

**NYE COUNTY NUCLEAR WASTE REPOSITORY PROJECT OFFICE**

**CUTTINGS SAMPLE LOG**

Borehole ID: NC-GWE-2P Drill Depth From: 0 to 399.9 Page 1 of 4

Driller: Bill Nelson/Ray Wilson Start Date/Time: 05/18/2010 @ 1208 End Date/Time: 05/27/2010 @ 1223

Drilling Equip./Method: Ford Bucket/Auger and Speedstar 50K/Conventional Air-Form Sampling Equip. Method: Auger to 20ft/Cyclone from 20 to 399.9 ft

DEPTH (FEET)	Drilling Time (min/5 ft)	DESCRIPTION OF LITHOLOGY-PETROLOGY	GRAPHIC LOG	LITHOLOGIC UNIT	NOTES	
10	25	(0-17 ft): well-graded sand with silt and gravel (SW-SM), pale greenish-yellow, (10YR 8/2), 10% silt, 10-12%, fine to medium grained, sub-angular, reacts strongly to HCl, no cement, no cobbles, gravels composed of tuff clasts.		Qal	From ~0 to 2 ft is bentonitic material from 2DB operation. Soil is slightly moist from 0 to 5 ft.	
	33	@ 6 ft: Large gravels up to 1 ½ inch, sub-angular, tuff, 5%; @ 7 ft gravel content increases to 20%; @ 8 ft gravel content increases to 30%; decreasing to 1 inch; @ 9.5 ft moisture increase.			Gravels increase in size and percent. @ 8 ft: Gravel size decreases. Moisture increases at 9.5 ft.	
	47	@ 10 ft moisture increases more, weak cementation; @ 11 ft gravels increase to 3 inches, still moist, no cementation; @ 12 ft moisture decreases; @ 14 ft material is slightly moist.			Hole caves a little – loose material. Gravels increase in size.	
20	43	(17-25 ft) 17 ft: Well Graded sand (SW) light brownish (5YR 5/6), less than 5% silt, medium to coarse sand, 30% gravels, sub-angular, gravel is ~ 30% of material, strong reaction to HCl.			Sandy Set 16 inch casing at 20 ft.	
	11	@ 25 ft: Gravel content increases to 45%.				
30	4	From 25 to 50 ft: Well-graded sand with gravel (SW) pale brown (5YR 4/4) to (5YR 5/6), 40% gravel sub-rounded to sub-angular, strong HCl reacting, composition is volcanoclastic. No cementation. @ 30 ft: Gravels decrease to 25%.				All materials are wet due to drilling. Fines are mostly lost due to air-foam drilling methods.
	2					Material is very uniform.
	6					
40	4	@ 40 ft: Sand increases to 80%. Gravels are 15%. @ 45 ft: Gravels increase in percentage to 40% size up to 1 ½ inch.				
	2					
	3	From 50 to 70 ft: Well graded sand with gravel (SW), 85% sand, 5% gravel, less than 12% silt, pale brown (5YR 4/4), sub-rounded to sub-angular, strong HCl reaction, no cementation.			Evidence of material fining after rod change then coarsening as rod goes down.	
60	2	@ 55 ft: Increasing gravel to 35% up to ¾ inch.				
	2	@ 60 ft: Decreasing gravel to 15%.				
	3	@ 65 ft: Gravel increases back to 35%.				
70	2	From 70 to 85 ft: Silt content increases, silty fine sand (SW-SM), light brown (5YR 5/6), 14% silt sub-rounded to sub-angular.				
	2					
80	2	@ 80 ft: Less than 5% gravel. From 85 to 90 ft: Less than 12% silt and sand, 88% gravel (GW), weak HCl reaction, sub-rounded to sub-angular, gravels up to 1 ½ inch.				
	3					
	7	From 90 to 120 ft: Material returns to (SW-SM), 5% gravel up to ¾ inch, sub-rounded to sub-angular.				
90	3					
				Qal		

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110	4			Qal	All samples are wet due to wet drilling.	
	4					
	2	@ 115 ft: Gravel Increases 10%.				
120	3					
	3	From 120 to 150 ft: Well graded sand, SW, light brown (5YR 6/4), 5% gravel ¼ inch size, sub-rounded, sub-angular, HCl weak, cementation none, 85% sand.				Poor recovery, sample foamy.
	6					Poor recovery, sample foamy.
130	4					
	4					
	4					
140	3	@ 140 ft: Gravel Increases 20%.				
	6					
	6	From 150 to 175 ft: Well graded sand with gravel (SW/GW), light brown (5YR 6/4) gravel ¼ inch, sub-rounded, sub-angular, Hcl weak, cementation none, 50% sand.				
150	3					
	3					
	7					
170	4	From 175 to 230 ft: Well graded gravel GW, light brown (5 Y/R 6/4), 85% gravel 1 inch size, sub-rounded, sub-angular Hcl weak, cementation none.				
	3					
	3					
180	3					
	4					
	4					
190	4	@ 195 ft: Gravel increases to 90%.				
	4					
	2					
200				Qal	Note: Hole making 2 to 5 GPM 205 ft on.	

PREPARED BY: Howard/Foster      DATE: 05/27/2010      CHECKED BY: Bob Wilcoxon      DATE: 05/28/2010

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210	2			Qal	All samples are wet due to wet drilling.
	4				@ 205 ft: Hole making 2-5 GPM water.
	3	@ 210 to 215 ft: No sample, foam only.			No return.
220	2				
	2	@ 220 ft: Gravel size decreases to ¼ inch, sand decreases to 5%.			
230	5				
	4	From 230 to 245 ft: Change to (SW) with gravel, moderate yellow-brown (10YR 5/4), gravel 15%, weak HCl reaction, well-graded sand with gravel. @ 235 ft: Fine gravels increase to 1/2 inch.			
240	4				
	4	From 245 to 400 ft: Well-graded gravel with sand (GW), light brown (5YR 5/6), 75% fine gravels up to 3/8 inch, 25% sand, sub-rounded to sub-angular, no HCl reaction, no cementation.			
250	3				
	8	@ 250 ft: Gravels increase to ½ inch.			
260	3				
	3	@ 260 ft: Gravels increases to 90%. Few gravels show some rounding, gravel size to ¾ inch.			
270	5				
	6				
280	3	@ 275 ft: Sand increases to 40%. Gravel size decreases to ½ inch.			
	2			@ 280 ft: Drilling induced ground materials.	
290	2			@ 285 ft: Less drilling induced ground materials.	
	2	@ 290 ft: Gravel size increases to ¾ inch. Sand decreases to 10-12%.			
300	5			@ 295 ft: Rod change. Loss of gravels.	

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310	2	@ 300 ft: HCl reaction increase to weak.		Qal	
	6				
320	5	@ 310 ft: Gravel size decrease to ¼ inch.			Water measured on 5/29 = 315 ft bgs.
	2	@ 315 ft: Sand increases to 20%.			
330	2				
	4				
340	3	@ 330 ft: Sand increases to 40%.			
	5				
350	2	@ 340 ft: Sand decreases to 5-10%.			
	5				
360	4	@ 350 ft: Gravel size increases to 1 inch.			
	2	@ 355 ft: Sand increases to 25%.			@ 355 ft: Rod change.
370	2	@ 360 ft: Sand decreases to less than 5%.			
	3	@ 365 ft: Sand increases to 35%. Gravel size decreases to ¼ inch.			
380	4	@ 370 ft: Gravel size increases to 1 inch. Grain shape becomes angular.			
	2	@ 375 ft: Gravel size increases to 1 ½ inch. Sand decreases to 10%.			
390	2	@ 380 ft: Sand increases to 40%.			
	4	@ 385 ft: Sand increases to 50%.			@ 385 ft: Rod change, borderline (GW-SW).
400	2				
	2	@ 395 ft: Sand decreases to 25%. Gravel size decreases to 1 inch.		↓ Qal	T.D. @ 399.9 ft.

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