



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.	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															
325.5	3.5	7	7	8							929-1					
323.0	6.0	5	6	9							929-2					
320.3	8.7	4	6	7							929-3					
318.8	10.2	4	6	7							929-4					
315.5	13.5	3	4	5							929-UD-1					
		4	4	5							929-5					
310.4	18.6	5	5	6							929-6					
306.0	23.0	3	5	4							929-7					
301.0	28.0	5	5	5							929-8					
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					
281.0	48.0	19	26	33							929-12					
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					
260.7	68.3	50/0.2									929-16					
255.7	73.3	41			50/0.2						929-17					

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













MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST J. Wallen							
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)					
BORING NO. B-932		DRILL METHOD: Mud Rotary				SAMPLE METHODS: SPT				0 HR. 0.0					
COLLAR ELEV. 249.9 ft (NAVD88)		NORTHING 3,910,444		US ft (NAD83)		EASTING 11,686,416		US ft (NAD83)		24 HR. 0.0					
TOTAL DEPTH 35.1 ft		DRILL MACHINE CME 550 ATV				DRILLER: G. Akins				HAMMER TYPE 140 lbs Auto					
DATE STARTED 11/8/06		COMPLETED 11/9/06				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	
249.9					Ground Surface								249.9	0.0	
															No samples due to utility clearance operations-soft dig/vac. truck excavation
241.4	8.5												241.4	8.5	
238.9	11.0	WOH	1	1						932-1			238.9	11.0	Fine sandy SILT (ML) dark greenish gray (GLEY1 4/1), wet to moist, soft, trace gravel (Fill)
236.4	13.5	1	2	1						932-2			236.4	13.5	
233.9	16.0	WOH	2	1						932-3			233.9	16.0	CLAY (CH) dark yellowish brown (10YR 4/4), moist, soft, trace sand, organic debris (Fill)
230.9	19.0	2	1	2						932-4			230.9	19.0	Fine sandy SILT (ML) dark yellowish brown (10YR 4/4), moist, soft, organic debris (Fill)
224.9	25.0	6	13	18						932-5			224.9	25.0	Silty, fine to medium SAND (SM) dark yellowish brown (10YR 3/4), moist, dense to very dense, relict rock fabric (Residual Soil)
219.9	30.0	16	21	31						932-6			219.9	30.0	
214.9	35.0	50/0.4								932-7			214.9	35.0	Weathered Rock: Dark yellowish brown (10YR 4/4), moist, very dense, severely weathered, BIOTITE-QUARTZ GNEISS
		50/0.1								932-8			214.8	35.1	Boring terminated at 35.1 ft in Weathered Rock: Very dense, severely weathered, BIOTITE-QUARTZ GNEISS  Boring encountered abandoned PVC conduit at approximately 15 feet. Drilling stopped and conduit was probed with boroscope by Dominion pers. and determined to be empty.

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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. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
296.5					Ground Surface							296.5	0.0	
295.0	1.5													Clayey SAND (SC) reddish yellow (7.5YR 7/8&6/8), dry to moist, loose (Fill)
293.0	3.5	3	3	4							933-1			
290.5	6.0	3	4	3							933-2			
288.0	8.5	3	3	3							933-3		291.0	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)
285.3	11.2	3	3	5							933-4			
283.0	13.5	4	6	9							933-5			
277.0	19.5	4	5	4							933-6		280.5	Fine to medium SAND (SP) brown (7.5YR 5/2), wet, loose, micaceous, saprolitic (Residual Soil)
272.0	24.5	14	35	25							933-7		274.5	Medium SAND (SP) gray (7.5YR 6/1), wet, very dense (Residual Soil)
267.0	29.5	50/0.3									933-8		269.5	Weathered Rock: Orange brown, very dense, severely weathered, BIOTITE-QUARTZ GNEISS
262.0	34.5	45	50/0.4								933-9			
257.0	39.5	50/0.1									933-10		256.9	Hard Rock: Gray brown, moderately weathered, close fracturing, moderately hard to hard, BIOTITE-QUARTZ GNEISS with weathered rock layers
250.1	46.4	50/0.1									933-11		255.1	Weathered Rock: Gray brown, very dense, severely weathered, BIOTITE-QUARTZ GNEISS
											933-12		248.3	Hard Rock: Blue-gray-pink and gray-orange, moderately to slightly weathered, close to moderately close fracturing, hard, BIOTITE-QUARTZ GNEISS with quartz veins
													241.9	Weathered Rock: Severely weathered, BIOTITE-QUARTZ GNEISS
													239.6	Hard Rock: Blue-gray, gray, light brown and brown, slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS

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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. (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 (continued)		
													196.3	Boring and coring terminated at 100.2 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS	100.2

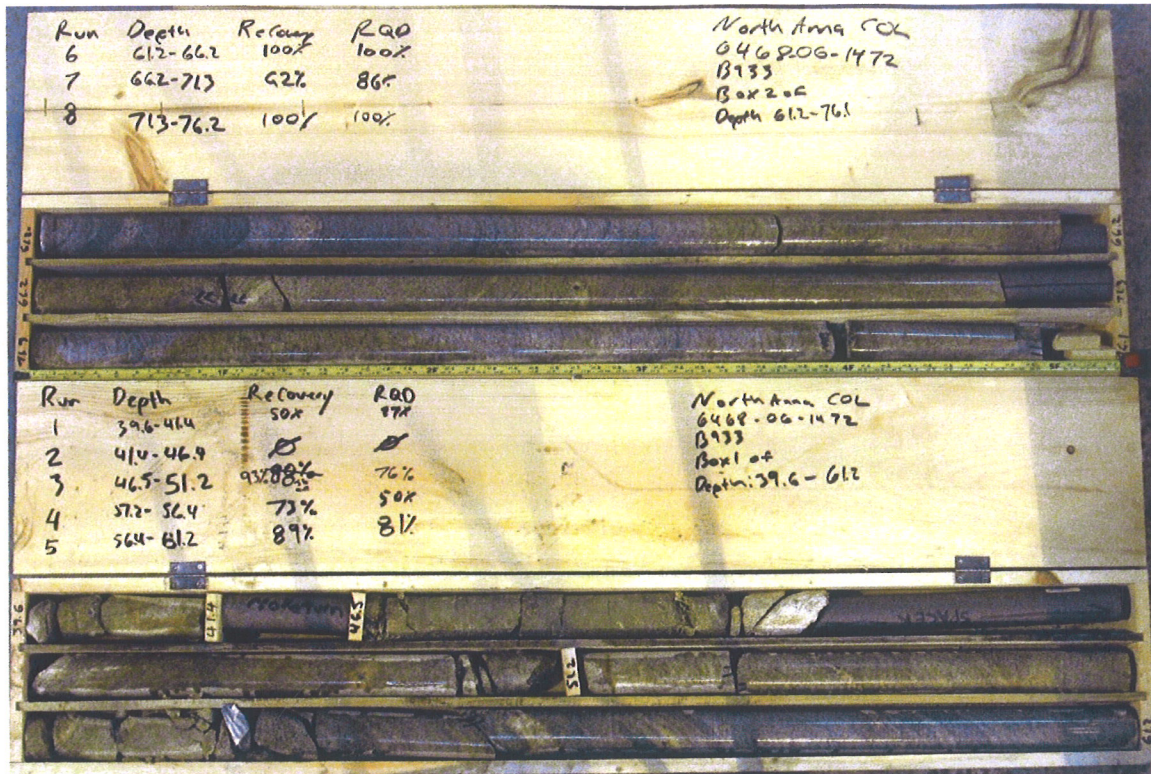
NORTH ANNA COL BORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07



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		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS		
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %				
										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 hard to hard, BIOTITE-QUARTZ GNEISS with weathered rock layers		
255.1	41.4	5.0	1:45/0.8	50%	28%							
			1:45	(0.0)	(0.0)	2				Weathered Rock: Gray brown, very dense, severely weathered, BIOTITE-QUARTZ GNEISS		
			1:00	0%	0%					-No Recovery		
			1:15									
250.1	46.4		1:15									
250.0	46.5	4.7	N=50/0.1	(4.4)	(3.6)	933-12						
			3:00	94%	77%	UC-50.5'						
			4:00									
245.3	51.2	5.2	2:45/0.7	(3.8)	(2.6)	4				Hard Rock: Blue-gray-pink and gray-orange, moderately to slightly weathered, close to moderately close fracturing, hard, BIOTITE-QUARTZ GNEISS with quartz veins		
			3:30									
			3:00									
			2:15	73%	50%							
			1:45									
240.1	56.4	4.8	1:30	(4.3)	(3.9)	5				Weathered Rock: Severely weathered, BIOTITE-QUARTZ GNEISS		
			1:00/1.2									
			1:30									
			4:15									
235.3	61.2	5.0	5:00	(5.0)	(5.0)	6				Hard Rock: Blue-gray, gray, light brown and brown, slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS		
			6:30/0.8	100%	100%							
			4:45									
			4:30									
			4:15									
			4:15									
			4:30									
230.3	66.2	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									
			5:00/1.1									
225.2	71.3	4.9	3:30	(4.9)	(4.9)	8				-No Joints		
			4:30	100%	100%							
			4:45									
			5:00									
			7:00/0.9									
220.3	76.2	4.9	5:30	(4.9)	(4.7)	9				(2 joints at 30°)		
			5:30	100%	96%							
			5:45									
			6:30									
			6:30/0.9									
215.4	81.1	5.0	4:45	(5.0)	(5.0)	10				(1 joint at 40°)		
			6:00	100%	100%							
			6:45									
			5:45									
			4:30									
210.4	86.1	5.0	5:00	(5.0)	(5.0)	UC-90.1'				-No Joints		
			5:00	100%	100%							
			5:00									
			6:00									
			7:15									
205.4	91.1	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									
			4:30									
			5:30									
200.4	96.1	4.1	4:00	(4.1)	(3.8)	13				(6 joints at 35°)		
			4:00	100%	93%							
			9:30									
			8:15									
196.3	100.2		2:15/0.1							Coring terminated at 100.2 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS		

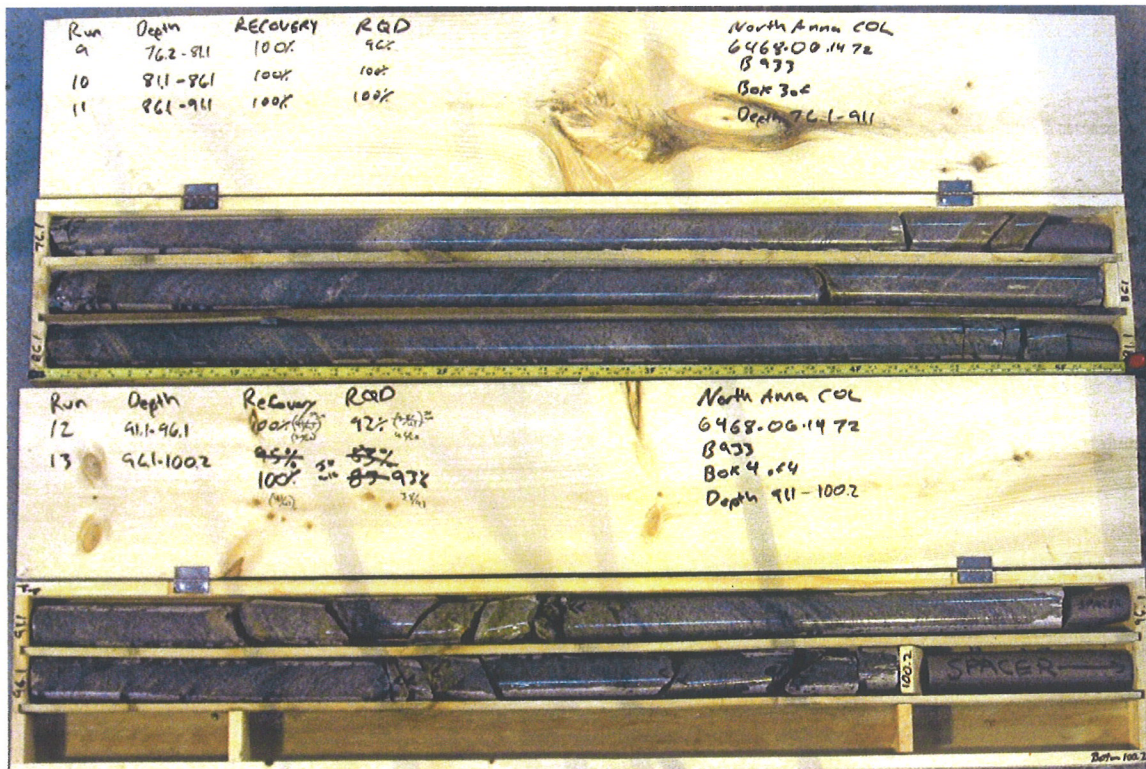
NORTH ANNA COL CORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07





B-933 - Box 2

B-933 - Box 1



B-933 - Box 3

B-933 - Box 4



MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST J. LAchewitz/M. Lear														
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)												
BORING NO. B-933A		DRILL METHOD: Mud Rotary				SAMPLE METHODS: UD/PITCHER BARREL				0 HR. ND												
COLLAR ELEV. 296.6 ft (NAVD88)		NORTHING 3,909,826		US ft (NAD83)		EASTING 11,685,802		US ft (NAD83)		24 HR. ND												
TOTAL DEPTH 27.5 ft		DRILL MACHINE CME 550 ATV				DRILLER: F. Cox				HAMMER TYPE NA												
DATE STARTED 10/24/06				COMPLETED 10/24/06				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												
296.6					Ground Surface									296.6	0.0							
															288.6	8.0	No samples due to utility clearance operations-soft dig/vac. truck excavation					
286.6	10.0																					
281.6	15.0																933A-UD-1					
276.6	20.0																933A-UD-2					
271.6	25.0																933A-UD-3					
											933A-PB-1											
															269.6	27.0	Weathered Rock: BIOTITE-QUARTZ GNEISS					
															269.1	27.5	Boring terminated at 27.5 ft in Weathered Rock: BIOTITE-QUARTZ GNEISS					

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