d = 1.20 FT -  
 A = 28.32 FT<sup>2</sup>  
 R = 1.03 FT  
 Q (CALC) = 138.0 CFS -  
 v = 4.87 FPS  
 t = 0.57 PSF  
 nb = 0.45  
 Beta = 27.98  
 n' = 0.33  
 SFs = 1.35

Design values

Channel Depth 1.70 FT Depth from top of freeboard to top of riprap  
 Dmax 0.5 FT = 2\* D50  
 Layer Thickness 0.5 FT = 2\* D50

Design Modification

Specific Gravity increased from 2.5 to 2.72 to match as-built conditions  
 Rip rap D50 increased from 0.125 FT to 0.25 FT  
 Swale A discharge of 40 cfs added to original 97 cfs

REFERENCE: FILE RIPSF105.WR1

RIPRAP DETERMINATION L. SAFETY FACTOR METHOD

REF: "Applied Hydrology and Sedimentology  
for Disturbed Areas", pages 185-194

LOCATION: UNC -- DRAINAGE SWALE B + C

DISCHARGE = 212 CFS (Drainage swales A+B and Swale C)  
 BOTTOM WIDTH = 20 FT (assume same width as Swale B)  
 Z (SIDE SLOPE) = 3 Alpha = 18.43 Degrees  
 CHANNEL SLOPE = 0.0102 Theta = 0.58 Degrees  
 RIPRAP S.G. = 2.72 Phi = 37.00 Degrees  
 COEF FOR t = 0.75 see Fig 3.16, ref.

CHANNEL BOTTOM

D50 (ASSUM) = 0.25 FT  
 n = 0.031  
 d = 1.54 FT -  
 A = 37.91 FT<sup>2</sup>  
 R = 1.27 FT  
 Q (CALC) = 213.4 CFS -  
 v = 5.63 FPS  
 t = 0.98 PSF  
 nb = 0.767  
 SFb = 1.28

CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.25 FT  
 n = 0.031  
 d = 1.58 FT -  
 A = 39.09 FT<sup>2</sup>  
 R = 1.30 FT  
 Q (CALC) = 223.3 CFS -  
 v = 5.71 FPS  
 t = 0.75 PSF  
 nb = 0.59  
 Beta = 34.93  
 n' = 0.47  
 SFs = 1.17

Design values

Channel Depth 2.04 FT Depth from top of freeboard to top of riprap  
 Dmax 0.5 FT = 2\* D50  
 Layer Thickness 0.5 FT = 2\* D50

REFERENCE: FILE RIPS103.WR1

RIPRAP DETERMINATION B. SAFETY FACTOR METHOD  
 REF: "Applied Hydrology and Sedimentology  
 for Disturbed Areas", pages 185-194

LOCATION: UNC -- DRAINAGE SWALE B + C

DISCHARGE = 212 CFS (Drainage swales A+B and Swale C)  
 BOTTOM WIDTH = 20 FT (assume same width as Swale B)  
 Z (SIDE SLOPE) = 3 Alpha = 18.43 Degrees  
 CHANNEL SLOPE = 0.0083 Theta = 0.48 Degrees  
 RIPRAP S.G. = 2.72 Phi = 37.00 Degrees  
 COEF FOR t = 0.75 see Fig 3.16, ref.

CHANNEL BOTTOM

D50 (ASSUM) = 0.25 FT  
 n = 0.031  
 d = 1.63 FT -  
 A = 40.57 FT<sup>2</sup>  
 R = 1.34 FT  
 Q (CALC) = 212.8 CFS -  
 v = 5.24 FPS  
 t = 0.84 PSF  
 nb = 0.661  
 SFb = 1.49

CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.25 FT  
 n = 0.031  
 d = 1.58 FT -  
 A = 39.09 FT<sup>2</sup>  
 R = 1.30 FT  
 Q (CALC) = 201.4 CFS -  
 v = 5.15 FPS  
 t = 0.61 PSF  
 nb = 0.48  
 Beta = 29.67  
 n' = 0.36  
 SFs = 1.31

Design values

Channel Depth 2.13 FT Depth from top of freeboard to top of riprap  
 Dmax 0.5 FT = 2\* D50  
 Layer Thickness 0.5 FT = 2\* D50

REFERENCE: FILE RIPS113.WR1

**SMTH**

CALCULATIONS

BRANCH SWALES H, I AND J

86-060-E639  
 DRAWING 86-060-E544  
 NUMBER  
 E639

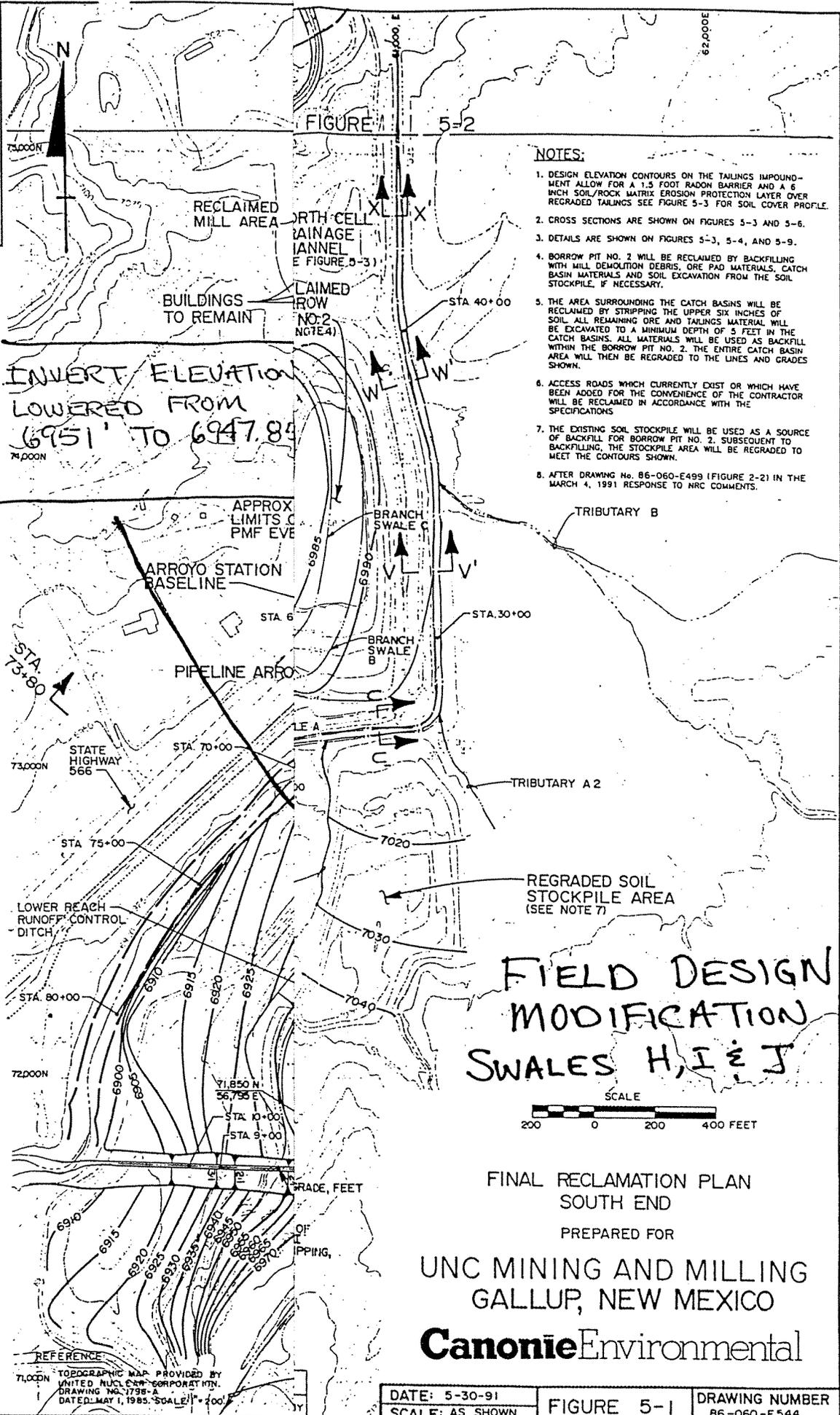


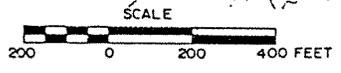
FIGURE 5-2

**NOTES:**

1. DESIGN ELEVATION CONTOURS ON THE TAILINGS IMPOUNDMENT ALLOW FOR A 1.5 FOOT RADON BARRIER AND A 6 INCH SOIL/ROCK MATRIX EROSION PROTECTION LAYER OVER REGRADED TAILINGS SEE FIGURE 5-3 FOR SOIL COVER PROFILE.
2. CROSS SECTIONS ARE SHOWN ON FIGURES 5-3 AND 5-6.
3. DETAILS ARE SHOWN ON FIGURES 5-3, 5-4, AND 5-9.
4. BORROW PIT NO. 2 WILL BE RECLAIMED BY BACKFILLING WITH MILL DEMOLITION DEBRIS, ORE PAD MATERIALS, CATCH BASIN MATERIALS AND SOIL EXCAVATION FROM THE SOIL STOCKPILE, IF NECESSARY.
5. THE AREA SURROUNDING THE CATCH BASINS WILL BE RECLAIMED BY STRIPPING THE UPPER SIX INCHES OF SOIL. ALL REMAINING ORE AND TAILINGS MATERIAL WILL BE EXCAVATED TO A MINIMUM DEPTH OF 3 FEET IN THE CATCH BASINS. ALL MATERIALS WILL BE USED AS BACKFILL WITHIN THE BORROW PIT NO. 2. THE ENTIRE CATCH BASIN AREA WILL THEN BE REGRADED TO THE LINES AND GRADES SHOWN.
6. ACCESS ROADS WHICH CURRENTLY EXIST OR WHICH HAVE BEEN ADDED FOR THE CONVENIENCE OF THE CONTRACTOR WILL BE RECLAIMED IN ACCORDANCE WITH THE SPECIFICATIONS.
7. THE EXISTING SOIL STOCKPILE WILL BE USED AS A SOURCE OF BACKFILL FOR BORROW PIT NO. 2. SUBSEQUENT TO BACKFILLING, THE STOCKPILE AREA WILL BE REGRADED TO MEET THE CONTOURS SHOWN.
8. AFTER DRAWING No. 86-060-E499 (FIGURE 2-2) IN THE MARCH 4, 1991 RESPONSE TO NRC COMMENTS.

**INVERT ELEVATION LOWERED FROM 6951' TO 6947.84'**

**FIELD DESIGN MODIFICATION SWALES H, I & J**



FINAL RECLAMATION PLAN  
 SOUTH END  
 PREPARED FOR  
 UNC MINING AND MILLING  
 GALLUP, NEW MEXICO

**Canonie Environmental**

**REFERENCE**  
 TOPOGRAPHIC MAP PROVIDED BY UNITED NUCLEAR CORPORATION, DRAWING NO. 778-A, DATED MAY 1, 1985, SCALE 1" = 400'

DATE: 5-30-91	FIGURE 5-1	DRAWING NUMBER 86-060-E544
SCALE: AS SHOWN		

## RIPRAP DETERMINATION BY SAFETY FACTOR METHOD

REF: "Applied Hydrology and Sedimentology  
for Disturbed Areas", pages 185-194

LOCATION: UNC -- DRAINAGE SWALE I FIELD MODIFICATION

DISCHARGE = 385 CFS  
 BOTTOM WIDTH = 20 FT  
 Z (SIDE SLOPE) = 3 Alpha = 18.43 Degrees  
 CHANNEL SLOPE = 0.0067 Theta = 0.38 Degrees  
 RIPRAP S.G. = 2.72 Phi = 37.00 Degrees  
 COEF FOR t = 0.75 see Fig 3.16, ref.

## CHANNEL BOTTOM

D50 (ASSUM) = 0.25 FT  
 n = 0.031  
 d = 2.42 FT -  
 A = 65.97 FT<sup>2</sup>  
 R = 1.87 FT  
 Q (CALC) = 388.3 CFS -  
 v = 5.89 FPS  
 t = 1.01 PSF  
 nb = 0.792  
 SFb = 1.25

## CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.25 FT  
 n = 0.031  
 d = 1.90 FT -  
 A = 48.83 FT<sup>2</sup>  
 R = 1.53 FT  
 Q (CALC) = 251.0 CFS -  
 v = 5.14 FPS  
 t = 0.60 PSF  
 nb = 0.47  
 Beta = 28.96  
 n' = 0.35  
 SFs = 1.33

## Design values

Channel Depth 2.92 FT Depth from top of freeboard to top of riprap  
 Dmax 0.50 FT = 2\* D50  
 Layer Thickness 0.50 FT = 2\* D50

## DESIGN MODIFICATION

SPECIFIC GRAVITY INCREASED FROM 2.5 TO 2.72 TO MATCH AS-BUILT CONDITIONS  
 CHANNEL SLOPE INCREASED TO 0.067 (ASSUMES 3.5 FT DEPTH AT END OF SWALE I)

## RIPRAP DETERMINATION BY SAFETY FACTOR METHOD

REF: "Applied Hydrology and Sedimentology  
for Disturbed Areas", pages 185-194

LOCATION: UNC -- DRAINAGE SWALE H FIELD MODIFICATION

DISCHARGE = 284 CFS  
 BOTTOM WIDTH = 20 FT  
 Z (SIDE SLOPE) = 3 Alpha = 18.43 Degrees  
 CHANNEL SLOPE = 0.01 Theta = 0.57 Degrees  
 RIPRAP S.G. = 2.72 Phi = 37.00 Degrees  
 COEF FOR t = 0.75 see Fig 3.16, ref.

## CHANNEL BOTTOM

D50 (ASSUM) = 0.25 FT  
 n = 0.031  
 d = 1.82 FT -  
 A = 46.34 FT<sup>2</sup>  
 R = 1.47 FT  
 Q (CALC) = 284.0 CFS -  
 v = 6.13 FPS  
 t = 1.14 PSF  
 nb = 0.889  
 SFb = 1.11

## CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.25 FT  
 n = 0.031  
 d = 1.90 FT -  
 A = 48.83 FT<sup>2</sup>  
 R = 1.53 FT  
 Q (CALC) = 306.7 CFS -  
 v = 6.28 FPS  
 t = 0.89 PSF  
 nb = 0.70  
 Beta = 39.43  
 n' = 0.57  
 SFs = 1.06

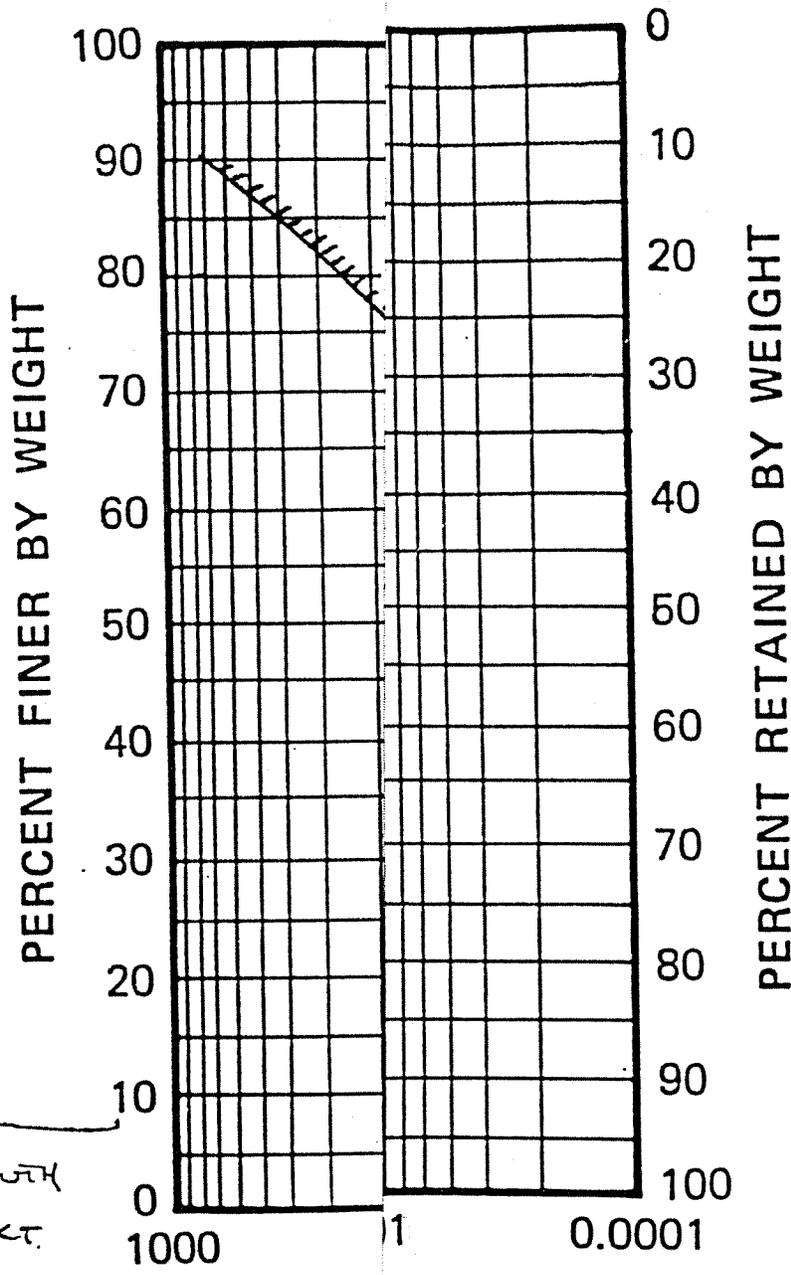
## Design values

Channel Depth 2.32 FT Depth from top of freeboard to top of riprap  
 Dmax 0.50 FT = 2\* D50  
 Layer Thickness 0.50 FT = 2\* D50

## DESIGN MODIFICATION

SPECIFIC GRAVITY INCREASED FROM 2.5 TO 2.72 TO MATCH AS-BUILT CONDITIONS  
 SLOPE INCREASED FROM 0.0085 TO 0.010

FIGURE 1  
BEDDING LAYER GRADATIONS



- ) UPPER SECTION SOUTH CELL DRAINAGE SECT.
- ) NORTH CELL DRAINAGE.
- ) NORTH DIVERSION DITCH, BURIED JETTY
- ) SWALES H.I., LOWER REACH OF RUNOFF CONTROL
- ) SOIL/ROCK MATRIX, SWALES, UPPER REACH RUNOFF CONTROL DITCH.

COBBACTION

**TYPICAL GRAIN** BOUND OF FILTER CRITERIA RESPECT TO 5 RIPRAP SIZES

FIGURE 1

CALCULATIONS

SOUTH CELL DRAINAGE CHANNEL

RIPSF109.WR1

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD

REF: "Applied Hydrology and Sedimentology  
for Disturbed Areas", pages 185-194

LOCATION: South Cell Drainage Channel

DISCHARGE = 694 CFS  
BOTTOM WIDTH = 10 FT  
Z (SIDE SLOPE) = 3                      Alpha = 18.43 Degrees  
CHANNEL SLOPE = 0.0174                  Theta = 1.00 Degrees  
RIPRAP S.G. = 2.7                      Phi = 37.00 Degrees  
COEF FOR t = 0.75 see Fig 3.16, ref.

CHANNEL BOTTOM

D50 (ASSUM) = 0.83 FT  
n = 0.038  
d = 3.70 FT -  
A = 78.07 FT<sup>2</sup>  
R = 2.34 FT  
Q (CALC) = 703.9 CFS -  
v = 9.02 FPS  
t = 4.02 PSF  
nb = 0.958  
SFb = 1.02

CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.83 FT  
n = 0.038  
d = 3.70 FT -  
A = 78.07 FT<sup>2</sup>  
R = 2.34 FT  
Q (CALC) = 703.9 CFS -  
v = 9.02 FPS  
t = 3.01 PSF  
nb = 0.72  
Beta = 40.15  
n' = 0.60  
SFs = 1.04

Design values

Channel Depth 4.2 ft. Depth from top of freeboard to top of riprap  
Dmax 1.66 ft = 2\* D50  
Layer Thickness 1.66 FT. = 2\* D50

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD

REF: "Applied Hydrology and Sedimentology  
for Disturbed Areas", pages 185-194

LOCATION: South Cell Drainage Channel

DISCHARGE =	694 CFS		
BOTTOM WIDTH =	12 FT		
Z (SIDE SLOPE)	3	Alpha =	18.43 Degrees
CHANNEL SLOPE =	0.0174	Theta =	1.00 Degrees
RIPRAP S.G. =	2.72	Phi =	37.00 Degrees
COEF FOR t =	0.75	see Fig 3.16, ref.	

CHANNEL BOTTOM

D50 (ASSUM) =	0.75 FT	
n =	0.038	
d =	3.45 FT	-
A =	77.11 FT <sup>2</sup>	
R =	2.28 FT	
Q (CALC) =	695.4 CFS	-
v =	9.02 FPS	
t =	3.75 PSF	
nb =	0.977	
SFb =	1.00	

CHANNEL SIDE SLOPES

D50 (ASSUM) =	0.75 FT	
n =	0.038	
d =	3.45 FT	-
A =	77.11 FT <sup>2</sup>	
R =	2.28 FT	
Q (CALC) =	695.4 CFS	-
v =	9.02 FPS	
t =	2.81 PSF	
nb =	0.73	
Beta =	40.70	
n' =	0.61	
SFs =	1.02	

Design values

Channel Depth	4.0 ft.	Depth from top of freeboard to top of riprap
Dmax	1.5 ft.	= 2* D50
Layer Thickness	1.5 FT.	= 2* D50



APPENDIX J

TEST RESULTS, SWALES H, I, AND J

## SWALES

Swales designed H, I and J were constructed to Station 11 + 25 in 1995 Reclamation project. Nielson's, Inc. contoured the existing native materials to excavated grade. Field density tests taken in conjunction with maximum unit weight values were performed to assist in determining if native soils were compacted to a minimum of 90% of ASTM D698. Upon completion, UNC personnel monitored swales for radon emissions and areas were determined where radon attenuation cover would be placed. Areas where RAC were omitted are sections of Swale I from Station 2 + 00 to Station 7 + 00, Swale H from Station 7 + 00 to Station 11 + 25 and Swale J from Station 8 + 00 to Station 11 + 25. Nielson's, Inc. placed radon attenuation cover to the specified elevations provided by UNC. RAC cover was processed and compacted to a minimum of 95% of ASTM D698 as noted at the specific test locations with moisture specification of optimum to plus 2%. Field densities, proctor values, and soil classifications were completed to assist in determining if RAC layer met project specifications.

Specified aggregate sizes used as erosion control were placed to minimum thickness determined by project requirements.

Bedding material (D50 .02) ranging from 3" to 3 1/2" thick were placed upon RAC material. Nielson's, Inc. placed bedding material by manual means. WT measured the in-place bedding material for thickness at various locations to indicate if thickness met project specifications at the specific test locations.

D50 .35 aggregate ranging from 3" to 4 1/2" was placed upon D50 .02 aggregate material. Nielson's, Inc. placed D50 .35 aggregate by manual means. WT measured in the in-placed D50 .35 aggregate for thickness at various locations to indicate conformance to project requirements.

D50 1.5 aggregate was placed on in-placed bedding material. D50 1.5 aggregate ranged from 3" to 4 1/2" thick. Nielson's, Inc. used manual means in an effort to meet project requirement thickness. WT measured in-place D50 1.5 aggregate for thickness to determine whether the material met the project requirements for thickness at the specific test locations.

D50 3" aggregates ranging from 6" to 7 1/2" were placed when specified by Reclamation plan. Nielson's, Inc. used a track hoe as a method of placement. WT measured in-place D50 3" for thickness at various locations to indicate if thickness met project requirements.

Areas where material thickness were not in compliance were reworked by Nielson's, Inc.









**Western Technologies Inc.**

The Quality People  
Since 1955

400 South Lorena Avenue  
Farmington, New Mexico 87401  
(505) 327-4966 • fax 327-5293

**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
P.O. Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450145  
Report Date: 06/22/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Sand

Sampled By: H. Kuebler Date 06/19/95

Source: Swale J

Submitted By: H. Kuebler Date 06/19/95

Authorized By: Client Date 06/19/95

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"	100	
3/8"	99.6	
1/4"		
No. 4	98	
8	96	
10	96	
16	94	
30	92	
40	91	
50	89	
100	70	
200	47.6	

Copies: Client (3), Billing (1), Field File (1)  
6-19/rgo:UNC031

The above services and report were performed pursuant to the terms and conditions of the contract between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

REVIEWED BY Thomas Huake



**Western Technologies Inc.**  
The Quality People  
Since 1955

400 South Lorena Avenue  
Farmington, New Mexico 87401  
(505) 327-4966 • fax 327-5293

**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
POST OFFICE BOX 3077  
GALLUP, NM 87305

Date of Report **08-23-95**  
Job No. **3145JB031** Page **1** of **1**  
Event/Invoice No. **31450185-6**  
Authorized By **E. MORALES** Date **07-12-95**  
Tested By **H. KUEBLER/WT** Date **07-12-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**  
Test Locations Designated By **H. KUEBLER/WT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**  
Calibrated Volume of Sand Cone Apparatus **0.0387** cu. ft. Bulk Unit Weight of Sand **94.6** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
1	0.0369	14.2	106.8	0.0	22	112.0	14.0	95	14.0 TO 16.0	95	YES
2	0.0373	17.2	98.8	0.0	33	103.8	17.1	95	17.1 TO 19.1	95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
1	SWALE J, STA. 11+00, W. SLOPE		9656.3	SUBGRADE
2	SWALE J, STA. 9+00, BOTTOM		6953.5	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
22	31450145	SANDY LEAN CLAY	SWALE J, STA. 10+00, 6955.6	14.0	112.0	D698-A
33	31450185	SILT, SUBGRADE	SWALE I, STA. 5+00, 6951.2	17.1	103.8	D698-A

Comments: **CB**  
\* DATUM Elevation of Test = Top of RAC

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY T. Krake

SIGNED COPY ON FILE

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SWALES H and I

DATE OF REPORT 12/06/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/06/95	Proctor - Swale I	Sta. 2 + 00	Bottom			Subgrade	116.0	12.4		CL	Yes
06/06/95	Soil Classification Swale I	Sta. 2 + 00	Bottom			Subgrade				CL	Yes
06/14/95	Proctor - Swale H	Sta. 11 + 50			6956.7	Subgrade	116.5	12.4		CL	Yes
06/14/95	Proctor - Swale I	Sta. 7 + 00			6952.5	Subgrade	110.3	16.5		CL	Yes
06/20/95	Soil Classification Swale I	Sta. 7 + 00			6952.5	Subgrade				SM	Yes
06/20/95	Soil Classification Swale H	Sta. 11 + 50			6956.0	Subgrade				CL	Yes
07/06/95	Sandcone - Swale I	Sta. 0 + 00			6945.3	Subgrade	110.1	9.1	95	CL	Yes
07/06/95	Sandcone - Swale I	Sta. 2 + 00	W. Slope		6950.1	Subgrade	98.6	4.6	85	CL	No*
07/06/95	Sandcone - Swale I	Sta. 1 + 00			6947.5	Subgrade	106.9	7.6	92	CL	Yes
07/06/95	Sandcone - Retest Swale I*	Sta. 2 + 00	W. Slope		6950.1	Subgrade	105.7	7.3	91	CL	Yes
07/12/95	Sandcone	Sta. 7 + 00	E. Slope		6955.0	Subgrade	93.6	14.1	90	CL	Yes
07/12/95	Sandcone	Sta. 5 + 00	Bottom		6951.2	Subgrade	99.4	18.7	96	CL	Yes

cb/UNC.031/33  
\* Revised 02/14/96

Dist: Client (3) Field File (1) Billing (1)

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SWALES H and I

DATE OF REPORT 12/06/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/12/95	Sandcone - Swale I	Sta. 3 + 00	Bottom		6949.9	Subgrade	101.7	18.0	98	ML	Yes
07/12/95	Sandcone - Swale I	Sta. 2 + 00	W. Slope		6952.4	RAC	104.6	17.4	100	ML	Yes
07/13/95	Proctor - Swale I	Sta. 5 + 00			6951.2	Subgrade	103.8	17.1		ML	Yes
07/13/95	Soil Classification Swale I	Sta. 5 + 00			6951.2	Subgrade				ML	Yes
07/13/95	Sandcone - Swale H	Sta. 11 + 00	Bottom		6956.5	Subgrade	110.5	12.6	95	CL-ML	Yes
07/13/95	Sandcone - Swale H	Sta. 9 + 00	Bottom		6954.5	Subgrade	98.8	17.2	95	CL	Yes
07/17/95	Sandcone - DC-SC	Sta. 0 + 00	W. Slope		6951.3	RAC	102.9	17.2	99	CL	Yes
07/17/95	Soil Classification DC-SC	Sta. 0 + 00	W. Slope		6951.3	RAC				CL	Yes
07/20/95 to 09/27/95	Aggregate Placement										

AC = Radon Attenuation Cover

b/UNC.031/34

ist: Client (3) Field File (1) Billing (1)

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

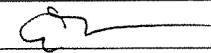
Job No. 3145JB031

Lab/Invoice No. 31450145

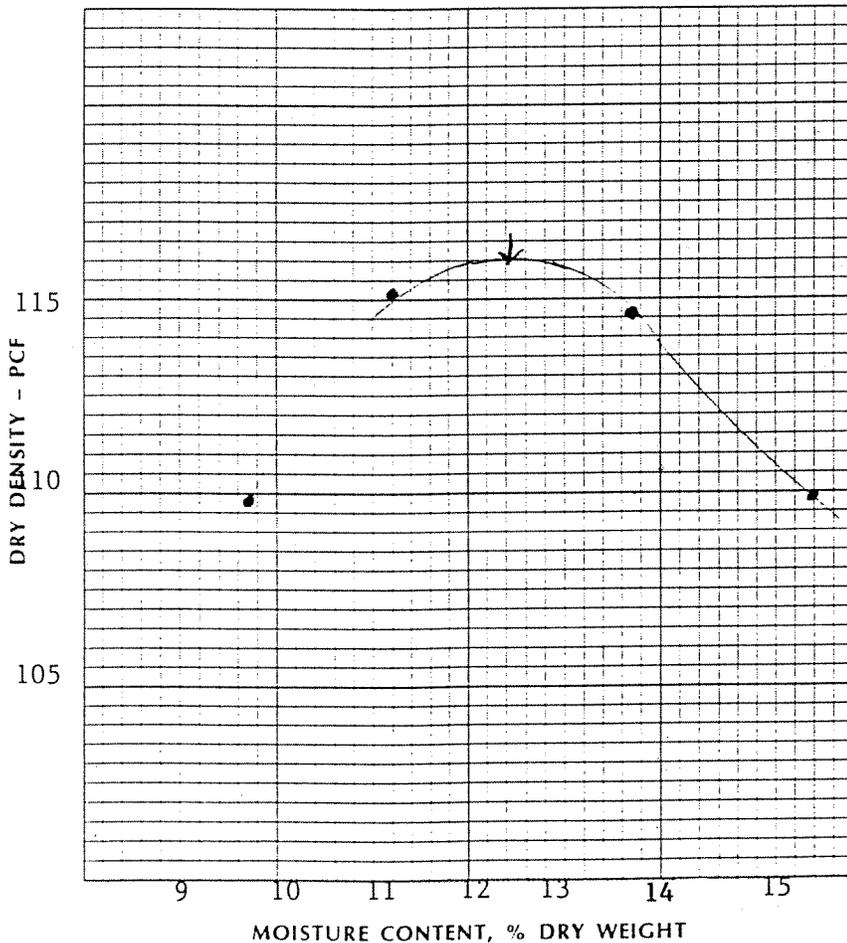
Type of Material Clayey Silt Sampled By H. Kuebler/WT Date 06/06/95

Source of Material Native Subgrade Swale I 2+00 Submitted By H. Kuebler/WT Date 06/06/95

Tested/Calc. By H. Dickson/WT Date 06/07/95

Test Procedure ASTM D698A Reviewed By  Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	0	50	100	150			
Sample + Mold Weight, gms	6419.4	6535.0	6571.4	6520.8			
Mold Weight, gms	4600.0	4600.4	4600.4	4600.0			
Wet Sample Weight, gms	1819.4	1935.0	1971.4	1920.8			
Wet Sample Weight, lbs	4.01	4.27	4.35	4.23			
Wet Density, pcf	120.3	128.0	130.4	127.0			
Moisture Sample Wet, gms	401.3	406.5	403.1	407.9			
Moisture Sample Dry, gms	365.8	365.4	354.4	353.0			
Weight of Water, gms	35.5	41.1	48.7	54.9			
Moisture, %	9.7	11.2	13.7	15.6			
Dry Density, pcf	109.7	115.1	114.7	109.9			



Maximum Dry Density, pcf 116.0

Optimum Moisture Content, % 12.4

Diameter of Mold, in. 4 inch

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12 inch

Material Used -4 material



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450415  
Report Date: 12/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Lean Clay	Sampled By: H. Kuebler /WT	Date: June 1995
Source: Swale I, 2 + 00	Submitted By: H. Kuebler /WT	Date: June 1995
Native Subgrade	Authorized By: Client	Date: June 1995

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	100	
8	99	
10	98	
16	97	
30	96	
40	96	
50	95	
100	75	
200	60.9	

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit 32  
Plasticity Index 13

Copies: Client (3), Billing (1), Field File (1)  
1/dn:unc031

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REVIEWED BY JK

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab / Invoice No. 31450145

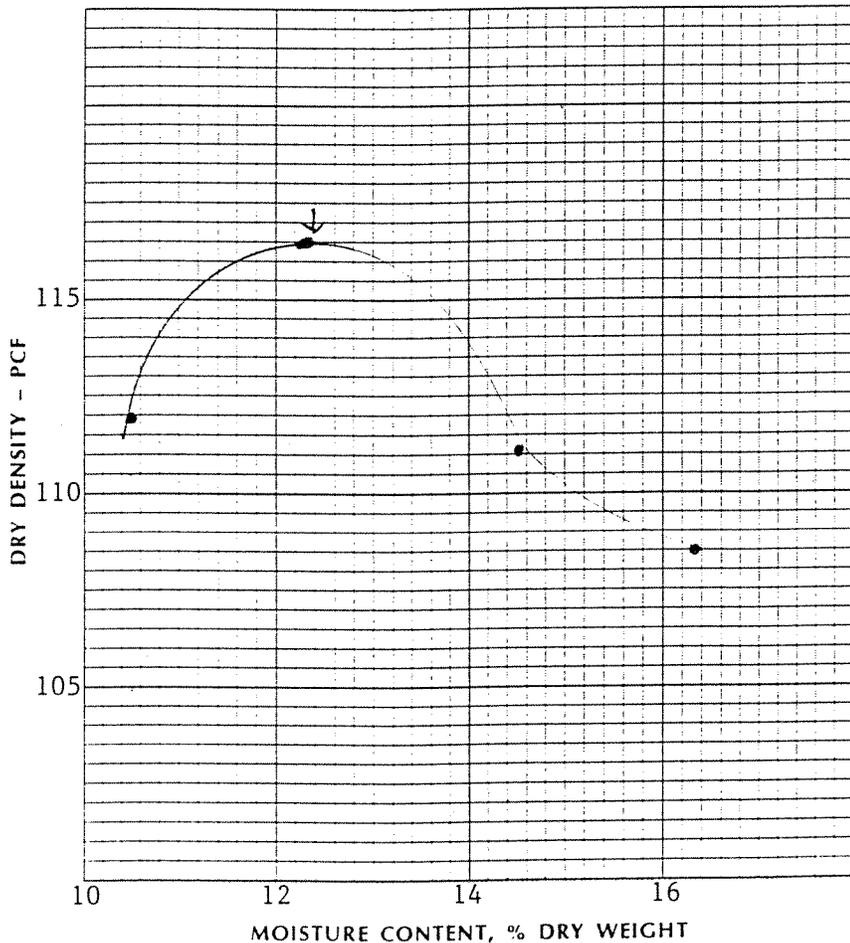
Type of Material Sandy Lean Clay Sampled By H. Kuebler/WT Date 06/14/95

Source of Material Swale H Sta. 11+50 subgrade Submitted By H. Kuebler/WT Date 06/14/95

Elev 6956.7 Tested / Calc. By H. Kuebler/WT Date 06/14/95

Test Procedure ASTM D698A Reviewed By *[Signature]* Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	100	150	50	0			
Sample + Mold Weight, gms	6240.0	6186.0	6135.0	6173.7			
Mold Weight, gms	4264.0	4264.0	4264.0	4264.0			
Wet Sample Weight, gms	1976.0	1922.0	1871.0	1909.7			
Wet Sample Weight, lbs	4.36	4.24	4.12	4.21			
Wet Density, pcf	130.8	127.2	123.6	126.2			
Moisture Sample Wet, gms	400.8	400.1	399.9	410.1			
Moisture Sample Dry, gms	357.0	349.6	361.9	352.6			
Weight of Water, gms	43.8	50.5	38.0	57.5			
Moisture, %	12.3	14.5	10.5	16.3			
Dry Density, pcf	116.5	111.1	111.9	108.5			



Maximum Dry Density, pcf 116.5

Optimum Moisture Content, % 12.4

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450145

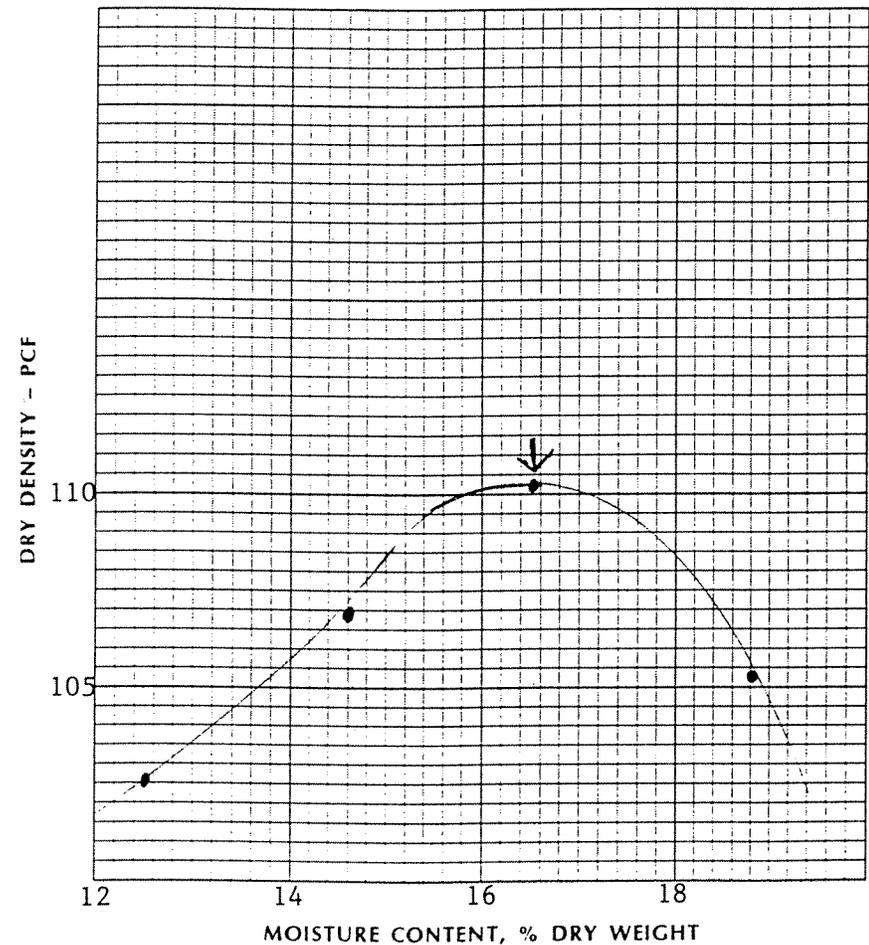
Type of Material Sandy Lean Clay Sampled By H. Kuebler/WT Date 06/14/9

Source of Material Swale I Sta. 7+00 Subgrade Elev. 6952.5 Submitted By H. Kuebler/WT Date 06/14/9

Tested/Calc. By H. Kuebler/WT Date 06/14/9

Test Procedure ASTM D698A Reviewed By *[Signature]* Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	50	100	0	-50			
Sample + Mold Weight, gms	6205	6156	6114	6007.5			
Mold Weight, gms	4264.0	4264.0	4264.0	4264.0			
Wet Sample Weight, gms	1941	1892	1850	1743.5			
Wet Sample Weight, lbs	4.279	4.17	4.08	3.84			
Wet Density, pcf	128.4	125.1	122.4	115.3			
Moisture Sample Wet, gms	337.4	353.4	394.8	400.0			
Moisture Sample Dry, gms	289.6	297.5	344.6	355.6			
Weight of Water, gms	47.8	55.9	50.2	44.4			
Moisture, %	16.5	18.8	14.6	12.5			
Dry Density, pcf	110.2	105.3	106.8	102.5			



Maximum Dry Density, pcf 110.3

Optimum Moisture Content, % 16.5

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: **UNC Mining & Milling**  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450243  
Report Date: 8-23-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Silty Sand</u>	Sampled By: <u>H.K.</u>	Date: <u>6-20-95</u>
Source: <u>Swale I 7+00/Subgrade</u>	Submitted By: <u>H.K.</u>	Date: <u>6-20-95</u>
	Authorized By: <u>Client</u>	Date: <u>6-20-95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	100
1/2"	97	
3/8"	97	
1/4"		
No. 4	94	90-100
8	91	
10	90	85-100
16	88	
30	87	
40	86	65-100
50	84	
100	73	50-100
200	51.3	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA  
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NV  
Plasticity Index NP

Copies: Client (3), Field File (1), Billing (1).  
File:UNC031

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450122  
Report Date: 11/21/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/20/95</u>
Source: <u>Swale H 11+50/Subgrade</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/20/95</u>
<u>Elev. 6956.0</u>	Authorized By: <u>Client</u>	Date: <u>06/20/95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"		
2"		
1 1/2"		
1"		
3/4"	100	100
1/2"	98	
3/8"	97	
1/4"		
No. 4	94	90-100
8	91	
10	90	85-100
16	89	
30	87	
40	86	65-100
50	85	
100	72	50-100
200	50.6	40-85

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>N/A</u>
Optimum Moisture, %	<u>N/A</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>25</u>
Plasticity Index	<u>7</u>

Copies: Client (3), Billing (1) Field File (1)  
0.1/cb:UNC.031

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**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
POST OFFICE BOX 3077  
GALLUP, NM 87305

Date of Report **08-22-95**  
Job No. **3145JB031** Page 1 of 1  
Event/Invoice No. **31450185-1**  
Authorized By **E. MORALES** Date **07-06-95**  
Tested By **H. KUEBLER/WT** Date **07-06-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**  
Test Locations Designated By **UNC**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**  
Calibrated Volume of Sand Cone Apparatus **0.0387** cu. ft. Bulk Unit Weight of Sand **94.6** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
1	0.0332	9.1	110.1	0.0	3	116.0	12.4	95		90	YES
2	0.0408	4.6	98.6	0.0	3	116.0	12.4	85		90	NO
3	0.0405	7.6	106.9	0.0	3	116.0	12.4	92		90	YES
4	0.0341	7.3	105.7	0.0	3	116.0	12.4	91		90	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
1	SWALE I, STA. 0+00		6945.3	SUBGRADE
2	SWALE I, STA. 2+00, W. SLOPE		6950.1	SUBGRADE
3	SWALE I, STA. 1+00		6947.5	SUBGRADE
4	RETEST OF #2 (07/06/95)		6950.1	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
3	31450145	CLAYEY SILT	STATION 2 + 00, SWALE I	12.4	116.0	698-A

Comments: **CB**  
\* DATUM Elevation of Test = Top of Subgrade Prior to RAC Placement

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTEE OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY T. Krake



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**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
POST OFFICE BOX 3077  
GALLUP, NM 87305

Date of Report **08-28-95**  
Job No. **3145JB031**  
Event/Invoice No. **31450185-7**  
Authorized By **E. MORALES**  
Tested By **H.K./C.P./WT**

Page **1** of **1**  
Date **07-12-95**  
Date **07-12-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**  
Test Locations Designated By **H. KUEBLER/C. PADILLA/WT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**  
Calibrated Volume of Sand Cone Apparatus **0.0383** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
1	0.0400	14.1	93.6	0.0	33	103.8	17.1	90	17.1 TO 19.1	90	YES
2	0.0576	18.7	99.4	0.0	33	103.8	17.1	96		90	YES
3	0.0376	18.0	101.7	0.0	33	103.8	17.1	98		90	YES
4	0.0343	17.4	104.6	0.0	33	103.8	17.1	100+		95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
1	SWALE I, STA. 7+00, E. SLOPE		6955.0	SUBGRADE
2	SWALE I, STA. 5+00, BOTTOM		6951.2	SUBGRADE
3	SWALE I, STA. 3+00, BOTTOM		6949.9	SUBGRADE
4	SWALE I, STA. 2+00, W. SLOPE		6952.4	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
33	31450185	SILT, SUBGRADE	SWALE I, STA. 5+00, 6951.2	17.1	103.8	D698-A

Comments: **CB**  
\* DATUM Elevation of Test = Top of Subgrade prior to Bedding Placmt.

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY

**A. McHaney**

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450185

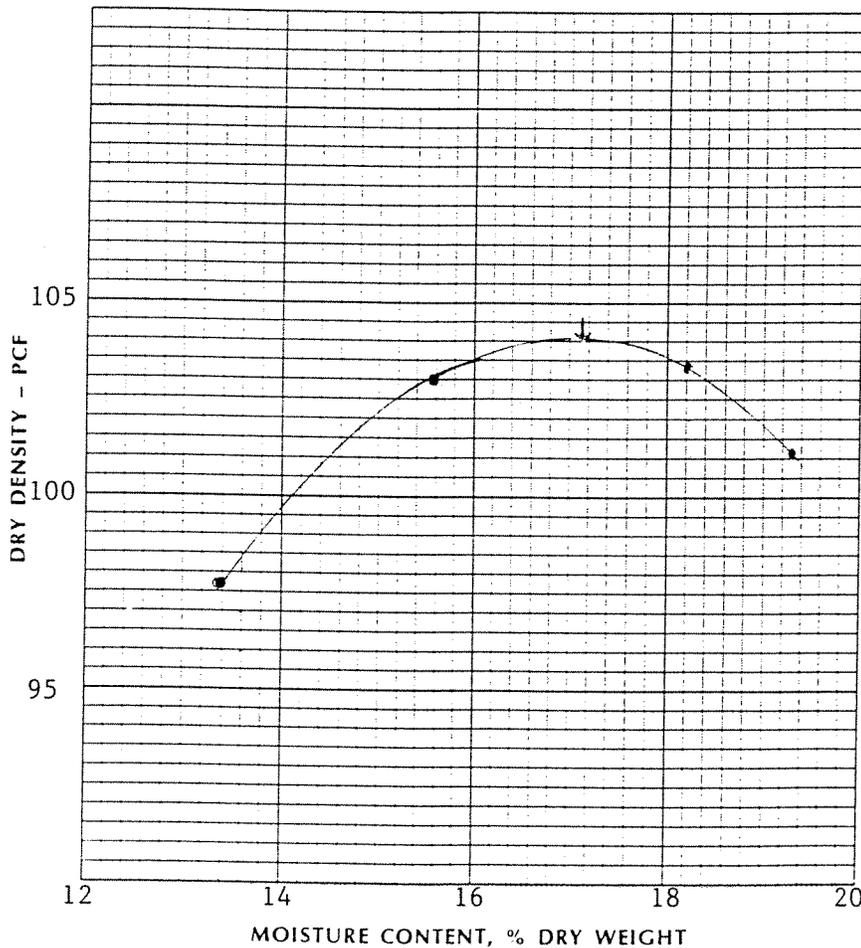
Type of Material Silt Sampled By C. Padilla/WT Date 07/13/9

Source of Material Swale I Sta. 5+00 Elev. 6951.2 Submitted By C. Padilla/WT Date 07/13/9

Tested/Calc. By C. Padilla/WT Date 07/13/9

Test Procedure ASTM D698A Reviewed By *[Signature]* Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	50	100	150				
Sample + Mold Weight, gms	5980.3	6025.5	6003.4	5853.0			
Mold Weight, gms	4179.7	4179.7	4179.7	4179.7			
Wet Sample Weight, gms	1800.6	1845.8	1823.7	1673.3			
Wet Sample Weight, lbs	3.970	4.069	4.021	3.689			
Wet Density, pcf	119.1	122.1	120.6	110.7			
Moisture Sample Wet, gms	317.1	328.4	318.1	392.7			
Moisture Sample Dry, gms	274.2	277.9	266.7	346.3			
Weight of Water, gms	42.9	50.5	51.4	46.4			
Moisture, %	15.6	18.2	19.3	13.4			
Dry Density, pcf	103.0	103.3	101.1	97.6			



Maximum Dry Density, pcf 103.8

Optimum Moisture Content, % 17.1

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450185  
Report Date: 8-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>Silt</u>	Sampled By: <u>CP &amp; HK</u>	Date: <u>7-13-95</u>	
Source: <u>Swale I Station 5+00</u>	Submitted By: <u>CP</u>	Date: <u>7-14-95</u>	
	Authorized By: <u>Client</u>	Date: <u>7-13-95</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"		
1/2"		
3/8"		
1/4"		
No. 4		
8	100	
10	99	
16	98	
30	97	
40	93	
50	89	
100	64	
200	34	

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA  
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NV  
Plasticity Index NP

Copies: Client (3), Billing (1), Field File (1).  
713\ha:UNC031

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REVIEWED BY *Chris McHugh*



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**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
POST OFFICE BOX 3077  
GALLUP, NM 87305

Date of Report **08-28-95**  
Job No. **3145JB031** Page 1 of 1  
Event/Invoice No. **31450185-8**  
Authorized By **E. MORALES** Date **07-13-95**  
Tested By **C. PADILLA/WT** Date **07-13-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**  
Test Locations Designated By **C. PADILLA/WT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**  
Calibrated Volume of Sand Cone Apparatus **0.0383** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		CONFORMANCE INDICATED
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	
1	0.0384	12.6	110.5	0.0	3	116.0	12.4	95		90	YES
2	0.0414	17.2	98.8	0.0	33	103.8	17.1	95		90	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
1	SWALE H, STA. 11+00, BOTTOM		6956.5	SUBGRADE
2	SWALE H, STA. 9+00, BOTTOM		6954.5	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
3	31450145	CLAYEY SILT	STATION 2 + 00, SWALE 1	12.4	116.0	698-A
33	31450185	SILT, SUBGRADE	SWALE 1, STA. 5+00, 6951.2	17.1	103.8	D698-A

Comments: **CB**  
\* DATUM Elevation of Test = Top of Subgrade prior to Bedding Placmt

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTEE OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY

**A. McHaney**

SIGNED COPY ON FILE



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450415  
Report Date: 12/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Silty Clay	Sampled By: H. Kuebler /WT	Date: August 1995
Source: DC - SC Swale	Submitted By: H. Kuebler /WT	Date: August 1995
Native Subgrade	Authorized By: Client	Date: August 1995

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	98	
1/2"	---	
3/8"	98	
1/4"	---	
No. 4	97	
8	96	
10	95	
16	94	
30	93	
40	92	
50	91	
100	73	
200	53.6	

**Moisture Density Relations, pcf (ASTM D698 Method A)**

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

**Plasticity Index, ASTM D4318**

Liquid Limit 27  
Plasticity Index 6

Copies: Client (3), Billing (1), Field File (1)  
1/dn:unc031

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**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
**POST OFFICE BOX 3077**  
**GALLUP, NM 87305**

Date of Report **08-28-95**  
Job No. **3145JB031** Page 1 of 1  
Event/Invoice No. **31450185-11**  
Authorized By **E. MORALES** Date **07-17-95**  
Tested By **H. KUEBLER/WT** Date **07-17-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**

Test Locations Designated By **CLIENT**  
Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**  
Calibrated Volume of Sand Cone Apparatus **0.0387** cu. ft. Bulk Unit Weight of Sand **94.6** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
1	0.0361	17.2	102.9	0.0	33	103.8	17.1	99	17.1 TO 19.1	95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
1	DC-SC, SWALE, STA. 0+00		6951.3	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
33	31450185	SILT, SUBGRADE	SWALE 1, STA. 5+00, 6951.2	17.1	103.8	D698-A

Comments: **CB**  
\* DATUM Test Elevation = Top of RAC

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

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REVIEWED BY \_\_\_\_\_ **A. McHaney**



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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

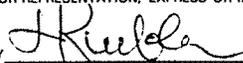
**DATE OF REPORT 12/06/95**

**SWALE J - D50 .02 SAND AGGREGATE THICKNESS**

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 8 + 00	3 1/2	3 1/2	3 1/2
Station 9 + 00	3	3 1/2	3 1/2
Station 10 + 00	3 1/2	3 1/2	3
Station 11 + 00	3 1/4	3 1/2	3 1/4

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.SWE/19

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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 08/17/95**

**SWALE H & I - .02 SAND THICKNESS**

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 11 + 50	3	3 1/4	3 1/2
Station 11 + 00	3 1/4	3 1/2	3
Station 10 + 00	3 1/2	3 1/2	3 1/4
Station 9 + 00	3	3	3 1/2
Station 8 + 00	3	3 1/2	3 1/2
Station 7 + 00	3 1/4	3 1/4	3
Station 6 + 00	3 1/2	3 1/4	3 1/2
Station 5 + 00	3 1/2	3 1/4	3 1/4
Station 4 + 00	3 1/4	3	3 1/4
Station 3 + 00	3 1/2	3 1/2	3 1/2
Station 2 + 00	3 1/2	3 1/2	3 1/2
Station 1 + 00	3 1/2	3 1/2	3 1/2

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.SWE/8

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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 08/17/95**

**SWALE H & I - .35 AGGREGATE THICKNESS**

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 11 + 50	4	4	3 1/4
Station 11 + 00	3 1/2	4	3 3/4
Station 10 + 00	4	3 1/2	4
Station 9 + 00	3	4	4
Station 8 + 00	3	3 1/4	3 1/2
Station 7 + 00	3 3/4	3	4
Station 6 + 00	3 3/4	4	3
Station 5 + 00	4	3 1/2	3 1/2
Station 4 + 00	3	3	4
Station 3 + 00	4	4	4
Station 2 + 00	4	4	3
Station 1 + 00	4	3 3/4	3

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.SWE/7

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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/06/95**

**SWALE J - D50 1.5 AGGREGATE THICKNESS**

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 8+00	3 1/2	3	4
Station 9+00	3 1/4	4	3 1/2
Station 10+00	3 1/2	3 1/4	3
Station 11+00	4	4	3 1/2

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.SWE/20

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REVIEWED BY J. Kuebler



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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/06/95**

**SWALES H AND I - D50 3 INCH AGGREGATE THICKNESS**

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 11 + 50	6	6	6
Station 10 + 50	6 3/4	6 1/4	6
Station 9 + 50	6 3/4	6 3/4	6 1/2
Station 8 + 50	6	6 1/2	6 1/2
Station 7 + 50	6 1/4	6 1/4	6 1/2
Station 6 + 50	6 3/4	6	6 3/4
Station 5 + 50	7	6 1/2	6
Station 4 + 50	6 1/4	6	6 3/4
Station 3 + 50	6 1/2	6	6 1/2
Station 2 + 50	6	6	6
Station 1 + 50	6	6	6 1/4

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.SWE/18

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REVIEWED BY

*[Handwritten Signature]*

**APPENDIX  
K**

APPENDIX K

BEDDING MATERIAL GRADATION TESTS





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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .02 Aggregate      Sampled By: P. Christensen/WT      Date: 03/13/95

Source: Hamilton Brothers Crusher      Submitted By: P. Christensen/WT      Date: 03/13/95

Authorized By: Client      Date: 03/13/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	85-100
1/2"		
3/8"		
1/4"		
No. 4	96	65-100
8		
10	73	47-94
16		
30		
40	47	23-70
50		
100		
200	26.0	15-30

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A  
Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)  
13/cb:UNC.031

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REVIEWED BY *A. Healy*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450122  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .02 Aggregate      Sampled By: H. Kuebler/WT      Date 05/23/95

Source: UNC Stockpile      Submitted By: H. Kuebler/WT      Date 05/23/95

Authorized By: Client      Date 05/23/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	100
1-1/2"		
1-1/8"		
1"		
3/4"	100	85-100
1/2"		
3/8"		
1/4"		
No. 4	100	65-100
8		
10	73	47-94
16		
30		
40	39	23-70
50		
100		
200	18.0	15-30

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A  
Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)  
23.1/cb:UNC.031

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REVIEWED BY *A. Neely*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450145  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>.02 Aggregate</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/20/95</u>
Source: <u>UNC</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/20/95</u>
	Authorized By: <u>Client</u>	Date: <u>06/20/95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	100
1-1/2"		
1-1/8"		
1"		
3/4"	100	85-100
1/2"		
3/8"		
1/4"		
No. 4	96	65-100
8		
10	76	47-94
16		
30		
40	48	23-70
50		
100		
200	21.5	15-30

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>N/A</u>
Optimum Moisture, %	<u>N/A</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>N/A</u>
Plasticity Index	<u>N/A</u>

Copies: Client (3), Billing (1) Field File (1)  
10/cb:UNC.031

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REVIEWED BY *H. Kuebler*

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR D50 .35 MATERIAL

DATE OF REPORT 12/07/95

DATE	SAMPLE LOCATION	% PASS 3" SPEC. 65-100%	% PASS 3/4" SPEC. 43-80%	% PASS #4 SPEC. 22-60%	% PASS #10 SPEC. 15-38%	% PASS #40 SPEC. 5-12%	% PASS 200 SPEC. 0-10%	WITHIN SPECS. ?
03/09/95	Hamilton Brothers	100	98	49	32	19	10.7	No
03/13/95	Hamilton Brothers	100	94	41	26	14	7.5	No
05/19/95	Hamilton Brothers	100	90	41	29	19	8.8	No
05/23/95	Rock Score							
05/25/95	Hamilton Brothers	100	80	31	22	14	6.9	No
05/25/95	Hamilton Brothers	100	75	34	24	14	8.1	No
06/12/95	Rock Score							
06/12/95	Hamilton Brothers	100	68	27	18	10	6.7	Yes
06/22/95	Hamilton Brothers	100	73	39	17	10	7.4	Yes
07/10/95	Rock Score							
07/10/95	Hamilton Brothers	100	67	33	15	10	6.1	Yes

NOTE: Material that did not meet specifications was discarded.

cb/1995.UNC/4

Dist: Client (3) Field File (1) Billing (1)



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>.35 Aggregate</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>03/09/95</u>
Source: <u>Hamilton Brothers</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>03/09/95</u>
	Authorized By: <u>Client</u>	Date: <u>03/09/95</u>

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	98	43-80
1/2"		
3/8"		
1/4"		
No. 4	49	22-60
8		
10	32	15-38
16		
30		
40	19	5-12
50		
100		
200	10.7	0-10

**Moisture Density Relations, pcf (ASTM D698 Method A)**

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

**Plasticity Index, ASTM D4318**

Liquid Limit N/A  
Plasticity Index N/A

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REVIEWED BY *H. Kuebler*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Material      Sampled By: P. Christensen/WT      Date: 03/13/95

Source: Hamilton Brothers Crusher      Submitted By: P. Christensen/WT      Date: 03/13/95

Authorized By: Client      Date: 03/13/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	94	43-80
1/2"		
3/8"		
1/4"		
No. 4	41	22-60
8		
10	26	15-38
16		
30		
40	14	5-12
50		
100		
200	7.5	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A  
Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)  
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REVIEWED BY: *Ed healy*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450122  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>.35 Aggregate</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>05/19/95</u>	
Source: <u>Hamilton Brothers</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>05/19/95</u>	
	Authorized By: <u>Client</u>	Date: <u>05/19/95</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	90	43-80
1/2"		
3/8"		
1/4"		
No. 4	41	22-60
8		
10	29	15-38
16		
30		
40	19	5-12
50		
100		
200	8.8	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>N/A</u>
Optimum Moisture, %	<u>N/A</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>N/A</u>
Plasticity Index	<u>N/A</u>

copies: Client (3), Billing (1) Field File (1)  
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**LABORATORY REPORT**

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Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450122  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D<sup>50</sup> .35 Aggregate      Sampled By: H. Kuebler/WT      Date: 05/23/95

Source: Hamilton Yard      Submitted By: H. Kuebler/WT      Date: 05/23/95

Authorized By: Client      Date: 05/23/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	70	43-80
1/2"		
3/8"		
1/4"		
No. 4	26	22-60
8		
10	20	15-38
16		
30		
40	14	5-12
50		
100		
200	7.7	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A  
Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)  
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REVIEWED BY *H. Kuebler*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

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Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450122  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Aggregate

Sampled By: H. Kuebler/WT Date 05/25/95

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 05/25/95

Authorized By: Client Date 05/25/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	80	43-80
1/2"		
3/8"		
1/4"		
No. 4	31	22-60
8		
10	22	15-38
16		
30		
40	14	5-12
50		
100		
200	6.9	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A  
Plasticity Index N/A

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Job No. 3145JB031  
Lab/Inv. No. 31450122  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Aggregate      Sampled By: H. Kuebler/WT      Date 05/25/95

Source: Hamilton Brothers      Submitted By: H. Kuebler/WT      Date 05/25/95

Authorized By: Client      Date 05/25/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	75	43-80
1/2"		
3/8"		
1/4"		
No. 4	34	22-60
8		
10	24	15-38
16		
30		
40	14	5-12
50		
100		
200	8.1	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450145  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Aggregate      Sampled By: H. Kuebler/WT      Date: 06/12/95

Source: Hamilton Brothers      Submitted By: H. Kuebler/WT      Date: 06/12/95

Authorized By: Client      Date: 06/12/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	68	43-80
1/2"		
3/8"		
1/4"		
No. 4	27	22-60
8		
10	18	15-38
16		
30		
40	10	5-12
50		
100		
200	6.7	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A  
Plasticity Index N/A

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450145  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>.35 Aggregate</u>	Sampled By: <u>J. Golding/WT</u>	Date: <u>06/22/95</u>
Source: <u>Hamilton Brothers Crusher</u>	Submitted By: <u>J. Golding/WT</u>	Date: <u>06/22/95</u>
	Authorized By: <u>Client</u>	Date: <u>06/22/95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	73	43-80
1/2"		
3/8"		
1/4"		
No. 4	39	22-60
8		
10	17	15-38
16		
30		
40	17	5-12
50		
100		
200	7.4	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>N/A</u>
Optimum Moisture, %	<u>N/A</u>

Plasticity Index, ASTM D4318

Liquid Limit	<u>N/A</u>
Plasticity Index	<u>N/A</u>

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450145  
Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: <u>.35 Aggregate</u>	Sampled By: <u>J. Golding/WT</u>	Date: <u>06/22/95</u>
Source: <u>Hamilton Brothers Crusher</u>	Submitted By: <u>J. Golding/WT</u>	Date: <u>06/22/95</u>
	Authorized By: <u>Client</u>	Date: <u>06/22/95</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	70	43-80
1/2"		
3/8"		
1/4"		
No. 4	37	22-60
8		
10	15	15-38
16		
30		
40	15	5-12
50		
100		
200	6.8	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A  
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A  
Plasticity Index N/A

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
Post Office Box 3077  
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Aggregate

Sampled By: J. Golding/WT Date 07/10/95

Source: Hamilton Brothers Crusher

Submitted By: J. Golding/WT Date 07/10/95

Authorized By: Client Date 07/10/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	67	43-80
1/2"		
3/8"		
1/4"		
No. 4	33	22-60
8		
10	15	15-38
16		
30		
40	10	5-12
50		
100		
200	6.1	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)

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APPENDIX L

TEST RESULTS, RUNOFF CONTROL DITCH

## SOUTH CELL WEST CONTROL RUNOFF DITCH

West control ditch was to be contoured to 1995 Reclamation plan specifications. Nielson's, Inc. worked on the west control ditch periodically, with final completion of the control ditch on September 27, 1995. The west berm of the west control berm was built-up to a higher elevation than its previous existing elevation and the control ditch bottom was contoured to a width and elevation as prescribed in the 1995 Reclamation plans. Field density tests were performed to determine if the fill placement was according to project specifications for compaction and moisture content requirements at the specific test locations.

Bedding material was placed in a lift ranging 3" to 3 1/2" thick. Nielson's, Inc. graded material by manual means (rake and shovel). Thickness measurements were performed to determine if material met project specifications for thickness at the specific test locations.

D50 1.5 aggregate was placed on the bedding material to act as an erosion protection layer. Nielson's, Inc. placed D50 1.5 aggregate by manual means. Project specifications stated D50 1.5 aggregate was to be placed in a lift between 3" to 4 1/2" thick. Thickness measurements were performed to determine if the material met project specifications for thickness at the specific locations.



UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR WEST CONTROL DITCH

DATE OF REPORT 12/06/95

HK

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
03/02/95	Soil Classification	South End								CL	Yes
03/02/95	Soil Classification	North End								CL	Yes
03/02/95	Soil Classification	South End	of Drainage	Channel						SC	Yes
03/02/95	Proctor	Composite	of West	Control	Ditch		109.8	15.8		CL	Yes
07/24/95	Proctor	South End	of Control	Ditch			112.6	11.2		SM	Yes
09/12/95	Sandcone	Sta. 25+00	West Berm		6952.3		103.7	12.6	94	CL	Yes
09/12/95	Sandcone	Sta. 26+50	East Berm		6952.1		104.0	12.1	95	CL	Yes
09/12/95	Sandcone	Sta. 28+50	Bottom		6949.4		105.9	13.9	96	CL	Yes
09/12/95	Sandcone	Sta. 30+50	West Berm		6949.6		99.9	11.4	91	CL	Yes
09/12/95	Sandcone	Sta. 32+50	Bottom		6947.6		112.3	10.7	100	CL	Yes
09/12/95	Sandcone	Sta. 34+50	West Berm		6945.0		103.2	4.1	94	CL	Yes
09/12/95	Sandcone	Sta. 36+50	East Berm		6943.2		104.8	6.7	93	SM	Yes

RAC = Radon Attenuation Cover

cb/JUNC.031/4

Dist: Client (3) Field File (1) Billing (1)





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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 03/07/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Samdy/lean Clay      Sampled By: H. Kuebler      Date: 03/02/95

Source: S of run off control ditch      Submitted By: H. Kuebler      Date: 03/02/95

Authorized By: Client      Date: 03/02/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	94	65-100
50	93	
100	84	50-100
200	62.0	40-85

Plasticity Index, ASTM D4318

Liquid Limit 31

Plasticity Index 13

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REVIEWED BY *Herman Kuebler*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 03/07/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy/lean Clay      Sampled By: H. Kuebler      Date: 03/02/95

Source: N of run off control ditch      Submitted By: H. Kuebler      Date: 03/02/95

Authorized By: Client      Date: 03/02/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"		
3/8"		
1/4"		
No. 4	100	90-100
8	96	
10	95	85-100
16	94	
30	93	
40	92	65-100
50	91	
100	79	50-100
200	64.0	40-85

Plasticity Index, ASTM D4318  
Liquid Limit 32  
Plasticity Index 13

Copies: Client (3), Billing (1), Field File (1)  
In:unc.031

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REVIEWED BY Thomas Huabe



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client: UNC Mining & Milling  
Attn: Mr. Ed Morales  
PO Box 3077  
Gallup, NM 87305

Job No. 3145JB031  
Lab/Inv. No. 31450051  
Report Date: 03/07/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Silty/Clay Sand

Sampled By: H. Kuebler Date 03/02/95

Source: North of Drainage Channel, East of  
Gravel Road

Submitted By: H. Kuebler Date 03/02/95  
Authorized By: Client Date 03/02/95

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	99	
3/8"	96	
1/4"	---	
No. 4	92	90-100
8	89	
10	89	85-100
16	88	
30	84	
40	81	65-100
50	73	
100	56	50-100
200	38.0	40-85

Plasticity Index, ASTM D4318

Liquid Limit	<u>23</u>
Plasticity Index	<u>7</u>

**Note: This material not for R.A.C.**

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2.1/dn:unc031

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REVIEWED BY H. Kuebler

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450051

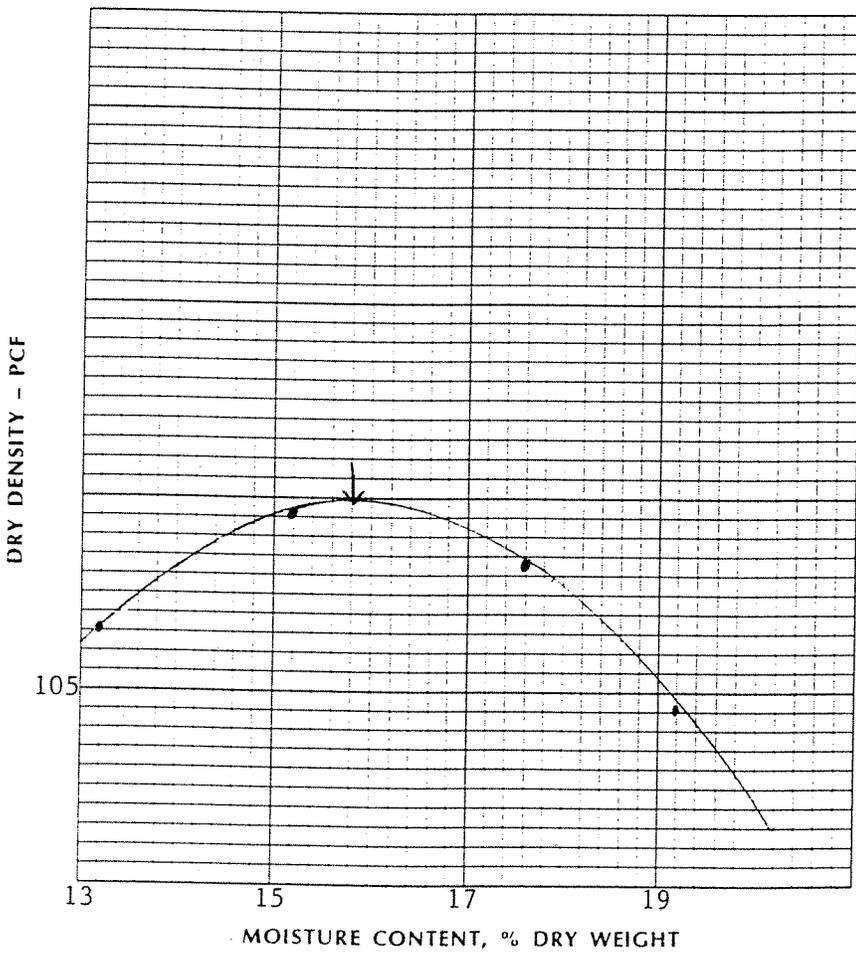
Type of Material Sandy Lean Clay Sampled By H. Kuebler/WT Date 03/02/9

Source of Material Composite of West run off Submitted By H. Kuebler/WT Date 03/02/9

Control Ditch Tested/Calc. By H. Kuebler/WT Date 03/02/9

Test Procedure ASTM D698A Reviewed By *[Signature]* Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	50	100	0	150			
Sample + Mold Weight, gms	6169.0	6183.0	6081.2	6144.6			
Mold Weight, gms	4257.9	4257.9	4257.9	4257.9			
Wet Sample Weight, gms	1911.1	1925.1	1823.3	1886.7			
Wet Sample Weight, lbs	4.213	4.244	4.02	4.159			
Wet Density, pcf	126.4	127.3	120.6	124.8			
Moisture Sample Wet, gms	302.3	326.7	345.4	315.2			
Moisture Sample Dry, gms	262.5	277.9	305.2	264.5			
Weight of Water, gms	39.8	48.8	40.2	50.7			
Moisture, %	15.2	17.6	13.2	19.2			
Dry Density, pcf	109.7	108.3	106.5	104.7			



Maximum Dry Density, pcf 109.8

Optimum Moisture Content, % 15.8

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

# SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab / Invoice No. 31450185

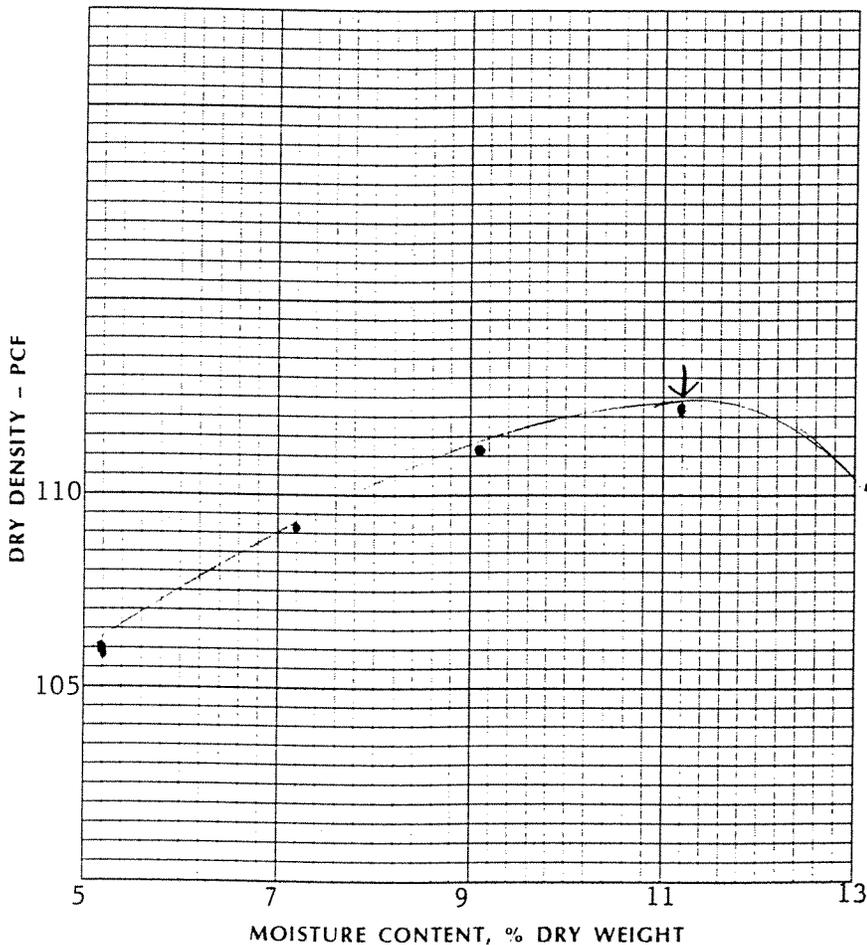
Type of Material Silty Sand (buff color) Sampled By H. Kuebler/WT Date 07/24/95

Source of Material South Cell Control Ditch Submitted By H. Kuebler/WT Date 07/24/95

Tested / Calc. By H. Kuebler/WT Date 07/24/95

Test Procedure ASTM D698A Reviewed By  Date \_\_\_\_\_

Trial No.	1	2	3	4	5	6	7
Water, Estimated %							
Water, cc	0	50	100	150	200		
Sample + Mold Weight, gms	5941	6025	6089	6142	6139		
Mold Weight, gms	4257	4257	4257	4257	4257		
Wet Sample Weight, gms	1684	1768	1832	1885	1882		
Wet Sample Weight, lbs	3.71	3.90	4.04	4.16	4.15		
Wet Density, pcf	111.3	117.0	121.2	124.8	124.5		
Moisture Sample Wet, gms	315.2	316.1	316.3	316.4	316.7		
Moisture Sample Dry, gms	299.5	295.0	289.8	284.5	280.0		
Weight of Water, gms	15.7	21.1	26.5	31.9	36.7		
Moisture, %	5.2	7.2	9.1	11.2	13.1		
Dry Density, pcf	105.8	109.1	111.1	112.2	110.1		



Maximum Dry Density, pcf 112.5

Optimum Moisture Content, % 11.2

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4



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**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
**POST OFFICE BOX 3077**  
**GALLUP, NM 87305**

Date of Report **11-16-95**  
Job No. **3145JB031** Page 1 of 1  
Event/Invoice No. **31450292**  
Authorized By **E. MORALES** Date **09-12-95**  
Tested By **H. KUEBLER/WT** Date **09-12-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**

Test Locations Designated By **CLIENT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**

Calibrated Volume of Sand Cone Apparatus **0.0387** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
1	0.0363	12.6	103.7	0.0	2	109.8	15.8	94		90	YES
2	0.0330	12.1	104.0	0.0	2	109.8	15.8	95		90	YES
3	0.0336	13.9	105.9	0.0	2	109.8	15.8	96		90	YES
4	0.0350	11.4	99.9	0.0	2	109.8	15.8	91		90	YES
5	0.0334	10.7	112.3	0.0	2	109.8	15.8	100 +		90	YES
6	0.0364	4.1	103.2	0.0	2	109.8	15.8	94		90	YES
7	0.0363	6.7	104.8	0.0	15	112.5	11.2	93		90	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
1	S. CELL CONTROL DITCH, STA. 25 + 00, WEST BERM		6952.3	SUBGRADE
2	S. CELL CONTROL DITCH, STA. 26 + 50, EAST BERM		6952.1	SUBGRADE
3	S. CELL CONTROL DITCH, STA. 28 + 50, BOTTOM		6949.4	SUBGRADE
4	S. CELL CONTROL DITCH, STA. 30 + 50, WEST BERM		6949.6	SUBGRADE
5	S. CELL CONTROL DITCH, STA. 32 + 50, BOTTOM		6947.6	SUBGRADE
6	S. CELL CONTROL DITCH, STA. 34 + 50, WEST BERM		6945.0	SUBGRADE
7	S. CELL CONTROL DITCH, STA. 36 + 50, EAST BERM		6943.2	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
2	31450051	SANDY LEAN CLAY	COMP. OF W. RUN OFF CONTD	15.8	109.8	D698-A
15	31450185	SILTY SAND (BUFF COLOR)	W. CONTROL DITCH	11.2	112.5	D698-A

Comments: **CB**

\* DATUM Elevation of Test = Top of Subgrade

Distribution : **CLIENT - (3)**  
**FIELD FILE & BILLING (2)**

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY \_\_\_\_\_

**A. Neely** *(Signature)*

(SIGNED COPY ON FILE)



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**SOIL / AGGREGATE  
FIELD UNIT WEIGHT TESTS  
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**  
POST OFFICE BOX 3077  
GALLUP, NM 87305

Date of Report **12-05-95**  
Job No. **3145JB031** Page 1 of 1  
Event/Invoice No. **31450292-1**  
Authorized By **E. MORALES** Date **09-12-95**  
Tested By **H. KUEBLER/WT** Date **09-12-95**

Client **UNC MINING AND MILLING**  
Project **1995 RECLAMATION**  
Location **CHURCH ROCK, NM**  
Test Locations Designated By **CLIENT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**  
Calibrated Volume of Sand Cone Apparatus **0.0387 cu. ft.** Bulk Unit Weight of Sand **94.8 lbf/cu. ft.**

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
8	0.0379	7.2	106.8	0.0	15	112.5	11.2	95		90	YES
9	0.0367	6.4	104.7	0.0	15	112.5	11.2	93		90	YES
10	0.0398	8.6	101.8	0.0	15	112.5	11.2	90		90	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
8	S. CELL CONTROL DITCH, STA. 39+00, EAST SLOPE		6942.0	SUBGRADE
9	S. CELL CONTROL DITCH, STA. 41+00, BOTTOM		6937.8	SUBGRADE
10	S. CELL CONTROL DITCH, STA. 42+50, WEST BERM		6935.0	SUBGRADE

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
15	31450185	SILTY SAND (BUFF COLOR)	W. CONTROL DITCH	11.2	112.5	D698-A

Comments: \* DATUM Elevation of Test = Top of Subgrade

Distribution : CLIENT - (3)  
FIELD FILE & BILLING (2)

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REVIEWED BY A. Neely  
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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/06/95**

**SOUTH CELL RUNOFF DITCH - D50 .02 SAND THICKNESS**

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 25 + 00	3	3 1/2	3
Station 26 + 00	3 1/4	3	3 1/2
Station 27 + 00	3	3	3
Station 28 + 00	3 1/4	3	3
Station 29 + 00	3	3	3 1/4
Station 30 + 00	3 1/2	3 1/4	3
Station 31 + 00	3	3 1/4	3 1/2
Station 32 + 00	3 1/4	3 1/2	3 1/4
Station 33 + 00	3 1/2	3 1/2	3 1/2
Station 34 + 00	3 1/4	3 1/4	3
Station 35 + 00	3 1/2	3 1/2	3
Station 36 + 00	3 1/2	3	3

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.SWE/21

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REVIEWED BY *[Signature]*



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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/06/95**

**SOUTH CELL RUNOFF DITCH - D50 .02 SAND THICKNESS**

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 37 + 00	3	3 1/4	3 1/4
Station 38 + 00	3 1/2	3	3 1/4
Station 39 + 00	3	3	3
Station 40 + 00	3 1/2	3 1/2	3
Station 41 + 00	3 1/2	3	3 1/4
Station 42 + 00	3 1/2	3	3 1/2
Station 43 + 00	3 1/2	3 1/2	3 1/4

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.SWE/22

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REVIEWED BY *J. Kuelker*



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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/06/95**

**SOUTH CELL RUNOFF CONTROL DITCH - D50 .35 AGGREGATE THICKNESS**

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 38 + 50	3	3 1/2	3 1/2
Station 39 + 50	3 1/2	3	4
Station 40 + 50	4	3	4
Station 41 + 50	4	4	3 3/4
Station 42 + 50	3 1/2	4	4

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.SWE/25

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REVIEWED BY JKubler



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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 12/06/95**

**SOUTH CELL RUNOFF CONTROL DITCH - D50 1.5 AGGREGATE THICKNESS**

LOCATION	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
Station 25 + 00	3 3/4	3 3/4	3 1/4
Station 26 + 00	4	3	3
Station 27 + 00	3	3 1/2	3 1/2
Station 28 + 00	3 3/4	4	3
Station 29 + 00	4	4	4
Station 30 + 00	3 1/4	3	4
Station 31 + 00	3 1/2	3 1/4	3 1/2
Station 32 + 00	3 1/2	3	3 1/2
Station 33 + 00	3 1/2	3 1/4	3 1/4
Station 34 + 00	3 1/2	3 3/4	3 1/2
Station 35 + 00	3 3/4	3 1/2	3 1/4
Station 36 + 00	4	3 1/2	3 1/2
Station 37 + 00	3 3/4	3 1/2	3 1/2

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.SWE/23

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REVIEWED BY J. Kuebler



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**UNITED NUCLEAR CORPORATION 1995 RECLAMATION**

**WT JOB NO. 3145JB031**

**DATE OF REPORT 11/21/95**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
South Cell Control Ditch - East Slope**

Location	Thickness	Location	Thickness
Sta. 42 + 00	4"	Sta. 41 + 00	4"
Sta. 40 + 00	3 1/2"	Sta. 39 + 00	4"
Sta. 38 + 00	3 1/2"	Sta. 37 + 00	5 1/2"
Sta. 36 + 00	4"	Sta. 35 + 00	3 3/4"
Sta. 34 + 00	4 3/4"	Sta. 33 + 00	4"
Sta. 32 + 00	6 1/2"	Sta. 32 + 00	5 1/4"
Sta. 31 + 00	3 1/4"	Sta. 30 + 00	3 1/4"
Sta. 29 + 00	3 1/2"	Sta. 28 + 00	3"
Sta. 27 + 00	3"		

Dist: Client (3) Field File (1) Billing (1)  
/cb:031.UNC/7

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REVIEWED BY *J. Keeler*

