



SHEET 1 OF 1

MACTEC PROJECT NO.: 6468-06-1472					COUNTY Louisa, VA					GEOLOGIST S. Nicely				
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)				
BORING NO. B-929			DRILL METHOD: Mud Rotary				SAMPLE METHODS: SPT/UD				0 HR. 23.5			
COLLAR ELEV. 329.0 ft (NAVD88)			NORTHING 3,909,214		US ft (NAD83)		EASTING 11,685,655		US ft (NAD83)		24 HR. 23.9			
TOTAL DEPTH 74.0 ft			DRILL MACHINE CME 55 Truck				DRILLER: H. Meyerson				HAMMER TYPE 140 lbs Auto			
DATE STARTED 8/8/06			COMPLETED 8/10/06				CORE BARREL TYPE: NA							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80	100				
329.0					Ground Surface								329.0 0.0	
327.5	1.5									929-1		Clayey SAND (SC) strong brown (7.5YR 5/6), moist, medium dense, trace gravel (Residual Soil)		
325.5	3.5	7	7	8						929-2		324.0 5.0		
323.0	6.0	5	6	9	929-3	Silty, fine to coarse SAND (SM) reddish yellow (7.5YR 6/6&7/6), moist, loose to medium dense, trace clay, relict rock fabric (Residual Soil)								
320.3	8.7	4	6	7	929-4									
318.8	10.2	3	4	5	929-UD-1									
315.5	13.5	4	4	5	929-5									
310.4	18.6	5	5	6	929-6									
306.0	23.0	3	5	4	929-7			303.0 26.0						
301.0	28.0	5	5	5	929-8	Silty, fine to coarse SAND (SM) reddish yellow (7.5YR 6/6), moist, medium dense, trace gravel, relict rock fabric (Residual Soil)								
296.0	33.0	6	7	8	929-9									
291.0	38.0	4	8	6	929-10									
286.0	43.0	7	13	14	929-11		283.0 46.0							
281.0	48.0	19	26	33	929-12	Silty, fine to coarse SAND (SM) light brown (7.5YR 6/4), moist, very dense, trace gravel, relict rock fabric (Residual Soil)								
276.0	53.0	37	42	41	929-13									
271.0	58.0	14	19	43	929-14									
264.0	65.0	50/0.3			929-15		265.0 64.0							
260.7	68.3	50/0.2			929-16	Weathered Rock: Light brown (7.5YR 6/4), moist, very dense, severely weathered, BIOTITE GNEISS								
255.7	73.3	41	50/0.2		929-17		255.0 74.0							

Boring terminated at 74.0 ft in Weathered Rock: Very dense, BIOTITE GNEISS

NORTH ANNA COL BORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07

NORTH ANNA COLLEGE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07



MACTEC PROJECT NO.: 6468-06-1472					COUNTY Louisa, VA					GEOLOGIST S. Nicely				
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)				
BORING NO. B-930			DRILL METHOD: Mud Rotary				SAMPLE METHODS: SPT				0 HR. 23.4			
COLLAR ELEV. 326.1 ft (NAVD88)			NORTHING 3,909,276		US ft (NAD83)		EASTING 11,685,843		US ft (NAD83)		24 HR. 25.3			
TOTAL DEPTH 123.6 ft			DRILL MACHINE CME 55 Truck				DRILLER: H. Meyerson				HAMMER TYPE 140 lbs Auto			
DATE STARTED 8/17/06			COMPLETED 8/21/06				CORE BARREL TYPE: NA							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80	100				
326.1					Ground Surface								326.1 0.0	
324.6	1.5	5	6	7	●13					930-1			323.7 2.4	
322.4	3.7	3	3	4	●7					930-2			Silty, fine to coarse SAND (SM) yellowish brown (10YR 5/8), reddish yellow (7.5YR 6/8), and yellow (10YR 7/6), dry to moist, loose (Residual Soil)	
320.1	6.0	3	4	4	●8					930-3				
317.6	8.5	3	3	4	●7					930-4			Silty, fine to coarse SAND (SM) yellow (10YR 7/6), yellowish brown (10YR 6/8) to light yellowish brown (2.5YR 6/4), dry to moist, medium dense (Residual Soil)	
315.1	11.0	4	5	5	●10					930-5				
312.6	13.5	4	5	5	●10					930-6			315.6 10.5	
307.5	18.6	5	6	5	●11					930-7				
302.4	23.7	5	5	5	●10					930-8				
297.6	28.5	5	8	9	●17					930-9				
292.4	33.7	10	11	13	●24					930-10				
287.5	38.6	10	13	13	●26					930-11			Silty, fine to coarse SAND (SM) pale olive gray (5Y 6/2), yellowish brown (10YR 5/4), and brownish yellow (10YR 6/6), moist, medium dense to dense, relict rock fabric (Residual Soil)	
282.5	43.6	13	17	18	●35					930-12				
277.3	48.8	11	13	15	●28					930-13			285.1 41.0	
272.4	53.7	13	18	19	●37					930-14				
267.4	58.7	16	22	28	●50					930-15				
262.4	63.7	20	26	27	●53					930-16			265.1 61.0	
257.4	68.7	21	32	40	●72					930-17			Silty, fine to coarse SAND (SM) brownish yellow (10YR 6/6), moist, very dense, relict rock fabric (Residual Soil)	
252.4	73.7	21	38	41	●76					930-18				

NORTH ANNA COL BURE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL GDT 1/19/07

NORTH ANNA COL CORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07



SHEET 1 OF 1

MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST S. Nicely							
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)					
BORING NO. B-931		DRILL METHOD: Mud Rotary				SAMPLE METHODS: SPT				0 HR. ND					
COLLAR ELEV. 278.5 ft (NAVD88)		NORTHING 3,910,153		US ft (NAD83)		EASTING 11,685,922		US ft (NAD83)		24 HR. ND					
TOTAL DEPTH 74.0 ft		DRILL MACHINE CME 55 Truck				DRILLER: H. Meyerson				HAMMER TYPE 140 lbs Auto					
DATE STARTED 11/6/06		COMPLETED 11/6/06				CORE BARREL TYPE: NA									
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT						SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80	100					
278.5					Ground Surface								278.5	0.0	
															No samples due to utility clearance operations -soft dig/vac. truck excavation
269.4	9.1	1	1	1							931-1		269.4	9.1	
267.0	11.5	2	1	2							931-2				Silty, fine to coarse SAND (SM) dark yellowish brown (10YR 4/6), moist, very loose to loose (Residual Soil)
264.7	13.8	1	2	2							931-3				
259.7	18.8	1	2	2							931-4		257.5	21.0	
254.7	23.8	1	3	3							931-5		252.5	26.0	
249.5	29.0	2	2	3							931-6				Sandy, SILT (ML) dark yellowish brown (10YR 4/6), moist, medium stiff, trace gravel
244.7	33.8	2	3	4							931-7		242.5	36.0	
239.8	38.7	3	3	4							931-8		238.5	40.0	
234.7	43.8	12	16	21							931-9				Silty, fine to coarse SAND (SM) light olive brown (2.5YR 5/4), moist to wet, dense (Residual Soil)
229.7	48.8	15	22	26							931-10				
224.7	53.8	16	21	13							931-11		221.5	57.0	
219.7	58.8	50/0.4									931-12				Weathered Rock: Light olive brown (2.5YR 5/4), moist, very dense, severely weathered, BIOTITE-QUARTZ GNEISS
214.7	63.8	50/0.5									931-13				
209.7	68.8	50/0.2									931-14				
204.7	73.8	50/0.2									931-15		204.5	74.0	

Boring terminated at 74.0 ft in Weathered Rock: Very dense, BIOTITE-QUARTZ GNEISS

NORTH ANNA COL BORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07

NORTH ANNA COL _JURE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07



SHEET 1 OF 2

MACTEC PROJECT NO.: 6468-06-1472					COUNTY Louisa, VA					GEOLOGIST J. Howard				
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)				
BORING NO. B-933			DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. 16.2			
COLLAR ELEV. 296.5 ft (NAVD88)			NORTHING 3,909,827		US ft (NAD83)		EASTING 11,685,791		US ft (NAD83)		24 HR. 21.3			
TOTAL DEPTH 100.2 ft			DRILL MACHINE CME 550 ATV				DRILLER: G. Akins				HAMMER TYPE 140 lbs Auto			
DATE STARTED 9/8/06			COMPLETED 9/12/06				CORE BARREL TYPE: HQ 3 triple tube-wireline							
ELEV.	DEPTH	BLOW COUNT			BLOWS PER FOOT					SAMP.	LOG	SOIL AND ROCK DESCRIPTION		
(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	20	40	60	80	100			NO.	
296.5					Ground Surface							296.5 0.0		
295.0	1.5										933-1	Clayey SAND (SC) reddish yellow (7.5YR 7/8&6/8), dry to moist, loose (Fill)		
293.0	3.5	3	3	4							933-2			
290.5	6.0	3	4	3							933-3	Silty SAND (SM) Reddish yellow (7.5YR 6/8), brown (7.5YR 5/4), light gray (7.5YR 7/1), and gray (2.5YR 5/1), moist to wet, loose to medium dense, saprolitic (Residual Soil)		
288.0	8.5	3	3	3							933-4			
285.3	11.2	3	3	5							933-5			
283.0	13.5	3	3	5							933-6			
		4	6	9										
277.0	19.5	4	5	4							933-7	Fine to medium SAND (SP) brown (7.5YR 5/2), wet, loose, micaceous, saprolitic (Residual Soil)		
272.0	24.5										933-8	Medium SAND (SP) gray (7.5YR 6/1), wet, very dense (Residual Soil)		
		14	35	25										
267.0	29.5										933-9	Weathered Rock: Orange brown, very dense, severely weathered, BIOTITE-QUARTZ GNEISS		
		50/0.3												
262.0	34.5										933-10			
		45	50/0.4											
257.0	39.5										933-11	Hard Rock: Gray brown, moderately weathered, close fracturing, moderately hard to hard, BIOTITE-QUARTZ GNEISS with weathered rock layers		
		50/0.1										Weathered Rock: Gray brown, very dense, severely weathered, BIOTITE-QUARTZ GNEISS		
250.1	46.4										933-12			
		50/0.1												
												Hard Rock: Blue-gray-pink and gray-orange, moderately to slightly weathered, close to moderately close fracturing, hard, BIOTITE-QUARTZ GNEISS with quartz veins		

NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07



SHEET 2 OF 2

MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST J. Howard								
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft) 0 HR. 16.2 24 HR. 21.3						
BORING NO. B-933		DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE										
COLLAR ELEV. 296.5 ft (NAVD88)		NORTHING 3,909,827		US ft (NAD83)		EASTING 11,685,791		US ft (NAD83)								
TOTAL DEPTH 100.2 ft		DRILL MACHINE CME 550 ATV				DRILLER: G. Akins				HAMMER TYPE 140 lbs Auto						
DATE STARTED 9/8/06				COMPLETED 9/12/06				CORE BARREL TYPE: HQ 3 triple tube-wireline								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT						SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80	100						
221.7					Continued from previous page											
														Hard Rock: Blue-gray; gray, light brown and brown, slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS (<i>continued</i>)		
														196.3	100.2	Boring and coring terminated at 100.2 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS

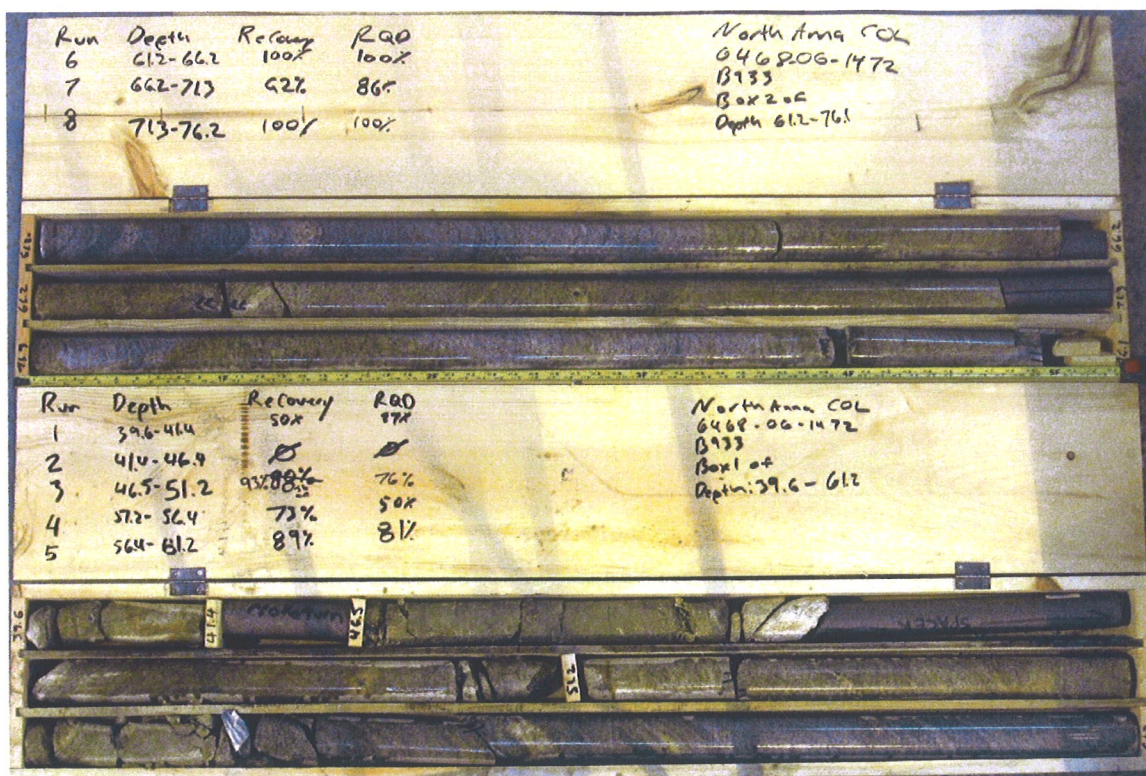
NORTH ANNA COL BORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL GDT 1/19/07



SHEET 1 OF 1

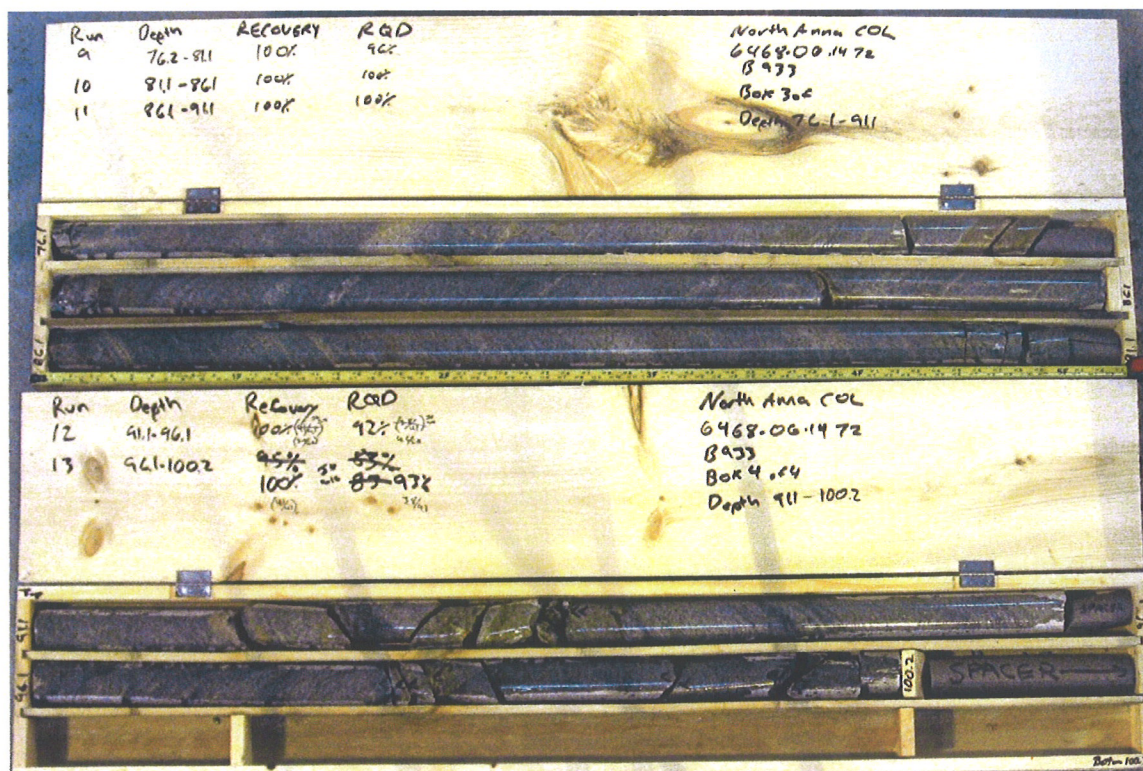
MACTEC PROJECT NO.: 6468-06-1472							COUNTY Louisa, VA			GEOLOGIST J. Howard		
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)		
BORING NO. B-933			DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE			0 HR. 16.2		
COLLAR ELEV. 296.5 ft (NAVD88)			NORTHING 3,909,827		US ft (NAD83)		EASTING 11,685,791		US ft (NAD83)		24 HR. 21.3	
TOTAL DEPTH 100.2 ft			DRILL MACHINE CME 550 ATV				DRILLER: G. Akins			HAMMER TYPE 140 lbs Auto		
DATE STARTED 9/8/06				COMPLETED 9/12/06			CORE BARREL TYPE: HQ 3 triple tube-wireline					
CORE SIZE HQ3				TOTAL RUN 60.5 ft								
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %		ROD (ft) %	SAMP. NO.	STRATA REC. (ft) %		RQD (ft) %	L O G	DESCRIPTION AND REMARKS
												Begin Coring @ 39.6 ft
256.9	39.6	1.8	3:00	(0.9)	(0.5)	1						Hard Rock: Gray brown, moderately weathered, close fracturing, moderately
255.1	41.4	5.0	1:45/0.8	50%	28%	2						hard to hard, BIOTITE-QUARTZ GNEISS with weathered rock layers
			1:45	(0.0)	(0.0)							Weathered Rock: Gray brown, very dense, severely weathered,
			1:00	0%	0%							BIOTITE-QUARTZ GNEISS
			1:15									-No Recovery
250.1	46.4		1:15									
250.0	46.5	4.7	N=50/0.1	(4.4)	(3.6)	933-12/ UC-50.5'						Hard Rock: Blue-gray-pink and gray-orange, moderately to slightly weathered,
			3:00	94%	77%							close to moderately close fracturing, hard, BIOTITE-QUARTZ GNEISS with
			4:00									quartz veins
245.3	51.2		2:45									
			3:30									
		5.2	2:45/0.7	(3.8)	(2.6)	4						
			3:00	73%	50%							
			2:15									
			1:45									
240.1	56.4		1:30									Weathered Rock: Severely weathered, BIOTITE-QUARTZ GNEISS
			1:00/1.2									
		4.8	1:30	(4.3)	(3.9)	5						Hard Rock: Blue-gray, gray, light brown and brown, slightly weathered to fresh,
			3:30	90%	81%							close to wide fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS
235.3	61.2		4:15									
			5:00									
			6:30/0.8									
		5.0	4:45	(5.0)	(5.0)	6						
			4:30	100%	100%							
			4:15									
230.3	66.2		4:15									
			4:30									
		5.1	3:45	(4.7)	(4.4)	UCS-66.6'						(2 joints at 30°; complete loss of circulation from 67.0-69.0 ft)
			2:15	92%	86%							
			4:30									
			4:45									
225.2	71.3		5:00/1.1									
		4.9	3:30	(4.9)	(4.9)	8						-No Joints
			4:30	100%	100%							
			4:45									
220.3	76.2		5:00									
			7:00/0.9									(2 joints at 30°)
		4.9	5:30	(4.9)	(4.7)	9						
			5:30	100%	96%							
			5:45									
215.4	81.1		6:30									(1 joint at 40°)
			6:30/0.9									
		5.0	4:45	(5.0)	(5.0)	10						
			6:00	100%	100%							
			6:45									
210.4	86.1		5:45									
			4:30									
		5.0	5:00	(5.0)	(5.0)	UC-90.1'						-No Joints
			5:00	100%	100%							
			5:00									
205.4	91.1		6:00									
			7:15									
		5.0	3:00	(5.0)	(4.6)	12						(2 joints at 20°, 1 joint at 30°, 1 joint at 50°)
			3:15	100%	92%							
			3:15									
200.4	96.1		4:30									
			5:30									
		4.1	4:00	(4.1)	(3.8)	13						(6 joints at 35°)
			4:00	100%	93%							
			9:30									
196.3	100.2		8:15									
			2:15/0.1									Coring terminated at 100.2 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS

NORTH ANNA COL CORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL GDT 1/19/07



B-933 - Box 2

B-933 - Box 1



B-933 - Box 3

B-933 - Box 4

NORTH ANNA COLLEGE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07