



SHEET 1 OF 3

MACTEC PROJECT NO.: 6468-06-1472					COUNTY Louisa, VA					GEOLOGIST J. Wallen/J. Howard				
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)				
BORING NO. B-914			DRILL METHOD: Mud Rotary/Core			SAMPLE METHODS: SPT/CORE			0 HR. 11.9					
COLLAR ELEV. 297.5 ft (NAVD88)			NORTHING 3,909,940		US ft (NAD83)		EASTING 11,685,922		US ft (NAD83)		24 HR. 23.5			
TOTAL DEPTH 200.5 ft			DRILL MACHINE CME 550 ATV			DRILLER: G. Akins			HAMMER TYPE 140 lbs Auto					
DATE STARTED 8/22/06			COMPLETED 8/29/06			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				
297.5					Ground Surface								297.5 0.0	
296.0	1.5												Silty, fine to medium SAND (SM), reddish brown (5YR 5/4), dry, medium dense (Fill)	
294.0	3.5	8	7	6							914-1		294.5 3.0	
291.5	6.0	12	4	5							914-2		Clayey SAND (SC), yellowish brown (10YR 5/6), moist, stiff (Residual Soil)	
289.0	8.5	4	6	8							914-3		292.5 5.0	
286.5	11.0	5	7	6							914-4		Silty, fine to coarse SAND (SM), yellowish brown (10YR 5/6), moist, medium dense, trace rock fragments (Residual Soil)	
284.0	13.5	4	6	7							914-5			
		8	11	9							914-6			
278.5	19.0	11	15	9							914-7			
273.6	23.9	50/0.2									914-8		275.5 22.0	
													Weathered Rock: Yellowish brown, severely weathered, soft, QUARTZ-BIOTITE GNEISS	
													272.4 25.1	
													Silty, fine to coarse SAND (SM), yellowish brown (10YR 5/6), moist, dense to very dense, rock fabric (Residual Soil)	
261.9	35.6	8	12	35							914-9			
256.9	40.6	28	30	43							914-10		255.4 42.1	
251.9	45.6	50/0.1									914-11		253.0 44.5	
													Weathered Rock: Yellowish brown, severely weathered, soft, QUARTZ-BIOTITE GNEISS	
													Hard Rock: Dark gray to blue gray with brown Fe staining, moderately severely to moderately weathered, very close to close fracturing, soft to hard, BIOTITE-QUARTZ GNEISS	
													236.9 60.6	
													Hard Rock: Light blue gray to blue gray with pink, slightly weathered to fresh, close to moderately close fracturing, hard to very hard, QUARTZ GNEISS	

NORTH ANNA COL CORE 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/J. Howard								
SITE DESCRIPTION NORTH ANNA COL														GROUND WATER (ft)								
BORING NO. B-914				DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. 11.9										
COLLAR ELEV. 297.5 ft (NAVD88)				NORTHING 3,909,940				US ft (NAD83)		EASTING 11,685,922		US ft (NAD83)		24 HR. 23.5								
TOTAL DEPTH 200.5 ft				DRILL MACHINE CME 550 ATV				DRILLER: G. Akins				HAMMER TYPE 140 lbs Auto										
DATE STARTED 8/22/06				COMPLETED 8/29/06				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												
222.6					Continued from previous page																	
														Hard Rock: Light blue gray to blue gray with pink, slightly weathered to fresh, close to moderately close fracturing, hard to very hard, QUARTZ GNEISS (continued)								
																				202.1	Hard Rock: Blue gray with green, moderately weathered to fresh, very close to wide fracturing, medium hard to very hard, BIOTITE GNEISS	95.4

NORTH ANNA COLLORE 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/J. Howard					
SITE DESCRIPTION NORTH ANNA COL														GROUND WATER (ft) 0 HR. 11.9 24 HR. 23.5					
BORING NO. B-914				DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE											
COLLAR ELEV. 297.5 ft (NAVD88)				NORTHING 3,909,940				US ft (NAD83)				EASTING 11,685,922				US ft (NAD83)			
TOTAL DEPTH 200.5 ft				DRILL MACHINE CME 550 ATV				DRILLER: G. Akins				HAMMER TYPE 140 lbs Auto							
DATE STARTED 8/22/06				COMPLETED 8/29/06				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						
147.8					Continued from previous page														
												Hard Rock: Blue gray with green, moderately weathered to fresh, very close to wide fracturing, medium hard to very hard, BIOTITE GNEISS (continued)							
												97.0							
												200.5							
												Boring and coring terminated at 200.5 ft in Hard Rock: Very hard, BIOTITE GNEISS							

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



SHEET 1 OF 3

MACTEC PROJECT NO.: 6468-06-1472							COUNTY Louisa, VA			GEOLOGIST J. Wallen/J. Howard		
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)		
BORING NO. B-914			DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE			0 HR. 11.9		
COLLAR ELEV. 297.5 ft (NAVD88)			NORTHING 3,909,940		US ft (NAD83)		EASTING 11,685,922		US ft (NAD83)		24 HR. 23.5	
TOTAL DEPTH 200.5 ft			DRILL MACHINE CME 550 ATV				DRILLER: G. Akins			HAMMER TYPE 140 lbs Auto		
DATE STARTED 8/22/06				COMPLETED 8/29/06			CORE BARREL TYPE: HQ 3 triple tube-wireline					
CORE SIZE HQ3				TOTAL RUN 172.8 ft								
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %	RQD (ft) %	L O G	DESCRIPTION AND REMARKS		
										Begin Coring @ 24.6 ft		
272.9	24.6	5.9	2:47/0.9 1:04 1:10 0:56 1:19 1:01	(3.0) 51%	(0.0) 0%	1				272.4	Weathered Rock: Yellowish brown, severely weathered, soft, QUARTZ-BIOTITE GNEISS (continued) Silty, fine to coarse SAND (SM), yellowish brown (10YR 5/6), moist, dense to very dense, rock fabric (Residual Soil)	
267.0	30.5		1:19 1:32 1:42 0:54 1:01/1.1 N=47	(0.8) 16%	(0.0) 0%	2						
261.9	35.6	5.1				914-9						
260.4	37.1	3.5	1:12/0.5 1:38 1:51 2:38 N=73	(2.2) 63%	(0.0) 0%	3						
256.9	40.6					914-10				255.4		
255.4	42.1	3.5	1:54/0.5 1:13 1:32 1:13	(1.7) 49%	(0.4) 11%	4				253.0	Weathered Rock: Yellowish brown, severely weathered, soft, QUARTZ-BIOTITE GNEISS (2 joints at 40°, 1 joint at 5°)	
251.9	45.6		N=50/0.1 2:44 2:52 2:01 2:36 3:47/0.9	(1.7) 35%	(0.3) 6%	5					Hard Rock: Dark gray to blue gray with brown Fe staining, moderately severely to moderately weathered, very close to close fracturing, soft to hard, BIOTITE-QUARTZ GNEISS	
251.8	45.7	4.9				914-11						
246.9	50.6	5.0		(3.7) 74%	(1.9) 38%	6					(4 joints at 5° and 1 joint at 70° with Fe staining; Quartz vein from 51.6-51.9 ft)	
241.9	55.6	5.0	3:20 2:43 5:48 3:27 2:07	(2.4) 48%	(0.4) 8%	7						
236.9	60.6	5.0	3:00 2:06 2:55 2:58 3:22	(5.0) 100%	(4.1) 82%	UC-63.8'				236.9	Hard Rock: Light blue gray to blue gray with pink, slightly weathered to fresh, close to moderately close fracturing, hard to very hard, QUARTZ GNEISS (Joints at 20-40°; Quartz+hornblende+pyrite veins)	
231.9	65.6	5.0	2:00 2:00 2:00 2:15 2:15	(5.0) 100%	(4.1) 82%	9					(Joints at 30-60°)	
226.9	70.6	5.1	2:00 2:30 2:30 3:00 3:15	(5.0) 100%	(4.3) 84%	UC-75.3'					(Joints at 20-70°)	
221.8	75.7	5.1	2:15 3:00 4:30 6:00 8:15/1.1	(5.0) 98%	(5.0) 98%	11					-No Joints	
216.7	80.8	4.6	7:30 4:00 4:15 5:30 7:00/1.1	(5.0) 98%	(5.0) 98%	12					(Joints at 20-80°)	
212.1	85.4	5.0	12:00 8:00 7:15 9:30 9:00/0.6	(4.6) 100%	(3.8) 83%	13					(Joints at 50-70°)	
207.1	90.4	5.0	9:15 8:30 6:45 7:15 8:00	(5.0) 100%	(5.0) 100%	14					(Joints at 10-80°)	
202.1	95.4	5.1	6:15 4:00 4:15 5:45 8:30	(4.9) 98%	(3.6) 72%	UCS-95.8'				202.1	Hard Rock: Blue gray with green, moderately weathered to fresh, very close to wide fracturing, medium hard to very hard, BIOTITE GNEISS (Joints at 40°)	

NORTH ANNA COL - JRE 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/J. Howard			
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)			
BORING NO. B-914			DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. 11.9		
COLLAR ELEV. 297.5 ft (NAVD88)			NORTHING 3,909,940		US ft (NAD83)		EASTING 11,685,922		US ft (NAD83)		24 HR. 23.5		
TOTAL DEPTH 200.5 ft			DRILL MACHINE CME 550 ATV				DRILLER: G. Akins				HAMMER TYPE 140 lbs Auto		
DATE STARTED 8/22/06				COMPLETED 8/29/06				CORE BARREL TYPE: HQ 3 triple tube-wireline					
CORE SIZE HQ3				TOTAL RUN 172.8 ft									
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	RQD (ft) %	L O G	DESCRIPTION AND REMARKS			
										Continued from previous page			
197.0	100.5	5.0	7:15/1.1 4:30 4:30 3:15 4:45 4:30	(5.0) 100%	(5.0) 100%	16				Hard Rock: Blue gray with green, moderately weathered to fresh, very close to wide fracturing, medium hard to very hard, BIOTITE GNEISS (continued) (Joints at 10°)			
192.0	105.5	5.0	3:00 2:45 3:15 3:00 3:00	(4.9) 98%	(4.9) 98%	17				(Joints at 0-5°; Quartz vein)			
187.0	110.5	5.0	2:30 3:15 4:00 4:45 4:00	(4.9) 98%	(4.9) 98%	18				(Joints at 80°)			
182.0	115.5	4.8	4:45 8:30 7:30 6:00 7:00/0.8	(4.8) 100%	(4.8) 100%	19							
177.2	120.3	5.4	5:00 4:30 4:30 3:30 5:00/1.4	(5.4) 100%	(4.4) 81%	UC-120.8'				(Joints at 20-40°; Quartz+hornblende vein)			
171.8	125.7	5.0	3:30 3:00 3:15 3:15 2:45	(5.0) 100%	(5.0) 100%	21				(Joints at 10-60°)			
166.8	130.7	4.9	2:30 2:00 2:30 2:30 2:30/0.9	(4.7) 96%	(4.0) 82%	22				(Joints at 30-50° with brown Fe staining)			
161.9	135.6	5.0	2:30 2:30 2:15 2:15 2:00	(5.0) 100%	(5.0) 100%	23				-No Joints			
156.9	140.6	5.0	3:00 3:00 2:45 4:00 4:45	(5.0) 100%	(4.5) 90%	24				(Joints at 70°)			
151.9	145.6	5.0	4:15 3:15 3:00 2:15 2:30	(5.0) 100%	(5.0) 100%	25				(Quartz+feldspar veins; No Joints)			
146.9	150.6	5.0	4:00 3:00 3:30 2:00 2:45	(4.8) 96%	(4.7) 94%	UCS-151.4'				(Joints at 50°)			
141.9	155.6	5.0	2:45 2:45 2:45 2:45 2:00	(4.6) 92%	(1.1) 22%	27							
136.9	160.6	5.0	2:00 3:00 3:00 3:45 3:00	(4.4) 88%	(2.5) 50%	28				(Joints at 5-40°; quartz vein)			
131.9	165.6	5.0	2:00 3:15 3:00 4:15 5:15	(5.0) 100%	(4.2) 84%	29							
126.9	170.6	5.0	3:00 3:45 7:30	(5.0) 100%	(3.4) 68%	30				(Joints at 50-90°)			

NORTH ANNA COL. JRE 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/J. Howard									
SITE DESCRIPTION NORTH ANNA COL																				GROUND WATER (ft)									
BORING NO. B-914					DRILL METHOD: Mud Rotary/Core					SAMPLE METHODS: SPT/CORE					0 HR. 11.9														
COLLAR ELEV. 297.5 ft (NAVD88)					NORTHING 3,909,940					US ft (NAD83)					EASTING 11,685,922					US ft (NAD83)					24 HR. 23.5				
TOTAL DEPTH 200.5 ft					DRILL MACHINE CME 550 ATV					DRILLER: G. Akins					HAMMER TYPE 140 lbs Auto														
DATE STARTED 8/22/06					COMPLETED 8/29/06					CORE BARREL TYPE: HQ 3 triple tube-wireline																			
CORE SIZE HQ3					TOTAL RUN 172.8 ft																								
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %		RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %		RQD (ft) %	L O G	DESCRIPTION AND REMARKS																	
Continued from previous page																													
121.9	175.6	4.9	3:30 3:00	(4.9)	(4.9)	31							Hard Rock: Blue gray with green, moderately weathered to fresh, very close to wide fracturing, medium hard to very hard, BIOTITE GNEISS (<i>continued</i>)																
117.0	180.5	5.0	3:30 4:30 4:30 4:45 8:30/0.9	100%	100%	32					(joints at 20-70°)																		
112.0	185.5	5.0	4:00 3:00 3:00 3:00	(5.0)	(4.6)	33					(Joints at 70°)																		
107.0	190.5	5.0	6:00 3:30 4:00 4:15 5:45	94%	84%	35					(Joints at 50°)																		
102.0	195.5	5.0	9:00 10:30 4:00 4:15 4:45	100%	100%	UC-192.7'																							
97.0	200.5	5.0	5:30 5:00 6:00 5:30 6:45	100%	98%																								
Coring terminated at 200.5 ft in Hard Rock: Very hard, BIOTITE GNEISS																													

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



B-914 - Box 1

B-914 - Box 2



B-914 - Box 3

B-914 - Box 4



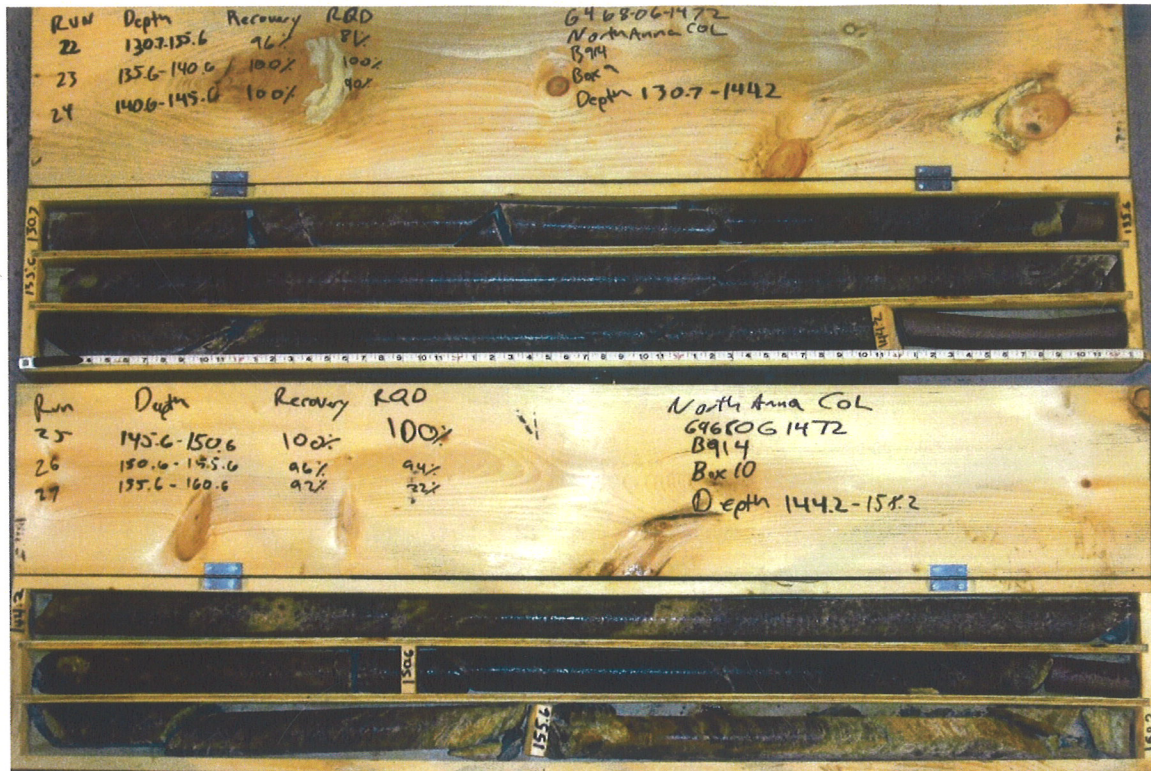
B-914 – Box 5

B-914 – Box 6



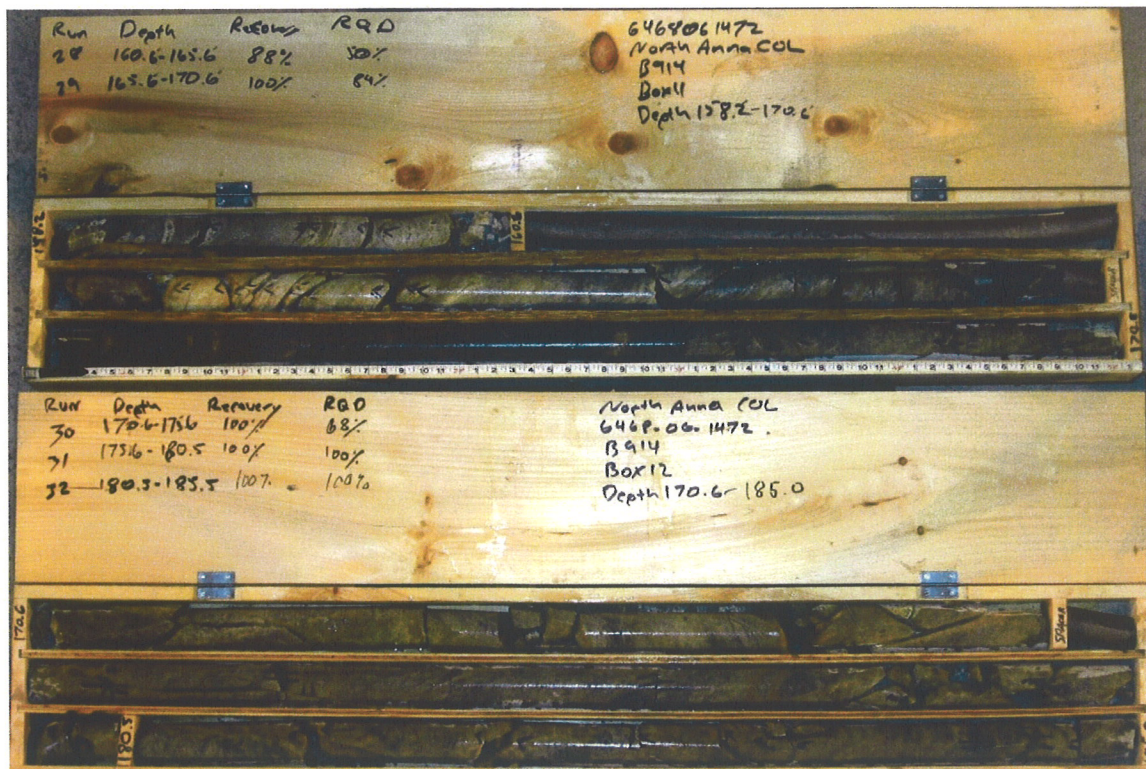
B-914 – Box 7

B-914 – Box 8



B-914 – Box 9

B-914 – Box 10



B-914 – Box 11

B-914 – Box 12



B-914 – Box 13

B-914 – Box 14