

**SITE OBSERVATION FORM:** DNV Landslide Risk Assessment  
**LOCATION:** 2191 Berkley Avenue  
**INSPECTION DATE:** (mm/dd/yy) 10/26/05  
**WEATHER:** Sunny, clear skies, no rain 1 day prior, heavy rain 2 days prior to visit.



**BGC ENGINEERING INC.**  
 AN APPLIED EARTH SCIENCES COMPANY

500 - 1045 Howe Street  
 Vancouver, BC  
 Canada V6Z 2A9

THICKNESS OF LOOSE MATERIALS	<1 m	1-2 m	2-3 m	>3 m
FENCE LINE			<input checked="" type="checkbox"/>	
10 m DOWNSLOPE FROM SLOPE CREST			<input checked="" type="checkbox"/>	

SLOPE BELOW FENCE/ RETAINING STRUCTURE	SLOPE = 35°		
	CRACKS	SLIDES	EROSION
		<input checked="" type="checkbox"/>	
<b>OBSERVATIONS:</b> Adjacent property (to the south) is the site of the January 2005 slide. (See observations in backyard deformation)			

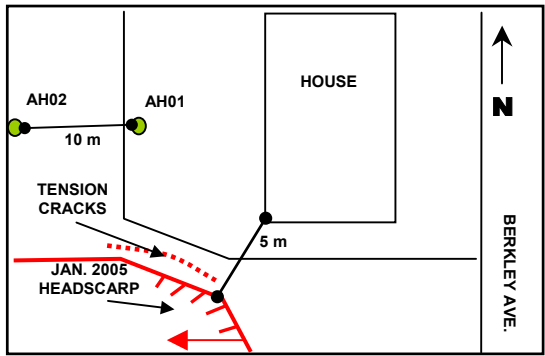
TREES BELOW FENCE/ RETAINING STRUCTURE	STRAIGHT	PISTOL-BUTT	LEANING
PERCENT CONIFER: <50%			<input checked="" type="checkbox"/>
<b>OBSERVATIONS:</b> Trees leaning slightly down slope.			

RETAINING STRUCTURES	YES <input checked="" type="checkbox"/>	NO	HEIGHT= 0.5 m
TYPE	CONCRETE <input checked="" type="checkbox"/>	TIMBER CRIB	OTHER:
DEFORMATION	CRACKED <input checked="" type="checkbox"/>	SETTLED <input checked="" type="checkbox"/>	BULGING
<b>OBSERVATIONS:</b> Slightly cracked, bulging slightly. Tilted, rotating at base approximately 20°.			

DEFORMATION IN BACKYARD	YES <input checked="" type="checkbox"/>	NO
LOCATION: South side of backyard at fence line.		
DESCRIPTION: Surficial tension cracks near January 2005 slide site.		

POOLS	YES	NO <input checked="" type="checkbox"/>
DESCRIPTION: None		

SEEPAGE/ SPRINGS IN OR BELOW FILL	YES	NO <input checked="" type="checkbox"/>
OBSERVATIONS: None observed.		



**HOUSE DISTANCE TO CREST = 10 m**

RECEIVES SURFACE RUNOFF FROM	BACKYARD	½ ROOF	FULL ROOF	FRONT YARD	STREET
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>OBSERVATIONS:</b>					

CONNECTED TO STORM SEWER	YES	NO <input checked="" type="checkbox"/>	UNSURE
<b>OWNERS COMMENTS:</b> DNV reports that this property is not connected to storm sewer.			

**GENERAL OBSERVATIONS**

- Property adjacent to the south is the site of the January 2005 slide.



Figure 1. 2191 Berkley Avenue – Front of the house



Figure 2. 2191 Berkley Avenue – View looking NW along fence line



Figure 3. 2191 Berkley Avenue – View from house to crest

# INSPECTION LOCATION # 2191 Berkley

**Project :** DNV Landslide Risk Assessment

**Project No. :** 0404-002-01

**Location :** 2191 Berkley  
**Drill Method :** Dutch Hand Auger  
**Inspection Date :** 26 Oct 05  
**Logged by :** MB/ES/SF/JB  
**Reviewed by :** MJP

Depth (m)	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	Depth To Water Table
	<p><b>AUGERHOLE:</b> BGC05-2191BER-AH01 on Slope Crest  <b>FINAL DEPTH OF AUGERHOLE:</b> 3.17 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 2.96 m</p>			<p><b>AUGERHOLE:</b> BGC05-2191BER-AH02 10 m Downslope  <b>FINAL DEPTH OF AUGERHOLE:</b> 3.00 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 2.85 m</p>	
0.0	<p><b>SAND (SM)</b>                      Silty, trace gravel sized silt clasts, poorly graded, very loose, max particle size = 20 mm, sub-angular, dark brown, no odour, moist, homogeneous, no cementation                      [TOPSOIL]</p>		0.0	<p><b>SILT (ML)</b>                      Some fine sand, non plastic, very loose, dark brown, slight odour, moist, homogeneous, organics, rootlets and roots                      [TOPSOIL]</p>	
0.5	<p><b>SAND (SM)</b>                      Fine to medium sand, silty, gravel sized silt clastst, medium gravel sized sand clasts with moderate cementation, poorly graded, loose, light brown, trace orange mottling, moist, homogneneous, no cementation, rootlets                      [FILL]</p>		0.5	<p><b>SAND (SP)</b>                      Fine to meidum sand, some non plastic silt, trace gravel, trace cobbles, trace gravel sized silt clasts, poorly graded, loose, sub-angular to sub-rounded, light brown, moist, homogeneous                      [FILL]</p>	
1.0			1.0	<p>0.80 m: Some orange mottling noted.                      0.80 m - 0.90 m: Trace charcoal and rootlets, slightly sandier</p>	
1.5	<p>1.40 m: Charcoal evident, 20 mm thick</p>		1.5		
2.0	<p>1.60 m: Material becomes dark brown, becomes denser</p> <p>1.85 - 1.89 m: ORGANICS layer, dark brown, trace charcoal</p>		2.0	<p>1.75 m - 1.80 m: Organic layer, roots and trace charcoal, wood.</p>	
2.5	<p>2.00 m: Trace rootlets present</p>		2.5	<p>2.20 m: Becoming browner.                      Trace gravel clasts to 60 mm, rounded to sub-rounded, felsic intrusive and aphanitic volcanics</p>	
3.0	<p><b>SILT (ML) and SAND (SW)</b>                      Low plastic to non plastic, well graded, soft, light brown, no odour, wet, homogeneous, no cementation, slow dilatancy, trace rootlets                      [COLLUVIUM]</p>		3.0	<p>2.60 m: Cobble encountered</p>	
3.0	<p>2.96 m: Material becomes 'dense'.  <b>SILT (ML)</b></p>	▼	3.0	<p><b>SILT (ML)</b>                      Some fine sand, trace fine gravel, trace clay, low plastic, firm, light grey to brown with trace orange mottling, no odour, moist,</p>	

(Continued on next page)

BGC05-2191BER-AH01

**BGC ENGINEERING INC.**  
 AN APPLIED EARTH SCIENCES COMPANY  
 Vancouver, BC Phone: (604) 684 5900

*Client: District of North Vancouver*

# INSPECTION LOCATION # 2191 Berkley

**Project :** DNV Landslide Risk Assessment

**Project No. :** 0404-002-01

**Location :** 2191 Berkley  
**Drill Method :** Dutch Hand Auger  
**Inspection Date :** 26 Oct 05  
**Logged by :** MB/ES/SF/JB  
**Reviewed by :** MJP

Depth (m)	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	Depth To Water Table
	<p><b>AUGERHOLE:</b> BGC05-2191BER-AH01 on Slope Crest  <b>FINAL DEPTH OF AUGERHOLE:</b> 3.17 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 2.96 m</p>			<p><b>AUGERHOLE:</b> BGC05-2191BER-AH02 10 m Downslope  <b>FINAL DEPTH OF AUGERHOLE:</b> 3.00 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 2.85 m</p>	
3.5	Some fine sand, trace clay, low plastic, firm, light grey with orange mottling, no odour, wet, homogeneous, no cementation, slow dilatancy [Weathered GLACIOMARINE] 3.17 m: EOH - Refusal as material too stiff to auger through		3.5	homogeneous, no cementation, slow dilatancy, trace rootlets [Weathered GLACIOMARINE] 3.00 m: EOH - Refusal as material too stiff to auger through	
4.0			4.0		
4.5			4.5		
5.0			5.0		
5.5			5.5		
6.0			6.0		

BGC05-2191BER-AH01

**SITE OBSERVATION FORM:** DNV Landslide Risk Assessment  
**LOCATION:** 2205 Berkley Avenue  
**INSPECTION DATE:** (mm/dd/yy) 10/26/05  
**WEATHER:** Sunny, clear skies, no rain 1 day prior, heavy rain 2 days prior to visit.



**BGC ENGINEERING INC.**  
 AN APPLIED EARTH SCIENCES COMPANY

500 - 1045 Howe Street  
 Vancouver, BC  
 Canada V6Z 2A9

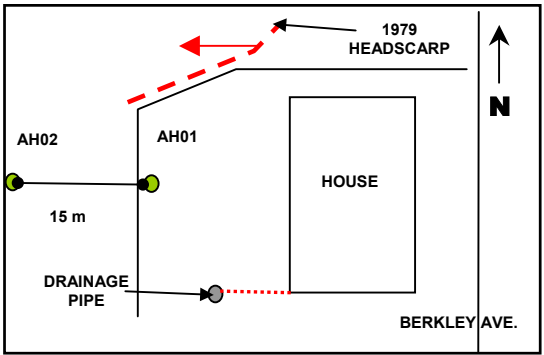
THICKNESS OF LOOSE MATERIALS	<1 m	1-2 m	2-3 m	>3 m
FENCE LINE			<input checked="" type="checkbox"/>	
15 m DOWNSLOPE FROM SLOPE CREST			<input checked="" type="checkbox"/>	

SLOPE BELOW FENCE/ RETAINING STRUCTURE	SLOPE = 35°		
	CRACKS	SLIDES	EROSION
		<input checked="" type="checkbox"/>	
<b>OBSERVATIONS:</b> No slope deformation observed directly below west fence line. Adjacent property (to the north) is the site of a slide in 1979, a portion of the scarp is at the north end of the 2205 Berkley fence line.			

TREES BELOW FENCE/ RETAINING STRUCTURE	STRAIGHT	PISTOL-BUTT	LEANING
PERCENT CONIFER: <50%		<input checked="" type="checkbox"/>	
<b>OBSERVATIONS:</b> Swayed trees observed.			

RETAINING STRUCTURES	YES	NO <input checked="" type="checkbox"/>	HEIGHT= n/a
TYPE	CONCRETE	TIMBER CRIB	OTHER:
DEFORMATION	UNDEFORMED	CRACKED	BULGING
<b>OBSERVATIONS:</b> None observed.			

DEFORMATION IN BACKYARD	YES	NO <input checked="" type="checkbox"/>
<b>LOCATION:</b>		
<b>DESCRIPTION:</b> Unable to determine if any deformation has occurred. Geotechnical investigation took place in yard in 2005.		



POOLS	YES	NO <input checked="" type="checkbox"/>
<b>DESCRIPTION:</b> None		

SEEPAGE/ SPRINGS IN OR BELOW FILL	YES	NO <input checked="" type="checkbox"/>
<b>OBSERVATIONS:</b> None observed.		

**HOUSE DISTANCE TO CREST = 12 m**

RECEIVES SURFACE RUNOFF FROM	BACKYARD	½ ROOF	FULL ROOF	FRONT YARD	STREET
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<b>OBSERVATIONS:</b> Front half of roof may drain into swale on south side of property towards 2191 Berkley.					

CONNECTED TO STORM SEWER	YES	NO <input checked="" type="checkbox"/>	UNSURE
<b>OWNERS COMMENTS:</b> DNV reports that this property is not connected to storm sewer.			

- GENERAL OBSERVATIONS**
- Property adjacent to the north is the site of the 1979 slide.
  - Cement patio appears to be separating from the foundation of the house.
  - Old drainage pipe outlet located in backyard located 8 m from the southwest corner of the house.



Figure 1. 2205 Berkley Avenue - Front of the house



Figure 2. 2205 Berkley Avenue – View along crest of slope



Figure 3. 2205 Berkley Avenue - View looking north along crest



# INSPECTION LOCATION # 2205 Berkley

**Project :** DNV Landslide Risk Assessment

**Project No. :** 0404-002-01

**Location :** 2205 Berkley  
**Drill Method :** Dutch Hand Auger  
**Inspection Date :** 26 Oct 05  
**Logged by :** MB/ES/SF/JB  
**Reviewed by :** MJP

Depth (m)	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	Depth To Water Table
	<p><b>AUGERHOLE:</b> BGC05-2205BER-AH01 on Slope Crest  <b>FINAL DEPTH OF AUGERHOLE:</b> 2.05 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 2.05 m minimum</p>			<p><b>AUGERHOLE:</b> BGC05-2205BER-AH02 15 m Downslope  <b>FINAL DEPTH OF AUGERHOLE:</b> 3.00 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 2.90 m</p>	
0.0	SAND (SP) Trace silt, trace fine to medium gravel sized silt clasts, poorly graded, very loose to loose, light brown with trace orange and brown mottling, moist, homogeneous, trace organics [FILL]		0.0	SAND (SM) Fine to medium sand, silty, trace gravel, poorly graded, very loose, max particle size = 10 mm, sub-angular, dark brown, no odour, moist, homogeneous, no cementation, trace rootlets [TOPSOIL]	
0.5			0.5	SAND (SM) Fine to medium sand, silty, trace gravel, gravel sized silt and sand clasts, poorly graded, loose, max particle = 50 mm, sub-rounded, brown, no odour, moist, homogeneous, no cementation [FILL] 0.60 m: Orange mottling Sand content changes to 'fine to coarse grained'	
1.0			1.0		
1.20	Increase in orange mottling			SAND (SM) Fine to medium sand, silty, trace gravel, gravel sized silt clasts, loose, max particle size = 15 mm, sub angular, dark brown to black, no odour, moist, homogeneous, no cementation [FILL]	
1.30	Material still displays gravel sized silt clasts				
1.30	Increase in silt content and sub-angular fine gravel content			SAND (SM) Fine to medium sand, silty, trace gravel, gravel sized silt clasts, loose, max particle = 15 mm, sub-rounded, brown, no odour, moist, homogeneous, no cementation, trace charcoal [FILL]	
1.45	Trace fine gravel		1.5		
1.65	Discontinuous organic lense				
1.70	Gravel content is increased to 'some'. Gravel is sub-rounded and fine to medium grained				
1.75 - 1.94	ORGANIC LAYER				
1.94	Silty, trace sand, some gravel, sub rounded to rounded grains, moist to wet		2.0	SILT (ML) Trace fine to medium sand, trace clay, trace gravel, low plasticity, soft to firm, light brown to grey with orange mottling, no odour, moist, homogeneous, no cementation, no dilatancy [COLLUVIUM]	
2.00	Material becomes dark brown				
2.00	Trace medium gravel, max particle size = 40 mm				
2.05	EOH - Refusal of auger on gravel		3.0	SAND (SP) Fine to medium sand, compact, light brown with orange mottling, no odour, wet, homogeneous, no cementation	▼

(Continued on next page)

BGC05-2205BER-AH01

**BGC ENGINEERING INC.**  
AN APPLIED EARTH SCIENCES COMPANY  
Vancouver, BC Phone: (604) 684 5900

Client: District of North Vancouver

# INSPECTION LOCATION # 2205 Berkley

**Project :** DNV Landslide Risk Assessment

**Project No. :** 0404-002-01

**Location :** 2205 Berkley  
**Drill Method :** Dutch Hand Auger  
**Inspection Date :** 26 Oct 05  
**Logged by :** MB/ES/SF/JB  
**Reviewed by :** MJP

Depth (m)	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	Depth To Water Table
	<p><b>AUGERHOLE:</b> BGC05-2205BER-AH01 on Slope Crest  <b>FINAL DEPTH OF AUGERHOLE:</b> 2.05 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 2.05 m minimum</p>			<p><b>AUGERHOLE:</b> BGC05-2205BER-AH02 15 m Downslope  <b>FINAL DEPTH OF AUGERHOLE:</b> 3.00 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 2.90 m</p>	
3.5			3.5	<div style="border: 1px solid black; padding: 2px;"> <p>[Weathered GLACIOMARINE]                      SILT (ML) and SAND (SP)                      Fine to medium sand, low plastic silt, firm, light brown with orange mottling, no odour, wet, homogeneous                      [Weathered GLACIOMARINE]                      3.00 m: EOH - Extent of auger</p> </div>	
4.0			4.0		
4.5			4.5		
5.0			5.0		
5.5			5.5		
6.0			6.0		

BGC05-2205BER-AH01

**SITE OBSERVATION FORM:** DNV Landslide Risk Assessment  
**LOCATION:** 2217 Berkley Avenue  
**INSPECTION DATE:** (mm/dd/yy) 11/09/05  
**WEATHER:** Raining, heavy rain 2 days prior to visit.



**BGC ENGINEERING INC.**  
 AN APPLIED EARTH SCIENCES COMPANY

500 - 1045 Howe Street  
 Vancouver, BC  
 Canada V6Z 2A9

THICKNESS OF LOOSE MATERIALS	<1 m	1-2 m	2-3 m	>3 m
FENCE LINE				<input checked="" type="checkbox"/>
9 m DOWNSLOPE FROM SLOPE CREST			<input checked="" type="checkbox"/>	

SLOPE BELOW FENCE/ RETAINING STRUCTURE	SLOPE = 44°		
	CRACKS	SLIDES	EROSION
		<input checked="" type="checkbox"/>	
<b>OBSERVATIONS:</b> 1979 landslide scarp on south portion of slope below the fence line. Wood deck built over headscarp, several foundations are placed below crest of the scarp.			

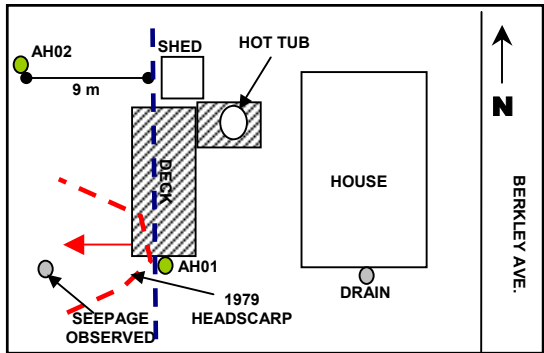
TREES BELOW FENCE/ RETAINING STRUCTURE	STRAIGHT	PISTOL-BUTT	LEANING
PERCENT CONIFER: <20%			<input checked="" type="checkbox"/>
<b>OBSERVATIONS:</b>			

RETAINING STRUCTURES	YES	NO <input checked="" type="checkbox"/>	HEIGHT= n/a
TYPE	BLOCKS	CONCRETE	TIMBER CRIB
DEFORMATION	UNDEFORMED	CRACKED	SETTLED
<b>OBSERVATIONS:</b> None observed.			

DEFORMATION IN BACKYARD	YES	NO <input checked="" type="checkbox"/>
LOCATION:		
DESCRIPTION:	None observed.	

POOLS	YES <input checked="" type="checkbox"/>	NO
DESCRIPTION:	Hot tub	

SEEPAGE/ SPRINGS IN OR BELOW FILL	YES <input checked="" type="checkbox"/>	NO
<b>OBSERVATIONS:</b> Seepage (visibly flowing) observed in scarp. Appears to come from above the Glaciomarine sediments that are exposed in scarp. May be an old drain, as mentioned in Klohn 1980 report.		



**HOUSE DISTANCE TO CREST = 12 m**

RECEIVES SURFACE RUNOFF FROM	BACKYARD	1/2 ROOF	FULL ROOF	FRONT YARD	STREET
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<b>OBSERVATIONS:</b> Unknown where roof drainage is directed.					

CONNECTED TO STORM SEWER	YES	NO <input checked="" type="checkbox"/>	UNSURE
<b>OWNERS COMMENTS:</b> DNV reports that this property is not connected to storm sewer.			

**GENERAL OBSERVATIONS**

- The south portion of this slope is the site of a slide in 1979.
- Large coniferous tree on south side of headscarp has been undercut by landslide.
- Seepage appears to be at the contact between Glaciomarine and colluvium in landslide scarp.



Figure 1. 2217 Berkley Avenue – Front of the house



Figure 2. 2217 Berkley Avenue – View of backyard looking NW



Figure 3. 2217 Berkley Avenue – Deck supports



Figure 4. 2217 Berkley Avenue – View of backyard looking south

# INSPECTION LOCATION # 2217 Berkley

**Project :** DNV Landslide Risk Assessment

**Project No. :** 0404-002-01

**Location :** 2217 Berkley  
**Drill Method :** Dutch Hand Auger  
**Inspection Date :** 08 Nov 05  
**Logged by :** SF/JB  
**Reviewed by :** MJP

Depth (m)	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	Depth To Water Table
	<p><b>AUGERHOLE:</b> BGC05-2217BER-AH01 on Slope Crest  <b>FINAL DEPTH OF AUGERHOLE:</b> 3.25 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 3.00 m</p>			<p><b>AUGERHOLE:</b> BGC05-2217BER-AH02 9 m Downslope  <b>FINAL DEPTH OF AUGERHOLE:</b> 2.90 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 1.75 m</p>	
0.0	<p>SILT (ML) Some fine to coarse sand, trace fine gravel, very organic, low plastic, very soft, dark brown, moist [TOPSOIL]</p>		0.0	<p>ORGANICS Very loose, dark brown, moist</p>	
-0.5	<p>SAND (SP) Mainly fine to medium sand, trace coarse grained sand, trace silt, poorly graded, loose, light grey and brown, moist, homogeneous [FILL]</p>		-0.5	<p>SILT (ML) Some fine sand, trace coarse sand, trace fine to medium gravel, coarse sand sized silt clasts, non plastic, soft, max particle = 20 mm, sub angular, moist, homogeneous [FILL]</p>	
-1.0	<p>SAND (SP) Fine sand, trace silt, trace fine to medium gravel, gravel sized silt clasts, clasts are sub rounded up to 20 mm diameter, poorly graded, loose, max particle size = 40 mm, brown with organic staining, moist, homogeneous, roots [FILL] 0.75 m: Material becomes browner</p>		-1.0	<p>SILT (ML) Sandy, fine sand, trace fine gravel sized silt and fine sand clasts, non plastic, soft, light grey and brown with some orange mottling, moist, homogeneous [FILL]</p>	
-1.5	<p>1.45 m: Material is now dark brown 1.55 m: Pervasive organic silt material Below 1.55: Material is grading into an orange brown</p>		-1.5	<p>SAND (SP) Fine sand, silty, loose, poorly sorted, light grey brown with trace orange and brown mottling, moist, homogeneous [FILL]</p>	
-2.0	<p>1.85 m: Material density increases to 'loose to compact' Silt clasts still evident</p>		-2.0	<p>1.70 m - 2.20 m: ORGANICS Lense Organic silts, trace fine gravel, subrounded gravel, dark brown, moist, bark 1.75 m: Material density changes to 'loose to compact'</p>	
-2.5	<p>2.10 m: Silt content increases to 'silty'</p>		-2.5	<p>2.05 m: Some charcoal noted in organic layer</p>	
-3.0	<p>SILT (ML) Some fine to medium sand, some gravel sized silt clasts, non plastic, firm, light grey and brown, moist, homogeneous [FILL]</p>		-3.0	<p>SILT (ML) Trace fine to medium sand, trace fine to medium gravel, non plastic, soft to firm, max particle size = 15 mm, sub rounded, light orange and brown, moist, homogeneous, trace organics [COLLUVIUM]</p>	▼
-3.0	<p>SAND (SP) Fine to medium sand, trace silt, trace coarse sand, loose to compact, light orange and brown, moist, homogeneous [FILL/ COLLUVIUM]</p>	▼	-3.0	<p>SILT (ML) Trace fine sand, trace fine gravel, low plastic, firm to stiff, light grey and brown with orange brown mottling, moist to wet, homogeneous, no cementation</p>	▼
	3.00 m: Material becomes 'wet' (perched water table).	▼			

(Continued on next page)

	<p><b>BGC ENGINEERING INC.</b>  AN APPLIED EARTH SCIENCES COMPANY  Vancouver, BC Phone: (604) 684 5900</p>	
--	--	--

Client: District of North Vancouver

# INSPECTION LOCATION # 2217 Berkley

**Project :** DNV Landslide Risk Assessment

**Project No. :** 0404-002-01

**Location :** 2217 Berkley  
**Drill Method :** Dutch Hand Auger  
**Inspection Date :** 08 Nov 05  
**Logged by :** SF/JB  
**Reviewed by :** MJP

Depth (m)	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	Depth To Water Table
	<p><b>AUGERHOLE:</b> BGC05-2217BER-AH01 on Slope Crest  <b>FINAL DEPTH OF AUGERHOLE:</b> 3.25 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 3.00 m</p>			<p><b>AUGERHOLE:</b> BGC05-2217BER-AH02 9 m Downslope  <b>FINAL DEPTH OF AUGERHOLE:</b> 2.90 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 1.75 m</p>	
3.5	<p>An increase in silt content is noted with the increase in moisture content.</p> <p>SILT (ML)                      Trace clay, trace fine sand, non to low plastic, firm to stiff, light yellow and brown, with orange and brown mottling, moist, homogeneous</p> <p>[Weathered GLACIOMARINE]                      3.25 m: EOH - Limit of auger tool.</p>		3.5	<p>[Weathered GLACIOMARINE]                      2.90 m: EOH - Refusal as material is too stiff to auger through</p>	
4.0			4.0		
4.5			4.5		
5.0			5.0		
5.5			5.5		
6.0			6.0		

BGC05-2217BER-AH01

**BGC ENGINEERING INC.**  
 AN APPLIED EARTH SCIENCES COMPANY  
 Vancouver, BC Phone: (604) 684 5900

*Client: District of North Vancouver*

**SITE OBSERVATION FORM:** DNV Landslide Risk Assessment  
**LOCATION:** 2223 Berkley Avenue  
**INSPECTION DATE:** (mm/dd/yy) 11/09/05  
**WEATHER:** Overcast, rain 1 day prior to visit.



**BGC ENGINEERING INC.**  
 AN APPLIED EARTH SCIENCES COMPANY

500 - 1045 Howe Street  
 Vancouver, BC  
 Canada V6Z 2A9

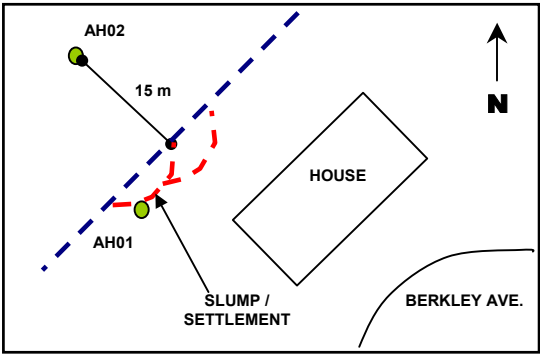
THICKNESS OF LOOSE MATERIALS	<1 m	1-2 m	2-3 m	>3 m
FENCE LINE			<input checked="" type="checkbox"/>	
15 m DOWNSLOPE FROM SLOPE CREST		<input checked="" type="checkbox"/>		

<b>SLOPE BELOW FENCE/ RETAINING STRUCTURE</b>	SLOPE = 33°		
	CRACKS	SLIDES	EROSION
			<input checked="" type="checkbox"/>
<b>OBSERVATIONS:</b> Minor erosion below trees.			

TREES BELOW FENCE/ RETAINING STRUCTURE	STRAIGHT	PISTOL-BUTT	LEANING
PERCENT CONIFER: 50%	<input checked="" type="checkbox"/>		
<b>OBSERVATIONS:</b>			

RETAINING STRUCTURES	YES	NO <input checked="" type="checkbox"/>	HEIGHT= n/a
TYPE	CONCRETE	TIMBER CRIB	OTHER:
DEFORMATION	UNDEFORMED	CRACKED	BULGING
<b>OBSERVATIONS:</b> None observed.			

<b>DEFORMATION IN BACKYARD</b>	YES <input checked="" type="checkbox"/>	NO
<b>LOCATION:</b> Backyard		
<b>DESCRIPTION:</b> Slumping observed near crest of slope.		



**HOUSE DISTANCE TO CREST = 12 m**

<b>POOLS</b>	YES	NO <input checked="" type="checkbox"/>
<b>DESCRIPTION:</b> None		

<b>SEEPAGE/ SPRINGS IN OR BELOW FILL</b>	YES <input checked="" type="checkbox"/>	NO
<b>OBSERVATIONS:</b> Seepage observed along an organic seam in an existing DNV test pit located 15 m down slope of crest. (Approx. 0.8 m below ground level)		

RECEIVES SURFACE RUNOFF FROM	BACKYARD	½ ROOF	FULL ROOF	FRONT YARD	STREET
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<b>OBSERVATIONS:</b> Unknown where roof drainage is directed.					

<b>CONNECTED TO STORM SEWER</b>	YES	NO <input checked="" type="checkbox"/>	UNSURE
<b>OWNERS COMMENTS:</b> DNV reports that this property is not connected to storm sewer. Owner notes that the house will be connected on Nov. 23, 2005.			

**GENERAL OBSERVATIONS**

- Owner notes that a DNV geotechnical engineer has been doing work on this property. A deep test pit and a piezometer (installed in lawn) remain on site.
- Three corrugated pipes lead down slope. Rain is directed by a tarp on the back lawn to flow down these pipes. Installed after January 2005 slide.





Figure 1. 2223 Berkley Avenue – Front of the house



Figure 2. 2223 Berkley Avenue - End of drainage pipes down-slope



Figure 3. 2223 Berkley Avenue - View down-slope from crest



Figure 4. 2223 Berkley Avenue – Slumping in backyard

**Project :** DNV Landslide Risk Assessment

**Project No. :** 0404-002-01

**Location :** 2223 Berkley  
**Drill Method :** Dutch Hand Auger  
**Inspection Date :** 09 Nov 05  
**Logged by :** MB/ES  
**Reviewed by :** MJP

Depth (m)	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	Depth To Water Table
	<p><b>AUGERHOLE:</b> BGC05-2223BER-AH01 Top of Slumps, above Slope Crest  <b>FINAL DEPTH OF AUGERHOLE:</b> 2.50 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 2.10 m</p>			<p><b>AUGERHOLE:</b> BGC05-2223BER-AH02 15 m Downslope  <b>FINAL DEPTH OF AUGERHOLE:</b> 2.20 m  <b>THICKNESS OF LOOSE MATERIALS:</b> 1.85 m</p>	
0.0	SAND (SM) Fine sand, silty, trace fine to medium grained gravel, poorly graded, loose, max particle size = 10 mm, dark brown, no odour, moist, homogeneous, no cementation, trace rootlets [TOPSOIL]		0.0	SAND (SM) Fine sand, silty, trace fine to medium grained gravel, poorly graded, loose, max particle size = 10 mm, dark brown, no odour, moist, homogeneous, no cementation, trace rootlets [TOPSOIL]	
0.5	SAND (SP) Fine sand, trace silt, trace gravel, poorly graded, loose, max particle size = 8 mm, brown with orange mottling, no odour, moist, homogeneous, no cementation, trace rootlets [FILL]		0.5	SAND (SP) and SILT (ML) Mainly fine sand, some fine to coarse gravel sized silt clasts, poorly graded sand, low plastic silt, firm, max particle size = 2 mm, brown with orange mottling, no odour, moist, homogeneous, no cementation, trace roots and rootlets [FILL]	
1.0	0.85 - 0.90 m: ORGANICS rich layer		1.0	0.70 m: Material becomes wet	▼
1.5	SILT (ML) and SAND (SP) Fine sand, trace clay, gravel sized silt clasts, low plastic silt, poorly graded sand, soft to firm, light brown to grey with orange mottling, no odour, moist, homogeneous, no cementation, trace organics [FILL]	▼	1.5		
2.0	SILT (ML) and SAN (SP) Fine sand, trace clay, low plastic silt, poorly graded sand, stiff, light brown to grey with orange mottling, no odour, moist, homogeneous, no cementation [Weathered GLACIOMARINE]		2.0	SAND (SW) Fine to coarse sand, trace to some clay, trace (<1%) fine gravel, well graded sand, compact, max particle size = 3 mm, sub-rounded to sub-angular, grey to turquoise / blueish-grey, no odour, wet, homogeneous, no cementation [Weathered GLACIOMARINE]	
2.5	2.50 m: EOH - Refusal as material is too stiff to auger through		2.5	2.20 m: EOH - Refusal on cobble or root.	
3.0			3.0		

BGC05-2223BER-AH01