



## YOUR PROPERTY OR AREA MAY BE AT RISK IF

- ♻ The land is soft and steep
- ♻ Vegetation has been removed
- ♻ Water collects near a slope
- ♻ Existing slopes have been altered due to construction
- ♻ There is a history of land slippage in the area

## HOW TO REDUCE THE IMPACT OF A LANDSLIDE

- ♻ Plant trees and shrubs that hold the soil on slopes.
- ♻ Build retaining walls.
- ♻ In areas prone to mudflows, build channels or deflection walls to direct the flow around buildings.
- ♻ Beware of changing the natural course of water-ways. This can cause problems, if not to you, then to others.
- ♻ Use Gabion baskets to control the flow of water down slope.
- ♻ Follow Town and Country Development Planning guidelines and requirements, which set out land-use and building ordinances that regulate construction in areas susceptible to landslides and debris flows.
- ♻ Watch the patterns of storm-water drainage on slopes near your home, and note especially the places where runoff water converges, increasing the flow over soil-covered slopes. Be vigilant regarding any signs of land movement, such as small landslides, debris flows or progressively tilting trees.
- ♻ Learn about the emergency response and evacuation plans for your area and develop your own emergency plans for your family and business.

## SLIP OR SLIDE

T	L	L	T	V	N	G	N	N	E	E	L	S	Q	T
B	N	A	L	I	I	R	L	P	Y	K	A	K	E	Z
E	C	E	N	A	D	J	O	N	Z	A	N	C	C	R
B	T	R	M	D	F	L	U	W	N	U	D	A	D	F
H	E	T	T	E	S	N	O	B	N	Q	S	R	K	O
K	A	B	A	X	V	L	I	O	Y	H	L	C	B	T
R	E	I	R	D	G	O	I	A	S	T	I	O	I	H
B	S	S	Y	X	W	T	M	D	R	R	P	H	H	Z
W	E	R	D	N	A	T	S	S	E	A	N	A	M	P
F	L	X	N	T	J	Q	L	U	S	E	F	H	B	F
Z	C	U	E	V	G	L	O	M	V	A	G	Q	B	R
C	H	G	T	Y	R	N	I	Q	L	C	M	G	D	K
A	E	J	I	A	V	A	L	A	N	C	H	E	I	Z
V	L	Q	F	G	K	Q	R	S	K	O	F	H	Q	N
Y	J	N	M	J	U	P	S	U	U	S	Z	K	X	Y

**AVALANCHE**

**CRACKS**

**EARTHQUAKE**

**LANDSLIDE**

**LANDSLIP**

**MASS MOVEMENT**

**RAINFALL**

**SLOPE**

**ST ANDREW**

**VEGETATION**

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## WHAT IS A LANDSLIDE?

Landslide is a general term covering a wide variety of mass movement landforms and processes. This involves the downslope transport, under gravitational influence, of soil and rock usually within a relatively confined zone. Landslides have a great range of shapes, rates of motion, patterns of movement, and can range in size from a small area to one affecting a region of many square miles.

The term landslide is used interchangeably with landslip. The difference between the two terms however is one of immediacy. Land slippage is used to describe continuous, slow, movement over a long period of time, whereas landslide is used to describe an instant event.

Landslides vary in type of movement and may be the secondary effects of heavy storms, earthquakes and volcanic eruptions. Landslides are more widespread than any other geological event.

Locally, land slippage generally occurs in areas where the subsoil is of a peculiar geological nature with appreciable quantities of groundwater and steep slope conditions. Soil over-saturation is usually caused by heavy rainfall but may also be due to frequent high discharge of domestic water. The combined effect of saturated, unstable soils and high slope angles (greater than 30 degrees) therefore, create ideal conditions for landslip in areas such as the Scotland District in St. Andrew.

## VIBRATIONS FROM EARTHQUAKES CAN TRIGGER A LANDSLIDE!

### LANDSLIDE FACTS

- ❖ Vibrations from earthquakes can trigger a landslide.
- ❖ Heavy rains and subsequent water logging, act to saturate the top layers of unstable soil and can cause them to slide downhill.
- ❖ Human activity such as deforestation, vegetation removal, improper construction of roads and buildings on steep slopes may also lead to land slippage.
- ❖ Landslides may move very slowly from a few centimeters per year to a sudden, total collapse or avalanche.
- ❖ Landslides may travel just a few meters to many kilometers.
- ❖ Landslides can be deadly. They destroy houses, cars, water mains, gas pipes or anything else in their paths.
- ❖ Several areas in the Scotland District in St. Andrew, Barbados, are prone to land slippage.

### SIGNS OF AN IMPENDING LANDSLIDE

- ❖ New cracks appear in plaster, tile, brick or foundations.
- ❖ Outside walls, walk ways or stairs begin pulling away from buildings.
- ❖ Unusual bulges in the ground, street pavements or sidewalks;
- ❖ Ground water seeps to the surface in new locations;
- ❖ Fences, retaining walls, utility poles or trees tilt or move.
- ❖ Soil moving away from foundations.
- ❖ Ancillary structures such as decks and patios tilting and (or) moving relative to the main house.
- ❖ Broken water lines and other underground utilities.
- ❖ Sunken or down-dropped road beds.
- ❖ Sounds such as trees cracking or boulders knocking together.
- ❖ Any sudden increase or decrease in the flow of natural water courses.

### FACTORS CONTRIBUTING TO VULNERABILITY

- ❖ Settlements built on steep slopes, softer soils and cliff tops.
- ❖ Settlements built at the base of steep slopes.
- ❖ Roads and communication lines in hilly areas.
- ❖ Buildings with weak foundations.
- ❖ Buried pipelines and brittle pipes.