SITE OBSERVATION FORM: DNV

DNV Landslide Risk Assessment

LOCATION: H

Hayseed-Layton Gully

INSPECTION DATE: (mm/dd/yy) 10/28/05

WEATHER: Cloudy with periods of rain



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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	V			
12 m DOWNSLOPE FROM FENCE LINE AT CREST	\overline{A}			

	SLOPE = 33°		
SLOPE BELOW FENCE/ RETAINING STRUCTURE	CRACKS	SLIDES	EROSION
ORSERVATIONS: None slope deformation observed. House is 15-16m from the old gravel nit and over 30m to the crest of the slope			

OBSERVATIONS: None slope deformation observed. House is 15-16m from the old gravel pit and over 30m to the crest of the slope

TREES BELOW FENCE/ RETAINING STRUCTURE		STRAIGHT	PISTOL-BUTT	LEANING	
PERCENT CONIFER: 80%				K	
OBSERVATIONS: Some coniferous trees slightly swayed on the south side of the slope below crest. A few deciduous trees and high					

shrubs are the only vegetation in the old gravel pit/gully.

RETAINING STRUCTURES		YES	NO ☑	HEIGHT= n/a
TYPE	PE BLOCKS		TIMBER CRIB	OTHER:
DEFORMATION	UNDEFORMED	CRACKED	SETTLED	BULGING

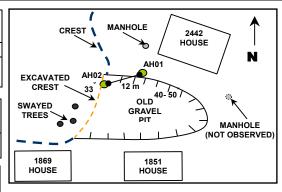
OBSERVATIONS: None observed

DEFORMATION IN BACKYARD	YES	NO 🖭			
LOCATION: Backyard of 2442 Hayseed Close					
DESCRIPTION: Minor undulation in lawn area. at this property according to owner.	No history of slop	e movement			

POOLS YES NO ☑

DESCRIPTION: Hot tub on patio.

SEEPAGE/ SPRINGS IN OR BELOW FILL	YES	№ 🗹
OBSERVATIONS: None observed		



HOUSE DISTANCE TO CREST = 30 m

RECEIVES SURFACE RUNOFF FROM	BACKYARD	½ ROOF	FULL ROOF	FRONT YARD	STREET			
RECEIVES SURFACE RUNOFF FROM	>							
OBSERVATIONS: 2442 Hayseed Close may get some street run off in large storm event.								

CONNECTED TO STORM SEWER

YES

NO

UNSURE

OWNERS COMMENTS: Owner notes that the house at 2442 Hayseed Close is completely connected to storm sewer. 2 manholes on property, 1 located, 1 not visible. DNV reports that the property is not connected to the storm sewer.

- Park/gully immediately below 2442 Hayseed Close, 1869 and 1851 Layton properties is an old gravel pit
- Gully at end of gravel pit has been filled with soil and woody debris
- Auger holes were drilled at 2442 Hayseed Close property line and estimated location of crest of main slope (before gravel pit excavation).



Figure 1. Hayseed-Layton Gully - Front of 2442 Hayseed



Figure 2. Hayseed-Layton Gully – View of 2442 Hayseed looking north from south side of gravel pit



Figure 3. Hayseed-Layton Gully – View looking SE along property line of 2442 Hayseed

INSPECTION LOCATION # Hayseed - Layton Gully

Page 1 of 1

Project : DNV Landslide Risk Assessment Project No. : 0404-002-01

Location: Hayseed - Layton Gully **Drill Method**: Dutch Hand Auger **Inspection Date**: 28 Oct 05

Logged by: SF/JB **Reviewed by**: MJP

	AUGERHOLE: BGC05-2442HAY-LHG-AH01 on Slope Crest FINAL DEPTH OF AUGERHOLE: 0.40 m THICKNESS OF LOOSE MATERIALS: 0.40 m minimum	rable		AUGERHOLE: BGC05-2442HAY-LHG-AH02 12 m Downslope FINAL DEPTH OF AUGERHOLE: 0.55 m THICKNESS OF LOOSE MATERIALS: 0.55 m minimum	able
Depth (m)	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	Denth To Water Table
-0.0- 0.5 1.0 2.0	ORGANICS and SAND (SP) Fine to coarse sand, trace silt, poorly graded, very loose, dark brown, slight odour, moist, homogeneous [TOPSOIL] SAND (SP) Medium to coarse, gravelly, fine to coarse gravel, maximum particle size = 35 mm, sub-rounded, poorly graded, very loose, light yellow brown, no odour, moist, homogeneous, mostly coarse sand [FILL or COLLUVIUM] 0.40 m :EOH - Refusal on cobble Hole collapsing.		- 0.0	ORGANICS Trace silt and gravel [TOPSOIL] SAND (SW) and GRAVEL (GW) Fine to coarse sand, fine to coarse gravel, some silt, trace cobbles, well graded, very loose, maximum particle size = 200 mm, sub-rounded, brown, no odour, moist, homogeneous, roots and rootlets [FILL] SAND (SW) and GRAVEL (GW) Fine to coarse sand, fine to coarse gravel, trace silt and trace cobbles, well graded, very loose, maximum particle size = 200 mm, sub-rounded, brown, no odour, moist, homogeneous [FILL] 0.55 m: EOH - Refusal as hole is collapsing	
3.0			- 3.0		

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AN APPLIED EARTH SCIENCES COMPANY

Vancouver, BC Phone: (604) 684 5900

LOCATION: 2448 Hayseed Close

INSPECTION DATE: (mm/dd/yy) 10/28/05

WEATHER: Cloudy with periods of rain



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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		✓		
12 m DOWNSLOPE FROM SLOPE CREST			✓	

		SLOPE = 35°	
SLOPE BELOW FENCE/ RETAINING STRUCTURE	CRACKS	SLIDES	EROSION
			K
OBSERVATIONS: Minor slope erosion observed			

TREES BELOW FENCE/ RETAINING STRUCTURE		STRAIGHT	PISTOL-BUTT	LEANING
PERCENT CONIFER: 90%			√	
OBSERVATIONS: Slight pistol butting on approximately 50% or trees.				

RETAINING STRUCTURES		YES 🗹	NO	HEIGHT= 0.8 m
TYPE	BLOCKS	CONCRETE	TIMBER CRIB	OTHER: Landscape tie crib
			V	✓
DEFORMATION	UNDEFORMED	CRACKED	SETTLED	BULGING
ODOEDWATIONO No.				

OBSERVATIONS: No evidence of deformation.

DEFORMATION IN BACKYARD	YES 🗹	NO	1
LOCATION: Backyard			
DESCRIPTION: Backyard dips towards slope.			AH02 7.5 m
POOLS	YES 🗹	NO	13 m HOUSE
DESCRIPTION: Hot tub.			CREST BALCONY HAYSEED CLOSE
SEEPAGE/ SPRINGS IN OR BELOW FILL	YES	NO ☑	i included season
OBSERVATIONS: None observed.			HOUSE DISTANCE TO CREST = 7.5 m

RECEIVES SURFACE RUNOFF FROM	BACKYARD	½ ROOF	FULL ROOF	FRONT YARD	STREET
RECEIVES SURFACE RUNOFF FROM	K	V			
OBSERVATIONS: Backyard downspouts drain on to	o ground.				

INECTED TO STORM SEWER ERS COMMENTS: DNV reports that this property is not connected to the	YES	NO 🗹	UNSURE				
OWNERS COMMENTS: DNV reports that this property is not connected to the storm sewer system.							

- Old septic system exists in backyard
- Retaining wall consists of 2 steps with a walkway between
- Thickness of loose materials at crest are estimated since auger hole 1 refused at 0.8m in coarse gravel that was imported for the old septic system



Figure 1. 2448 Hayseed Close – Front of the house



Figure 2. 2448 Hayseed Close – Timber crib retaining structure



Figure 3. 2448 Hayseed Close – View down-slope from crest

INSPECTION LOCATION # 2448 Hayseed

Page 1 of 1

Project : DNV Landslide Risk AssessmentProject No. : 0404-002-01

Location: 2448 Hayseed
Drill Method: Dutch Hand Auger
Inspection Date: 28 Oct 05

Logged by: MB/ES **Reviewed by**: MJP

Depth (m)	AUGERHOLE: BGC05-2448HAY-AH01 on Slope Crest FINAL DEPTH OF AUGERHOLE: 0.80 m THICKNESS OF LOOSE MATERIALS: 0.80 m minimum Lithologic Description	Depth To Water Table	Depth (m)	AUGERHOLE: BGC05-2448HAY-AH02 12 m Downslope FINAL DEPTH OF AUGERHOLE: 2.00 m THICKNESS OF LOOSE MATERIALS: 2.00 m minimum Lithologic Description	Depth To Water Table
-0.0			-0.0		۵
- 0.5	SAND (SM) Silty, some fine to coarse gravel, some cobbles, well graded, loose, maximum particle size = 80 mm, sub-rounded, brown to dark brown, no odour, moist, homogeneous, no cement [FILL]		- 0.5	SAND (SM) Fine to medium sand, silty, trace fine gravel, loose, poorly graded, maximum particle size = 4 mm, dark brown, no odour, moist, homogeneous, no cementation, roots [TOPSOIL] SAND (SW) Fine to coarse sand, some fine to coarse gravel, trace silt, trace cobbles, well graded, loose, maximum particle size = 80 mm, sub-rounded to sub-angular, brown, no odour, moist,	
_	0.50 - 0.60 m: High gravel content, SAND (SM) and GRAVEL (GP), coarse gravel		- 5.5	homogeneous, no cementation [FILL]	
- - - - - - - - -	4 inch ceramic pipe encountered at 0.6 m, occupant confirms pipe is part of an old septic tank system. 0.80 m: EOH - Refusal on ceramic pipe and gravel Three holes attempted along crest.	,	- - - 1.0 - - - - -	[FILL]	
- - - - 2.0			- - - - 2.0	SAND (SP) Mostly medium sand, trace gravel, trace silt, some gravel sized sand clasts, poorly graded, loose, maximum particle size = 5 mm, sub angular, light brown, no odour, moist, homogeneous, no cementation, easily broken on handling [FILL/ COLLUVIUM]	_
-			- - -	2.00 m: EOH - Refusal on cobbles at 2.00 m No watertable encountered	
- 2.5 - - -			- 2.5 - - -		
- 3.0			- 3.0		

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Vancouver, BC Phone: (604) 684 5900

LOCATION: 2454 Hayseed Close

INSPECTION DATE: (mm/dd/yy) 10/27/05

WEATHER: Cloudy, rained previous night



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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			V	
15 m DOWNSLOPE FROM SLOPE CREST		V		

	SLOPE = 33°			
SLOPE BELOW FENCE/ RETAINING STRUCTURE OBSERVATIONS: Minor slope erosion observed	CRACKS	SLIDES	EROSION	
			K	

TREES BELOW FENCE/ R	ETAINING STRUCTURE	STRAIGHT	PISTOL-BUTT	LEANING
TREES BELOW FENCE/ RETAINING STR PERCENT CONIFER: 100% OBSERVATIONS: Slope is heavily vegetated by ivy ar	100%	✓		
OBSERVATIONS: Slope is heavily	vegetated by ivy and ferns			

RETAINING STRUC	TURES	YES 🗹	NO	HEIGHT= 3.3 m
TYPE	BLOCKS	CONCRETE	TIMBER CRIB	OTHER: Landscape tie crib
			V	V
DEFORMATION	UNDEFORMED	CRACKED	SETTLED	BULGING

OBSERVATIONS: Retaining wall consists of 2 steps; both are 1.5m in height. No evidence of deformation.

DEFORMATION IN BACKYARD	YES 🗹	NO				
LOCATION: Backyard	1		CREST		SHACK	
DESCRIPTION: Backyard dips towards slope 2 m from house.	. Slight cracks in	concrete patio	525.			N
			AH02	AH01	HOUSE	
POOLS	YES	мо☑	15 m	1		
DESCRIPTION:						
SEEPAGE/ SPRINGS IN OR	YES	NO ☑			HAYSEED CLOSE	
	BELOW FILL NO 🖺					
OBSERVATIONS: None observed			HOUSE DIS	STANCE T	O CREST =	9.7 m

RECEIVES SURFACE RUNOFF FROM	BACKYARD	½ ROOF	FULL ROOF	FRONT YARD	STREET
RECEIVES SURFACE RUNOFF FROM	✓	\sim			
OBSERVATIONS: Front yard dips towards street					

CONNECTED TO STORM SEWER	YES	NO	UNSURE 🗹
OWNERS COMMENTS: Occupant believes that house is connected to storm	sewer. DNV reports	that this property	is not connected to the
storm sewer system.			

GENERAL OBSERVATIONS

Backyard dips towards slope



Figure 1. 2454 Hayseed Close – Front of the house



Figure 2. 2454 Hayseed Close – Timber crib retaining wall



Figure 3. 2454 Hayseed Close – View down-slope from south side of property looking NW



Figure 4. 2454 Hayseed Close – Lawn in the backyard dips towards the slope

INSPECTION LOCATION # 2454 Hayseed

Page 1 of 1

Project : DNV Landslide Risk AssessmentProject No. : 0404-002-01

Location: 2454 Hayseed
Drill Method: Dutch Hand Auger
Inspection Date: 28 Oct 05

Logged by: MB/ES **Reviewed by**: MJP

	AUGERHOLE: BGC05-2454HAY-AH01 0.5 m South of Slope Crest FINAL DEPTH OF AUGERHOLE: 2.70 m THICKNESS OF LOOSE MATERIALS: 2.70 m minimum	Table		AUGERHOLE: BGC05-2454HAY-AH02 15 m Downslope FINAL DEPTH OF AUGERHOLE: 1.20 m THICKNESS OF LOOSE MATERIALS: 1.20 m minimum	
	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	
	SAND (SM) Fine to meduim sand, silty, trace fine gravel, poorly graded, loose, dark brown, no odour, moist, homogeneous, no cementation, rootlets [TOPSOIL] SAND (SW) Fine to coarse, trace silt, trace fine to medium gravel, well graded sand, loose, maximum particle size = 20 mm, sub rounded, grey peppered appearance, no odour, moist, homogeneous, no cementation, trace rootlets [FILL] SAND (SP) Fine to medium sand, trace silt, trace fine to medium gravel, gravel sized clasts of fine sand and silt, poorly graded, loose, max particle size = 13 mm, light brown, no odour, moist, homogeneous, no cementation, trace rootlets [FILL]			SAND (SM) Silty sand, trace fine gravel, poorly graded, loose, max particle size = 3 mm, dark brown, no odour, moist, homogeneous, no cementation, some rootlets [TOPSOIL] SAND (SM) Silty sand, some cobbles, trace gravel, poorly graded, loose, max particle size = 100 mm, brown, no odour, dry, homogeneous, no cementation, trace rootlets [FILL/ COLLUVIUM]	_
	1.50 m - Garbage and charcoal SAND (SP) Mostly fine to medium sand, some silt, trace fine to coarse		- - - - 1.5	1.20 m: EOH - Refusal on cobbles No groundwater encountered	
	gravel, poorly graded, loose, max particle size = 40 mm, sub rounded, brown, no odour, moist, homogeneous, no cementation, trace roots, charcoal [FILL]		- - - 2.0		
			- - - - 2.5		
	2.70 m: EOH - Refusal of auger on cobbles	-	v		
,			- - 3.0		

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Vancouver, BC Phone: (604) 684 5900

LOCATION: 2462 Hayseed Close

INSPECTION DATE: (mm/dd/yy) 10/28/05

WEATHER: Cloudy, rained previous night



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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		K		
12 m DOWNSLOPE FROM SLOPE CREST		✓		

		SLOPE = 40°	
SLOPE BELOW FENCE/ RETAINING STRUCTURE	CRACKS	SLIDES	EROSION
			K
OBSERVATIONS: Minor slope erosion observed.			

TREES BELOW FENCE/ R	ETAINING STRUCTURE	STRAIGHT	PISTOL-BUTT	LEANING		
PERCENT CONIFER:	<50%			K		
OBSERVATIONS: Minor pistol butting on some trees. Heavily vegetated with shrubs.						

RETAINING STRUCTURES		YES 🗹	NO	HEIGHT= 0.5-0.6m
TYPE	BLOCKS	CONCRETE	TIMBER CRIB	OTHER: Rock and Mortar
DEFORMATION	UNDEFORMED	CRACKED	SETTLED	BULGING
		✓	✓	\triangleright

OBSERVATIONS: 3 terraced retaining walls. All are cracking, leaning or are detached and falling over.

DEFORMATION IN BACKYARD	YES 🗹	NO	CRACKED RETAINING WALLS
OCATION: Backyard	•	1	
DESCRIPTION: Undulating ground, some mir nothing has changed in last 7-8 years.	nor settlement. Ow	vner notes that	CREST AH01 AH02 HOUSE
POOLS	YES	NO ☑	12 m
DESCRIPTION: None.			FALLEN SECTION OF WALL EST. NATURAL CF
SEEPAGE/ SPRINGS IN OR BELOW FILL	YES	NO ☑	HAYSE
OBSERVATIONS: None observed.	1	•	HOUSE DISTANCE TO CREST

RECEIVES SURFACE RUNOFF FROM	BACKYARD	½ ROOF	FULL ROOF	FRONT YARD	STREET		
RECEIVES SURFACE RUNOFF FROM	K	K	K				
OBSERVATIONS: Owner noted that gravel drain in driveway drains toward street.							

L	CONNECTED TO STORM SEWER	YES	NO NO	UNSURE			
ſ	OWNERS COMMENTS: No drains observed at base of lowest retaining wall. DNV reports that this property is not connected to the storm						
	sewer system.						

- House distance to landscaped crest/ retaining wall is 10.6 m; House distance to estimated natural crest of slope is 4 m.
- Boulders and cement from lower retaining wall fallen down slope.
- Surface erosion below north part of retaining wall.



Figure 1. 2462 Hayseed Close - Front of the house



Figure 2. 2462 Hayseed Close – View of backyard looking north

INSPECTION LOCATION # 2462 Hayseed

Page 1 of 1

Project : DNV Landslide Risk AssessmentProject No. : 0404-002-01

Location: 2462 Hayseed **Drill Method**: Dutch Hand Auger **Inspection Date**: 28 Oct 05

Logged by: SF/JB **Reviewed by**: MJP

	AUGERHOLE: BGC05-2462HAY-AH01 on Slope Crest FINAL DEPTH OF AUGERHOLE: 1.25 m THICKNESS OF LOOSE MATERIALS: 1.25 m minimum	able-		AUGERHOLE: BGC05-2462HAY-AH02 12 m Downslope FINAL DEPTH OF AUGERHOLE: 1.25 m THICKNESS OF LOOSE MATERIALS: 1.25 m minimum	
Depth (m)	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	
0.0—	ORGANICS Very loose, moist, homogeneous		-0.0-	ORGANICS	
).5	GRAVEL (GP) and SAND (SP) Fine to coarse gravel, medium to coarse sand, trace silt, poorly graded, loose, maximum particle size = 50 mm, sub-rounded, brown, no odour, moist, homogeneous, no cement, rootlets [FILL]		- - - 0.5 - -	GRAVEL (GW) and SAND (SW) Fine to coarse gravel, medium to coarse sand, well graded, loose, maximum particle size = 55 mm, light brown, no odour, moist, homogeneous, no cementation, rootlets [COLLUVIUM]	
.0	0.90 m - grading to light brown by 1.20 m		- - 1.0 -		
	1.25 m: EOH - Refusal of auger on coarse gravel		- -	1.25 m: EOH - Refusal on coarse gravel at 1.25 m Attempted another hole 6 m farther downslope - refusal on gravel at 0.50 m	
.5			- 1.5		
			-		
0			- 2.0		
			_		
			-		
5			- - 2.5		
			<u> </u>		
			-		
.0			- - 3.0		

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AN APPLIED EARTH SCIENCES COMPANY

Vancouver, BC Phone: (604) 684 5900

LOCATION: 2468 Hayseed Close

INSPECTION DATE: (mm/dd/yy) 10/27/05

WEATHER: Cloudy, rained previous night



BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COM PANY

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		✓		
6 m DOWNSLOPE FROM SLOPE CREST		✓		

	SLOPE = 34-35°			
SLOPE BELOW FENCE/ RETAINING STRUCTURE	CRACKS	SLIDES	EROSION	
OBSERVATIONS: None observed.				

TREES BELOW FENCE/ RETAINING STRUCTURE		STRAIGHT	PISTOL-BUTT	LEANING	
PERCENT CONIFER:	50%	✓			
OBSERVATIONS: Some swayed trees, mostly straight, many removed					

RETAINING STRUCTURES		YES	NO 🗹	HEIGHT= n/a
TYPE	BLOCKS	CONCRETE	TIMBER CRIB	OTHER:
DEFORMATION	UNDEFORMED	CRACKED	SETTLED	BULGING

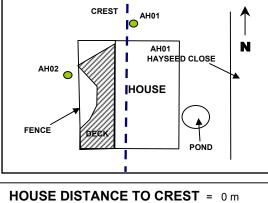
OBSERVATIONS: None observed.

DEFORMATION IN BACKYARD	YES	NO 🗹				
LOCATION:						
DESCRIPTION: No backyard. Property is occupied entirely by house and elevated sundeck.						

POOLS YES NO ☑

DESCRIPTION: Small garden pond exists in front yard, no visible cracks.

SEEPAGE/ SPRINGS IN OR BELOW FILL	YES	№ 🗹
OBSERVATIONS: None observed.		



RECEIVES SURFACE RUNOFF FROM	BACKYARD	½ ROOF FULL ROOF		FRONT YARD	STREET		
RECEIVES SURFACE KUNOFF FROM	K	V	V				
OBSERVATIONS: Front yard slopes towards road ~ 2m vertical elevation change.							

CONNECTED TO STORM SEWER	YES	ΝΟ✓	UNSURE		
OWNERS COMMENTS: DNV reports that this property is not connected to the storm sewer system.					

- House built on crest, wood deck overhangs crest of slope.
- Two drainage pipes collect water off the north end of the house and drain below the sundeck
- Thicknesses of loose materials are estimated since auger holes 1 and 2 reached maximum depths of 0.75m and 0.95m respectively. Both holes refused on gravels in loose materials.



Figure 1. 2468 Hayseed Close – Front of the house



Figure 2. 2468 Hayseed Close - Back fence line with drain pipe in the foreground



Figure 3. 2468 Hayseed Close – Looking NE along fence line

INSPECTION LOCATION # 2468 Hayseed

Page 1 of 1

Project : DNV Landslide Risk AssessmentProject No. : 0404-002-01

Location: 2468 Hayseed **Drill Method**: Dutch Hand Auger **Inspection Date**: 28 Oct 05

Logged by: SF/JB **Reviewed by**: MJP

Depth (m)	AUGERHOLE: BGC05-2468HAY-AH01 on Slope Crest FINAL DEPTH OF AUGERHOLE: 0.75 m THICKNESS OF LOOSE MATERIALS: 0.75 m minimum Lithologic Description	Depth To Water Table	Depth (m)	AUGERHOLE: BGC05-2468HAY-AH02 6 m Downslope FINAL DEPTH OF AUGERHOLE: 0.95 m THICKNESS OF LOOSE MATERIALS: 0.95 m minimum Lithologic Description	Depth To Water Table
0.0 - -	SAND (SP) Fine to coarse, some fine to coarse gravel, trace silt, poorly graded, loose, maximum particle size = 50 mm, sub-rounded, brown, moist, homogeneous, no organics	٥	0.0 - -	SAND (SP) Fine to coarse sand, mostly medium to coarse, some fine to coarse gravel, trace silt, loose, maximum particle size = 50 mm, sub-rounded, brown, moist, homogeneous, some orange	
- - - 0.5	[FILL]		- - - 0.5	brown stained clasts, gravel content coarsening with depth [FILL]	
- -			-	0.65 m: Organic layer/lense	
-	0.75 m: EOH - Refusal of auger on gravel			0.75 m: Loose, slightly orange brown	
- 1.0 -			- 1.0 - -	0.95 m: Trace charcoal clasts 0.95 m: EOH - Refusal on gravels at 0.95 m Attempted second hole 1.5 m downslope, cobbles found in top 0.20 m]
-			-		
- 1.5 - -			- 1.5 - -		
- -			 -		
- 2.0 - -			- 2.0 - -		
- - 2.5 -			- - 2.5 -		
- -			- - -		
- 3.0			- 3.0		

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

LOCATION: 2474 Hayseed Close

INSPECTION DATE: (mm/dd/yy) 10/27/05

WEATHER: Sunny, rained previous night



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		V		
10 m DOWNSLOPE FROM SLOPE CREST	V			

		SLOPE = 33°	
SLOPE BELOW FENCE/ RETAINING STRUCTURE	CRACKS	SLIDES	EROSION
			K
OBSERVATIONS: Some erosion observed ~ 10m below deck.	_		

TREES BELOW FENCE/ RETAINING STRUCTURE		STRAIGHT	PISTOL-BUTT	LEANING
PERCENT CONIFER: 90%		✓		
OBSERVATIONS: Many fallen trees along slope.				

RETAINING STRUCTURES		YES 🗹	NO	HEIGHT= 0.3-0.4m
TYPE	BLOCKS	CONCRETE	TIMBER CRIB	OTHER: Plywood and stumps
		✓		Ø
DEFORMATION	UNDEFORMED	CRACKED	SETTLED	BULGING
				∇

OBSERVATIONS: Concrete wall at crest of slope is tilted. In addition to concrete wall, soil is also held in places by plywood propped against stumps.

DEFORMATION IN BACKYARD	YES	NO☑	AH02 3 m
LOCATION:		•	10 m SEEPAGE/ EROSION
DESCRIPTION: None observed.			CREST AH01 DECK
POOLS	YES	ио ☑	SHED HOUSE
DESCRIPTION: None		•	
SEEPAGE/ SPRINGS IN OR BELOW FILL	YES 🗹	NO	HAYSEED CLOSE
OBSERVATIONS: Evidence of seepage channels ~ 10m below deck.			HOUSE DISTANCE TO CREST = 2.3 m

RECEIVES SURFACE RUNOFF FROM	BACKYARD	½ ROOF	FULL ROOF	FRONT YARD	STREET	
RECEIVES SURFACE RUNOFF FROM	✓	K				
OBSERVATIONS: Uncertain if slope receives surface run off from full roof. Front yard dips towards street.						

CONNECTED TO STORM SEWER	YES 🗹	NO	UNSURE		
OWNERS COMMENTS: DNV reports that this property is connected to the storm sewer system.					

- Sundeck support posts being replaced (evidence of work in progress).
- Patio/deck built at crest of slope.
- Slope thickly vegetated; fallen trees observed.



Figure 1. 2474 Hayseed Close – Front of the house



Figure 2. 2474 Hayseed Close – Tilted concrete retaining structure



Figure 3. 2474 Hayseed Close – View from crest looking north down-slope



Figure 4. 2474 Hayseed Close – In-progress renovation of deck supports

INSPECTION LOCATION # 2474 Hayseed

Page 1 of 1

Project : DNV Landslide Risk Assessment Project No. : 0404-002-01

Location: 2474 Hayseed
Drill Method: Dutch Hand Auger
Inspection Date: 27 Oct 05

Logged by: MB/ES **Reviewed by**: MJP

	ewed by . INIOI				
Depth (m)	AUGERHOLE: BGC05-2474HAY-AH01 on Slope Crest FINAL DEPTH OF AUGERHOLE: 1.10 m THICKNESS OF LOOSE MATERIALS: 1.10 m minimum Lithologic Description	Depth To Water Table	Depth (m)	AUGERHOLE: BGC05-2474HAY-AH02 10 m Downslope FINAL DEPTH OF AUGERHOLE: 0.70 m THICKNESS OF LOOSE MATERIALS: 0.70 m minimum Lithologic Description	Depth To Water Table
0.0 - - - - - 0.5	SAND (SM) Silty, trace fine to medium gravel, poorly graded, loose, max particle size = 8 mm, sub rounded, dark brown, no odour, moist, homogeneous, no cementation, trace roots [TOPSOIL] SAND (SM) Fine to medium sand, silty, some fine to medium gravel, some cobbles, some gravel sized silt clasts, poorly graded, loose, maximum particle size = 20 mm, sub-rounded, brown, no odour, moist, homogeneous, trace roots, no cementation [FILL]			SAND (SM) Fine to coarse sand, silty, poorly graded, loose, dark brown, no odour, moist, homogeneous, no cementation, trace rootlets [TOPSOIL] SAND (SP) Fine to medium sand, mostly medium to coarse, some fine to coarse gravel, some silt, some cobbles, loose, maximum particle size = 50 mm, sub-rounded, brown, no odour, moist, homogeneous, no cementation [FILL] 0.70 m: EOH- Refusal on cobbles. No groundwater encountered	
- 1.0 1.5	1.10 m: EOH - Refusal on gravels/cobbles. Five holes attempted at crest. No groundwater encountered		- 1.0 1.5 		
- - 2.0 -			- - 2.0 -		
- - 2.5 - -			- - 2.5 - -		
- - 3.0			- - 3.0		

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

LOCATION: 2480 Hayseed Close OCCUPANTS: Cas Bohlken

INSPECTION DATE: (mm/dd/yy) 10/27/05

WEATHER: Sunny, rained previous 2 days



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THICKNESS OF LOOSE MATERIALS	<1 m	1-2 m	2-3 m	>3 m
FENCE LINE		K		
10 m DOWNSLOPE FROM SLOPE CREST	\checkmark			

		SLOPE = 33°		
SLOPE BELOW FENCE/ RETAINING STRUCTURE	CRACKS	SLIDES	EROSION	
			\checkmark	
OBSERVATIONS: Minor erosion at the base of the retaining wall; slope is rayelling; prunings and compost present				

OBSERVATIONS: Minor erosion at the base of the retaining wall; slope is ravelling; prunings and compost present.

TREES BELOW FENCE/ RETAINING STRUCTURE		STRAIGHT	PISTOL-BUTT	LEANING	
PERCENT CONIFER: 90%		✓			
OBSERVATIONS: Trees are swayed in the downslope direction.					

RETAINING STRUCTURES		YES 🗹	NO	HEIGHT= 6.4 m
TYPE	BLOCKS	CONCRETE	TIMBER CRIB	OTHER:
			V	
DEFORMATION	UNDEFORMED	CRACKED	SETTLED	BULGING
				✓

OBSERVATIONS: Slight deformation, appears that the deformation may be bulging. No consistent or persistent bulge. Made up of 6" x 8" railway ties put in place by owner after 1979 event.

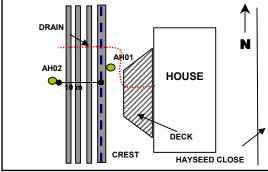
DEFORMATION IN BACKYARD	YES 🗹	NO			
LOCATION: Lawn area between deck and edge of retaining wall.					
DESCRIPTION: Settlement or slumping (max. 10 cm) causing the lawn to be					
wavy.					

POOLS YES NO ☑

DESCRIPTION: None

SEEPAGE/ SPRINGS IN OR
BELOW FILL

OBSERVATIONS: None observed.



HOUSE DISTANCE TO CREST = 5.4 m

RECEIVES SURFACE RUNOFF FROM	BACKYARD	½ ROOF	FULL ROOF	FRONT YARD	STREET
RECEIVES SURFACE RUNOFF FROM	✓	$\overline{\mathbf{A}}$	√		
OBSERVATIONS: Front yard dips toward street.					

CONNECTED TO STORM SEWER

OWNERS COMMENTS: DNV reports that this property is not connected to the storm sewer system.

UNSURE

- House is 5.4 m from crest of retaining wall and 2.5-3 m from the original crest line as estimated by neighbours yards.
- Drainage pipe runs from roof, through backyard fill and out near the base of the retaining wall, but not all roof drains are connected
- Chicken wire holding gravely material behind retaining walls between timbers in upper sections of wall



Figure 1. 2480 Hayseed Close – View of front of house



Figure 2. 2480 Hayseed Close – View looking NE along crest



Figure 3. 2480 Hayseed Close – Timber crib retaining wall with protruding drainage pipe



Figure 4. 2480 Hayseed Close – Timber crib retaining wall

INSPECTION LOCATION # 2480 Hayseed

Page 1 of 1

Project : DNV Landslide Risk AssessmentProject No. : 0404-002-01

Location: 2480 Hayseed **Drill Method**: Dutch Hand Auger **Inspection Date**: 27 Oct 05

AN APPLIED EARTH SCIENCES COMPANY

Phone: (604) 684 5900

Vancouver, BC

Logged by: SF/JB **Reviewed by**: MJP

Depth (m)	AUGERHOLE: BGC05-2480HAY-AH01 on Original Slope Crest FINAL DEPTH OF AUGERHOLE: 0.65 m THICKNESS OF LOOSE MATERIALS: 0.65 m minimum (estimate 1-2 m) Lithologic Description	Depth To Water Table	Depth (m)	AUGERHOLE: BGC05-2480HAY-AH02 10 m Downslope FINAL DEPTH OF AUGERHOLE: 0.45 m THICKNESS OF LOOSE MATERIALS: 0.45 m minimum Lithologic Description	Depth To Water Table
-0.0	SILT (ML) Sandy, fine to coarse, low plastic, very loose, dark brown, moist, organic odour [TOPSOIL] SAND (SW) Some silt, some fine to coarse gravels, trace cobbles, well graded, very loose, max particle size = 140 mm, sub rounded, dark brown, organic odour, moist, homogeneous, no cementation, rootlets and other organics, pieces of geotextile and polyurethane [FILL] 0.65 m: EOH - Refusal on cobbles. Two holes attempted. No groundwater encountered		0.0 - - - - - 0.5 - -	ORGANICS Silty, very loose, dry, dark brown SAND (SP) Medium to coarse sand, some fine to coarse gravel, trace silt, very loose, max particle size = 30 mm, round to sub-rounded, poorly graded, no odour, moist, homogeneous, roots and rootlets, gravel has orange brown stains [FILL or COLLUVIUM] 0.45 m: EOH - Refusal fo auger on tree root. Hole is collapsing. No groundwater encountered	3
- - 1.0 - -			- 1.0 - - -		
- 1.5 -			- - 1.5 - - -		
- 2.0 - - -			- 2.0 - - -		
- 2.5 - - -			- 2.5 - - -		
- 3.0			- 3.0		
	BGC ENGINEERING INC.			Client: District of North Vancouver	

LOCATION: 2486 Hayseed Close

INSPECTION DATE: (mm/dd/yy) 10/27/05

WEATHER: Sunny, rained previous few days



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THICKNESS OF LOOSE MATERIALS	<1 m	1-2 m	2-3 m	>3 m
FENCE LINE		V		
10 m DOWNSLOPE FROM SLOPE CREST		✓		

		SLOPE = 36°	
SLOPE BELOW FENCE/ RETAINING STRUCTURE	CRACKS	SLIDES	EROSION
			K
OBSERVATIONS: Some erosion directly below retaining structure			

TREES BELOW FENCE/ RETAINING STRUCTURE		STRAIGHT	PISTOL-BUTT	LEANING
PERCENT CONIFER:	90%	✓		
OBSERVATIONS:				

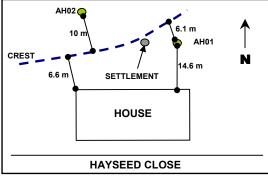
RETAINING STRUCTURES		YES 🗹	NO	HEIGHT= 2.0 m
TYPE	BLOCKS	CONCRETE	TIMBER CRIB	OTHER: Stacked logs
				Ø
DEFORMATION	UNDEFORMED	CRACKED	SETTLED	BULGING
			V	

OBSERVATIONS: Stacked log wall is rotting. Layers of slumping bricks.

DEFORMATION IN BACKYARD	YES 🗹	NO		
LOCATION:				
DESCRIPTION: Settling in backyard at top of retaining structure.				

POOLS	YES	NO ☑
DESCRIPTION: None.		

SEEPAGE/ SPRINGS IN OR BELOW FILL	YES	NO ☑
OBSERVATIONS: None observed.		



HOUSE DISTANCE TO CREST = 6.6 m

RECEIVES SURFACE RUNOFF FROM	BACKYARD	½ ROOF	FULL ROOF	FRONT YARD	STREET
RECEIVES SURFACE RUNOFF FROM	K	V			
OBSERVATIONS: Backyard downspout drips directly onto lawn.					

CONNECTED TO STORM SEWER	YES	мо⊻	UNSURE		
OWNERS COMMENTS: DNV reports that this property is not connected to the storm sewer.					

- Owner noted slight slumping of soil behind wood/brick retaining wall on east side of backyard within last couple of days
- Owner notes that 3 trees on west side of backyard fell 10 years ago during a heavy storm
- Bricks/ logs and pieces of asphalt lying on slope



Figure 1. 2486 Hayseed Close – Front of the house



Figure 2. 2486 Hayseed Close – View looking south towards a slumping brick retaining wall



Figure 3. 2486 Hayseed Close – Top view of settling brick retaining wall



Figure 4. 2486 Hayseed Close – View down-slope on north side of property where 3 trees fell during a heavy storm 10 years ago

INSPECTION LOCATION # 2486 Hayseed

Page 1 of 1

Project : DNV Landslide Risk AssessmentProject No. : 0404-002-01

Location: 2486 Hayseed **Drill Method**: Dutch Hand Auger **Inspection Date**: 27 Oct 05

Logged by: MB/ES **Reviewed by**: MJP

	ewed by . INIDI				
	AUGERHOLE: BGC05-2486HAY-AH01 6.1 m Back from Crest FINAL DEPTH OF AUGERHOLE: 1.20 m THICKNESS OF LOOSE MATERIALS: 1.00 m	Table		AUGERHOLE: BGC05-2486HAY-AH02 10 m Downslope FINAL DEPTH OF AUGERHOLE: 1.10 m THICKNESS OF LOOSE MATERIALS: 1.10 m minimm	Table
Depth (m)	Lithologic Description	Depth To Water Table	Depth (m)	Lithologic Description	Depth To Water Table
-0.0- -0.5 -0.5 -1.0 -1.5 -1.5 -2.0 -2.5 -3.0	SAND (SM) Silty, trace fine gravel, poorly graded, loose, max particle size = 2 mm, sub-rounded, dark brown, no odour, moist, homogeneous, no cementation [TOPSOIL] SAND (SM) Silty, trace fine to coarse gravel, poorly graded, loose, some gravel sized fine sand clasts, maximum particle size = 15 mm, sub-rounded, brown, no odour, moist, homogeneous, no cementation [FILL] SAND (SM) Fine to medium sand, some silt, some gravel sized fine sand clasts, poorly graded, loose, sub-rounded, light brown to grey, no odour, moist, homogeneous, no cementation, some orange mottling [FILL] 0.80 m: Some gravel noted SILT (ML) and SAND (SP) Fine sand, gravel sized silt and fine sand clasts, low plastic, stiff, grey and brown, no odour, moist, homogeneous, no cementation, no dilatancy, trace roots [Weathered GLACIOMARINE] 1.20 m: EOH - Refusal as material is too stiff to auger through. Four holes attempted. No groundwater encountered		0.0	SAND (SM) Silty, trace fine gravel, poorly graded, loose, dark brown, no odour, moist, homogeneous, no cementation [TOPSOIL] SAND (SM) Fine to medium sand, silty, some fine to medium gravel, some gravel sized silt clasts, poorly graded, loose, max particle size = 60 mm, brown, no odour, moist, homogeneous, no cementation [FILL] 0.60 m: Charcoal clasts 1.10 m: EOH - Refusal on gravels. Two holes attempted downslope. No groundwater encountered	

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