



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.	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													
294.0	3.5	8	7	6						914-1		294.5	3.0	Silty, fine to medium SAND (SM), reddish brown (5YR 5/4), dry, medium dense (Fill)
291.5	6.0	12	4	5						914-2		292.5	5.0	Clayey SAND (SC), yellowish brown (10YR 5/6), moist, stiff (Residual Soil)
289.0	8.5	4	6	8						914-3				Silty, fine to coarse SAND (SM), yellowish brown (10YR 5/6), moist, medium dense, trace rock fragments (Residual Soil)
286.5	11.0	5	7	6						914-4				
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											275.5	22.0	Weathered Rock: Yellowish brown, severely weathered, soft, QUARTZ-BIOTITE GNEISS
		50/0.2								914-8		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	Weathered Rock: Yellowish brown, severely weathered, soft, QUARTZ-BIOTITE GNEISS
251.9	45.6											253.0	44.5	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
		50/0.1								914-11				
												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 BORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07



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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

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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 MOI	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 <span style="margin-left: 150px;">200.5</span>	
												Boring and coring terminated at 200.5 ft in Hard Rock: Very hard, BIOTITE GNEISS	

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



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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		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS		
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %				
										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				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	5.1	1:19 1:32 1:42 0:54 1:01/1.1	(0.8) 16%	(0.0) 0%	2						
261.9	35.6		N=47			914-9						
260.4	37.1	3.5	1:12/0.5 1:38 1:51 2:38	(2.2) 63%	(0.0) 0%	3						
256.9	40.6		N=73			914-10						
255.4	42.1	3.5	1:54/0.5 1:13 1:32 1:13	(1.7) 49%	(0.4) 11%	4				Weathered Rock: Yellowish brown, severely weathered, soft, QUARTZ-BIOTITE GNEISS		
251.9	45.6									(2 joints at 40°, 1 joint at 5°)		
251.8	45.7	4.9	N=50/0.1 2:44 2:52 2:01 2:36 3:47/0.9	(1.7) 35%	(0.3) 6%	914-11 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		
246.9	50.6	5.0	3:20 2:43 5:48 3:27 2:07	(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	3:00 2:06 2:55 2:58 3:22	(2.4) 48%	(0.4) 8%	7						
236.9	60.6	5.0	2:00 2:00 2:00 2:15 2:15	(5.0) 100%	(4.1) 82%	UC-63.8'				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 2:30 2:30 3:00 3:15	(5.0) 100%	(4.1) 82%	9				(Joints at 30-60°)		
226.9	70.6	5.1	2:15 3:00 4:30 6:00 8:15/1.1	(5.0) 98%	(4.3) 84%	UC-75.3'				(Joints at 20-70°)		
221.8	75.7	5.1	7:30 4:00 4:15 5:30 7:00/1.1	(5.0) 98%	(5.0) 98%	11				-No Joints		
216.7	80.8	4.6	12:00 8:00 7:15 9:30 9:00/0.6	(4.6) 100%	(3.8) 83%	12				(Joints at 20-80°)		
212.1	85.4	5.0	9:15 8:30 6:45 7:15 8:00	(5.0) 100%	(5.0) 100%	13				(Joints at 50-70°)		
207.1	90.4	5.0	6:15 4:00 4:15 5:45 8:30	(4.9) 98%	(3.6) 72%	14				(Joints at 10-80°)		
202.1	95.4	5.1	5:00 5:30 5:00 6:00	(5.1) 100%	(5.1) 100%	UCS-95.8'				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 REV.0.GPJ NORTH ANNA COL.GDT 1/19/07



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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		SAMP. NO.	STRATA		L O G	DESCRIPTION AND REMARKS	
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
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	(4.8) 100%	(4.8) 100%	19					
177.2	120.3	5.4	7:00/0.8 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°)	

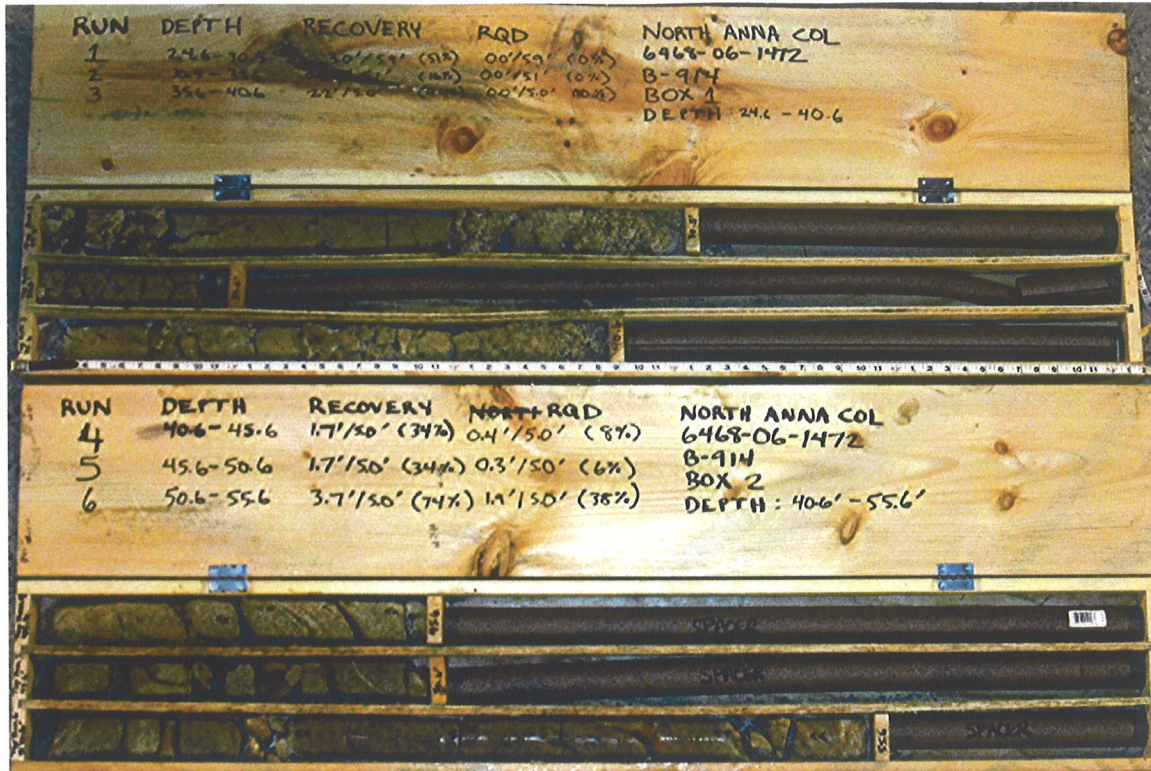
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TOTAL DEPTH 200.5 ft		DRILL MACHINE CME 550 ATV				DRILLER: G. Akins			HAMMER TYPE 140 lbs Auto		
DATE STARTED 8/22/06			COMPLETED 8/29/06			CORE BARREL TYPE: HQ 3 triple tube-wireline					
CORE SIZE HQ3			TOTAL RUN 172.8 ft								
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		L O G	DESCRIPTION AND REMARKS	
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
										Continued from previous page	
121.9	175.6	4.9	3:30 3:00	(4.9) 100%	(4.9) 100%	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> )	
			3:30 4:30 4:30 4:45								
117.0	180.5	5.0	8:30/0.9	(5.0) 100%	(4.6) 92%	32				(joints at 20-70°)	
			4:00 3:00 3:00 3:00								
112.0	185.5	5.0	6:00 3:30 4:00	(4.7) 94%	(4.2) 84%	33				(Joints at 70°)	
			4:15 5:45								
107.0	190.5	5.0	9:00 10:30 4:00	(5.0) 100%	(5.0) 100%	UC-192.7				(Joints at 50°)	
			4:15 4:45								
102.0	195.5	5.0	5:30 5:00 6:00	(5.0) 100%	(4.9) 98%	35				(Joints at 50°)	
			5:30 6:45								
97.0	200.5									Coring terminated at 200.5 ft in Hard Rock: Very hard, BIOTITE GNEISS	

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



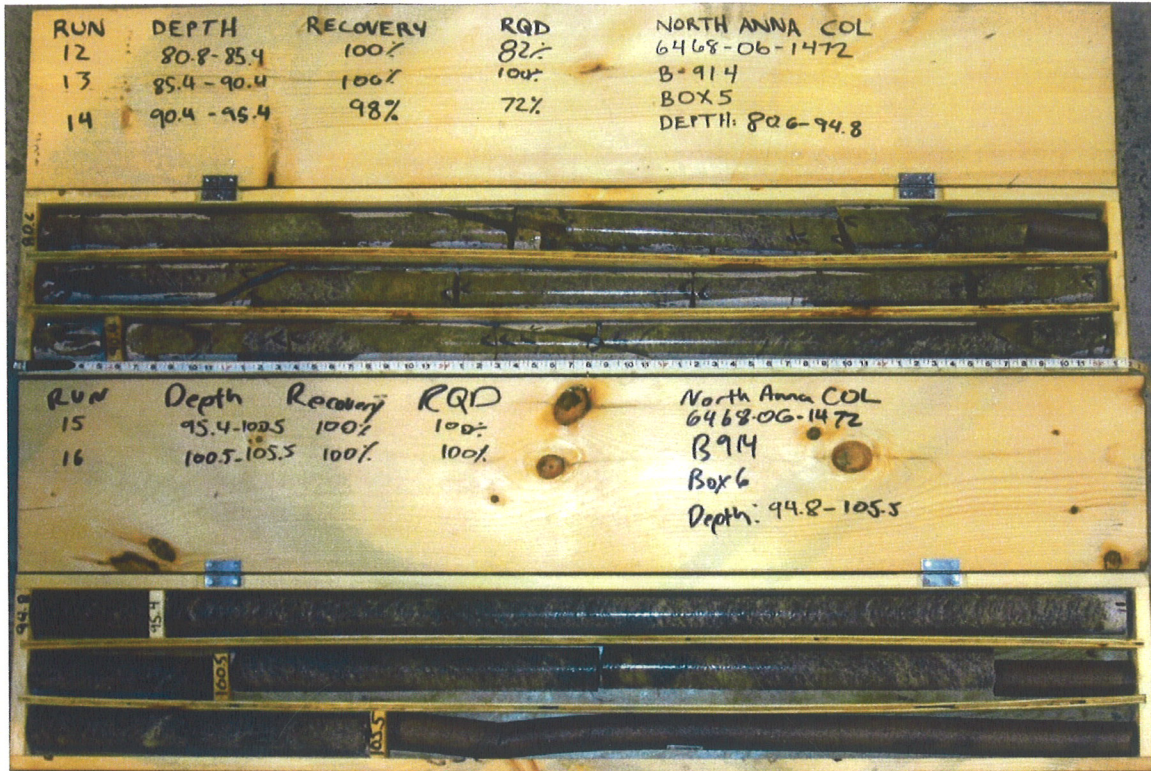


B-914 - Box 1  
B-914 - Box 2



B-914 - Box 3  
B-914 - Box 4





B-914 - Box 5

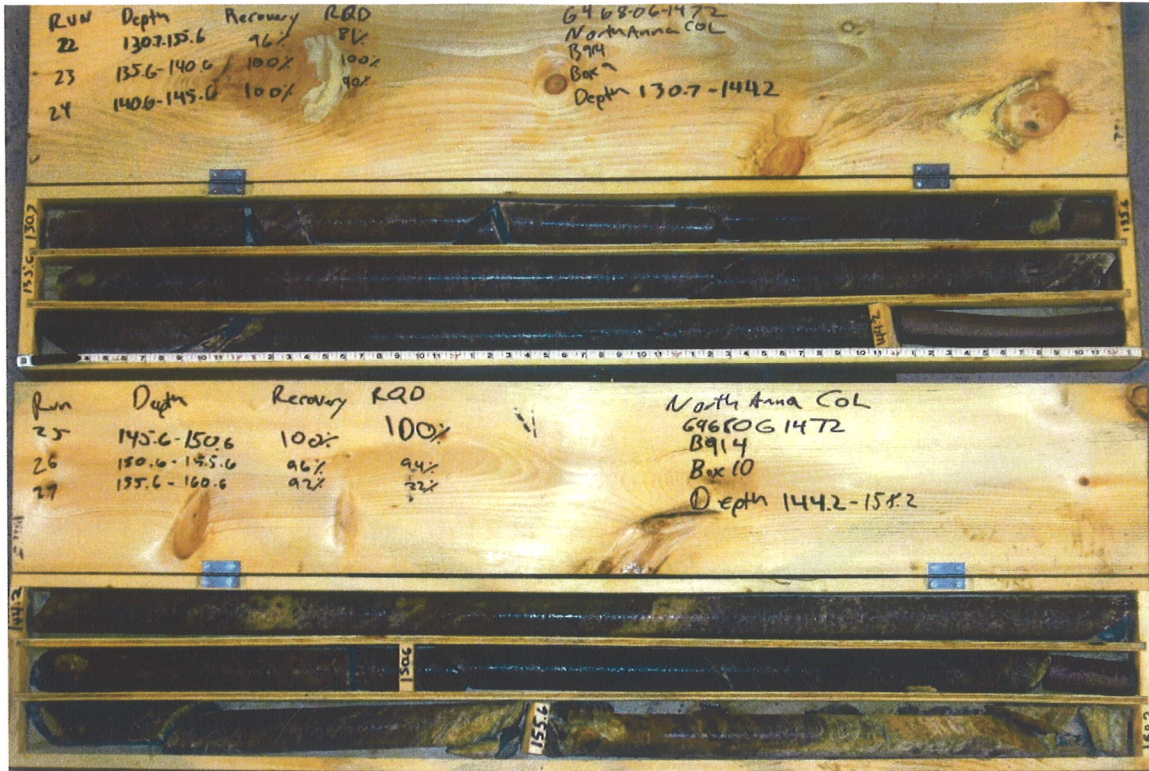
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B-914 - Box 7

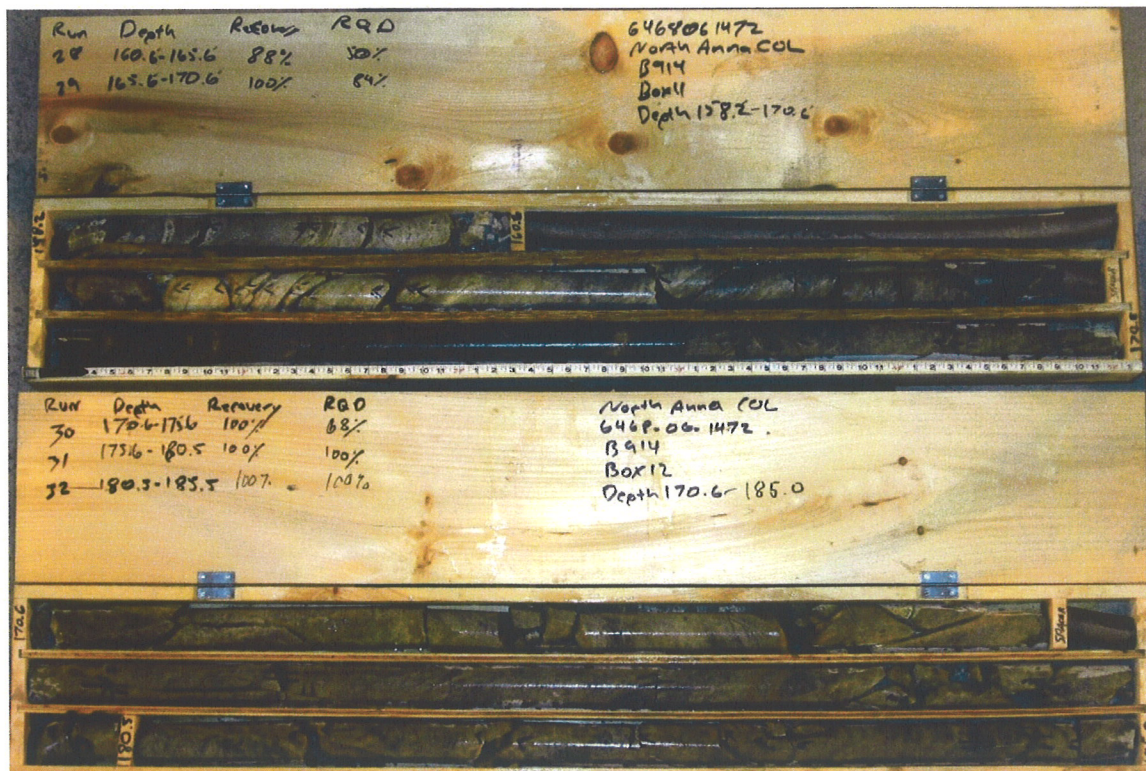
B-914 - Box 8





B-914 - Box 9

B-914 - Box 10



B-914 - Box 11

B-914 - Box 12





B-914 - Box 13  
B-914 - Box 14