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Urgent, please hand deliver

For Review / Comment

Please Reply

<b>TO:</b> CHRIS HENSLEY		<b>DATE:</b> 6/7/05
<b>FIRM:</b> TVA	<b>SUBJECT:</b>	
<b>FAX:</b> 423-751-7094	Field BORING LOGS	
<b>TEL:</b>	NB-2, 10, 22, 24, 35, 41,	
<b># PAGES:</b> 12+ this cover sheet	and 44.	
<b>COPY TO:</b>		
<b>FROM:</b> MACTEC	<b>COMMENTS:</b>	
<b>OFF/DEPT:</b> Knoxville	NB-10 recovered rock core	
<b>FAX:</b> 865-588-8026	has not been logged yet, during	
<b>TEL:</b> 865-588-8544	termination depth was noted	
<b>HARDCOPY:</b>	at 72.4 FT.	
<b>ADDRESS:</b> 1725 Louisville Drive		
	Knoxville, TN 37925	

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SOIL TEST BORING FIELD REPORT

BORING NO. NB-2 PG. 1 OF 1

RIG TYPE ATV HAMMER TYPE AUTO

JOB NO. 3043051021 DRILLER J. BAILEY HOURS DRILLING GROUND SURFACE ELEV.

JOB NAME TVA-KINGSTON LOGGED BY C. LAWSON HOURS MOVING DATE 7/24 WEATHER: SUNNY

DEPTH	SCALE	SOIL DESCRIPTION
2.0-1.5	4 5 6	1.5' GRAVEL - 0.3' STIFF RD/TN/OR, SL. MOIST, SA. S. CLAY 7' CHERT - RES.
2.5-6.5	2 5 5	1.5' STIFF, RD/BR, MOIST, SA. S. CLAY 7' CHERT + SMOOTH STONE - RES.
3.10-11.5	3 5 7	1.5' STIFF, BR/RD, MOIST, S. CLAY - RES (CH) W/BLK. OXD. STAINING
4.15-16.5	2 6 6	1.5' STIFF, TN/CL, MOIST, S. CLAY W/BLK. OXD. STAINING - RES (CH)
5.20-21.5	50/1	0.2' V. HARD, RD/BR, MOIST, SA. S. CLAY W/BLK. FRAG. - RES.
A.R. @ 20.2'		
6.25-24.5		

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND, 6" AND 3RD 6" TO DRIVE 1-36" I.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 20.2'  
 BORING REFUSAL: 20.2'  
 WATER TOB DEPTH: NOT ENCOUNTERED  
 WATER 24 HR. DEPTH: " "  
 WATER LOSSES: \_\_\_\_\_  
 CAVE-IN DEPTHS: \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER	0 TO 20.2'
HAND SHOP: W/MUD: W/WATER	TO
ROTARY DRILL: W/MUD: W/WATER	TO
DIAMOND CORE	TO
CORE SIZE	TO
UNDISTURBED SAMPLES	NO. 1, SIZE: 2-10'
BAG SAMPLES	NO. 1, SIZE: 2-10'

3449  
10501



SOIL TEST BORING FIELD REPORT

JOB NO. 3043051021 DRILLER M. Burnett BORING NO. NB-10 PG. 1 OF 1  
 JOB NAME TVA KINGSTON LOGGED BY J. Mason HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_  
 HOURS MOVING \_\_\_\_\_ DATE: 5/19/05 WEATHER: \_\_\_\_\_

No. Depth	SAMPLING				SCALE	UP	REC	SOIL CLASSIFICATION	REMARKS
	1st	2nd	3rd	4th					
1 <sup>0</sup> / <sub>20</sub> 09:29	3	4	6	4	0		1.4	Stiff, 7.5% 2/4 dark brown, slightly clayey SILT. Rootlets (Topsoil). Dry.	
2 <sup>2</sup> / <sub>4</sub> 09:35	2	2	2	4	0		1.1	Soft, 7.5% 2/4 dark brown, very slightly clayey SILT grading down ward to very silty CLAY. Slightly moist.	
3 <sup>4</sup> / <sub>6</sub> 09:40	5	5	6	6	0		1.5	Stiff, 5% 2/4 reddish brown (with some 2.5% black, spotty manganese mottling) very silty CLAY. Slightly moist.	
4 <sup>6</sup> / <sub>8</sub> 09:46	4	4	4	7	0		1.0	Firm, 2.5% 2/4 dark red (with 2.5% 2.5% black, spotty manganese mottling) silty CLAY. Slightly moist.	
5 <sup>8</sup> / <sub>10</sub> 09:49	4	4	5	6	0		1.0	Same as above except stiff.	
6 <sup>10</sup> / <sub>12</sub> 09:55	6	7	7	9	0		1.3	Same as above except very stiff.	
7 <sup>12</sup> / <sub>14</sub> 09:59	4	5	5	7	0		1.6	Stiff 5% 2/4 yellowish red (with 5% 2.5% black, spotty manganese mottling), silty CLAY, with occasional 1 to 3 mm, buff-colored, weathered chert fragments. Slightly moist.	
8 <sup>14</sup> / <sub>16</sub> 10:01	3	4	7	9	0	0.6 SEM 0.75	1.7	Stiff Same as above, with weathered chert (buff-colored, 1 to 4 mm) throughout.	
9 <sup>16</sup> / <sub>18</sub> 10:10	6	8	9	8	0		1.9	Same as above, except very stiff.	
10 <sup>18</sup> / <sub>20</sub> 10:16	4	5	5	6	0		1.8	Stiff 5% 2/4 yellowish red (with 5% 2.5% black, spotty manganese mottling), silty CLAY, with 2 to 4 mm buff-colored weathered chert throughout. Slightly moist.	

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 5" AND 3RD 6" TO DRIVE 1-38" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED:  
 BORING REFUSAL: 42.5 FT  
 WATER TOB DEPTH \_\_\_\_\_  
 WATER 24 HR.: DEPTH 20.7 FT  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER	_____	TO _____
HAND SHOP: W/MUD: W/WATER	_____	TO _____
ROTARY DRILL: W/MUD: W/WATER	_____	TO _____
DIAMOND CORE	_____	TO _____
CORE SIZE	_____	TO _____
UNDISTURBED SAMPLES	NO _____ SIZE _____	TO _____
BAG SAMPLES	NO _____	TO _____

F1824 0/01



SOIL TEST BORING FIELD REPORT

JOB NO. 3043051021 DRILLER M. Burnett BORING NO. NB-10 PG. 2 OF       
 JOB NAME TVA KINGSTON LOGGED BY J. Mason HOURS DRILLING      GROUND SURFACE ELEV.       
 HOURS MOVING      DATE: 5/19/05 WEATHER:     

No. Depth	SAMPLING				SCALE	LOG	REC	SOIL CLASSIFICATION	REMARKS
	1" 5"	2" 6"	3" 6"	3" 6"					
11 20/22 10:19	4	5	5	6	0		1.0	Same as above.	
12 22/24 10:26	4	4	5	6	5		1.2	Same as above	
13 24/26 10:30	4	4	6	6			1.8	<del>stiff</del> <sup>sun</sup> Same as above	
14 26/28 10:36	5	6	8	10	0		1.2	stiff, 5YR 4/6 to 5YR 5/6 yellowish red, silty, sandy (in discrete, irregular, subhorizontal layers a few millimeters thick), silty CLAY. Slightly moist.	
15 28/30 10:43	7	8	7	9	5		1.0	stiff, 5YR 4/6 yellowish red (with some 5YR 2.5/1, subhorizontal black mottling), silty CLAY, with occasional <sup>sun</sup> angular, buff-colored, weathered clast. Slightly moist.	
16 30/32 10:47	4	6	9	10			1.6	Same as above.	
17 32/34 10:55	4	4	5	5			1.7	stiff, mottled (5YR 4/6 yellowish red, 5YR 3/3 dark reddish brown, and 10YR 6/6 brownish yellow) silty CLAY. Slightly moist.	
18 34/34.8 11:01	10	50/0.3'			0		0.35	Firm, 10YR 5/4 yellowish brown to 10YR 4/4 dark yellowish brown, sandy CLAY. Very moist to wet, believed to be weathered dolomite.	
19 36/37.45 11:12	18	32 50/0.3'					0.9	<del>Same as above</del> <sup>sun</sup> <del>except very</del> <sup>sun</sup> <del>to</del> <sup>clay</sup> <del>clay</del> <sup>clay</sup> 10YR 5/4 yellowish brown to 10YR 4/4 dark yellowish brown with silty SAND, with weathered fragments of dolomite - severely weathered dolomite. Wet.	

\*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 5" AND 3RD 5" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 50 INCHES.

BORING TERMINATED:

BORING REFUSAL: 42.5 FT  
 WATER TOB DEPTH \_\_\_\_\_  
 WATER 24 HR.: DEPTH 20.7 FT  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER		TO _____
HAND SHOP: WMUD: WWATER		TO _____
ROTARY DRILL: WMUD: WWATER		TO _____
DIAMOND CORE		TO _____
CORE SIZE		TO _____
UNDISTURBED SAMPLES	NO _____ SIZE _____	
BAG SAMPLES	NO _____	



SOIL TEST BORING FIELD REPORT

BORING NO. NB-22 PG. 2 OF 2

RIG TYPE ATV HAMMER TYPE Auto

JOB NO. 3043051021 DRILLER G. AKIN HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA Kingston 107130r LOGGED BY T. Justice HOURS MOVING \_\_\_\_\_ DATE: 6/16/05 WEATHER: Sunny

BEGAN NG Coring @ 38.5 FT

40' to 41' - Partially sand-filled cavity

Run #1: 38.5 FT TO 41.7 FT

Run = 3.2 FT  
Rec = 0.85 / 3.2 = (27%)  
RQD = 0%

Run #2: 41.7 FT TO 43.7 FT

Run = 2.0 FT  
Rec = 1.95 (98%)  
RQD = 1.35 / 2 = (68%)

44' to 47' - Partially sand-filled cavity

Run #3: 43.7 FT TO 48.5 FT

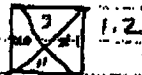
Run = 4.8 FT  
Rec = 1.3 FT (27%)  
RQD = 0%

CORING TERM. @ 48.5 FT

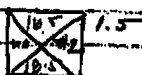
SLIGHTLY TO COMPLETELY WEATHERED, moderately closely jointed, Brownish Gray to Gray, fine grained, very strong (hard) siliceous Dolomite. BEDDING IS at an apparent dip of about 40 to 50°. Joints exhibit some sand infilling and iron-staining.

NOTE: OFFSET ABOUT \_\_\_\_\_ FT. TO NB-22A

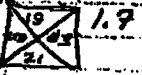
01 2'-11" →



2 16.5-19.5 →



3 13-21 →

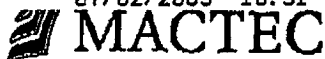


B.T. @ 21 FT

BORING TERMINATED: 48.5 FT  
BORING REFUSAL: 30.5 FT  
WATER TOB DEPTH @ time of filling = 11.5 FT  
WATER 24 HR.: DEPTH \_\_\_\_\_  
WATER LOSSES \_\_\_\_\_  
CAVE-IN DEPTHS \_\_\_\_\_  
CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER	3 1/4"	0 TO 38.5'
HAND SHOP: WMUD: WWATER		TO _____
ROTARY DRILL: WMUD: WWATER		TO _____
DIAMOND CORE		TO _____
CORE SIZE NG		38.5 TO 48.5'
UNDISTURBED SAMPLES	NO 6 SIZE 3"	
BAG SAMPLES	NO 2, 3'-10"	

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" AND 3RD 6" TO DRIVE 1-38" I.D. 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.



SOIL TEST BORING FIELD REPORT

BORING NO. NB-24 PG. 1 OF 1

RIG TYPE ATV HAMMER TYPE AUTO

JOB NO. 3093051021

DRILLER J. BAILEY

HOURS DRILLING \_\_\_\_\_

GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA-KINGSTON

LOGGED BY C. LAWSON

HOURS MOVING \_\_\_\_\_

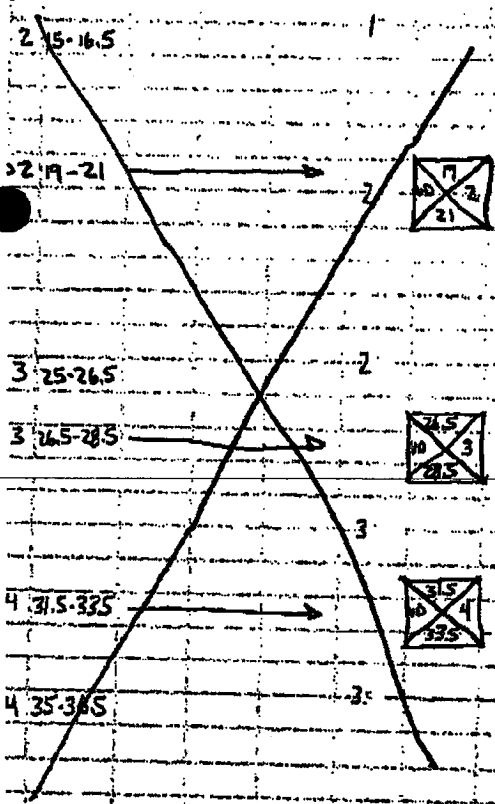
DATE: 7/24

WEATHER: SUNNY

0 0-1.5 1 1 3 10' TOPSOIL - 0.5' SOFT, RD/BR, SL. MAST, S. CLAY, CHERT - RES.  
 OFFSET 5' SOUTH OF STAKE DUE TO OVERHEAD BRANCHES

1 1.5-6.5 5 10 13 1.5' V. STIFF, RD/BR, SL. MAST, S. CLAY, CHERT - RES.

DZ 9-11 → P.B. PUSH 0.8', STOPPED, PULLED  
 AR @ 12.5'



\*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-36" ID, 2" D.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 12.5'  
 BORING REFUSAL: 12.5'  
 WATER TOB DEPTH: NOT ENCOUNTERED  
 WATER 24 HR.: DEPTH: "  
 WATER LOSSES: \_\_\_\_\_  
 CAVE-IN DEPTHS: \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER	<u>3 1/4"</u>	0 TO <u>12.5'</u>
HAND SHOP: W/MUD: W/WATER		TO _____
ROTARY DRILL: W/MUD: W/WATER		TO _____
DIAMOND CORE		TO _____
CORE SIZE		TO _____
UNDISTURBED SAMPLES	NO <u>1</u> SIZE <u>3"</u>	
BAG SAMPLES	NO _____	

24 803



SOIL TEST BORING FIELD REPORT

BORING NO. NB-35

PG. 1 OF 1

RIG TYPE ATV

HAMMER TYPE Auto

NO. TVA Kingstr  
JOB NAME 30430ST021

DRILLER G. Akins

HOURS DRILLING

GROUND SURFACE ELEV.

LOGGED BY T. J. J. J.

HOURS MOVING

DATE: 6/3 WEATHER: RAIN

Note: NB-35 was located about 200 FT N 95 E of NB-36 AND ABOUT 20 FT SE of 148 (Pond).

1	0-2	2/2	2	3	1.3	0.4-2.0 - Firm Brown moist clayey silt with roots - Possible Alluvium / Residual	Top soil = 0-0.4'
2	2-4	3/3	5	5	1.8	2.0 - 6.0 - STIFF to Very Stiff	
3	4-6	5/6	6	8	1.8	DRY BR silty silt with chert fragments to well rounded	
4	6-8	8/9	11	13	2.0	Silty silt fragments - Possible Alluvium / Residual	
5	8-10	7/10	8	10	2.0	6.0 - 10.0' - Very Stiff CR BR silty silt with chert	
6	10-12	7/7	9	11	2.0	fragments - Residual	
7	12-14	5/5	7	7	2.0	STIFF CR BR silty silt with chert fragments	7-14 ft
8	14-16	2/3	2	2	2.0	and black manganese staining - Residual	
9	16-18	50/3	3	3	1.5	SOFT SILT AS ABOVE except silty silt	
10	18-20	WOB			0.375	Firm Brown to CR BR wet sandy silt with chert fragments - Residual	
11	20-22	WOB			0	Very Soft "SAME AS ABOVE"	

AUGER Refusal @ 20.4 FT.

BEGAN NR @ 20.4 FT

Run # 1 ; 20.4 FT TO 24.6 FT

Rm = 4.2 FT

Rc = 4.0 FT (95%)

RQD = 3.6/4.2 = (86%)

Run # 2 ; 21.0 FT TO 31.5 FT

Rm = 6.9 FT

Rc = 5.1 FT (74%)

RQD = 4.4/6.9 (64%)

Core term. @ 31.5 FT

Slightly to moderately weathered, moderately clayey, light brownish gray to gray, fine grained, very strong (hard) siliceous dolomite. Bedding is not evident. Joints exhibit some sand infilling and iron staining. Joints dipping from about 60° to near vertical.

BORING TERMINATED:	31.5 FT
BORING REFUSAL:	20.4 FT
WATER TOB DEPTH @ time of drilling:	14 FT
WATER 24 HR.: DEPTH	4.0 FT
WATER LOSSES	0%
CAVE-IN DEPTHS	
CASING: SIZE 3/4" HSA	LENGTH 20.4 FT
STANDBY TIME	
BORING LAYOUT	

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER 3/4" HSA	0 TO 20.4 FT
HAND SHOP: W/MUD: W/WATER	TO
ROTARY DRILL: W/MUD: W/WATER	TO
DIAMOND CORE	TO
CORE SIZE NR	20.4' TO 31.5'
UNDISTURBED SAMPLES	NO - SIZE -
BAG SAMPLES	NO 1, 15 - 20'

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.







SOIL TEST BORING FIELD REPORT

BORING NO. 18-44

PG. 1 OF 3

RIG TYPE ATY

HAMMER TYPE Auto

JOB NO. 3043051021

DRILLER G. AKINS

HOURS DRILLING

GROUND SURFACE ELEV.

JOB NAME TVA Kingston

LOGGED BY T. Justice

HOURS MOVING

DATE: 7/31 WEATHER:

DEPTH	SOIL DESCRIPTION	REMARKS
1.0-1.5	1.0 Very Soft Brown moist clayey silt with rounded sandstone fragments and roots - Alluvium	Top soil = 0-0.2' Note: OFFSET APPROX. 9 FT S85°E
2.5-6.5	1.5 STIFF DARK Yellowish Brown silty moist silty clay with chert fragments and black manganese staining - Residual	
101 9'-11'	1.0	@ time of drilling = 9 FT
3.11-12.5	1.5 Firm Yellowish Brown to Pale Gray silty moist silty clay with chert fragments - Residual	
4.15-16.5	1.5 "SAME AS ABOVE"	
102 16.5-18.5	1.8	
03 19-21	1.8	
14 21.5-23.5	2.0	
5 23.5-25	1.5 Firm Dark Yellowish Brown to Black moist sandy clayey silt - Residual - "sample exhibits slight fracturing"	
15 26.5-28.5	1.8	
20 29-31	1.0	
153 31.5	1.3 Very Soft Brown WET sandy clayey silt with weathered Dolomite fragments - Residual	- Sample noted weathered ZEPHYRUS 35' to 37'
385-40	1.5 VERY FIRM BROWN WET SILTY SAND (COMPLETELY WEATHERED Dolomite) with WEATHERED Dolomite Fragments - Residual	

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND FT AND 3RD 6" TO DRIVE 1-36" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED:  
 BORING REFUSAL: 44.2 FT  
 WATER TOB DEPTH @ Auger refusal = 7.2 FT  
 WATER 24 HR.: DEPTH 2.9 FT  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE HW LENGTH 44.5 FT  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER <u>3 1/4"</u>	D TO <u>44.2 FT</u>
HAND SHOP: WMUD: WWATER	TO _____
ROTARY DRILL: WMUD: WWATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE <u>HQ</u>	TO _____
UNDISTURBED SAMPLES NO <u>6</u> SIZE <u>3"</u>	TO _____
BAG SAMPLES NO _____	TO _____

# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB 44 PG. 2 OF 3

RIG TYPE ATV HAMMER TYPE Auto

JOB NO. 301305DZ1 DRILLER G. ARINS

HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA Kingston LOGGED BY T. Justice

HOURS MOVING \_\_\_\_\_ DATE: 5/31/06 WEATHER: P. Sunny

843.5-45 50/3 - - 0.5 Very Hard Gray Dolomite fragments with (STIFF) Red Brown silt matrix. Silty clay and Brown silt matrix. Sandy silt (located on relict fracture surfaces). - Residual

Auger Refusal @ 44.2 FT  
SET HW CASING TO A DEPTH OF ABOUT 44.5 FT

BEGAN HQ CORING at 44.2 FT

Run #1 44.2 FT TO 47.2 FT  
 Ran = 3.0 FT  
 Rec = 2.6 FT (87%)  
 ROD = 10%

Run #2 47.2 FT TO 55.1 FT  
 Ran = 7.9 FT  
 Rec = 4.0 FT (51%)  
 ROD = 2.35/7.9 = (28%)

50.0 FT TO 51.7 FT - cavity - partially clay filled  
 51.0 FT TO 52.7 FT - cavity - partially clay filled  
 52.7 FT TO 53.3 FT - partially clay filled cavity

Run #3 55.1 FT TO 63.9 FT  
 Ran = 8.8 FT  
 Rec = 3.8 FT (43%)  
 ROD = 1.0/8.8 = (11%)

58.0 FT TO 58.4 FT - cavity - Partially clay filled  
 58.1 FT TO 60.6 FT - cavity - Partially clay filled  
 61.5 FT TO 63.0 FT - cavity - partially clay filled

Run #4 63.9 FT TO 70.1 FT  
 Ran = 6.2 FT  
 Rec = 3.5 FT (56%)  
 ROD = 1.25/6.2 = (20%)

66.0 to 66.7 - partially clay filled cavity  
 67.6 to 68.0 - partially clay filled cavity  
 68.1 to 69.6 - partially sand filled cavity

Run #5 70.1 FT TO 80.1 FT  
 Ran = 10.0 FT  
 Rec = 2.4 (24%)  
 ROD = 0%

73.2 FT TO 80.0 FT - Partially sand-filled cavity

BORING TERMINATED: 70.1 FT  
 BORING REFUSAL: 44.2 FT  
 WATER TOB DEPTH @ Auger Refusal = 7.2 FT  
 WATER 24 HR.: DEPTH 2.0 FT  
 WATER LOSSES 16% @ 60 FT  
 CAVES-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE HW LENGTH 44.5 FT  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER	3 1/4"	0 TO 44.2 FT
HAND SHOP: WMUD: WWATER		TO _____
ROTARY DRILL: WMUD: WWATER		TO _____
DIAMOND CORE		TO _____
CORE SIZE		TO _____
UNDISTURBED SAMPLES	NO <u>4</u> SIZE <u>3"</u>	TO _____
BAG SAMPLES	NO _____	

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 5" AND 3RD 5" TO DRIVE 1-30" ID, 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.



SOIL TEST BORING FIELD REPORT

BORING NO. NB-44

PG. 3 OF 3

JOB NO. 3043071021

DRILLER G. ARINS

HOURS DRILLING

GROUND SURFACE ELEV.

JOB NAME TVA Kingston

LOGGED BY T. Tutin

HOURS MOVING

DATE 6/1/05

WEATHER: RAIN

Run # 6: 80.1 FT TO 84.8 FT

Ram = 4.7 FT

Rc = 3.9 FT (72%)

RQD = 0%

Run # 7: 84.8 FT TO 95.1 FT

Ram = 10.3 FT

Rc = 2.5 FT (24%)

RQD = 0.5/10.3 = 5%

86.1 FT TO 94.1 FT - CAVITY - Partially Clay-filled

Run # 8: 95.1 FT TO 104.2 FT

Ram = 2.1 FT

Rc = 9.1 FT (100%)

RQD = 4.7/9.1 = (52%)

CORING TERMIN. @ 104.2 FT

SLIGHTLY TO COMPLETELY WEATHERED. Closely jointed, Brownish Gray to Light GRAY. Fine grained, Very strong (HARD) Siliceous Dolomite. Bedding is at an Apparent Dip of 45° to 50°. Orthogonal (to Bedding) and High angle (near-vertical) joints observed throughout. Bedding plane Fractures and joints exhibit iron staining. Numerous clay-filled and sand-filled Cavities are noted. Portions of recovered rock core is highly fractured.

\*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 130" I.D. 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 104.2 FT

BORING REFUSAL: 44.2 FT

WATER TOB DEPTH @ Auger refusal = 7.2 FT

WATER 24 HR.: DEPTH 2.9 FT

WATER LOSSES 10%

CAVE-IN DEPTHS

CASING: SIZE HN LENGTH 44.5 FT

STANDBY TIME BORING LAYOUT

METHOD OF ADVANCING BORING

POWER AUGER 3 1/4"
HAND SHOP: WMUD: WWATER
ROTARY DRILL: WMUD: WWATER
DIAMOND CORE
CORE SIZE
UNDISTURBED SAMPLES NO 6 SIZE 3"
BAG SAMPLES NO

DEPTH

0 TO 44.2 FT
TO
TO
TO
TO



SOIL TEST BORING FIELD REPORT

BORING NO. NR-10 PG. 3 OF     

RIG TYPE CME 550 HAMMER TYPE AUTO

NO. 3045051027 DRILLER M. Burnett

HOURS DRILLING      GROUND SURFACE ELEV.     

JOB NAME TVA KINGSTON LOGGED BY J. Mason

HOURS MOVING      DATE: 5/19/05 WEATHER:     

NO. OF BLOWS	DEPTH (FT)	SOIL DESCRIPTION
20 30/40 11:21	6 2 14 8	1.5 38 to 38.8 ft. Vary stiff, 5YR 4/6 yellowish red, silty clay, with 1 to 3 mm bluish manganese and 2 to 7 mm buff-colored, weathered chert. Slightly moist. 38.8 to 39.2 ft. <del>Stiff</del> 5YR 4/6 yellowish red to 7.5YR 4/4 brown sandy CLAY. Very moist to wet. 39.2 to 39.5 ft. Brownish gray severely weathered DOLOMITE. Wet.
21 40/42 11:29	7 9 16 50/0.3	1.1 Firm, 10YR 5/4 yellowish brown to 7.5YR 4/6 strong brown, silty SAND. Moist. Believe to be very severely weathered dolomite.
22 42/42.75 11:43	25 50/0.25	0.5 Same as above, except very dense.

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-36" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

Augers refused @ approximately 42.5 ft.

BORING TERMINATED: \_\_\_\_\_  
 BORING REFUSAL: 42.5 FT  
 WATER TOB DEPTH \_\_\_\_\_  
 WATER 24 HR.: DEPTH 20.7 FT  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER	TO _____
HAND SHOP: WMUD: WWATER	TO _____
ROTARY DRILL: WMUD: WWATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE	TO _____
UNDISTURBED SAMPLES NO. _____ SIZE _____	
BAG SAMPLES NO. _____	

2.65  
5' stick  
42.5  
42.35



SOIL TEST BORING FIELD REPORT

BORING NO. NB-22

PG. 1 OF 2

RIG TYPE ATV

HAMMER TYPE Hand

B NO. 3043051021

DRILLER C.A.K.A.S

HOURS DRILLING

GROUND SURFACE ELEV.

JOB NAME TVA Kingston

LOGGED BY T.J. Justice

HOURS MOVING

DATE: 6/6/03

WEATHER Cloudy

Note: NB-22 was offset approx. 50 FT SW of original stacked location.

No. Depth	SAMPLING	SCALE	REMARKS
1.0-1.5	1 1 1	1.3	Very soft Brown to O/Bc Very moist Topsoil = 0 to 0.8' Clayey silt with roots.
2.5-6.5	1 3 4	1.3	Firm OR BR moist to very moist clayey silt - Residuum <sup>to reddish OR</sup>
19-11	→	1.2	8' - 11.5 FT
3.15-16.5	5 6 6	1.5	STIFF OR BR SI moist silty clay <sup>to reddish OR</sup> with chert fragments - Residuum
0.5-18.5	→	1.0	
19-20	→	1.0	
4.20-21.5	6 5 4	0.5	STIFF GRAY CHERT Fragments with light OR BR wet silty clay - Residuum
4.22.5-21.5	→	1.6	
5.25-26.5	2 4 4	1.5	Firm Brownish yellow wet SANDY SILT - Residuum
5.26.5-28.5	→	2.0	
27.5-33.5	→	2.0	
35-36.5	2 3 3	1.5	Firm Brownish yellow very moist to wet sandy clay - Residuum Auger Refusal @ 38.5 FT

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 5' AND 3RD 6' TO DRIVE 1-3/8" ID. 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 40.5 FT  
 BORING REFUSAL: 38.5 FT  
 WATER TOB DEPTH @ time of drilling = 11.5 FT  
 WATER 24 HR.: DEPTH \_\_\_\_\_  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER 3/4"	0 TO 38.5 FT
HAND SHOP: W/MUD: W/WATER	TO
ROTARY DRILL: W/MUD: W/WATER	TO
DIAMOND CORE	TO
CORE SIZE NB	38.5 TO 40.5'
UNDISTURBED SAMPLES NO 6 SIZE 3"	
BAG SAMPLES NO 1, 2, 5, 10"	



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 MACTEC Development

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TO:	Chris Hensley	DATE:	5/25/05
FIRM:	TVA	SUBJECT:	Field Borin Logs for Kingston Gypsum Stack  NB-2, NB-21, NB-24, NB-39 and NB-41
FAX:	(423) 751-7094		
TEL:			
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# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-2 PG. 1 OF 1

JOB NO. 3043051021 DRILLER J. BAILEY HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA-KINGSTON LOGGED BY C. LAWSON HOURS MOVING \_\_\_\_\_ DATE: 5/24 WEATHER: SUNNY

No. Depth	SAMPLING			SCALE	UD	MFC	SOIL CLASSIFICATION	REMARKS
	1-6"	7-12"	13-18"					
1 0-1.5	4	5	6				1.5' STIFF GRAVEL - 0.3' RD/TN/OR, SL. MOIST, SA, S: CLAY CHERT - RES	*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 8" AND SRD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 80 INCHES.
2 1.5-6.5	2	5	5				1.5' STIFF, RD/BR, MOIST, SA, S: CLAY CHERT + SMOOTH STONE - RES	
3 10-11.5	3	5	7				1.5' STIFF, BR/RD, MOIST, S: CLAY - RES (CH) w/BLK. OXD. STAINING	
4 11.5-16.5	2	6	6				1.5' STIFF, TN/YL, MOIST, S: CLAY w/BLK. OXD. STAINING - RES (CH)	
5 20-21.5	50%						0.2' V. HARD, RD/BR, MOIST, SA S: CLAY w/ROCK FRAG. - RES.	
6 25-26.5							AR @ 20.2'	

BORING TERMINATED: 20.2'  
 BORING REFUSAL: 20.2'  
 WATER TOB DEPTH: NOT ENCOUNTERED  
 WATER 24 HR. DEPTH: \_\_\_\_\_  
 CORE LOSSES: \_\_\_\_\_  
 CAVE-IN DEPTHS: \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER	<u>3/4"</u>	0 TO <u>20.2'</u>
HAND SHOP: W/MUD: W/WATER		TO _____
ROTARY DRILL: W/MUD: W/WATER		TO _____
DIAMOND CORE		TO _____
CORE SIZE		TO _____
UNDISTURBED SAMPLES	NO _____ SIZE _____	
BAG SAMPLES	NO <u>1</u> , <u>7-10'</u>	

1024 B/03

# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NG-21 PG. 1 OF 1

JOB NO. 3043051021 DRILLER J. BAILEY

RIG TYPE ATV HAMMER TYPE AUTO

JOB NAME TVA-KINGSTON LOGGED BY C. LAWSON

HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

HOURS MOVING \_\_\_\_\_ DATE: 5/25 WEATHER: ☁ CLOUDY

DEPTH	SAMPLING	SCALE	NO	RES	SOIL CLASSIFICATION	REMARKS
						ATTEMPT 7 SHELBY TUBES AT FOLLOWING INTERVALS AS REQUESTED BY PARSONS DURING TELEPHONE CONVERSATION ON 5-25-05 WITH GREG MCNOLTY OF PARSONS AND CHAD LAWSON OF MACTEC: 15-17, 18-20, 21-23, 30-32, 33-35, 36-38, 39-41
						AUGER TO 15, BEGIN SHELBY TUBE SAMPLES.
0:2	15-17		15	2	2.25'	PUSH 2.0'
0:2	18-20		18	2	2.30'	PUSH 2.0' WATER @ 18.0'
0:3	21-23		21	3	2.05'	PUSH 2.0'
4	30-32		30	4	2.0'	PUSH 2.0'
5	33-35		33	5	2.30'	PUSH 2.0'
6	36-38		36	6	2.30'	PUSH 2.0'
7	39-41		39	7	2.30'	PUSH 2.0'

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 41.0'  
 BORING REFUSAL: 91.0'  
 WATER TOB DEPTH: 18.0'  
 WATER 24 HR.: DEPTH \_\_\_\_\_  
 WATER LOSSES \_\_\_\_\_  
 CAVES-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER	<u>3 1/4"</u>	0 TO <u>41.0'</u>
HAND SHOP: W/MUD: W/WATER		_____ TO _____
ROTARY DRILL: W/MUD: W/WATER		_____ TO _____
DIAMOND CORE		_____ TO _____
CORE SIZE		_____ TO _____
UNDISTURBED SAMPLES	NO <u>7</u> SIZE <u>3"</u>	
BAG SAMPLES	NO _____	



# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-24 PG. 1 OF 1

JOB NO. 3043051021 DRILLER J. BAILEY

RIG TYPE ATV HAMMER TYPE AUTO  
HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA-KINGSTON LOGGED BY L. LAWSON

HOURS MOVING \_\_\_\_\_ DATE: 5/24 WEATHER: SUNNY

No. Depth	SAMPLING			SCALE	UD	REC	SOIL CLASSIFICATION	REMARKS
	1	2	3					
0 0-1.5	1	1	3				SOFT TOPSOIL - 0.5' RD/BR, SL. MOIST, S' CLAY CHERT - RES.	
1 1.5-6.5	5	10	13				1.5' V. STIFF, RD/BR, SL. MOIST, S' CLAY CHERT - RES.	
1B1 9-10							0.8' PUSH 0.8', STOPPED, PULLED.	
							AR @ 12.5'	
2 15-16.5								
2B2 19-21								
3 25-26.5								
3B3 26.5-28.5								
4 31.5-33.5								
4B4 33.5-36.5								

\*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-38" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 12.5'  
 BORING REFUSAL: 12.5'  
 WATER TOB DEPTH: NOT ENCOUNTERED  
 WATER 24 HR.: DEPTH: " "  
 WATER LOSSES: \_\_\_\_\_  
 CAVE-IN DEPTHS: \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER <u>3 1/4"</u>	<u>0</u> TO <u>12.5'</u>
HAND SHOP: W/MUD: W/WATER	TO _____
ROTARY DRILL: W/MUD: W/WATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE	TO _____
UNDISTURBED SAMPLES NO <u>1</u> SIZE <u>3"</u>	
BAG SAMPLES NO _____	

# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-39 PG. 1 OF 1

JOB NO. 3043051021 DRILLER J. BAILEY

RIG TYPE ATV HAMMER TYPE AUTO

JOB NAME TVA - KINGSTON LOGGED BY C. LAWSON

HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

HOURS MOVING \_\_\_\_\_ DATE: 5/23 WEATHER: P. CLOUDY

Depth	SAMPLING			SCALE	UD	PRC	SOIL DESCRIPTION	REMARKS
	1	2	3					
0-1.5	1	2	3				1.5' FIRM, BROWN, SL. MOIST, TOPSOIL - RES. GRASS COVERED ~ 2.0' T.S.	
1.5-6.5	1	2	2				1.5' RED BROWN SOFT, BROWN RED, SL. MOIST, SI CLAY - RES W/CHERT FRAGS	
UD 9-11							1.0' PUSH 1.2', STOPPED, SO PULLED	
2 15-16.5	3	5	7	1			1.5' RED BROWN STIFF, BROWN RED, SL. MOIST, SI CLAY W/CHERT FRAGS - RES	
2 19-21							1.65' PUSH 2.0' PULLED	
3 23.2-24.7							0 AR @ 23.2'	
3 25-26.5								
3 27.5-28.5								
4 31.5-33.5								
4 35-36.5								

\*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 8" AND 3RD 6" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 80 INCHES.

BORING TERMINATED: 23.2'  
 BORING REFUSAL: 23.2'  
 WATER TOB DEPTH \_\_\_\_\_ NOT ENCOUNTERED  
 WATER 24 HR.: DEPTH \_\_\_\_\_  
 W/ LOSSES \_\_\_\_\_  
 GAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER	3 1/4"	0 TO 23.2'
HAND SHOP: W/MUD: W/WATER		TO _____
ROTARY DRILL: W/MUD: W/WATER		TO _____
DIAMOND CORE		TO _____
CORE SIZE		TO _____
UNDISTURBED SAMPLES	NO 2 SIZE 3"	
BAG SAMPLES	NO 1, 5'-10'	





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For Review / Comment

Please Reply

TO:	CHRIS HENSLEY	DATE:	5/20/05
FIRM:	TVA	SUBJECT:	Field BORING Logs NB - 18, 21, 25, and 47.
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# SOIL TEST BORING FIELD REPORT

BORING NO. NB-18 PG. 2 OF 2

JOB NO. 30436J1021 DRILLER G. Akins HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA Kingston LOGGED BY T. Whittin HOURS MOVING \_\_\_\_\_ DATE: 5/18 WEATHER: Sunny

No. Depth	SAMPLES			SCALE	ID	RES	SOIL DESCRIPTION	REMARKS
	1	2	3					
							<i>Topsail removed by DAZEL</i>	<i>Note: BORING OFFSET 6.5 FT S 82° W.</i>
1	2.5-4	4	4	7		1.0	STIFF Brown to Red Brown sil. moist silty clay with a few chert fragments - Residual	
	2.5-6.5	4	6	10		1.2	Very stiff Red Brown dry to slightly moist silty clay with chert fragments (weathered) - Residual	
	NO 1 6.5-8.5					1.2	Moist silty clay with chert fragments (weathered) - Residual	
	NO 2 9-11					1.9		
	NO 3 11.5-13.5					1.9		
	3 15-16.5	4	4	4		1.5	Firm Red Brown slightly moist (FA) clay with chert fragments - Residual	From 15.1 to 16.3' Very cherty zone
	NO 4 16.5-18.5					1.7		- Driller noted chert @ 19.0 FT
	NO 5 19.5-21.5					0	TUBE CRUSHED @ 19.9 FT	@ 19.0 FT
	NO 6 22.5-24.0					0	TUBE CRUSHED @ 22.5 FT	
	4 22.5	50/0	-	-		0		
	23.6							
							AUGER REFUSAL @ 23.0 FT	

\*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-3/8" I.D. 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 23.0 FT  
 BORING REFUSAL: 23.0 FT  
 WATER TOB DEPTH NOT ENCOUNTERED  
 WATER 24 HR. DEPTH NOT ENCOUNTERED  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER	3 1/4" TO 23.0 FT
HAND SHOP: W/MUD: W/WATER	TO _____
ROTARY DRILL: W/MUD: W/WATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE	TO _____
UNDISTURBED SAMPLES	NO 4 SIZE 3" (6 Attempts)
BAG SAMPLER	NO 1.5" - 1.5"

002

MACTEC KNOXVILLE

05/20/05 FRI 11:03 FAX 8655888026



SOIL TEST BORING FIELD REPORT

JOB NO. 3043051021 DRILLER M. Burnett BORING NO. NB-21 PG. 1 OF 2  
 JOB NAME TVA KINGSTON LOGGED BY J. Mason HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_  
 HOURS MOVING \_\_\_\_\_ DATE: 5/17/05 WEATHER: \_\_\_\_\_

No. Depth	SAMPLING			SCALE	LID	REC	SOIL CLASSIFICATION	REMARKS
	1st 6"	2nd 6"	3rd 6"					
1 1404 0/1.5	6	3	3	0	0.8	0.0 to 0.5 ft.: Firm, 10YR 2/6 dark yellowish brown, sandy SILT. (Topsoil). Dry		
				5		0.5 to 0.8 ft.: Firm, 5YR 4/6 yellowish red slightly sandy, slightly clayey SILT. Dry.		
2 1410 2 1/5.5	5	6	8	0	1.2	Stiff 5YR 5/6 to 5YR 4/6 yellowish red, slightly sandy, slightly clayey SILT. Dry		
3 1429 4 1/5.5	4	5	9	0	1.1	Stiff, variegated (alternating horizontal bands of 10YR 6/6 brownish yellow, 5YR 5/6 yellowish red, and 10YR 2/2 very dark brown) silty CLAY, with interlayered clayey silts and silty sands; alternating layers are typically about 1 cm thick. Slightly moist.	Some light gray, weathered chert at bottom of sample.	
4 1438 4 7/5.5	5	7	7	0	1.0	Stiff, variegated (10YR 5/6 yellowish brown, 10YR 7/2 light gray, 10YR 6/8 brownish yellow), slightly clayey sandy SILT, with occasional horizontal, with fine to medium sands a few millimeters thick. Slightly moist.		
5 1449 5 3/5.5	3	3	3	0	1.5	Firm, 2.5Y 4/1 dark gray, slightly clayey SILT, horizontally inter-layered with fine to medium sands, up to 1 cm thick. Very moist to wet.		
6 15:01 6 1/5.5	4	4	4	5	0.9	Same as above.		

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

Augers refused @ approximately 48.0 ft.

Cone from 48.8 to 49.2 ft.; core barrel breaks and remains lodged in boring. Recovered core (1.0 ft.) is 5YR 6/1 light brownish gray to 5YR 4/1 brownish gray DOLOMITE.

BORING TERMINATED: Original 47.0' Offset: 61.19  
 BORING REFUSAL: (47.0') : (49.9 FT)  
 WATER TOB DEPTH 34.0'  
 WATER 24 HR.: DEPTH 16.2'  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER	3 1/2"	0 TO 47.0'
HAND SHOP: WMUD: WWATER		TO _____
ROTARY DRILL: WMUD: WWATER		TO _____
DIAMOND CORE		TO _____
CORE SIZE <u>H52</u>		47.9' TO 61.2'
UNDISTURBED SAMPLES	NO _____ SIZE _____	
BAG SAMPLES	NO _____	

# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-21 PG. 2 OF 2

RIG TYPE CME 550 HAMMER TYPE AUTO

JOB NO. 3043051021 DRILLER M. Burcraft

HOURS DRILLING \_\_\_\_\_

GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA KINSEON LOGGED BY J. Mason

HOURS MOVING \_\_\_\_\_

DATE: 5/16/05 WEATHER: \_\_\_\_\_

SAMPLING		SCALE	UL	TES	SOIL CLASSIFICATION	REMARKS
Nr. Depth	Time					
Rig offset 51605 to redrill. Auger to refusal @ 49.94 ft.						
49.94 to 61.19 ft.: Dolomite. Mottled appearance; tones range from 5YR 8/4 pinkish gray to 5YR 4/1 brownish gray. Fine grained. Recovered core is relatively; where weathering is more developed, the dolomite is friable with a "sugary" texture, which may indicate siliceous content. Bedding is thin and at an apparent dip of about 30°. Weathering ranges from slight to complete, with the core exhibiting initial void development throughout, either in the form of 1 to 4 mm voids (prevalent and throughout the core) or small or open partial voids with the aforementioned sugary texture. Overall, the core is hard.						
The core is slightly fractured overall. A few bedding plane fractures have been mechanically opened, but the predominant joint set oriented roughly at diagonal to bedding are found at an apparent dip of 40° to 50°, and often exhibit light to heavy iron staining.						
Because of continual blockages, the recorded core run exceeds 10 feet (several pulls required to remove blocked core).						
• Run (from 49.94 to 61.19 ft.; run 11.25 ft., recovered 9.5 ft. (84%). RQD = 0.05/11.25 = 54%).						
Run time 1415 - 1437						
1513 - 1515						
1549 - 1555						
1608 - 1610						
1612 - 1627						

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 8" AND 3RD 8" TO DRIVE 1-30" I.D. 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: \_\_\_\_\_

BORING REFUSAL: \_\_\_\_\_

WATER TOB DEPTH: \_\_\_\_\_

WATER 24 HR. DEPTH: \_\_\_\_\_

WATER LOSSES: \_\_\_\_\_

CAVE-IN DEPTHS: \_\_\_\_\_

CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_

STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER		TO _____
HAND SHOP: W/MUD: W/WATER		TO _____
ROTARY DRILL: W/MUD: W/WATER		TO _____
DIAMOND CORE		TO _____
CORE SIZE		TO _____
UNDISTURBED SAMPLES	NO _____ SIZE _____	
BAG SAMPLES	NO _____	

# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-25 PG. 1 OF 2

RIG TYPE ATV HAMMER TYPE AuTB

JOB NO. 3093057021

DRILLER G. ARINS

HOURS DRILLING \_\_\_\_\_

GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA KNOXVILLE

LOGGED BY T. Justice

HOURS MOVING \_\_\_\_\_

DATE: 5/16/05 WEATHER: P. Sunny

No. Depth	SAMPLING			SCALE	REMARKS
	IN	IN	IN		
1 0-2.0	2/2	2	3	1.7	Topsoil = 0 to 2'
2 2-4.0	3/5	8	12	1.8	Fine red brown dry to moist silty clay with chert fragments and black manganese staining - Residue → Very stiff "same as above"
3 4-6.0	7/13	15	17	2.0	→ Hard "same as above" except "clay"
4 6-8.0	13/15	15	19	1.9	Hard "same as above" except (fat) clay
5 8-10.0	5/8	11	14	2.0	Very stiff yellowish brown dry (fat) clay with manganese staining - Residue
6 10-12	3/5	8	13	1.9	"same as above" except with a few chert fragments.
7 12-14	7/12	16	16	2.0	Hard yellowish brown "same as above"
8 14-16	9/9	13	14	2.0	Very stiff "same as above"
9 16-18	7/11	11	13	2.0	"same as above"
10 18-20	9/8	16	14	2.0	"same as above" except with chert fragments
11 20-22	7/11	20	15	2.0	Hard "same as above"
12 22-24	6/8	11	13	2.0	Very stiff yellowish Br dry (fat) clay with black manganese staining - Residue
13 24-26	7/8	11	13	2.0	From 24'-25' same as above. From 25'-26' - Very stiff Pale Gray and Red Brown dry (fat) clay with chert fragments and black manganese staining - Residue
14 26-28	9/9	11	14	2.0	Very stiff yellowish brown dry to slightly moist (fat) clay with chert fragments and black manganese staining - Residue
15 28-30	7/7	10	14	2.0	- "same as above" except Pale Gray and R.Br
16 30-32	6/6	7	9	2.0	- "same as above"
17 32-34	3/5	6	9	2.0	STIFF Yellow Br and Red Brown sl. moist (fat) clay with chert fragments - Residue
18 34-36	5/5	7	7	2.0	"same as above"
19 36-38	4/5	9	5	2.0	"same as above"

\*STANDARD PENETRATOR RESISTANCE IS SUM OF BLOWS FOR 2ND B" AND 3RD B" TO DRIVE 1-30" I.D. 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 55.5 FT  
 BORING REFUSAL: 55.5 FT  
 WATER TOB DEPTH: 53.8 FT  
 WATER 24 HR.: DEPTH \_\_\_\_\_  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER 3 1/4"	0 TO 55.5 FT
HAND SHOP: WMUD: WWATER	TO _____
ROTARY DRILL: WMUD: WWATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE	TO _____
UNDISTURBED SAMPLES NO. _____ SIZE _____	



# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB 25 PG. 2 OF 2

JOB NO. 3043051021 DRILLER G. AKINS HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA EIOBSTM LOGGED BY T. Just HOURS MOVING \_\_\_\_\_ DATE: 5/19 WEATHER: P. Sunny

No	Depth	SAMPLING			SCALE	RE	SOIL DESCRIPTION	REMARKS
		TYPE	SIZE	NO				
20	38-40	5/8	8	7		2.0	SAME AS ABOVE	
21	40-42	3/4	5	5		2.0	"SAME AS ABOVE" EXCEPT "SL. MOIST TO MOIST"	
22	42-44	4/7	5	8		2.0	SAME AS ABOVE EXCEPT "NO CHERT FRAGMENTS"	
23	44-46	3/4	5	5		2.0	SAME AS ABOVE	
24	46-48	2/3	3	5		2.0	FIRM "SAME AS ABOVE"	
25	48-50	3/3	3	4		2.0	FIRM RDBR moist (fat) CLAY - Residual	
26	50-52	1/2	2	2		2.0	SFT RDBR moist to very moist (fat) clay with a few chert fragments - Residual	
27	52-54	2/1	2	2		2.0	"SAME AS ABOVE"	
28	54-55.1	10	27	50/L		1.1	From 54 to 54.4 - "SAME AS ABOVE" From 54.4 to 55.1 - Very HARD light brownish gray sandy silt with dolomite fragments - Residual	

Auger Refusal @ 55.5 FT

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 5" AND 3RD 6" TO DRIVE 1-3/8" ID., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 55.8 FT  
 BORING REFUSAL: 55.5 FT  
 WATER TOB DEPTH: 53.9 FT  
 WATER 24 HR.: DEPTH \_\_\_\_\_  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER <u>3/4"</u>	0 TO <u>55.5 FT</u>
HAND SHOP: WMUD: WWATER	TO _____
ROTARY DRILL: WMUD: WWATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE	TO _____
UNDISTURBED SAMPLES NO. _____ SIZE _____	

# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-47 PG. 1 OF 2

RIG TYPE CME 550 HAMMER TYPE 1070

JOB NO. 3043051021 DRILLER M. Burnett

HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA KNESTON LOGGED BY L. Mason

HOURS MOVING \_\_\_\_\_ DATE: 5/16/05 WEATHER: \_\_\_\_\_

No. Depth	SAMPLING			SCALE	UD	RES.	SOIL CLASSIFICATION	REMARKS
	1" S	2" S	3" S					
1 0/1.5 1420	3	4	3			0.9	Firm, 10YR 2.5/4 dark yellowish brown, slightly clayey, silty. Slightly moist (topsoil)	
2 0/5.5 1423	4	3	5			0.8	Firm, 5YR 5/6 to 5YR 4/6 yellowish red (with occasional thin 10YR 2/1 black manganese nodules) very silty CLM. Slightly moist.	
3 0/15.5 1435	4	4	6			1.5	Stiff, 7.5YR 5/6 strong brown (with minor 7.5YR 7/8 earthy yellow mottling, and 10YR 2/1 black, 1 mm manganese nodules) very silty CLM. Occasional irregular, 5 mm x 1 cm, very fine sandy pebbles. Slightly moist.	
4 0/25.5 1446	3	3	3			1.0	Firm, 7.5YR 4/6 strong brown sandy (fine to very coarse, with occasional 2 to 3 mm angular weathered chert fragments) very silty CLM. Moist to very moist.	
5 0/35.5 1454	3	2	5			0.6	Firm, 7.5YR 4/6 strong brown slightly sandy (medium to coarse), silty CLM with 1 to 4 cm, angular to sub-angular, weathered chert fragments. Very moist to wet.	

Augers refused at approximately 40.0 ft. Began casing at 39.44 ft; 39.44 ft. of HW casing set.

39.44 to 69.44 ft.: DOLOMITE N7. Light gray to 5YR 6/6 light brownish gray; darker mottling may range to N4 medium dark gray. Fine grained, Cherty, usually in discrete nodules or layers up to a few mm centimeters in thickness. Indurated. Bedding is thin to medium, and at an apparent dip of about 30°. Bedding weathering overall is slight to moderate, with iron staining on fracture surfaces throughout the cored section. Complete weathering has resulted in a cavity from approximately 42.4 to 44.4 ft. The dolomite is hard. Overall, the core is slightly fractured, with moderately weathered bedding plane fractures predominant. From about 47.1 to

BORING TERMINATED: 69.44 FT  
 BORING REFUSAL: 40 FT  
 WATER TOB DEPTH: Not Observed  
 WATER 24 HR.: DEPTH: 22.0 FT  
 WATER LOSSES: \_\_\_\_\_  
 CAGE-IN DEPTHS: \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME: \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER	0 TO 40 FT
HAND SHOP: W/MUD: W/WATER	TO _____
ROTARY DRILL: W/MUD: W/WATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE <u>40</u>	<u>39.44 TO 69.44</u>
UNDISTURBED SAMPLES NO. _____ SIZE _____	
BAG SAMPLER _____	

\*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" AND 3RD 6" TO DRIVE 1-30" (O.D.) SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-47 PG. 2 OF 2

RIG TYPE CME 550 HAMMER TYPE AUTO

JOB NO. 3043051021 DRILLER M. Burnett

HOURS DRILLING \_\_\_\_\_

GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA KINGSTON LOGGED BY J. Mason

HOURS MOVING \_\_\_\_\_

DATE: 5/16/05 WEATHER: 5/17/05

No	SAMPLING		SCALE	VD	HET	SOIL CLASSIFICATION	REMARKS
	Depth	Scale					
	60.5 ft, the core is moderately fractured from the mechanical opening of several closely spaced (about 1 to 2 cm) subvertical fractures some of which exhibit slickensided surfaces. From approximately 47.1 to 48.0 ft, the dolomite appears to have absorbed energy from a fault event, with voids resulting from fracturing/faulting being re-cemented with white dolomite.						
	• Run 1 from 39.48 to 44.44 ft; ran 5.0 ft, recovered 2.74 ft. (55%) $2.74/5 = 54.7\%$ . Run time: 17:10 - 17:19						
	• Run 2 from 44.44 to 51.24 ft; ran 6.8 ft, recovered 6.8 ft. (100%) $4.62/6.8 = 68\%$ . Run time: 17:33 - 18:00						
	• Run 3 from 51.24 to 54.44 ft; ran 3.20 ft, recovered 3.14 ft. (98%) $2.94/3.20 = 92\%$ . Run time: 18:12 - 18:30						
	• Run 4 from 54.44 to 64.44 ft; ran 10.0 ft, recovered 9.8 ft. (98%) $6.25/10 = 62.5\%$ . Run time: 07:53 - 08:06, 08:20 - 08:32, 08:47 - 09:11, 09:52 - 10:05						
	• Run 5 from 64.44 to 69.44 ft; ran 5.0 ft, recovered 4.99 ft. (99%) $4.99/5 = 99\%$ . Run time: 10:27 - 10:52						

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 138 LB. 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 69.44 FT  
 BORING REFUSAL: 40 FT  
 WATER TOB DEPTH: NOT OBSERVED  
 WATER 24 HR.: DEPTH 22.0 FT  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING  
 POWER AUGER 3 1/4"  
 HAND SHOP: WMUD: WWATER  
 ROTARY DRILL: WMUD: WWATER  
 DIAMOND CORE  
 CORE SIZE #2  
 UNDISTURBED SAMPLES NO \_\_\_\_\_ SIZE \_\_\_\_\_

DEPTH  
0 TO 40 FT  
 \_\_\_\_\_ TO \_\_\_\_\_  
 \_\_\_\_\_ TO \_\_\_\_\_  
 \_\_\_\_\_ TO \_\_\_\_\_  
57.4 TO 69.44



MACTEC, Inc.   
 MACTEC Engineering and Consulting   
 MACTEC Development

Urgent, please hand deliver

For Review / Comment

Please Reply

TO:	CHRIS HENSLEY	DATE:	5/18/05
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SOIL TEST BORING FIELD REPORT

BORING NO. NR-73W PG. 1 OF 1

RIG TYPE ATV HAMMER TYPE Auto

JOB NO. 2043651021 DRILLER C. AKINS HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA K. INDIAN LOGGED BY T. Justin HOURS MOVING \_\_\_\_\_ DATE: 5/18 WEATHER: Sunny

SAWBLD		NO. OF		SOIL CLASSIFICATION	REMARKS	
No. Blows	1" A	2" A	3" A			
<u>Rock Core Description</u>						
Slightly to completely weathered, brownish gray to light gray, fine grained, fractured core is hard siliceous cherty. Ductility - Residual core is highly fractured.						
<b>Vol. 1</b> →						
1	12-13.5	3	3	5	1.5	Firm Yellowish Brown (mottled) slightly moist to moist very silty clay - Possible Alluvium/Residual
Penetration = 15 FT.						
<b>Vol. 2</b> →						
2	32-33.5	2	3	3	1.5	Firm Yellowish Brown to Brown wet sandy clayey silt to clayey sandy silt with an occasional chert fragment - Possible Alluvium/Residual
<b>Vol. 3</b> →						
3	42-43.5	2	2	2	1.5	Soft "SAME AS ABOVE"
4	47.5-47.5	-	-	-	0	AUGER REFUSED @ 47.5 FT
Encountered top of weathered bedrock @ about 46.0 FT						
Cased						
BEGAN NR CORE @ 47.3 FT						
Run # 1   47.3 FT TO 49.8 FT						
Run = 2.5 FT						
REC = 0.6 FT (24%)						
RRD = 0%						
<u>Rock Core Description</u>						
ABOVE						

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 49.8 FT

BORING REFUSAL: 47.5 FT

WATER TOB DEPTH: 0 (time of drilling = 15 FT)

WATER 24 HR.: DEPTH \_\_\_\_\_

WATER LOSSES: 100%

CAVE-IN DEPTHS \_\_\_\_\_

CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_

STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER	3 1/4"	0 TO 47.5 FT
HAND SHOP: W/MUD: W/WATER		TO _____
ROTARY DRILL: W/MUD: W/WATER		TO _____
DIAMOND CORE		TO _____
CORE SIZE <u>NR</u>		47.3 TO 49.8
UNDISTURBED SAMPLES	NO <u>3</u> SIZE <u>3"</u>	
BAG SAMPLES	NO _____	



SOIL TEST BORING FIELD REPORT

BORING NO. NB 81 PG. 1 OF 2

RIG TYPE HAMMER TYPE Auto

JOB NO. 5043051021 DRILLER C. ARINS HOURS DRILLING GROUND SURFACE ELEV.

JOB NAME TVA Kinshannon SYSTEM LOGGED BY T. Justice HOURS MOVING DATE: 5/13/05 WEATHER: Sunny

No	SAMPLING			DEPTH	SOIL DESCRIPTION	REMARKS
	1	2	3			
1	3	2	3	1.3	Firm Dark Br clay to sil. moist	Tip of = 0.0 to 0.5
					Clayey silt with fine roots	
2	2/1	2	3	2.0	From 1.5-1.9 - "SAME AS ABOVE"	
					to RDR	
3	5	6		2.0	STIFF BR sil. moist to moist silty clay	
					with a few black manganese nodules	
4	3	4		2.0	Firm RDR to RDR "SAME AS ABOVE" - sil. moist	
5	4	5		2.0	STIFF - "SAME AS ABOVE"	
6	3	5		2.0	Firm - "SAME AS ABOVE"	
7	4	5		2.1	STIFF RDR sil. moist silty clay	
					with a few chert fragments and black manganese nodules - Residue	
8	2/1	2	3	1.3	Nodules - Residue	
					Firm "SAME AS ABOVE"	
9	1	2		1.6	SOFT SAME AS ABOVE except sil. moist to moist	
10	1	2		1.2	SAME AS ABOVE	
11	2/2	4	3	2.0	From RDR sil. moist silty clay - Residue	
12	3	4		2.0	Firm RDR to Yell Br sil. moist silty clay - Residue	
13	1	2		1.8	SOFT "SAME AS ABOVE"	
14	3	4		2.0	Firm Yell Br sil. moist sandy silty clay	Setment drilling = 24.8
					with a few chert fragments - Residue	
15	3	8		1.8	STIFF RDR to Yell Br moist silty clay	
					with chert fragments - Residue	
16	9	25		1.5	From 27.5 to 31.2 - SAME AS ABOVE except "wet"	
					From 31.2 to 31.5 - DENSE BROWN MOIST	
					CLAY SAND (completely weathered Detonite) - Residue	
AUGER REFUSAL 30.5 FT						
SET HW CASING TO A DEPTH OF 31.1 FT						

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 8" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED:  
 BORING REFUSAL: 30.5 FT (AUGER REFUSAL)  
 WATER TOB DEPTH: 21.3 FT (@ Auger refusal)  
 WATER 24 HR.: DEPTH \_\_\_\_\_  
 WATER LOSSES: 100%  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE HW LENGTH 31.1 FT  
 STANDBY TIME 2 1/2 HOURS BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER 3 1/2" HSA	0 TO 30.5 FT
HAND SHOP: WMUD: WWATER	TO _____
ROTARY DRILL: WMUD: WWATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE HQ	31.1 TO 61.1'
UNDISTURBED SAMPLES NO _____ SIZE _____	
BAG SAMPLES NO _____	



SOIL TEST BORING FIELD REPORT

BORING NO. NB 81

PG. 2 OF 2

RIG TYPE CME

HAMMER TYPE

JOB NO. 3043051021

DRILLER G. AKINS

HOURS DRILLING

GROUND SURFACE ELEV.

OB NAME TVA KINGSDON

LOGGED BY T. Justice

HOURS MOVING

DATE: 5/16/05 WEATHER: Sunny

No	Depth	Remarks	Penetration
		BELAN HQ CORREL @ 31.1 FT	
		Run #1: 31.1 FT to 40.4 FT	
(1)	33.5 FT to 38.3 FT	Run = 9.3 FT	
(2)	39.3 FT to 41.0 FT	Rec = 2.0 FT (22%)	
		RQD = 1.35/9.3 = (15%)	
		Run #2: 40.4 FT to 50.2 FT	
		Run = 9.8 FT	
		Rec = 8.8 FT (90%)	
		RQD = 8.8/9.8 = (90%)	
		Run #3: 50.2 FT to 60.0 FT	
		Run = 9.8 FT	
		Rec = 9.8 (100%)	
		RQD = 9.8/9.8 = (100%)	
		Run #4: 60.0 FT to 61.1 FT	
		Run = 1.1 FT	
		Rec = 0.7 (64%)	
		RQD = 0.5/1.1 = (45%)	

to completely  
 slightly weathered, closely jointed,  
 brownish gray to light gray, fine grained  
 very strong (hard) siliceous dolomite.  
 Bedding is at an apparent dip of 45 to 50°.  
 Orthogonal and high angle joints observed  
 throughout. Bedding plane fractures and a few  
 joints exhibit some iron staining. Occasional  
 cherty zones observed.

STANDARD PENETRATION RESISTANCE IS SUM OF READINGS FOR 2ND, 5" AND 3RD 6" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED:	61.1 FT
BORING REFUSAL:	32.5 ft (slugs)
WATER TOB DEPTH:	21.3 FT (B. Aiken Refund)
WATER 24 HR.: DEPTH:	
WATER LOSSES:	100%
CAVE-IN DEPTHS:	
CASING: SIZE:	4 1/2" LENGTH 31.1 FT
STANDBY TIME:	2 hrs BORING LAYOUT

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER	3 1/2" HSA
HAND SHOP: W/MUD: W/WATER	0 TO 30.5 FT
ROTARY DRILL: W/MUD: W/WATER	TO
DIAMOND CORE	TO
CORE SIZE	HD
UNDISTURBED SAMPLES	NO SIZE
BAG SAMPLES	NO



SOIL TEST BORING FIELD REPORT

JOB NO. 3043051021 DRILLER M. Burnett  
 JOB NAME TVA KANE STAN LOGGED BY J. Mason

BORING NO. NB-84 PG. 1 OF 3  
 HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_  
 HOURS MOVING \_\_\_\_\_ DATE: 5/13/05 WEATHER: \_\_\_\_\_

No. Depth	SAMPLING			SCALE	UD	REC	SOIL CLASSIFICATION	REMARKS
	1" 6"	2" 8"	3" 10"					
1 0928	1.5	3	2	4	0	1.3	0.0 - 0.6 ft.: Topsoil 0.6 - 1.3 ft.: Firm, 5YR 4/6 yellowish red, clayey SILT. Dry to slightly moist.	
2 0934	4.5	4	8	10	5	1.5	Very stiff 5YR 5/6 yellowish red, very silty, clayey. Dry to slightly moist.	
3 0943	8.5	5	8	11	5	1.5	Very stiff mottled (5YR 3/6 yellowish red and 10YR 7/8 yellow), sandy (very fine, confined to yellow areas), very silty CLAY. Dry to slightly moist.	
					3	<del>UB</del> 2.0'		
4 10:04	14.5	7	9	10	5	0.3	Very stiff 10YR 7/8 yellow with some 10YR 2/1 black mottling, very silty CLAY. Sample has been "ribboned" by a 4-cm pink sandstone fragment. Dry.	
5 10:22	18.5	5	6	10	5	1.5	Very stiff, 10YR 6/6 brownish yellow (with minor gray & yellowish red mottling), silty CLAY. Flat subrounded chert fragment at 19.0 ft. Dry to slightly moist.	
					0	<del>UB</del> 7.5'	1.0' seam	
6 10:44	24.5	3	5	8	5	1.1	Stiff, 5Y 5/4 light olive brown with some 10YR 5/3 brown mottling, slightly clayey SILT. Dry.	
					0	<del>UB</del> 27.5' - 29.5'	1.8	

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: \_\_\_\_\_  
 BORING REFUSAL: 49.2'  
 WATER TOB DEPTH: 34.5'  
 WATER 24 HR.: DEPTH: 18.6'  
 WATER LOSSES: 100%  
 GAVE-IN DEPTHS: \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER	TO _____
HAND SHOP: W/MUD: W/WATER	TO _____
ROTARY DRILL: W/MUD: W/WATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE	TO _____
UNDISTURBED SAMPLES NO _____ SIZE _____	
BAG SAMPLES NO _____	





SOIL TEST BORING FIELD REPORT

JOB NO. 3043051021 DRILLER M. Burnett BORING NO. NB-84 PG. 2 OF 3  
 JOB NAME TVA KINESTON LOGGED BY J. Mason HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_  
 HOURS MOVING \_\_\_\_\_ DATE: 5/13/05 WEATHER: \_\_\_\_\_

No. Depth	SAMPLING			SCALE	UD	REC	SOIL CLASSIFICATION	REMARKS
	1 <sup>st</sup> E'	2 <sup>nd</sup> E'	3 <sup>rd</sup> E'					
7 29.5/31 11:53	4	11	14	0		1.2'	Vary stiff 10YR 5/6 brown (with minor yellowish brown mottling) clayey SILT. Dry.	
				5	<del>32.5</del> 4	1.0'		
8 34.5/36 12:18	6	11	11	0		1.5'	Vary stiff 10YR 4/4 dark yellowish brown (with 10YR 2/1 black mottling), silty CLAY, with occasional 1 to 3 cm angular gray to light gray, weathered chert fragments. Slightly moist.	34.5' t.p.b.
9 37/40.5 12:36	2	6	5	5		1.5'	Stiff 2.5Y 5/4 light olive brown silty CLAY, with occasional 1 to 3 cm, light gray, angular weathered chert fragments. Slightly moist to moist.	
10 44/45.5 12:47	3	16	1	0		0.3'	Very soft 10YR 5/6 yellowish brown, silty CLAY, with angular weathered chert fragments. Wet.	
11 49/50.5 50/0.2' 12:57				5		0.1'	Same as above. No rock fragments at bottom of sampler.	
Begin HQ coring through auger @ 49.15 ft.								
49.15 to 59.17 ft. Dolomite. Fine grained, 5YR 6/1 light brownish gray to M4 medium dark gray, where more siliceous. Cherty; occasionally, chert occurs as discrete nodules a few centimeters in size but more commonly as beds 2 to 3 cm thick. Indurated. Banding is thin to medium, and is at an apparent dip of about 50°. Weathering is slight to moderate, and may locally be moderately severe. Overall, the dolomite is hard. The dolomite is considerably fractured throughout with a set of fractures oriented orthogonally to bedding. These fractures have an average spacing of about 2 inches near the top of rock, and increase to be very close spacing (0.25 to 0.5 inch) with depth. Joint attitude steepens with depth from 40° apparent dip to 70° apparent dip, and indicate an episode of faulting; joints at 52.1, 52.3, and								

\*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: \_\_\_\_\_  
 BORING REFUSAL: \_\_\_\_\_  
 WATER TOB DEPTH \_\_\_\_\_  
 WATER 24 HR.: DEPTH \_\_\_\_\_  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER	TO _____
HAND SHOP: WMUD: WWATER	TO _____
ROTARY DRILL: WMUD: WWATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE	TO _____
UNDISTURBED SAMPLES NO _____ SIZE _____	
BAG SAMPLES NO _____	





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FAX:	1-423-751-7094		NB-59, 65, 76 and 85A/B
TEL:			
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FROM:	MACTEC	COMMENTS:	
OFF/DEPT:	Knoxville		
FAX:	865-588-8026		
TEL:	865-588-8544		
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ADDRESS:	1725 Louisville Drive		
	Knoxville, TN 37921		

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# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-09 PG. 1 OF 1

RIG TYPE CME HAMMER TYPE Auto

JOB NO. 3043051021 DRILLER G. ALINS HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA KING STN LOGGED BY T. Justin HOURS MOVING \_\_\_\_\_ DATE: 5/19/05 WEATHER: Sunny

No. Depth	3	5	3	1.3	Notes
1 0-1.5	3	5	3	1.3	Firm Brown silty moist s. clay; Topsoil = 0 to 0.6 with manganese nodules - Residue
2 5-6.5	4	4	6	1.5	SAME AS ABOVE EXCEPT SLT & and Red Brown
UD 9-11					
3 11-12.5	3	4	6	2.0	SAME AS ABOVE EXCEPT NO manganese nodules.
4 15-16.5	3	3	3	1.5	Firm Red Brown silty moist sandy clay - Residue
UD 19-21					
5 21-22.5	3	3	2	1.5	SAME AS ABOVE EXCEPT moist
6 25-26.5	1	2	1	1.5	Soft Red Brown Very moist sandy clay - Residue
UD 26.5-28.5					
7 28.5-30	1	1	3	0.5	Soft Red Brown Very moist sandy clay
8 30-31.5	1	1	2	1.5	with chert fragments - Residue
9 31.5-34.0	13	19	16	1.0	Dense Brown and Gray Dolomite fragments with sand - Residue

A.R.C 34.0 FT

NOTE: SNEEZY TIME WAS NOT ATTEMPTED TO 32.5 FT due to CREEPY (weathered) Dolomite Fragments.

\*STANDARD PENETRATOR RESISTANCE IS SUM OF BLOWS FOR 2ND 5" AND 3RD 6" TO DRIVE 1-28" I.D. 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 39.0'  
 BORING REFUSAL: 34.0'  
 WATER TOB DEPTH: 16.9 FT  
 WATER 24 HR.: DEPTH: 19.0 FT  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER	0 TO 34'
HAND SHOP: W/MUD: W/WATER	TO
ROTARY DRILL: W/MUD: W/WATER	TO
DIAMOND CORE	TO
CORE SIZE	TO
UNDISTURBED SAMPLES	NO <u>3</u> SIZE <u>3"</u>
BAG SAMPLES	NO <u>3</u> SIZE <u>5'-10'</u>

F1024 8/03

# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-65 PG. 1 OF 1

RIG TYPE CME HAMMER TYPE Auto

JOB NO. 309305702 DRILLER G. Atkins HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

DB NAME TVA Kingston LOGGED BY T Justice HOURS MOVING \_\_\_\_\_ DATE: 5/12/05 WEATHER: Sunny

No. Depth	SOIL CLASSIFICATION	REMARKS
1 0-1.5 4 4 B	1.5	STIFF Red Brown dry silty clay Topsoil = 0 to 0.1 with a few chert fragments - Residual
2 1.5-3.0 5 6 P	1.5	"SAME AS ABOVE" - except with some black manganese nodules.
3 3.0-4.5 5 6 B	1.5	STIFF Reddish Orange silty moist sandy silty clay - Residual
4 4.5-6.0 2 3 4	1.5	Fine Reddish Orange to Yellowish Brown silty moist sandy clay - Residual
5 6.0-7.5 1 2 1	1.0	Soft Brown moist sandy clay with a few chert fragments - Residual (35'-35.9')
6 7.5-38.4 5/1 - -	0.1	Very Soft Brown Very moist to wet Sandy Silt with a few chert fragments - Residual (35.9'-38.4')
Auger Refusal @ 38.4 FT		
Very Loose Brown wet Very Silty Sand - (completely weath. Dolomite) - Residual (38.4'-38.5')		

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 130' LB. 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 38.5'  
 BORING REFUSAL: 38.4'  
 WATER TOB DEPTH: 23.7'  
 WATER 24 HR.: DEPTH: 24.1'  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER	3 1/4"	0 TO 38.4'
HAND SHOP: W/MUD: W/WATER		TO _____
ROTARY DRILL: W/MUD: W/WATER		TO _____
DIAMOND CORE		TO _____
CORE SIZE		TO _____
UNDISTURBED SAMPLES	NO <u>0</u> SIZE _____	
BAG SAMPLES	NO <u>1</u> 2'-10'	

**MACTEC SOIL TEST BORING FIELD REPORT**

BORING NO. AB 76 PG. 1 OF 1

RIG TYPE CME HAMMER TYPE Auto

JOB NO. 3043051021 DRILLER G. AKINS HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA Kingston LOGGED BY J. J. J. J. HOURS MOVING \_\_\_\_\_ DATE 5/14/05 WEATHER: Sunny

No.	Depth	U	V	W	Remarks
1	0-1.5	3	4	4	1.5 Firm RdBr dry to sl. moist Silty clay with a few black Manganese nodules - Residual Tip soil = 0 to 0.5'
2	1.5-3.0	3	3	5	1.5 SAME AS ABOVE - except sl. moist with chert fragments
not 9-11					
3	11-12.5	3	4	7	1.5 STIFF Br and RdBr silty to silty clay with (weath) chert fragments - Residual and black manganese nodules
4	15-16.5	3	4	4	1.5 Firm "SAME AS ABOVE"
not 17-20.5 (pushed 1.5')					
5	20-22	3	4	10	1.5 STIFF yellowish Br sl. moist silty clay with chert fragments and chert sand - Residual
6	25-26.5	2	3	3	1.5 Even RdBr to RdBr sl. moist Silty clay - Residual
not 26.5/28.5					
7	28.5-30	5	3	2	0.9 to Br sandy Firm yellow Br moist silty clay/silt with chert fragments - Residual
8	30-32.5				1.5
9	32-33.5	1	1	1	0
9	35-36.5	1	1	1	1.0 Very soft Br to RdBr wet sandy clayey silt with dolomite fragments - Residual  A.R. @ 38.0 FT

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 38.0 FT  
 BORING REFUSAL: 38.0 FT  
 WATER TOB DEPTH: 28.2 FT  
 WATER 24 HR.: DEPTH \_\_\_\_\_  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

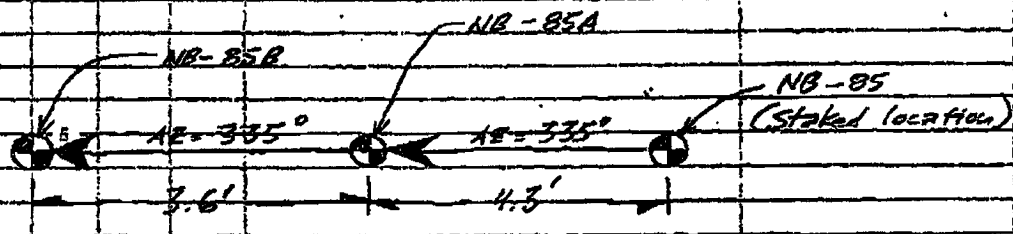
METHOD OF ADVANCING BORING	DEPTH
POWER AUGER	0 TO 38.0 FT
HAND SHOP: W/MUD: W/WATER	TO
ROTARY DRILL: W/MUD: W/WATER	TO
DIAMOND CORE	TO
CORE SIZE	TO
UNDISTURBED SAMPLES	NO 4 SIZE 7"
BAG SAMPLES	NO 1/2 5'-15"

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SOIL TEST BORING FIELD REPORT

JOB NO. 3043051021 DRILLER M. Burnett BORING NO. NB-B5A, B5B PG. 1 OF 1  
 JOB NAME TVA KNESTON LOGGED BY J. Mason HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_  
 HOURS MOVING \_\_\_\_\_ DATE: 5/12/05 WEATHER: \_\_\_\_\_

No. Depth	SAMPLING			SCALE	UD	REC	SOIL CLASSIFICATION	REMARKS
	1" 6"	2" 8"	3" 16"					
				0			<i>Auger from 0.0 to 13.0 ft.</i>	
1 14:30				5	UD		1.5'	
2 14:37				5	UD		1.3' Refused @ 16.4'	
3 14:46				0	UD		0.4' Refused @ 18.0'	Driven 2.0' total 1.0' in NB-B5B
4 14:57				0	UD		0.8' Driven 1.65' to refusal @ 20.65'	
5 16:00				3	UD		0.9' Driven 1.6' (NB-B5B)	
6 16:09				3	UD		1.6' Driven 2.0' (NB-B5B)	
7 16:27				3	UD		2.0' Driven 2.0' (NB-B5B)	
8 16:40				3	UD		1.6' Driven 2.0' (NB-B5B)	
21' to 25' UD tube pulled off of WD drive head in NB-B5A; rig offset further to NB-B5B to continue UD sampling.								
9 17:00				5	UD		1.0' Driven 1.3' (refused, NB-B5B)	
<i>Resistance to auger @ 30.3 ft; refused @ 31.0 ft.</i>								



\*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 1" D. AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: \_\_\_\_\_  
 BORING REFUSAL: \_\_\_\_\_  
 WATER TOB DEPTH \_\_\_\_\_  
 WATER 24 HR. DEPTH \_\_\_\_\_  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER	TO _____
HAND SHOP: W/MUD: W/WATER	TO _____
ROTARY DRILL: W/MUD: W/WATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE	TO _____
UNDISTURBED SAMPLES NO. _____ SIZE _____	
BAG SAMPLES NO. _____	



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FAX:	1-423-751-7094		
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TEL:	865-588-8544		
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	Knoxville, TN 37921		

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BOB NO. 3043051021

DRILLER M. Burnett

HOURS DRILLING

GROUND SURFACE ELEV.

BOB NAME TVA KINGSTON

LOGGED BY J. Mason

HOURS MOVING

DATE: 6/10/05 WEATHER: 71/105

NO. LOG	DEPTH	REMARKS
6.1555 1500	3 2 3	0.9 Firm, 7.5% 5/8 strong brown, very silty, clay with 1 mm to 1 cm angular gtz gravel throughout (about 7%) Moist
7.29/305 1510Z	2 3 9	0.9 Same as above except stiff, gravel size and content increase with depth.

Auger refused @ approximately 32.3 feet. Drillers prepared install the casing to 36.3 ft.

31.32 to 64.53 ft.: DOLOMITE. 542611 light brownish gray to greenish brownish gray, with an often mottled appearance. Fine grained. Locally dolomite may tend to be cherty. Recovered core is indurated. Distinct bedding features were not observed. Weathering ranges from slight (recovered core) to complete (voids as denoted below). Recovered rock is hard. The dolomite is extremely fractured throughout and most fractures are healed with white dolomite. There appear to be two prevailing sets of fractures: one set at from 5° to 70° apparent dip, with an average spacing of one foot, and a second set that dips from about 30° to 40°, and is roughly orthogonal to the first.

44.3 to 50.83 ft.: Cavity

58.5 to 63.3 ft.: Cavity

Run 1 from 31.32 to 39.53 ft.; ran 8.21 ft., recovered 8.21 ft. (100%)  
 $RDD = 7.05/8.21 = 86\%$ . Run time: 17:50 - 18:30

Run 2 from 39.53 to 49.53 ft.; ran 10.0 ft., recovered 4.3 ft. (42%)  
 $RDD = 3.9/10.0 = 39\%$ . Run time: 10:57 - 11:21.

Run 3 from 49.53 to 59.53 ft.; ran 10.0 ft., recovered 5.81 ft. (58%)  
 $RDD = 4.4/10.0 = 44\%$ . Run time: 12:00 - 12:16

Run 4 from 59.53 to 64.53 ft.; ran 5.0 ft., recovered 0 ft.  $RDD = 0\%$ . Run time: 12:40 - 12:45.

STANDARD PENETRATION TEST RESISTANCE IS SUM OF BEDS FOR 6" AND 3RD 6" TO DRIVE 130" LB. C. OLD SPLIT BARREL GAMPER WITH 60 POUND HAMMER FALLING 30 INCHES

BORING TERMINATED: 64.5'

BORING REFUSAL: 32.3' (Auger refusal)

WATER TOB DEPTH \_\_\_\_\_

WATER 24 HR.: DEPTH \_\_\_\_\_

WATER LOSSES \_\_\_\_\_

WE-IN DEPTHS \_\_\_\_\_

CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_

STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER		TO _____
HAND SHOP: W/MUD: W/WATER		TO _____
ROTARY DRILL: W/MUD: W/WATER		TO _____
DIAMOND CORE		TO _____
CORE SIZE		TO _____
UNDISTURBED SAMPLES	NO _____ SIZE _____	
BAG SAMPLES	NO _____	



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FROM:	MACTEC	COMMENTS:	-Soil profile appears to be cherty throughout; successful Shelby tube sampling may be difficult.
TO/CO/DEPT:	Knoxville		
FAX:	865-588-8026		
TEL:	865-588-8544		
HAND COPY:			
ADDRESS:	125 Louisville Drive Knoxville, TN 37924		

37  
2  
829  
12

BORIN  
BORIN  
WATER  
WATER  
WATER  
CAVE-IN  
CASING:  
STANDBY

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MAY-10-2005 19:49

8656947868

93%

P.01



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<b>TO:</b>	Chris Hensley	<b>DATE:</b>	
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<b>FAX:</b>	423-751-7094		
<b>TEL:</b>			
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<b>FROM:</b>	MACTEC	<b>COMMENTS:</b> Field Boring Logs for NB-63A, NB-73, NB-74.	
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<b>FAX:</b>	865-588-8026		
<b>TEL:</b>	865-588-8544		
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<b>ADDRESS:</b>	1725 Louisville Drive Knoxville, TN 37921		

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# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-63A PG. 2 OF 4

RIG TYPE CM E 75 HAMMER TYPE \_\_\_\_\_

JOB NO. 3042051021 DRILLER J. WARREN HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA Kingston LOGGED BY T. Justice HOURS MOVING \_\_\_\_\_ DATE: 9/6/05 WEATHER: 7 Sunny

69 Run

FM. Degr. \_\_\_\_\_ SCALE \_\_\_\_\_

RAN HQ CASING TO A DEPTH OF 52.3 FT AND BEGAN HQ ROCK CORING.

OFFSET 6.5 FT TO NB-63A FROM NB-63

Run #1; 52.3 FT TO 59.3 FT

RAN = 7.0 FT  
REC = 6.9 FT (~~99%~~) (96%)  
RQD = 4.3/7.0 = (61%)

Very slightly weathered, closely jointed. Bedding appears to be from 45 to 50° Light Gray, fine grained, very strong Dolomite. Several joint sets observed. Most notable oriented @ 60° to 80° and 45° (Orthogonal to bedding)

Run #2; 59.3 FT TO 64.3 FT

RAN = 5.0 FT  
REC = 4.8 FT (96%)  
RQD = 1.5/5.0 = (30%)

Run #3; 64.3 FT TO 69.3 FT

RAN = 5.0 FT  
REC = 5.0 FT (100%)  
RQD = 2.4/5.0 = (48%)

Run #4; 69.3 FT TO 78.6 FT

RAN = 9.3 FT  
REC = 9.3 FT (100%)  
RQD = 5.5/9.3 = (59%)

Run #5; 78.6 FT TO 82.3 FT

RAN = 3.7 FT  
REC = 3.6 FT (97%)  
RQD = 3.1/3.7 = (84%)

CORING TERMINATED @ 82.3 FT

BORING TERMINATED: 82.3 FT  
BORING REFUSAL: HQ casing refusal 52.3 FT  
WATER TOB DEPTH: Not observed  
WATER 24 HR.: DEPTH \_\_\_\_\_  
WATER LOSSES \_\_\_\_\_  
CAVE-IN DEPTHS \_\_\_\_\_  
CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING  
POWER AUGER HQ casing  
HAND SHOP: WMUD: WWATER  
ROTARY DRILL: WMUD: WWATER  
DIAMOND CORE \_\_\_\_\_  
CORE SIZE HQ  
UNDISTURBED SAMPLES NO \_\_\_\_\_ SIZE \_\_\_\_\_  
BAG SAMPLES NO \_\_\_\_\_

DEPTH  
TO 52.3  
TO \_\_\_\_\_  
TO \_\_\_\_\_  
TO \_\_\_\_\_  
TO 82.3

STANDARD PENETRATION TESTS ARE A SUM OF BLOW COUNTS FOR 200 MM AND 300 MM AND 300 MM AND 300 MM TO DRIVE 1.00 M (3.28 FT) OF SPLIT BARREL DRILLER WITH 60 POUNDS HANNING FALLS INCHES

# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-73 PG. 1 OF 2  
RIG TYPE NB-73(A) HAMMER TYPE \_\_\_\_\_

JOB NO. 3043051021 DRILLER M. Burnett HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_  
JOB NAME TVA KINGSTON LOGGED BY J. Mason HOURS MOVING \_\_\_\_\_ DATE: 5/4/05 WEATHER: 65° CLR

No.	Depth	SAMPLES				UC	DESC	TESTS RUN	REMARKS
		1	2	3	4				
1	1.5	2	3	5		1.5	0.0 to 0.6 ft. Firm, 1042 214 dark yellowish brown, slightly clayey silt, slightly moist 1042 214 0.6 to 1.5 ft. ? Firm, 1042 514 yellowish brown, slightly sandy, very silty CLAY, slightly moist.		
2	4.5	5	6	8		1.5	Stiff, mottled (1042 518 yellowish brown, 1042 211 black spotty manganese staining), very silty CLAY, slightly moist.		
3	10.5	3	5	7		1.5	Same as above Occasional lens, buff-colored, weathered clay.		
4	15.5	4	4	6		1.5	Stiff, mottled (1042 216 brownish yellow & 1042 516 yellowish brown) very silty, CLAY, slightly moist.		
						<del>1.5</del> 2.0			
5	20.5	3	4	4		1.0	Firm, mottled (1042 216 brownish yellow, 1042 516 yellowish brown and 1042 211 black manganese staining), very silty, CLAY Moist	Σ 19' during drilling	
6	25.5	3	2	3		1.5	24.0 to 24.4 ft. Same as above. 24.4 to 25.5 ft. Firm 7.542 518 strong brown, sandy (very fine sand), clayey silt Moist.		
7	29.5	3	4	5		1.5	Same as above except stiff with occasional 5 mm buff- to light gray-colored, angular, weathered clasts, slightly moist.		

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: NB-73 (40.0 FT) : NR-730 (50.5 FT)  
 BORING REFUSAL: NB-73 (40.0 FT) : NB-73A (40.0 FT) (N/A)  
 WATER TOB DEPTH 7.8 FT (Q Auger Refusal)  
 WATER 24 HR.: DEPTH 7.5 FT (24-hr)  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER	3 1/4" (NB-73)	0 TO 90'
HAND SHOWN	WATER (NB-73A)	0 TO 79'
ROTARY DRILL:	W/MUD: W/WATER	TO _____
DIAMOND CORE		TO _____
CORE SIZE		TO _____
UNDISTURBED SAMPLES	NO <u>1</u> SIZE <u>3"</u>	
BAG SAMPLES	NO <u>1</u> , 2'-10"	

F1024 B02

# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-73 PG. 2 OF 2

RIG TYPE (NB-73A) HAMMER TYPE 818

JOB NO. 3043051021 DRILLER Mr. Burnett HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_  
NAME TVA KINGSTON LOGGED BY J. Mason HOURS MOVING \_\_\_\_\_ DATE: 5/14/05 WEATHER: 65° CLR

NO.	DEPTH	SCALE	LD	NO.	SOIL CLASSIFICATION	REMARKS
8	34/35.5	3 5 6		1.5	Same as from 29.0 to 30.5 ft. with occasional 3.5 cm hard to white weathered clasts. Slightly moist.	- suspect Alluvial origin to Auger refusal depth (340ft)
9	39/39.8	38 50/38			No recovery; threaded upper section of split spoon broken off into split spoon head Auger. Refusal @ 40.0 FT. OFFSET 5 FT. NPIPE, to NB-73A AND INSTALLED TO 44 FT AND BEGAN SPLIT SPOON SAMPLING.	
10	44/45.5	2 3 3		1.5	Same as from 24.4 to 25.5 ft. except moist. sec	
11	49/50.5	3 1 2		1.5	Soft, 10YR 5/8 yellowish brown, slightly clayey, very sandy (fine sand) SILT. Moist.	
12	54/55.5	Weight of hammer		0	No recovery.	
13	59/60.5	Weight of hammer		0	No recovery.	
14	64/65.5	3 4 1		0.3	Firm, N.Z. very dark gray to dk grey, greenish gray, sandy SILT. Slightly moist.	
15	69/70.5	12 20 11		0.6	Hard, 7.5Y 8/2 pale yellow, sandy (very fine sand) SILT, with occasional cl. fragments of weathered material. Very moist to wet.	
16	74/75.5	4 7 5		0.6	Firm, 10YR 6/4 light yellowish brown, very silty SAND (fine to medium) with occasional white fragments. Very moist to wet.	
17	79/80.5	2 2 2		0.2	Very loose, 10YR 6/8 brownish yellow, fine to medium, silty SAND. Very moist to wet.	

ANGERS APPEAR TO BE "LEAVING OFF" (OFFSET FROM VERTICAL) DUE TO SUSPECTED SOLUTIONED SCOT WITHIN WEATHERED BEDROCK INTERVAL. BOTTOM 10 FT. OF AUGERS. LAST 2 AUGERS.  
BORING NB-73A TERMINATED AT 80.5 FT.

BORING TERMINATED: NB-73 (40 FT); NB-73A (80.5 FT)  
 BORING REFUSAL: NB-73 (40 FT); NB-73A (Not Encountered)  
 WATER TOB DEPTH 9.8 FT (at Auger Refusal)  
 WATER 24 HR.: DEPTH 7.5 FT (24-hr)  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER 5 1/4" (NB-73)	0 TO 40'
HAND SPOON SPLIT SPOON W/ WATER (NB-73A)	0 TO 79'
ROTARY DRILL: W/MUD: W/WATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE	TO _____
UNDISTURBED SAMPLES	NO <u>1</u> SIZE <u>3"</u>
BAG SAMPLES	NO <u>1</u> SIZE <u>2'-10"</u>

\*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 5" AND 3RD 6" TO DRIVE 1-3/4" ID, 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.





# MACTEC SOIL TEST BORING FIELD REPORT

RIG TYPE CME 550 HAMMER TYPE AUTO

JOB NO. 3043051021 DRILLER M. Burnett HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_  
JOB NO. ME TVA UNRESTORED LOGGED BY J. Mason HOURS MOVING \_\_\_\_\_ DATE: 5/5 WEATHER: \_\_\_\_\_

SAMPLE NO.	(SCALE)	DEPTH	DESCRIPTION	REMARKS
6 <sup>24/355</sup> 4 4 6		1.5	Stiff, mottled (75% silty strong brown to 10% yellow) silty CLAY, with some to 2 cm angular siltstone to light gray siltstone fragments from 24.3 to 24.7 ft. Slightly moist.	Note: At 24.0' FT 5 POUND SAMPLES APPARENT RESIDUAL.
<del>7<sup>29/305</sup> 4 5 10</del>	<del>1.4'</del>	<del>1.5</del>	<del>Stiff, 7.5% silty strong brown (with speckly 10% siltstone mottling) very silty CLAY, with some to 6 mm dark gray to buff-colored angular siltstone fragments throughout. Slightly moist.</del>	
8 <sup>34/355</sup> 2 3 5		1.5	Firm, mottled (75% silty strong brown, 10% silty yellowish brown, 10% black, and 2.5% silty pale yellow) silty CLAY with occasional concentrations of more than 3 mm buff to dark gray angular siltstone fragments. Slightly moist.	
9 <sup>39/405</sup> 2 3 4		1.5	Same as above.	
10 <sup>44/44</sup> 50 ft				

Auger split spear solidly retained @ 44.0 ft. Set NW casing to 44.0 ft. begin casing.

44.0 to 75.79 ft.: Dolomite, 5% silty light brownish gray to 5% silty brownish gray. Fine grained; upper two feet has a crystalline appearance and may be slightly siliceous. Other portions may be slightly calcareous with a very weak reaction occasionally to dilute HCL. Residual core is indurated. Distinct identifiable bedding features are not readily noticeable. Weathering ranges from slight to complete, resulting in multiple cavities (described below).

BORING TERMINATED: 75.8 FT  
 BORING REFUSAL: 44.0 FT (AUGER)  
 WATER TOB DEPTH: 22.19 FT  
 WATER 24 HR.: DEPTH: 11.5 FT  
 WATER LOSSES: 10%  
 CAVES-IN DEPTHS: \_\_\_\_\_  
 CASING: SIZE NW LENGTH 94.6 FT  
 STANDBY TIME: \_\_\_\_\_ BORING LAYOUT: \_\_\_\_\_

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER	0' TO 44.0 FT
HAND SHOP: WMUD: WWATER	TO _____
ROTARY DRILL: WMUD: WWATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE <u>NO</u>	44.0 TO 75.8
UNDISTURBED SAMPLES NO <u>6</u> SIZE <u>3 1/2</u>	
BAG SAMPLES NO _____	

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND, 4" AND 3RD 6" TO DRIVE 1-3/8" I.D. 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-74 PG. 3 OF 3

RIG TYPE CME 550 HAMMER TYPE AUTO

JOB NO. 3043051021 DRILLER M. Burnett HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA Kingston LOGGED BY J. Messeri HOURS MOVING \_\_\_\_\_ DATE: 5/6/05 WEATHER: \_\_\_\_\_

No. Depth	SOIL CLASSIFICATION	REMARKS
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below. Recovered pieces of dolomite are hard. The dolomite is considerably fractured; intact core pieces exhibit a joint set at an average apparent dip of 60° with a spacing of about 1/2 inch. Many of these fractures are healed with white dolomite and are occasionally intersected by an orthogonal set of joints with an apparent dip of 50°.

- 45.4 to 46 ft.: Cherty.
  - 47.3 to 51.1 ft.: Clay-filled cavity. Clay washed out during drilling.
  - 51.3 to 54.2 ft.: Cavity; very soft filling.
  - 54.4 to 54.8 ft.: Cavity
  - 61.4 to 65.7 ft.: Cavity
  - 66.0 to 68.0 ft.: Cavity
  - 68.4 to 68.75 ft.: Chert layer, 5YR 8/1, pinkish gray matrix, with abundant 1- to 7 mm, subrounded quartz clasts.
  - 68.75 to 72.5 ft.: The advance of the core barrel indicates repeated intervals of alternately hard/soft material. In increments too small to measure. Only a few fragments of dolomite were recovered from this interval; the largest intact section was from about 71.2 to 72.5 ft.
  - 72.5 to 75.3 ft.: Cavity.
- Overall drilling water return was at approximately 30%, which may indicate clay fill in most of the cavities.

- Run 1 from 44.0 to 53.2 ft.; run 9.5 ft., recovered 2.2 ft. (23%).  
RQD = 1.93/9.5 = 20%. Run time: 0945 - 0957
- Run 2 from 53.5 to 63.5 ft.; run 10.0 ft., recovered 4.03 ft. (40%).  
RQD = 2.04/10.0 = 20%. Run time: 1030 - 1040, 1050 - 1055, 1124 - 1127.
- Run 3 from 63.5 to 75.79 ft.; run 12.29 ft. (with repeated stops/starts to pull blocked core; hence 2.10 ft.), recovered 1.92 ft. (15%), RQD = 0.41/12.29 = 3%. Run time: 1145 - 1152, 1200 - 1213.

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND, 3RD AND 3RD 8" TO DRIVE 1.38" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED:	<u>75.8 FT</u>
BORING REFUSAL:	<u>44.0 FT (ARG FR)</u>
WATER TOB DEPTH	<u>± 19.0 FT</u>
WATER 24 HR.: DEPTH	<u>11.5 FT</u>
WATER LOSSES	<u>70%</u>
CAVE-IN DEPTHS	
CASING: SIZE <u>NW</u>	LENGTH <u>44 0 FT</u>
STANDBY TIME	BORING LAYOUT

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER <u>3 1/4"</u>	<u>0</u> TO <u>44.0 FT</u>
HAND SHOP: WMUD: WWATER	TO _____
ROTARY DRILL: WMUD: WWATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE <u>NQ</u>	<u>44.0</u> TO <u>75.8</u>
UNDISTURBED SAMPLES NO <u>6</u> SIZE <u>3</u>	
BAG SAMPLES NO _____	



MACTEC, Inc.   
 MACTEC Engineering and Consulting   
 MACTEC Development

Urgent, please hand deliver       For Review / Comment       Please Reply

TO:	CHRIS HENSLEY	DATE:	5/8/05
FIRM:	TVA	SUBJECT:	DRILLING PROGRESS @ TVA KINSBURN GYP SUM SITE.
FAX:	423-757-7094		
TEL:			
# PAGES:	7+ this cover sheet		
COPY TO:			
FROM:	BRADLEY	COMMENTS:	Field Borings At NB-63 and NB-66.
ORIGIN:	Knoxville		
FAX:	865-588-8026		
TEL:	865-588-8026		
ADDRESS:	1725 Woods Mill Drive Knoxville, TN 37921		

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MAY-04-2005 07:33

8655888026

96%

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# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-63 PG. 1 OF 3  
RIG TYPE CME75 HAMMER TYPE Auto

JOB NO. 3043057021 DRILLER J. Warren HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_  
JOB NAME TVA Kingston LOGGED BY T. J. ... HOURS MOVING \_\_\_\_\_ DATE: 4/24 WEATHER: BTM

NO	DEPTH	SAMPLES			TEST	SOIL DESCRIPTION	REMARKS
1	0-1.5	4	6	12	1.1	Topsoil - 0.75 FT	Note: OFFSET NB-63 APPROX. 3 FT SASTE (No change in clay)
2	1.5-3.0	6	11	11	1.2	From 0.2 to 3.0 FT - VERY STIFF Brown Dry Silty clay with a few chert fragments and black manganese nodules - fill	
3	3-4.5	4	5	5	1.3	From 3.0 to 10.0' - Firm to stiff Reddish Orange slightly moist to moist clay (FR7) with a few chert fragments - Residual	
4	4.5-6.0	3	3	4	1.4		
5	6-8.5	2	4	6	1.5	From 10' to 22' - Soft to Firm Reddish-Orange yellowish brown sand Gray moist clay (FR7) with a few chert fragments - Residual	
6	8.5-10	3	5	6	1.5		Note: Yellowish brown and gray zones appear homogeneous in orientation. Possible bedded joints.
7	10-11.5	2	3	3	1.5		
8	11.5-13	2	3	3	1.5		
9	13-14.5	1	3	3	1.5		
10	14.5-16	1	3	3	1.5		
11	16-18.5	1	2	3	1.5		
12	17-19	2	2	2	1.5		Note sandy filler from 18.5 to 19.0' (Sand fill)
13	19-20.5	2	2	3	1.5		
14	20.5-22	2	3	3	1.5		

STANDARD PENETRATION TESTS WERE RUN AT 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290, 295, 300, 305, 310, 315, 320, 325, 330, 335, 340, 345, 350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415, 420, 425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000.

BORING TERMINATED: 43.2 FT (75.1 FT)  
 BORING REFUSAL: 43.2 FT  
 WATER TOB DEPTH: 42.5 FT (at time of drilling)  
 WATER 24 HR.: DEPTH 16.8 FT  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_  
 MAY-04-2005 07:33 8655888026

METHOD OF ADVANCING BORING  
 POWER AUGER 3 1/4"  
 HAND SHOP: WMUD: WWATER  
 ROTARY DRILL: WMUD: WWATER  
 DIAMOND CORE  
 CORE SIZE N60  
 UNDISTURBED SAMPLES NO - SIZE \_\_\_\_\_  
 BAG SAMPLES NO - \_\_\_\_\_

DEPTH	TEST
0	TO 13.2
10	TO _____
20	TO _____
30	TO _____
40	TO _____
50	TO _____
60	TO _____
70	TO _____
80	TO _____
90	TO _____
100	TO _____
110	TO _____
120	TO _____
130	TO _____
140	TO _____
150	TO _____
160	TO _____
170	TO _____
180	TO _____
190	TO _____
200	TO _____
210	TO _____
220	TO _____
230	TO _____
240	TO _____
250	TO _____
260	TO _____
270	TO _____
280	TO _____
290	TO _____
300	TO _____
310	TO _____
320	TO _____
330	TO _____
340	TO _____
350	TO _____
360	TO _____
370	TO _____
380	TO _____
390	TO _____
400	TO _____
410	TO _____
420	TO _____
430	TO _____
440	TO _____
450	TO _____
460	TO _____
470	TO _____
480	TO _____
490	TO _____
500	TO _____
510	TO _____
520	TO _____
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610	TO _____
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630	TO _____
640	TO _____
650	TO _____
660	TO _____
670	TO _____
680	TO _____
690	TO _____
700	TO _____
710	TO _____
720	TO _____
730	TO _____
740	TO _____
750	TO _____
760	TO _____
770	TO _____
780	TO _____
790	TO _____
800	TO _____
810	TO _____
820	TO _____
830	TO _____
840	TO _____
850	TO _____
860	TO _____
870	TO _____
880	TO _____
890	TO _____
900	TO _____
910	TO _____
920	TO _____
930	TO _____
940	TO _____
950	TO _____
960	TO _____
970	TO _____
980	TO _____
990	TO _____
1000	TO _____



# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. NB-63 PG. 3 OF 3  
RIG TYPE CME 75 HAMMER TYPE Auto

JOB NO. 3043051021 DRILLER J. WARREN HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_  
JOB NAME TVA Kingsport LOGGED BY T. Janta HOURS MOVING \_\_\_\_\_ DATE 4/21 WEATHER: Rain

NO	DEPTH	SOIL DESCRIPTION	REMARKS
29	43.2 FT	Auger Refusal @ 43.2 FT	
		BEGAN NG CORING @ 45.1 FT	
Run # 1; 45.1 FT TO 54.9 FT RAN = 8.9 FT REC = 8.0 FT (90%) RRD = 7.5/8.9 = (84%)			
Run # 2; 54.9 FT TO 64.9 FT RAN = 10.0 FT REC = 9.7 FT (97%) RRD = 6.8/10 = (68%)			
Run # 3; 64.9 FT TO 75.1 FT RAN = 10.2 FT REC = 9.7 FT (95%) RRD = 7.2/10.2 (71%)			
CORING TERMINATED @ 75.1 FT			

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 43.2 FT 75.1 FT  
 BORING REFUSAL: 43.2 FT  
 WATER TOB DEPTH: 42.5 FT (2 fine c" drilling)  
 WATER 24 HR. DEPTH: 16.6 FT  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING  
 POWER AUGER 3 1/4"  
 HAND SHOP: W/MUD: W/WATER  
 ROTARY DRILL: W/MUD: W/WATER  
 DIAMOND CORE NR  
 CORE SIZE ✓  
 UNDISTURBED SAMPLES NO. \_\_\_\_\_ SIZE \_\_\_\_\_  
 BAG SAMPLES NO. \_\_\_\_\_

DEPTH  
 0 TO 43.2 FT  
 TO \_\_\_\_\_  
 TO \_\_\_\_\_  
 TO \_\_\_\_\_  
43.1 TO 75.1



SOIL TEST BORING FIELD REPORT

JOB NO. 3043051021 DRILLER M. Burnett BORING NO. NR-66 PG. 1 OF 3  
 JOB NAME TVA KINISTON LOGGED BY J. Mason HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_  
 HOURS MOVING \_\_\_\_\_ DATE: 5/2/05 WEATHER: \_\_\_\_\_

No. Depth	SAMPLING			SCALE	UD	REC	SOIL CLASSIFICATION	REMARKS
	1st	2nd	3rd					
1 <sup>19</sup> / <sub>09:51</sub>	3	3	3			1.4	Fine, 7.5% 4/3 brown clayey SILT (topsoil), slightly moist. Residuum.	
					<del>UD</del>	2.0'	As below from 6.0 - 7.5 ft.	
2 <sup>16</sup> / <sub>10:12</sub>	4	5	6			0.6	STIFF, 5% 4/6 yellowish red, very silty CLAY, slightly moist. Residuum.	
					<del>UD</del>	1.7'	As below from 9.5 - 11.0 ft.	
3 <sup>19.5</sup> / <sub>10:29</sub>	2	5	5			1.5	STIFF, 5% 5/6 yellowish red, very silty CLAY, with occasional thin black manganese nodules throughout. Slightly moist.	
					<del>UD</del>	2.0	As below from 11.0 - 13.0 ft.	
4 <sup>19</sup> / <sub>10:45</sub>	5	8	13			1.5	Very stiff, mottled (5% 5/8 yellowish red and 10% 6/8 brownish yellow) silty CLAY, slightly moist. Note: small saturated zone somewhere above 12', as outside of split spoon is wet.	PERMITS 0-15
					<del>UD</del>	2.0	As below from 13.0 - 20.5 ft.	
5 <sup>19</sup> / <sub>11:35</sub>	4	6	6			1.5	STIFF, mottled (5% 5/8 yellowish red, 10% 6/8 brownish yellow, & 10% 2/3 black from manganese staining), very slightly sandy (fine, micaceous) silty CLAY, slightly moist. Residuum.	Outside of sample is wet
					<del>UD</del>	2.0	As above from 19.0 - 20.5'	

BORING TERMINATED: 66.40'  
 BORING REFUSAL: 36.4'  
 WATER TOB DEPTH @ time of drilling = 16.5 FT  
 WATER 24 HR.: DEPTH \_\_\_\_\_  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDARD TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_  
 MAY-04-2005 07:36 8655888026

METHOD OF ADVANCING BORING  
 POWER AUGER 3 1/2"  
 HAND SHOP: W/MUD: W/WATER \_\_\_\_\_  
 ROTARY DRILL: W/MUD: W/WATER \_\_\_\_\_  
 DIAMOND CORE \_\_\_\_\_  
 CORE SIZE NA  
 UNDISTURBED SAMPLES NO 6 SIZE 3"  
 BAG SAMPLES (cleanable) NO \_\_\_\_\_  
 96%

DEPTH  
 @ TO Block  
 TO \_\_\_\_\_  
 TO \_\_\_\_\_  
 TO \_\_\_\_\_  
 TO \_\_\_\_\_  
 TO \_\_\_\_\_

STANDARD PENETRATION RESISTANCE (SUM OF BLOWS FOR 30" AND 30" 6" TO DRIVE) (SPT) (D. 2.0) SPT CORRECTED WITH ROUND POINTER (SPT) (D. 2.0)









SOIL TEST BORING FIELD REPORT

JOB NO. 3043051021 DRILLER M. Burnett BORING NO. NB-66 PG. 3 OF 3  
 JOB NAME TVA LINGESTON LOGGED BY J. Mason HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_  
 HOURS MOVING \_\_\_\_\_ DATE: 5-3-05 WEATHER: \_\_\_\_\_

No. Depth	SAMPLING			SCALE	UD	REC	SOIL CLASSIFICATION	REMARKS
	1st 6"	2nd 6"	3rd 6"					
54.8 to 63.65 ft.	Dolomite, Mottled (54261) light brownish gray and 54241 brownish gray. Fine grained, with some an often "crystalline" appearance. Recovered core is indurated. Thinly bedded without distinct, noticeable bedding surfaces; bedding is likely at 40° to 50° apparent dip. Recovered core is slightly weathered, but may locally be completely weathered, resulting in void (noted below). Recovered core is hard. The dolomite is jointed with 55°-apparent dip joints at an average spacing of about 6".							
57.5 to 64.5 ft.	Void (open) etc.							
63.65 to 64.4 ft.	CHERT 54272 grayish orange pink to 54261 light brownish gray; color after water in some white bands. Fine-grained. Slightly weathered, very hard.							
64.4 to 66.4 ft.	DOLOMITE. NF light gray to Nb med. to light gray. Fine-grained, indurated. Bedding at an apparent dip of 40° to 50°, and is marked by thin (lum), discontinuous dark layers that have a slightly stibolitic appearance; thinly bedded. Slightly weathered, hard.							
<ul style="list-style-type: none"> <li>Run 1 from 36.38 to 38.22 ft.; ran 1.84 ft., recovered 1.03 ft. (56%). RRD = 0. Run time: 17:00 - 17:09, 100% DW loss.</li> <li>Run 2 from 38.22 to 46.04 ft.; ran 7.82 ft., recovered 0.6 ft. (8%). RRD = 0. Run time: 18:00 - 18:05, 100% DW loss.</li> <li>Run 3 from 46.04 to 53.29 ft.; ran 7.25 ft., recovered 4.1 ft. (57%). RRD = 0. Run time: 18:39 - 18:44, 18:55 - 19:01, 19:26 - 19:43, 100% DW loss.</li> <li>Run 4 from 53.29 to 63.29 ft.; ran 10.0 ft., recovered 4.13 ft. (41%). RRD = 2/10 = 20%. Run time: 11:39 - 11:45, 12:30 - 12:37, 12:46 - 12:49, 100% DW loss.</li> <li>Run 5 from 63.29 to 66.40 ft.; ran 3.11 ft., recovered 1.95 ft. (63%). RRD = 1.45/3.11 = 47%. Run time: 13:00 - 13:15, 13:20 - 13:25, 100% DW loss.</li> </ul>								

\*STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 6" AND 3RD 6" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 66.40  
 BORING REFUSAL: 36.40  
 WATER TOB DEPTH @ TIME OF DRILLING = 14.5 FT  
 WATER 24 HR. DEPTH \_\_\_\_\_  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 TASSING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 TANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_  
 MAY-04-2005 07:38

8655888026

METHOD OF ADVANCING BORING	DEPTH
POWER AUGER 3 1/4"	0 TO 36.40'
HAND SHOP: WMUD: WWATER	TO _____
ROTARY DRILL: WMUD: WWATER	TO _____
DIAMOND CORE	TO _____
CORE SIZE <u>NQ</u>	56.4' TO 66.4'
UNDISTURBED SAMPLES NO <u>6</u> SIZE <u>3"</u>	
BAG SAMPLES (remnants) NO _____	

95%

P.87



MACTEC, Inc.   
 MACTEC Engineering and Consulting   
 MACTEC Development

Urgent, please hand deliver

For Review / Comment

Please Reply

TO:	CHRIS HENSLEY	DATE:	5/10/05
FIRM:	TVA	SUBJECT:	FIELD BORING LOG for NB-85.
FAX:	1-423-751-7094		
TEL:			
# PAGES:	1 + this cover sheet		
COPY TO:			
FROM:	MACTEC	COMMENTS:	
ORG/DEPT:	Knoxville		
FAX:	865-588-8026		
TEL:	865-588-8544		
HAND COPY:			
ADDRESS:	4725 Louisville Drive Knoxville, TN 37928		

*-Soil profile appears to be cherty throughout; successful Shelby tube sampling may be difficult.*

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# MACTEC SOIL TEST BORING FIELD REPORT

BORING NO. UB-05 PG. 1 OF 1

RIG TYPE CME 550 HAMMER TYPE \_\_\_\_\_

JOB NO. 3043051021 DRILLER M. Burnett

HOURS DRILLING \_\_\_\_\_ GROUND SURFACE ELEV. \_\_\_\_\_

JOB NAME TVA KMG Steel LOGGED BY J. Mason

HOURS MOVING \_\_\_\_\_ DATE: 5/10/05 WEATHER: Cloudy 9

No. Elev.	SAMPLES			NO.	REL.	DESCRIPTION	REMARKS
	1	2	3				
1 9.15 11.10	2	4	4	1.2		0.0 to 0.2 ft.: Topsoil 0.2 to 1.2 ft.: Firm, 7.5R 4/6 strong brown to 7.5R 5/8 strong, uneven, silty CLAY with thin to 3cm buff colored, weathered chert throughout. Slightly moist.	
2 11.13	3	10	7	0.3		Same as above, except very stiff.	
3 11.16	3	5	7	0.5		Stiff, 10R 6/6 brownish yellow to 10R 5/6 yellowish brown, very silty, CLAY, with abundant 1mm to 2mm, angular, buff- colored chert. Slightly moist.	
4 11.22	4	5	7	1.2		Same as above.	
5 11.27	5	5	6	1.0		Same as above. Slightly moist, moisture with depth.	
6 11.40	7	7	12	0.7		Same as above (4.0' to 5.5'), except very stiff.	
7 11.54	4	5	6	1.5		Stiff, 7.5R 5/8 strong brown, silty CLAY, with subvertical 5mm to 1cm wide, 10R 5/6 yellowish brown, sandy (fine to med) stringers of silt. Occasional 1mm to 2cm, wea- thered chert fragments. Slightly moist; sandy silt may be moist.	19' to 6' brown, fine to medium wet, very silty sand 1cm shales
8 12.01	50/45			0.7		Medium brownish gray, weathered DIAMONITE Wet. Overlap by 0.3 ft. of 10R 4/4 soft yellowish sandy silt may be moist.	

STANDARD PENETRATION RESISTANCE IS SUM OF BLOWS FOR 2ND 5" AND 3RD 5" TO DRIVE 1-3/8" I.D., 2" O.D. SPLIT BARREL SAMPLER WITH 140 POUND HAMMER FALLING 30 INCHES.

BORING TERMINATED: 32.0'  
 BORING REFUSAL: 32.0'  
 WATER TOB DEPTH: 19.0'  
 WATER 24 HR.: DEPTH \_\_\_\_\_  
 WATER LOSSES \_\_\_\_\_  
 CAVE-IN DEPTHS \_\_\_\_\_  
 CASING: SIZE \_\_\_\_\_ LENGTH \_\_\_\_\_  
 STANDBY TIME \_\_\_\_\_ BORING LAYOUT \_\_\_\_\_

METHOD OF ADVANCING BORING		DEPTH
POWER AUGER	<u>3 1/4" HSS</u>	<u>0</u> TO <u>32.0'</u>
HAND SHOP: W/MUD:	W/WATER	TO _____
ROTARY DRILL: W/MUD:	W/WATER	TO _____
DIAMOND CORE		TO _____
CORE SIZE		TO _____
UNDISTURBED SAMPLES	NO _____ SIZE _____	
BAG SAMPLES	NO _____	



# MACTEC

## DRAFT

### CONSTANT HEAD PERMEABILITY TEST

(ASTM D5084)

JOB NAME: TVA - KINGSTON  
 JOB NO.: 3043-5-1021  
 BORING NO.: NB-44 UD-2  
 DEPTH: 16.5-18.5  
 SAMPLE: \_\_\_\_\_  
 DESCRIPTION: FIRM CLAYEY SILT

TECHNICIAN: JALIX  
 DATE: 8-18-5  
 CHECKED BY: HLC  
 CELL NO.: #1  
 SYSTEM NO.: 13

#### SAMPLE INFORMATION

WEIGHT TUBE & SOIL (g): \_\_\_\_\_  
 WEIGHT TUBE (g): \_\_\_\_\_  
 WEIGHT SOIL (g): \_\_\_\_\_  
 VOLUME SOIL (cu ft): \_\_\_\_\_  
 DRY UNIT WEIGHT (pcf): \_\_\_\_\_  
 WET UNIT WEIGHT (pcf): \_\_\_\_\_

TUBE LENGTH: \_\_\_\_\_ (in) \_\_\_\_\_ (cm)  
 TUBE DIAMETER: \_\_\_\_\_ (in) \_\_\_\_\_ (cm)  
 SOIL LENGTH(L): 2.006 (in) 5.095 (cm)  
 SOIL DIAMETER: 2.843 (in) 7.221 (cm)  
 AREA(A): \_\_\_\_\_ (in<sup>2</sup>) 40.96 (cm<sup>2</sup>)

#### MOISTURE CONTENT

INITIAL WET WEIGHT (g): 405.34  
 FINAL WET WEIGHT (g): 405.15  
 FINAL DRY WEIGHT (g): 316.12  
 INITIAL MOISTURE (%): 28.2  
 FINAL MOISTURE (%): 28.2  
 PAN NAME: B-6

#### PERM INFORMATION

CELL PRESSURE (psi): 64 14  
psi  
 FORE PRESSURE (psi): 52  
 BACK PRESSURE (psi): 50  
 HEAD, h (psi) x 70.34: 140.68  
 TEMPERATURE (°F): 73°F  
 VISCOSITY CORRECTION (R<sub>v</sub>): 0.981  
 PERMEANT LIQUID USED: H<sub>2</sub>O  
 BURET CORRECTION FACTOR (C): 1.0

#### TABLE OF HYDRAULIC CONDUCTIVITY

DATE		TIME		ELAPSED TIME (+)		READING		FLOW (CC)	
START	END	START	END	MINUTES	SECONDS	START	END	CC	K
<del>8-19</del>		<del>8:11</del>				<del>12.0</del>	<del>8.0</del>		
<del>8-19</del>	<del>8-19</del>	<del>9:59 AM</del>	<del>1:25 PM</del>	<del>Consolidation</del>	<del>13.6</del>	<del>6.5</del>	<del>12.5</del>	<del>7.0</del>	<del>1.0</del>
8-19	8-19	1:25 PM	2:08 PM	43	2580	12.5	7.0	12.4	7.2 0.2 (6.4 x 10 <sup>-8</sup> )
8-19	8-20	2:08 PM	5:30 PM	1642	98520	12.4	7.2	7.0	13.0 (5.4) (4.5 x 10 <sup>-8</sup> )
8-20	8-20	5:30 PM	9:10 PM	220	13200	15.3	4.7	14.5	5.5 (0.8) (5.0 x 10 <sup>-8</sup> )
8-20	8-22	9:10 PM	9:58 AM	2208	132480	14.5	5.5	7.1	13.5 (7.4) (4.6 x 10 <sup>-8</sup> )
8-22	8-22	9:58 AM	10:58 AM	60	3600	7.1	13.5	6.9	13.7 (9.2) (4.6 x 10 <sup>-8</sup> )
<del>8-22</del>		<del>11:07 AM</del>				<del>6.9</del>	<del>13.7</del>		
TOTALS					i = 247800				Q = 13.8

COEFFICIENT OF PERMEABILITY,  $k = \frac{Q \times L \times R_t \times C}{h \times A \times t} = \frac{Q}{L} \times \frac{L \times R_t \times C}{h \times A \times t} = \frac{Q}{L} \times \frac{5.095 \times 0.981}{140.68 \times 40.96} = 4.6 \times 10^{-8}$

# MACTEC

**DRAFT**

## CONSTANT HEAD PERMEABILITY TEST

(ASTM D5084)

JOB NAME: TVA KINGSTON  
 JOB NO.: 3043-S-102  
 BORING NO.: NG 47A 110-7  
 DEPTH: 30'-321  
 SAMPLE: \_\_\_\_\_  
 DESCRIPTION: VERY SOFT AND WET

TECHNICIAN: ALEX  
 DATE: 8-18-5  
 CHECKED BY: HL  
 CELL NO.: #3  
 SYSTEM NO.: JA #15 SYS: 15

### SAMPLE INFORMATION

WEIGHT TUBE & SOIL (g): \_\_\_\_\_  
 WEIGHT TUBE (g): \_\_\_\_\_  
 WEIGHT SOIL (g): \_\_\_\_\_  
 VOLUME SOIL (cu ft): \_\_\_\_\_  
 DRY UNIT WEIGHT (pcf): \_\_\_\_\_  
 WET UNIT WEIGHT (pcf): \_\_\_\_\_

TUBE LENGTH: \_\_\_\_\_ (in) \_\_\_\_\_ (cm)  
 TUBE DIAMETER: JA (in) \_\_\_\_\_ (cm)  
 SOIL LENGTH(L): ~~1.997~~ (in) 5.072 (cm)  
 SOIL DIAMETER: 2.829 (in) 7.186 (cm)  
 AREA(A): \_\_\_\_\_ (in<sup>2</sup>) 40.55 (cm<sup>2</sup>)

### MOISTURE CONTENT

INITIAL WET WEIGHT (g): 386.66  
 FINAL WET WEIGHT (g): 378.28  
 FINAL DRY WEIGHT (g): ~~378.15~~ 291.15  
 INITIAL MOISTURE (%): 32.8 ✓  
 FINAL MOISTURE (%): 29.9 ✓  
 PAN NAME: BC-14

### PERM INFORMATION

CELL PRESSURE(psi): 74.0 JA  
 FORE PRESSURE(psi): 52  
 BACK PRESSURE (psi): 50  
 HEAD, h (psi) x 70.34: 140.68  
 TEMPERATURE (°F): 73.0 F  
 VISCOSITY CORRECTION(R<sub>v</sub>): 0.931  
 PERMEANT LIQUID USED: H<sub>2</sub>O  
 BURET CORRECTION FACTOR(C): 1.0

### TABLE OF HYDRAULIC CONDUCTIVITY

DATE		TIME		ELAPSED TIME (+)		READING		FLOW (CC)	
START	END	START	END	MINUTES	SECONDS	START	END	α	κ
<del>8-19</del>	<del>8-19</del>	<del>8:10 am</del>	<del>8:10 am</del>			<del>12.0</del>	<del>8.1</del>		
<del>8-19</del>	<del>8-19</del>	<del>9:58 am</del>	<del>1:27 pm</del>	<u>01m 50</u>	<u>10.47m</u>	<del>34.9</del>	<del>16.2</del>	<del>17.8</del>	<del>15.9</del> <u>21</u>
8-19	8-19	1:27 pm	2:09 pm	42	2520	17.8	15.9	17.5	16.2 <u>0.3</u> <u>9.9 x 10<sup>-8</sup></u>
8-19	8-20	2:09 pm	5:29 pm	<u>1640</u>	<u>93400</u>	19.5	16.2	12.4	23.8 <u>1.1</u> <u>6.0 x 10<sup>-8</sup></u>
8-20	8-20	5:30 pm	9:13 pm	<u>223</u>	<u>13380</u>	25.2	15.9	24.4	15.8 <u>0.8</u> <u>4.9 x 10<sup>-8</sup></u>
8-20	8-22	9:13 pm	10:05 am	<u>222</u>	<u>132720</u>	34.4	15.8	16.3	24.2 <u>0.4</u> <u>5.2 x 10<sup>-8</sup></u>
8-22	8-22	10:05 am	11:10 am	<u>165</u>	<u>3900</u>	16.3	24.2	16.1	24.4 <u>0.2</u> <u>4.2 x 10<sup>-8</sup></u>
<del>8-22</del>	<del>8-22</del>	<del>11:10 am</del>	<del>12:57 pm</del>	<del>107</del>	<del>6420</del>	<del>16.1</del>	<del>24.4</del>	<del>15.8</del>	<del>24.7</del> <u>0.3</u> <u>3.9 x 10<sup>-8</sup></u>
TOTALS					<u>1=248400</u>				<u>Q=16.5</u> ✓

COEFFICIENT OF PERMEABILITY,  $k = \frac{Q \times L \times R_v \times C}{h \times A \times t}$   $\frac{Q}{t} = \frac{5.072 (0.931)}{140.68 (40.55)} = 5.5 \times 10^{-8}$  ✓



# MACTEC

# DRAFT

## CONSTANT HEAD PERMEABILITY TEST

(ASTM D5084)

JOB NAME: TVA KINGSTON  
 JOB NO.: 3043-S-021  
 BORING NO.: NB 76 WD-2  
 DEPTH: 19'-20.5'  
 SAMPLE: \_\_\_\_\_  
 DESCRIPTION: SILTY - FIRM

TECHNICIAN: JALX  
 DATE: 8-18-5  
 CHECKED BY: HLC  
 CELL NO.: #5  
 SYSTEM NO.: #15

### SAMPLE INFORMATION

WEIGHT TUBE & SOIL (g): \_\_\_\_\_  
 WEIGHT TUBE (g): \_\_\_\_\_  
 WEIGHT SOIL (g): \_\_\_\_\_  
 VOLUME SOIL (cu ft): \_\_\_\_\_  
 DRY UNIT WEIGHT (pcf): \_\_\_\_\_  
 WET UNIT WEIGHT (pcf): \_\_\_\_\_

TUBE LENGTH: \_\_\_\_\_ (in) \_\_\_\_\_ (cm)  
 TUBE DIAMETER: \_\_\_\_\_ (in) \_\_\_\_\_ (cm)  
 SOIL LENGTH(L): 2.049 (in) 5.306 (cm)  
 SOIL DIAMETER: 2.833 (in) 7.196 (cm)  
 AREA(A): \_\_\_\_\_ (in<sup>2</sup>) 40.67 (cm<sup>2</sup>)

### MOISTURE CONTENT

INITIAL WET WEIGHT (g): 422.17  
 FINAL WET WEIGHT (g): 423.20  
 FINAL DRY WEIGHT (g): 340.78  
 INITIAL MOISTURE (%): 23.9  
 FINAL MOISTURE (%): 24.2  
 PAN NAME: CMS

### PERM INFORMATION

CELL PRESSURE(psi): 70 psi 20 psi  
 FORE PRESSURE(psi): 52  
 BACK PRESSURE (psi): 50  
 HEAD, h (psi) x 70.34: 140.68  
 TEMPERATURE (°F): 73°F  
 VISCOSITY CORRECTION(R<sub>T</sub>): 0.931  
 PERMEANT LIQUID USED: H<sub>2</sub>O  
 BURET CORRECTION FACTOR(C): 1.0

### TABLE OF HYDRAULIC CONDUCTIVITY

DATE		TIME		ELAPSED TIME (+)		READING		FLOW (CC)			
START	END	START	END	MINUTES	SECONDS	START	END	cc	K		
<del>8-19</del>	<del>8-19</del>	<del>8:07 AM</del>				<del>13.0</del>	<del>8.1</del>				
8-19	8-19	10:00 AM	1:26 PM	206	12360	13.2	6.4	9.5	10.0	3.7	2.6 x 10 <sup>-7</sup>
8-19	8-19	1:26 PM	2:08 PM	42	2520	7.5	10.0	8.8	10.7	9.7	2.4 x 10 <sup>-7</sup>
<del>8-19</del>	<del>8-19</del>	<del>2:08 PM</del>				<del>8.8</del>	<del>10.7</del>				
8-20	8-20	5:34 PM	8:24 PM	170	10200	11.1	9.1	8.4	11.9	2.7	2.3 x 10 <sup>-7</sup>
8-22	8-22	9:58 AM	11:08 AM	70	4200	13.2	6.7	12.5	7.4	0.7	1.4 x 10 <sup>-7</sup>
8-22	8-22	11:08 AM	1:58 PM	170	10200	12.5	7.4	10.4	9.4	1.1	1.8 x 10 <sup>-7</sup>
TOTALS					i = 27120						Q = 6.2

$$\text{COEFFICIENT OF PERMEABILITY, } k = \frac{Q \times L \times R_T \times C}{h \times A \times t} = \frac{Q}{t} \cdot \frac{5.306 (0.931) (1.0)}{140.68 (40.67)}$$

2.0 x 10<sup>-7</sup>



# MACTEC

# DRAFT

## CONSTANT HEAD PERMEABILITY TEST

(ASTM D5084)

JOB NAME: TVA-KINGSTON-PROP. GYP. STACK  
 JOB NO.: 3043-05-1021  
 BORING NO.: NB-76  
 DEPTH: 5-15  
 SAMPLE: BULK (REMOVED)  
 DESCRIPTION: RED BRN F. N. S. CLS

TECHNICIAN: JA  
 DATE: 8-9-5  
 CHECKED BY: H/C  
 CELL NO.: #13  
 SYSTEM NO.: #3

### SAMPLE INFORMATION

MPD = 99.3 pcf      OMC = 21.0%

WEIGHT TUBE & SOIL (g): \_\_\_\_\_  
 WEIGHT TUBE (g): \_\_\_\_\_  
 WEIGHT SOIL (g): \_\_\_\_\_  
 VOLUME SOIL (cu ft): \_\_\_\_\_  
 DRY UNIT WEIGHT (pcf): \_\_\_\_\_  
 WET UNIT WEIGHT (pcf): \_\_\_\_\_

TUBE LENGTH: \_\_\_\_\_ (in) \_\_\_\_\_ (cm)  
 TUBE DIAMETER: \_\_\_\_\_ (in) \_\_\_\_\_ (cm)  
 SOIL LENGTH(L): 2.041 (in) 5.184 (cm)  
 SOIL DIAMETER: 2.875 (in) 7.297 (cm)  
 AREA(A): \_\_\_\_\_ (in<sup>2</sup>) 41.82 (cm<sup>2</sup>)

### MOISTURE CONTENT

INITIAL WET WEIGHT (g): 395.55  
 FINAL WET WEIGHT (g): 403.09  
 FINAL DRY WEIGHT (g): 312.89  
 INITIAL MOISTURE (%): 24.4  
 FINAL MOISTURE (%): 26.8  
 PAN NAME: B-9

### PERM INFORMATION

CELL PRESSURE (psi): 60  
 FORE PRESSURE (psi): 52  
 BACK PRESSURE (psi): 50  
 HEAD, h (psi) x 70.34: 140.68  
 TEMPERATURE (°F): 73°C  
 VISCOSITY CORRECTION (R<sub>v</sub>): 0.931  
 PERMEANT LIQUID USED: H<sub>2</sub>O  
 BURET CORRECTION FACTOR (C): 1.0

### TABLE OF HYDRAULIC CONDUCTIVITY

DATE		TIME		ELAPSED TIME (+)		READING				FLOW (CC)	
START	END	START	END	MINUTES	SECONDS	START	END	START	END	Q	K
<del>8-20</del>	<del>8-22</del>	<del>9:13 AM</del>	<del>9:59 PM</del>	<del>46</del>		<del>44.4</del>	<del>8.2</del>				
8-22	8-22	10:02 AM	10:06 AM	4	240	11.1	8.9	10.3	9.7	0.8	3.7 x 10 <sup>-6</sup>
8-22	8-22	10:06 AM	10:09 AM	3	180	10.3	9.7	9.6	10.4	0.7	3.2 x 10 <sup>-6</sup>
8-22	8-22	10:09 AM	10:12 AM	3	180	9.6	10.4	8.9	11.1	0.7	3.2 x 10 <sup>-6</sup>
8-22	8-22	10:06 AM	12:48	102	6120	30.1	10.9	11.5	29.9	18.6	2.5 x 10 <sup>-6</sup>
TOTALS					c = 6720					Q = 20.8	

COEFFICIENT OF PERMEABILITY,  $k = \frac{Q \times L \times R_v \times C}{h \times A \times t} = \frac{Q \cdot 5.184 (0.931)}{140.68 (41.82)} = 2.5 \times 10^{-6}$



# MACTEC

# DRAFT

## REMOLDED SAMPLE DATA SHEET

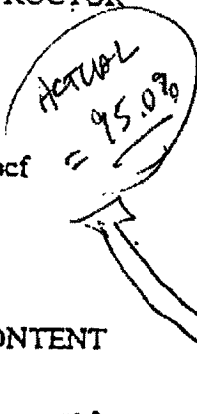
JOB NO 30435-1021 BORING NO NB-76 DEPTH 5-15 DATE 8-20-5  
 JOB NAME TVA KINGSTON (P.G.S.)  
 TECHNICIAN \_\_\_\_\_ CHECKED BY \_\_\_\_\_

OPTIMUM MOISTURE 21.0 %  
 MAX DRY DENSITY 99.3 pcf

COMPACTED TO 5 % OF PROCTOR  
 AT 23.0 % MOISTURE

95 % = 94.3  
 WET UNIT WEIGHT 116.0 pcf  
 MOISTURE 23.0 %

TUBE NO P-1  
 TUBE DIAMETER 2.00 in  
 TUBE LENGTH 8.9 in  
 SOIL LENGTH 7.0 in  
 TUBE WEIGHT \_\_\_\_\_ gr  
 SOIL WEIGHT \_\_\_\_\_ gr  
 TOTAL \_\_\_\_\_ gr  
 VOLUME \_\_\_\_\_ cu ft  
 WEIGHT \_\_\_\_\_ lb  
 WEIGHT 396.7 gr  
 WEIGHT 198.4 gr/in



### INITIAL MOISTURE CONTENT (Hot Plate)

Soil Wet = \_\_\_\_\_ grs  
 Soil Dry = \_\_\_\_\_ grs  
 % Moisture \_\_\_\_\_

Soil Wet = 239.9 grs  
 Soil Dry = 195.7 grs  
 % Moisture 22.6

### ACTUAL MOISTURE CONTENT (Oven Dried)

Soil Wet = 500.00 grs (min. 500 grs)  
 Soil Dry = 406.62 grs  
 % Moisture 23.0  
 Pan U

### MOISTURE ADJUSTMENT DATA

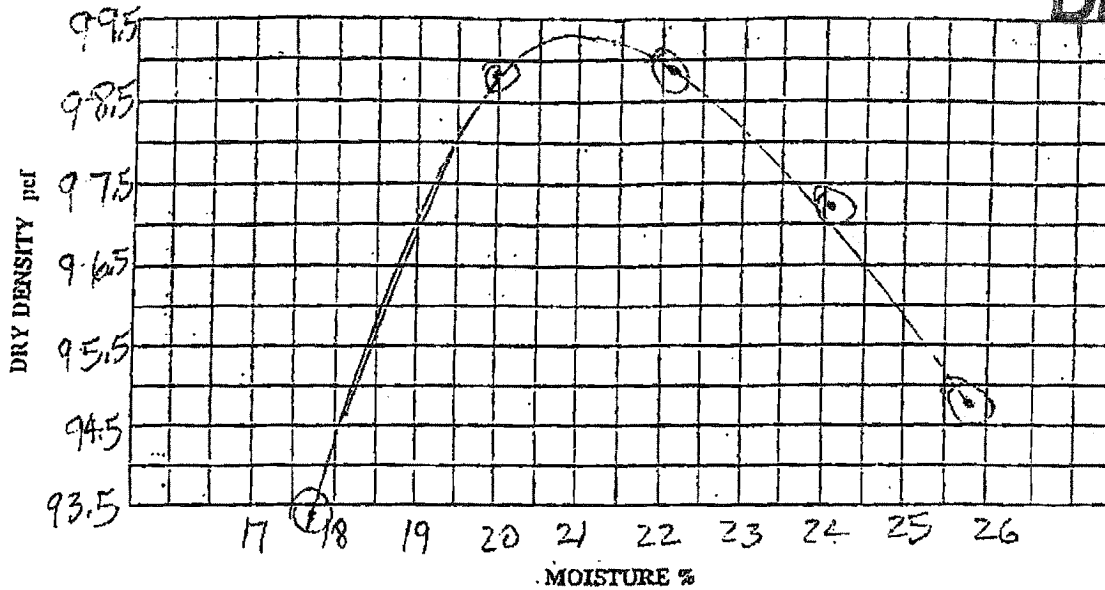
2000.0 g WET-1 @ 22.6 % = 1631.3 g DRY  
1631.3 g DRY @ 23.0 % = 2096.5 g WET-2  
2000.0 g WET-1

ADD: 6.5



PROCTOR DATA SHEET

DRAFT



SCALE F020KA MOLD NO. 4314

MOLD WT (g) 4241

MOLD VOL (cu ft) 1/29.99

CAN NO.	WATER CONTENT				COMPACTED SAMPLE					
	WET WT SOIL -	DRY WT SOIL	WEIGHT WATER	% MOISTURE	SOIL + MOLD (g)	SOIL - MOLD (g)	SOIL WT LBS	WET UNIT WEIGHT	DRY UNIT WEIGHT	WATER ADDED
TOP	500	424.6	75.4	17.8	5904	1663	3.67	110.0	93.3	0
Motion		416.5	83.5	20.0	6035	1794	3.96	118.6	98.8	50
Completion		409.4	90.6	22.1	6098	1857	4.09	122.8	98.9	100
Beneath		403.0	97.0	24.1	6066	1825	4.02	120.7	97.2	150
Mosses		397.5	102.5	25.8	6043	1802	3.97	119.1	94.7	200

5 points from sample

JOB NO. 3043-05-1021 CURVE NO. NB-76

JOB NAME TVA, Kingston (proposed Gypsum Disposal Area)

JOB LOCATION \_\_\_\_\_

CLIENT \_\_\_\_\_

TEST METHOD D 698 OR D 1557 METHOD 3 B C

DESCRIPTION Red brown fine sand silt

PROPOSED USE \_\_\_\_\_

SOURCE LOCATION Bulk 5'-15'

OPTIMUM MOISTURE (%) 21.0

MAXIMUM DRY DENSITY (pcf) 99.3

Equipment used: \_\_\_\_\_

Run 5 points on Proctor

FIELD MOISTURE	
WET WT	<u>296.9</u>
DRY WT	<u>237.0</u>
WT WATER	
% MOISTURE	<u>25.3</u>
PAN	<u>DEW 10.2</u>

TRIAxIAL-PERM-CONSOLIDATION 1 OR 2 CYLINDERS			
WET WT	<u>239.9</u>	WET WT	_____
DRY WT	<u>195.7</u>	DRY WT	_____
WT WATER	_____	WT WATER	_____
% MOISTURE	<u>22.6</u>	% MOISTURE	_____
PAN	<u>DEW 10.2</u>	PAN	_____

HOT PLATE- Y or N

RUN BY do DATE 8/1/05  
 CALCULATED 19 DATE 12/2/05  
 CHECKED \_\_\_\_\_ DATE \_\_\_\_\_



# MACTEC

# DRAFT

## CONSTANT HEAD PERMEABILITY TEST

(ASTM D5084)

JOB NAME: TVA-KINGSTON - PROP. GYP. STACK  
 JOB NO.: 3043-05-1021  
 BORING NO.: NB-84  
 DEPTH: 2'-10"  
 SAMPLE: BULK (REMOVED)  
 DESCRIPTION: \_\_\_\_\_

TECHNICIAN: JA.  
 DATE: 8-9-5  
 CHECKED BY: HC  
 CELL NO.: #2  
 SYSTEM NO.: #14

### SAMPLE INFORMATION

MDD = 102.2 PCF OMC = 21.6%

WEIGHT TUBE & SOIL (g): \_\_\_\_\_  
 WEIGHT TUBE (g): \_\_\_\_\_  
 WEIGHT SOIL (g): \_\_\_\_\_  
 VOLUME SOIL (cu ft): \_\_\_\_\_  
 DRY UNIT WEIGHT (pcf): \_\_\_\_\_  
 WET UNIT WEIGHT (pcf): \_\_\_\_\_

TUBE LENGTH: \_\_\_\_\_ (in) \_\_\_\_\_ (cm)  
 TUBE DIAMETER: \_\_\_\_\_ (in) \_\_\_\_\_ (cm)  
 SOIL LENGTH(L): 2.030 (in) 5.156 (cm)  
 SOIL DIAMETER: 2.862 (in) 7.269 (cm)  
 AREA(A): \_\_\_\_\_ (in<sup>2</sup>) 41.50 (cm<sup>2</sup>)

### MOISTURE CONTENT

INITIAL WET WEIGHT (g): 408.74  
 FINAL WET WEIGHT (g): 417.20  
 FINAL DRY WEIGHT (g): ~~428.75~~ 329.71  
 INITIAL MOISTURE (%): 24.0 ✓  
 FINAL MOISTURE (%): 26.5 ✓  
 PAN NAME: BOT

### PERM INFORMATION

CELL PRESSURE (psi): 10 PSI  
 FORE PRESSURE (psi): 52  
 BACK PRESSURE (psi): 50  
 HEAD, h (psi) x 70.34: 140.68  
 TEMPERATURE (°F): 73°F  
 VISCOSITY CORRECTION (R<sub>v</sub>): 0.931  
 PERMEANT LIQUID USED: W20  
 BURET CORRECTION FACTOR (C): 1.0

### TABLE OF HYDRAULIC CONDUCTIVITY

DATE		TIME		ELAPSED TIME (+)		READING				FLOW (CC)	
START	END	START	END	MINUTES	SECONDS	START	END	START	END	C	K
8-20	8-20	9:11 PM	10:11 PM	60	3600	15.9	4.6	15.2	5.3	0.7	1.6 × 10 <sup>-7</sup>
8-22	8-22	9:56 AM	10:07 AM	11	660	11.0	8.9	10.9	9.0	0.1	1.2 × 10 <sup>-7</sup>
8-22	8-22	10:07 AM	11:07 AM	60	3600	10.9	9.0	10.3	9.6	0.6	1.4 × 10 <sup>-7</sup>
8-22	8-22	11:07 AM	12:27 PM	80	4800	10.7	9.6	9.5	10.5	0.8	1.4 × 10 <sup>-7</sup>
TOTALS					<u>12660</u>						<u>Q=2.2</u>

COEFFICIENT OF PERMEABILITY,  $k = \frac{Q \times L \times R_v \times C}{h \times A \times t} = \frac{0.5156 (0.931)}{140.68 (41.50)} = 1.4 \times 10^{-7}$  ✓