BOREHOLE LOG

SWMU 16-004(a)
2/2/10

Field Support Facility

Stake ID: PS28

Borehole ID: 16-608676 TA/FU: 16 / Drill Depth From: 0ft To 30ft Page 1 of 2

Driller: Dave Staines - Precision Box: NA Start Date/Time: ____ End Date/Time ____

Print Name

1500 hand auger to 3ft bgs, 2/3/10, 1100

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 5ft long; 3 3/4" ID continuous sample core barrels

Sampling Equipment/Method: Core barrel samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
0' - 5'	HA 3ft / 24	NA	0.0 / 0.0	NA	0-2.5ft Backfill and roadbase. 2.5-3.0ft Qbt 4 tuff, reddish brown. fine ash matrix, < 1/4" pumice frags. 3.0-5.0ft ~~SAA~~ AKH 2/2/10 Fill, sand, silt, gravel, reddish brown, dry	AKH 2/2/10	FILL	
5' - 10'	24 / 60	NA	0.0 / 0.0	NA	5-~~10~~ft No Recovery 8-10ft Fill, sand/silt, few gravel/tuff chunks, wire, mod. moist		FILL	
10' - 15'	60 / 60	NA	0.0 / 0.0	NA	10-15ft Fill consisting of sand, silt, clay, and few round pebbles, reddish brown, moist		Fill	Stop drilling @ 1600 2/2/10, secure site
15' - 20'	60 / 60	NA	0.0 / 0.0	NA	15-16.5ft SAA 16.5-20ft Qbt 4 tuff, pinkish gray, moderate welding, pumice frags < 1" dia, sugary white, abundant lithics + qtz phenocrysts. High organic matter 16-16.5'		Qbt 4	Begin drilling 2/3/10 @ 0930.

Prepared By: Amy K Howard / Amy K Howard 2/2/10
Print Name/Signature Date

Checked By: Elizabeth Birkos / Elizabeth Birkos 7/6/10
Print Name/Signature Date

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Los Alamos
Environmental Restoration Project

SWMU 16-004(a)
Stake ID: P528

BOREHOLE LOG

Field Support Facility

Borehole ID: 16-608676 TA/FU: 16 / Drill Depth From: 0 ft To 30 ft Page 2 of 2

Driller: Dave Stamos - Parkson Box: NA Start Date/Time: 2/2/10 @ 1500-1600, 2/3/10 @ 0930- End Date/Time 1100
Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 5 ft long; 3 3/4" ID continuous sampler core barrels

Sampling Equipment/Method: Core barrel samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
20' - 25'	60 / 60	RE16-10-1158 + FB-16-10-1173	0.0 / 0.0	NA	20-25 ft Qbt 4 tuff, mod. to slightly welded, small < 1/4" lithics, light pink gray, few large dacite fragments to 1" dia, quartz filled pumice from 23.5-25.0 ft		Qbt 4	
25' - 30'	60 / 60	RE16-10-1157	0.0 / 0.0	NA	25-30 ft SAA, mod. welding large clay-filled pumice >1-2" with abundant qtz phenocrysts <5 mm, dry		Qbt 4	
					TD @ 30 ft			

Prepared By: Amy Howard, Amy K Howard 2/3/10
Print Name/Signature Date

Checked By: Elizabeth Birkos / Elizabeth Birkos 7/6/10
Print Name/Signature Date

SOP-12.01

Los Alamos Environmental Restoration Project

BOREHOLE LOG

Field Support Facility

SWMU 16-004(a)
Stake ID: PS29

Borehole ID: 16-608673 TA/FU: 16 / Drill Depth From: 0 ft To 30 ft Page 1 of 2
Driller: Dave Starnes - Precision Box: NA Start Date/Time: 1420 End Date/Time 1615
Print Name
Pothole to 3 ft @ 1345
Drilling Equipment/Method: Delta Base 2/1/2010

Sampling Equipment/Method: Hollowstem Auger, 3 3/4 ID continuous sample core barrels, 7 1/4 OD auger, 5 ft long core barrel

Depth (Feet)	Recovery (feet per feet/%)	Field Borehole Analytical Sample #	Field Screening Results ppm	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
0' - 5'	30/36	NA	0-5' =0.0 ppm	NA	0-2.5 ft Backfill - sand, silt, gravel, chunks of weathered tuff. 2.5-5.0 ft - Qbt 4 tuff, reddish brown, mod. welded, ash matrix mod. moist, few lithics, devitrified pumice (elongated)	Fill / Qbt 4		
5' - 10'	60/60	NA	5'-10' 0.6 ppm	NA	5-10 ft Qbt 4 tuff, reddish brown ashy matrix, lapilli size pumice / ~5% lithics, ~20% qtz phenocrysts. Pumice devitrified.	Qbt 4		
10 - 15'	60/60	NA	10 - 15' =0.6	NA	10-20 ft SAA, moderately welded, increase in quartz phenocrysts, abundant lithics up to 1" diameter	Qbt 4		
15' - 20'	60/60	NA	15' - 20' =1.0	NA	~~20~~ 15.8' horizontal fracture 17.7-18.3 45° clay-filled fracture	Qbt 4		

Prepared By: Amy Howard / Amy K Howard 2/1/2010
Print Name/Signature Date

Checked By: Elizabeth Burkes / Elizabeth Burkes 7/6/10
Print Name/Signature Date

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BOREHOLE LOG

Field Support Facility

SWMU 16-004(a)
Stake ID: PS29

Borehole ID: 16-408673 TA/FU: 16 / Drill Depth From: 0 ft To 30 ft Page 2 of 2

Driller: Dave Stanes - Precision Box: NA Start Date/Time: 2/1/10, 1345 End Date/Time: 2/1/10, 1415

Print Name

Drilling Equipment/Method: DR HA Base

Sampling Equipment/Method: Hollowstem Augers 3 3/4" ID Continuous Core Barrel Samplers, 7 1/4" OD - Augers (5 ft long)

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
20' - 25'	60/60	RE16-10 1150	1.0 ppm	NA	20-25 ft Qbt 4 tuff, pinkish gray, pumice frag ≤ 1 inch vitrified, lithics ≤ 1/2" dia, ~10% quartz		Qbt 4	
25' - 30'	60/60	RE16-10-1151	0.6 ppm	NA	25-30 ft SAA			
					TD @ 30 ft			

Prepared By: Amy Howard / Amy K Howard 2/1/10
Print Name/Signature Date

Checked By: Elizabeth Birkos / Elizabeth Birkos 7/6/10
Print Name/Signature Date

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Environmental Restoration Project

BOREHOLE LOG

Field Support Facility

SWMU 16-004(a)
Stake ID: 3531

Borehole ID: 16-608674 TA/FU: 16 / Drill Depth From: 0 ft To 30 ft Page 1 of 2

Driller: Dave Stamos - Precision Box: NA Start Date/Time: 0945 2/2/10 End Date/Time 2/2/10, 1300

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 5 ft long; 3 3/4" ID continuous sample core barrels

Sampling Equipment/Method: Core barrel samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
0' - 5'	36/30 ~~30~~/24	NA	0.0 0.0	NA	0-3ft Alluvial soil, sand silt, some clay, medium brown, upper 1 foot frozen, some grass rootlets 3-5 ft No Recovery 5-10ft ~~No Recovery~~ ARH 2/2/10		X Alluvial	
5' - 10'	60/60	NA	0.2 0.4	NA	reddish brown QBT4 fine ash matrix, <1" dia vitrified pumice clay-filled, nearly rounded, moderate welding, < 1/2" dia lithics		QBT4	
10' - 15'	60/60	NA	0.2 0.0	NA	10-15 ft SAA Medium pinkish gray 17.6-17.9' 45° fracture, large dacite fragments up to 2" and large pumice up to 2", ~5-10% quartz phenocrysts 2-3 mm.		QBT4	
15' - 20'	60/60	NA	0.0 0.0	NA	15-20ft, SAA, pumice & dacite frags increasing in size, qtz phenocrysts increase in size with depth. Pumice frags have sugary appearance		QBT4	

Prepared By: Amy K Howard, Amy K Howard 2/2/10
Print Name/Signature Date

Checked By: Elizabeth Birkos / Elizabeth Birkos 7/6/10
Print Name/Signature Date

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Environmental Restoration Project

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BOREHOLE LOG

Field Support Facility

SWMU 16-004(a)
Stake ID: PS31

Borehole ID: 16-608674 TA/FU: 16 / Drill Depth From: 0 ft To 30 ft Page 2 of 2

Driller: Dave Staines - Precision Box: NA Start Date/Time: 2/2/10, 0945 End Date/Time 2/2/10, 1300

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 5 ft long; 3 3/4" ID continuous sample core barrels

Sampling Equipment/Method: Core barrel samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
20' - 25'	60 / 60	RE16-10-1152 + DUP RE16-10-1172	0.0 0.0	NA	20-25' Qbt 4 tuff pinkish gray, mod. welding, 1/4-1/2" ~~[illegible]~~ lithics / pumice frags. sugary texture. 6" 600 fracture @ 23.0 ft, color darkening slightly with depth		Qbt 4	
25' - 30'	60 / 60	RE16-10-1153	0.5 0.4	NA	25-30' Qbt 4 tuff, mod pinkish gray. DAA, wood fragments 27.5-28.0 ft.		Qbt 4	
					TD @ 30 ft			

Prepared By: Amy K Howard / Amy K Howard 2/2/10
Print Name/Signature Date

Checked By: Elizabeth Birkos / Elizabeth Birkos 7/6/10
Print Name/Signature Date

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BOREHOLE LOG

Field Support Facility

SWMU 16-004(a)
Stake ID: PS32

Borehole ID: 16-608675 TA/FU: 16 / Drill Depth From: 0 ft To 30 ft Page 1 of 2

Driller: Dave Stamos - Precision Box: NA Start Date/Time: 2/10/10, 1445 End Date/Time: 2/10/10, 1820

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 5 ft long; 3 3/4" ID continuous sample core barrels

Sampling Equipment/Method: Core barrel samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
					Snow Cover 6"			
0' - 5'	24/24	NA	0.0	NA	0-1.5 ft Backfill consisting of sand and pebbles, wet		Fill	1400 Hand auger to refusal at 2.5 ft bgs
	24/30		0.0		1.5-2.5 ft Backfill consisting of cobbles, wet-water filled BH.			
5' - 10'	60/60	NA	0.0	NA	2.5-10 ft Qbt 4 tuff, pinkish gray, fine ash matrix, moderately welded, abundant quartz phenocrysts some (~5%) black lithic fragments, ~1% K Feldspar		Qbt 4	
10' - 15'	56/60	NA	0.0	NA	10-15 ft SAA with Fe staining throughout and 1/2" to 1" clay-filled pumice. 13-15 ft multiple horizontal clay-filled fractures, wet.			
15' - 20'	58/60	NA	0.0	NA	15-20 ft Qbt 4 tuff, fine ash matrix, moderately welded, pinkish gray, 10% quartz phenocrysts & dacite fragments.			

Prepared By: Amy K Howard / Amy K Howard 2/10/10
Print Name/Signature Date

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Print Name/Signature Date

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BOREHOLE LOG

Field Support Facility

SWMU 16-004(a)
Stake ID: PS32

Borehole ID: 16-608675 TA/FU: 16 / Drill Depth From: 0 ft To 30 ft Page 2 of 2

Driller: Dave Stamos - Jackson Box: NA Start Date/Time: 2/10/10, 1445 End Date/Time 2/10/10, 1620

Print Name

Drilling Equipment/Method: Delta Base Hollowstem Auger Drill Rig with 7 1/4" OD augers and 5 ft long; 3 3/4" ID continuous sample core barrels

Sampling Equipment/Method: Core barrel samplers

Depth (Feet)	Recovery (feet per feet/ %)	Field Borehole Analytical Sample #	Field Screening Results	Top/Bottom of Core in Box	Lithology – Petrology - Soil	Graphic Log	Lithologic Unit	Notes
20' - 25'	40 / 60	RE16-10-1154 + FD RE16-10-1174	0.0 / 0.0	NA	20-25 ft Qbt 4 tuff, light pinkish gray, fine ash matrix, moderately welded, 1"-2" clay-filled pumice, abundant quartz phenocrysts and black lithic fragments.		Qbt 4	Collected RE16-10-1154 + FD RE16-10-1174 @ 1605
25' - 30'	50 / 60	RE16-10-1155	0.0 / 0.0	NA	25-30 ft SAA, grading to light gray.			Collected RE16-10-1155 @ 1615
					TD @ 30 ft bgs			

Prepared By: Amy K Howard / Amy K Howard 2/10/10
Print Name/Signature Date

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Print Name/Signature Date

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