Log of Boring No. BRC-SB-01-A

BMI Site - Hydrogeologic Characterization

Henderson, Nevada

Basic Remediation COMPANY

Drilling Method: Mud Rotary
Drilling Equipment: Gefco 15K
Drilling Contractor: Water Development Corporation
Driller: Juan Aguilar

Borehole Total Depth: 400 ft bgs
Borehole Diameter: 10 in
Boring Location: Location 1 (Well ID: AA-01)
Depth to Water (ft. bgs): NA

Sample Type: Continuous Core
Sample Interval Continuous

Logged By: Dave Kremer
Date Started: 2/21/04
Date Completed: 2/23/04

Monitoring Well Construction

Type of Surface Seal:	Bentonite-Grout	**Screen Slot Size:**	0.010 in
Blank Casing Type/Size:	4" Sch 80 PVC	**Top of Screen (ft. bgs):**	29 ft bgs
Screen Type/Size:	4" Sch 80 PVC	**Bottom of Screen (ft. bgs):**	49 ft bgs
Transition Sand Type:	#1C	**Type of Sand Pack:**	#10 x 20

Depth Elevation (BGS)	Sample Type	Sample Interval	Sample Recovery	Sample Retained for Analysis	PID	Lithology	Soil Description	Geophysical Data: E-Log 16" (OHM)	E-Log 64" (OHM)	E-Log S. PT. (OHM)	Caliper Log (inch)	Guard Log (OHM.M)	Well Construction
0	Grab		2/5		NA		SM: Poorly graded sand, brown (7.5YR4/4), unconsolidated, wet (drilling mud?), subrounded to subangular gravel (pea sized), sand is subrounded to subangular, no cementation, nonplastic. Approximately 5% gravel, 10% coarse sand, 30% medium sand, 40% fine sand and 15% silt.						Locking monument well box with concrete apron and ballards; Cement Bentonite Grout
-10	Grab		2.5/5		NA		SW: Well graded sand with silt, brown (7.5YR4/4), unconsolidated, wet (drilling mud?), gravel is subrounded to subangular (pea sized up to 2"), coarse sand is subrounded to subangular, no cementation, nonplastic. Approximately 10% gravel, 20% coarse sand, 30% medium sand, 30% fine to very fine sand and 10% silt.						4" Blank PVC Riser Pipe
	Grab		2.3/5		NA		As above, increase (approximately 10%) in subrounded to subangular volcaniclastic gravel up to 1" in size. Increase (approximately 10%) in medium and coarse sand. No clay. No gravel, increase (approximately 40%) in fine sand, decrease (approximately 15%) in coarse sand.						
-20	Grab		2/5		NA		As above, increase (approximately 10%) in subrounded to subangular volcanoclastic gravel up to 1" in size.						Bentonite seal

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Depth Elevation (BGS)	Sample Type	Sample Interval	Sample Recovery	Sample Retained for Analysis	PID	Lithology	Soil Description	Geophysical Data: E-Log: 16" (OHM)	64" (OHM)	S. PT. (OHM)	Caliper Log (inch)	Guard Log (OHM.M)	Well Construction
	Grab		3/5				SM: Poorly graded silty sand, brown (7.5YR4/4), wet (drilling mud?), subrounded to subangular volcanoclastic gravel (pea sized up to 1 1/2-in in size), sand is subrounded, no clay, no cementation, nonplastic, unconsolidated. Approximately 10% gravel, 25% coarse sand, 25% medium sand, 30% fine sand and 15% silt.						#1C Transition Sand #10 x 20 Sand Pack
-30	Grab		3/5		NA		SP-SM: Sand with silt, brown (7.5YR4/4), wet (drilling mud?), subrounded volcanoclastic gravel (pea sized up to 1" in size), subrounded sand, no clay, no cementation, nonplastic, unconsolidated. Approximately 10% gravel, 15% coarse sand, 35% medium sand, 30% fine sand and 10% silt.						
							As above, slightly moist, increase in sand. Approxmately 10% gravel, 15% coarse sand, 30% medium sand, 40% fine sand and 5% silt.						4" 0.010 Slot PVC screen
	Grab		3/5		NA								
							As above.						
-40	Grab		1/5		NA		As above, increase in gravel and sand. Approximately 20% gravel, 30% coarse sand, 40% medium sand and 10% fine sand.						
	Grab		1/5		NA		As above, increase in sand, decrease in gravel (up to 2" in size). Approximately 15% gravel, 25% coarse sand, 30% medium sand, 25% fine sand and 5% silt.						
-50	Grab		5/5		NA		ML: Silt, brown (7.5YR5/4), soft, moist, sand is very fine grained, trace clay, weak to no cementation, nonplastic. Approximately 5% fine sand, 90% silt and 5% clay.						Threaded PVC Well Base Cap #10 x 20 Sand Pack Basal Bentonite Seal

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	Grab		5/5		NA		As above.						
							As above, slight (approximately 5%) increase in fine sand, non-plastic to low plasticity.						
-60	Grab		5/5		NA		As above.						
							As above.						
	Grab		5/5		NA		As above.						Cement Backfill
							As above.						
-70	Grab		5/5		NA								
							As above, medium stiff, moist, trace clay, medium (1/8" to 1" in size) cemented nodules, nonplastic.						
							No recovery from 73 to 76 ft bgs.						
	Grab		1/5		NA								
-80	Grab		5/5		NA		Silt, brown (7.5YR5/4), soft, moist, sand is very fine grained, trace clay, no cementation, low plasticity. Approximately 10% sand, 85% silt and 5% clay.						
							As above, slight (approximately 5%) increase in fine to very fine sand, moist.						
							As above, wet, increase (approximately 10%) in very fine sand.						
	Grab		5/5		NA								

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Depth Elevation (BGS)	Sample Type	Sample Interval	Sample Recovery	Sample Retained for Analysis	PID	Lithology	Soil Description	Geophysical Data: E-Log: 16" (OHM)	Geophysical Data: E-Log: 64" (OHM)	Geophysical Data: E-Log: S. PT. (OHM)	Geophysical Data: Caliper Log (inch)	Geophysical Data: Guard Log (OHM.M)	Well Construction
							As above, moist, decrease (approximately 10%) in very fine sand.						
							As above, increase (approximately 10%) in very fine to fine sand.						
-90	Grab		5/5		NA		As above, decrease (approximately 5%) in very fine sand.						
							As above, decrease (approximately 5%) in very fine sand.						
	Grab		5/5		NA		As above.						Cement Backfill
							As above.						
-100	Grab		5/5		NA		As above.						
							As above.						
	Grab		5/5		NA		As above.						
							As above.						
-110	Grab		5/5		NA		As above.						
							As above, decrease (approximately 5%) in very fine sand, increase in density to stiff.						
	Grab		5/5		NA								

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Depth Elevation (BGS)	Sample Type	Sample Interval	Sample Recovery	Sample Retained for Analysis	PID	Lithology	Soil Description	Geophysical Data: E-Log: 16" (OHM)	Geophysical Data: E-Log: 64" (OHM)	Geophysical Data: E-Log: S. PT. (OHM)	Geophysical Data: Caliper Log (inch)	Geophysical Data: Guard Log (OHM.M)	Well Construction
-120	Grab		5/5		NA		As above, increase (approximately 15%) in very fine sand, decrease in density to soft, wet.						
							Silt with sand, as above, decrease (approximately 15%) in very fine sand, increase in density to stiff.						
	Grab		5/5		NA		Silt, as above.						
-130	Grab		5/5		NA								Cement Backfill
							As above, decrease (approximately 5%) in very fine sand, increase in density to very stiff.						
	Grab		5/5		NA								
							As above, increase (approximately 5%) in very fine sand.						
							Silt with clay, as above, decrease (approximately 5%) in very fine sand.						
-140	Grab		5/5		NA								
							Silty with sand and clay, as above.						
							Silt with clay, as above, decrease (approximately 10%) in very fine sand.						
	Grab		4/5		NA								
							Clayey silt, as above.						

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Depth Elevation (BGS)	Sample Type	Sample Interval	Sample Recovery	Sample Retained for Analysis	PID	Lithology	Soil Description	Geophysical Data: E-Log: 16" (OHM)	64" (OHM)	S. PT. (OHM)	Caliper Log (inch)	Guard Log (OHM.M)	Well Construction
-150	Grab		5/5		NA								
	Grab		5/5		NA								Cement Backfill
							Silt with sand and clay, as above, increase (approximately 10%) in very fine sand.						
							Silt with clay, as above, decrease (approximately 5%) in very fine sand.						
-160	Grab		5/5		NA								
							Silt with sand and clay, as above, increase (approximately 10%) in very fine sand.						
	Grab		5/5		NA		Silt with clay, as above, decrease (approximately 10%) in very fine sand.						
							Clayey silt, as above.						
-170	Grab		5/5		NA								
	Grab		5/5		NA								
-180							CL: Silty clay, brown (7.5YR4/4), hard, moist, sand is very fine grained, silt with clay, no cementation, moderate to high plasticity.						

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Depth Elevation (BGS)	Sample Type	Sample Interval	Sample Recovery	Sample Retained for Analysis	PID	Lithology	Soil Description	Geophysical Data: E-Log: 16" (OHM)	64" (OHM)	S. PT. (OHM)	Caliper Log (inch)	Guard Log (OHM.M)	Well Construction
	Grab		5/5		NA		Approximately 5% fine sand, 45% silt and 50% clay.						
	Grab		5/5		NA		ML: Clayey silt, brown (7.5YR5/3), very stiff, moist, sand is very fine grained, silt and clay, no cementation, low plasticity. Approximately 5% fine sand, 55% silt and 40% clay.						
							CL: Silty clay, pinkish gray (7.5YR7/2), very stiff, moist, coarse, medium and fine sands are gypsum fragments, silt and clay, no cementation, moderate plasticity. Trace coarse sand, 5% medium sand, 15% fine sand, 30% silt and 50% clay.						
-190	Grab		5/5		NA		ML: Clayey silt, pinkish gray (7.5YR6/2), very stiff, moist, sand is very fine grained, silt and clay, no cementation, low plasticity. 5% coarse sand, 5% medium sand, 10% fine sand, 50% silt and 30% clay.						Cement Backfill
							Silt with sand and clay, color change to white (10YR8/1), very stiff, some cemented very fine sand nodules, no cementation, non plastic.						
	Grab		5/5		NA								
							Clayey silt with sand, as above, decrease (appproximately 10%) in medium sand.						
-200	Grab		5/5		NA								
							Clayey silt, as above.						
	Grab		5/5		NA								Cement Backfill
							Color change to greenish gray (Gley 1 6/10Y), hard.						
-210	Grab		5/5		NA								

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							Color change to brown (10YR5/3), hard.						
	Grab		5/5		NA		Color change to brown (7.5YR4/3).						
							Color change to brown (7.5YR5/3).						
-220	Grab		5/5		NA		SM: Poorly graded silty sand with clay, brown (7.5YR5/3), hard, moist, medium grained sand subrounded, fine to very fine sand, silt with clay, no cementation, nonplastic. Approximately 5% medium sand, 50% fine sand, 40% silt and 5% clay.						
							ML: Clayey silt, brown (7.5YR5/3), hard, moist, very fine sand, silt and clay, no cementation, nonplastic to low plasticity. Approximately 5% fine sand, 70% silt and 25% clay.						
	Grab		5/5		NA								
							As above, slight increase (approximately 5%) in clay.						
-230	Grab		5/5		NA		As above.						
							Color change to pinkish gray (7.5YR7/2), hard, moist, sand is fine to very fine grained, silt and clay, nocementation, increase (approximately 5%) in fine sand, decrease in clay.						
	Grab		5/5		NA		Color change to brown (7.5YR5/3), moderate plasticity, increase (approximately 5%) in fine sand, decrease in clay.						
							As above, decrease (approximately 5%) in fine sand, increase in clay.						
-240	Grab		5/5		NA		Clayey silt with sand, as above, increase (approximately 15%) in fine sand.						

Depth Elevation (BGS)	Sample Type	Sample Interval	Sample Recovery	Sample Retained for Analysis	PID	Lithology	Soil Description	Geophysical Data: E-Log: 16" (OHM)	64" (OHM)	S. PT. (OHM)	Caliper Log (inch)	Guard Log (OHM.M)	Well Construction
							As above, decrease (approximately 10%) in fine sand.						
	Grab		5/5		NA								Cement Backfill
							Silt with clay, as above.						
-250	Grab		5/5		NA								
							As above, decrease (approximately 5%) in fine sand.						
							Clayey silt, as above, increase (approximately 5%) in fine sand.						
	Grab		5/5		NA								Cement Backfill
							Clayey silt with sand, as above.						
							Silt with clay, as above, increase (approximately 10%) in fine sand, decrease in clay.						
-260	Grab		5/5		NA								
							As above, increase (approximately 5%) in fine sand, decrease in clay.						
	Grab		5/5		NA								
							Clayey silt, as above, decrease (approximately 10%) in fine sand.						
-270	Grab		5/5		NA								
							Silt with sand and clay, as above, increase (approximately 10%) in fine						

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	Grab		0/5		NA		sand.						
-280	Grab		5/5		NA		Clayey silt, as above, decrease (approximately 5%) in fine sand.						
							Silt with sand, as above.						
	Grab		5/5		NA		Sandy silt, as above, increase (approximately 20%) in fine sand.						
							Clayey silt, as above, increase (approximately 15%) in silt, trace fine sand.						
-290	Grab		5/5		NA								
							As above, increase (approximately 10%) in fine sand.						
							Silt with sand, as above. Approximately 15% fine sand, 80% silt and 5% clay.						
	Grab		5/5		NA								Cement Backfill
-300	Grab		5/5		NA		Silt, as above. Approximatley 10% fine sand, 85% silt and 5% clay.						
			5/5		NA								

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Depth Elevation (BGS)	Sample Type	Sample Interval	Sample Recovery	Sample Retained for Analysis	PID	Lithology	Soil Description	Geophysical Data: E-Log: 16" (OHM)	64" (OHM)	S. PT. (OHM)	Caliper Log (inch)	Guard Log (OHM.M)	Well Construction
-310	Grab		5/5		NA		SM: Poorly graded silty sand, brown (7.5YR4/4), hard, moist to wet, medium grained subrounded sand, some fine to very fine sand, silt with no clay, no cementation, nonplastic. Trace coarse sand, 10% medium sand, 60% fine sand and 30% silt.						
							ML						
							SM: Poorly graded silty sand, brown (7.5YR4/4), hard, very moist, medium subrounded sand, sand is very fine to fine grained, no cementation, nonplastic. Approximately 10% medium sand, 50% fine sand and 40% silt.						
	Grab		5/5		NA		ML: Sandy silt, brown (7.5YR4/4), hard, moist, some medium grained subrounded sand, some fine to very fine grained sand, no cementation, no to low plasticity.						Cement Backfill
-320	Grab		5/5		NA		SM: Poorly graded silty sand, brown (7.5YR4/4), stiff, very moist to wet, some coarse subrounded sand, some medium subrounded sand, some fine to very fine sand, none to weak cementation, nonplastic. Approximately 5% coarse sand, 10% medium sand, 50% fine sand and 35% silt.						
							ML: Sandy wilt with clay, brown (7.5YR4/4), hard, moist, trace subrounded medium sand, some fine to very fine sand, silt with clay, no cementation, low to nonplastic. Trace medium sand, 45% fine sand, 50% silt and 5% clay.						
	Grab		5/5		NA		SM: Silty sand, brown (7.5YR4/4), stiff, very moist, some medium grained subrounded sand, some fine to very fine grained sand, silt with trace clay at 325 ft bgs, no to weak cementation, nonplastic. Approximately 5% medium sand, 50% fine sand and 45% silt.						
							ML						
							CL: Silty clay, light brown (7.5YR6/4), hard, moist to dry, trace very fine grained sand, silt and clay, no cementation, moderate plasticity. Trace fine to very fine grained sand, 40% silt and 60% clay.						
-330	Grab		5/5		NA		ML						
							CH: Clay with silt, light brown (7.5YR6/3), hard, moist to dry, no cementation high plasticity. Approximately 10% silt and 90% clay.						
							CL: Silty clay, brown (7.5YR5/3), hard, moist, silt and clay, no cementation, low to moderate plasticity. Approximately 5% very fine sand, 30% silt and 65% clay.						
	Grab		5/5		NA		ML: Clayey silt, brown (7.5YR5/3), hard, moist, silt and clay, no cementation, low to moderate plasticity. Approximately 70% silt and 30% clay.						
							CL: Silty clay, brown (7.5YR5/3). Approximately 30% silt and 70% clay.						

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							ML: Clayey silt, brown (7.5YR5/3). Approximately 60% silt and 40% clay..						
-340	Grab		5/5		NA		CL: Silty clay, brown (7.5YR5/3). Approximately 40% silt and 60% clay.						
							SM: Poorly graded silty sand, brown (7.5YR4/3), soft, very moist to wet, sand is prediominately fine grained, silt, no clay, no cementation, nonplastic. Approximately 80% fine to very fine sand and 20% silt.						
							ML: Poorly graded clayey silt, brown (7.5YR4/3), soft, very moist to wet, no cementation, nonplastic. Approximately 60% silt and 40% clay.						
	Grab		5/5		NA		CL: Approximately 10% silt, 90% clay.						
							ML: Silt with clay, brown (7.5YR4/4), hard, moist, sand is fine to very fine grained, no cementation, nonplastic. Approximately 10% fine to very fine sand, 85% silt and 5% clay.						
							SM: Silty sand, brown (7.5YR4/4). Approximately 10% medium sand, 70% fine sand and 20% silt.						
							ML: Sandy silt with clay, brown (7.5YR4/4). Approximately 15% fine sand, 85% silt and trace clay..						
-350	Grab		5/5		NA		SM: Poorly graded silty sand, brown (7.5YR5/3), very stiff, moist to wet, some medium grained subrounded sand, silt with trace clay, no cementation, low plasticity. Approximately 30% medium sand, 50% fine sand and 20% silt.						
							ML: Clayey silt with sand, brown (7.5YR5/3). Approximately 5% fine sand, 50% silt and 45% clay.						
	Grab		5/5		NA		SM: Poorly graded silty sand, brown (7.5YR5/3). Approximately 10% medium sand, 50% fine sand, 40% silt and trace clay.						Cement Backfill
							ML: Clayey silt, brown (7.5YR5/3), hard, moist, sand is fine to very fine grained, silt and clay, no cementation, low plasticity. Approximately 35% fine to very fine sand, 50% silt and 5% clay.						
							SM: Poorly graded silty sand, brown (7.5YR5/3). Approximately 5% medium sand, 60% fine sand and 35% silt.						
							ML: Clayey silt, brown (7.5YR5/3). Approximately 10% fine to very fine sand, 70% silt and 20% clay.						
-360	Grab		5/5		NA		CL: Silty clay, light brown (7.5YR6/3). Approximately 20% silt and 80% clay.						
							ML: Clayey silt, brown (7.5YR5/3). Approximately 30% fine sand, 60% silt and 10% clay.						
							CL: Silty clay, light brown (7.5YR6/3), hard, moist, silt and clay with trace gypsum fragments up to 1/4", no cementation, moderate plasticity. Trace coarse sand, 20% silt and 80% clay.						
	Grab		5/5		NA		SM: Silty sand, brown (7.5YR4/4), very stiff, moist, medium grained subrounded sand, some fine to very fine grained sand, no clay, no to weak cementation, nonplastic. Approximately 10% medium sand, 70% fine sand and 20% silt.						
							ML: Clayey silt, brown (7.5YR4/4), hard, moist, some very fine grained sand and silt and clay, no cementation, low plasticity. Approximately 10% fine sand, 70% silt and 20% clay.						

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-370	Grab		4/5		NA		CL: Silty clay, brown (7.5YR5/3), hard, moist, silt and clay, no cementation, moderate plasticity. Approximately 10% fine sand, 60% silt and 30% clay.						
							ML: Clayey silt, brown (7.5YR4/4). Approximately 10% fine sand, 60% silt and 30% clay.						
							CL: Silty clay, brown (7.5YR5/3), hard, moist, silt and clay, no cementation, moderate plasticity. Approximately 5% fine sand, 40% silt and 55% clay.						
	Grab		5/5		NA		ML: Silt with clay, brown (7.5YR4/4), hard, moist, sand is fine to very fine grained, silt with clay, no cementation, no to low plasticity. Approximately 10% fine sand, 80%, silt and 10% clay.						Cement Backfill
							Clayey silt, as above. Approximately 10% fine sand, 50% silt and 40% clay.						
							Silt with clay, as above. Approximately 10% fine sand, 80% silt and 10% clay.						
-380	Grab		5/5		NA								
	Grab		5/5		NA		Clayey silt, as above. Approximately 80% silt and 20% clay.						Cement Backfill
							Wet from 386.5 to 386.7 ft bgs.						
-390	Grab		5/5		NA		Silt with clay, as above. Appoximately 5%fine sand, 85% silt and 10% clay.						
							Clayey silt, as above. Approximately 80% silt and 20% clay.						
	Grab		5/5		NA		Silt, as above. Approximately 5% fine sand, 90% silt and 5% clay.						
							Silt with clay, as above. Approximately 5% fine sand, 90% silt and 5% clay.						
-400													