

District 11-0 Geohazard Inventory and Rating System



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PENNDOT Dist. 11-0

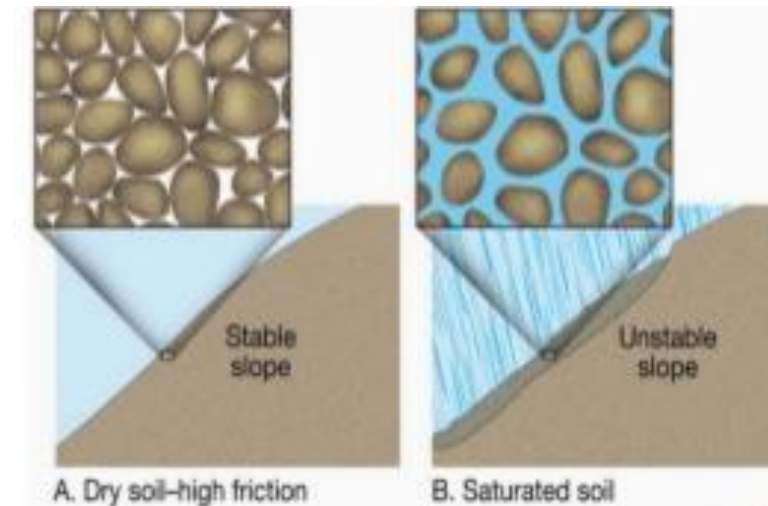
Landslide Causes

Landslides are the result of several contributing factors:

- Slope steepness
- Relatively weak soil and/or underlying rock
- Human alteration of a site
- Change in moisture conditions

Fully saturated soil

- Becomes buoyant, its ability to resist the weight of material above is reduced
- Material above is also heavier when it is wet
- Result -> material that is weaker trying to hold up more weight.
- The result is a landslide until the soil reaches equilibrium, typically at the bottom of the slope



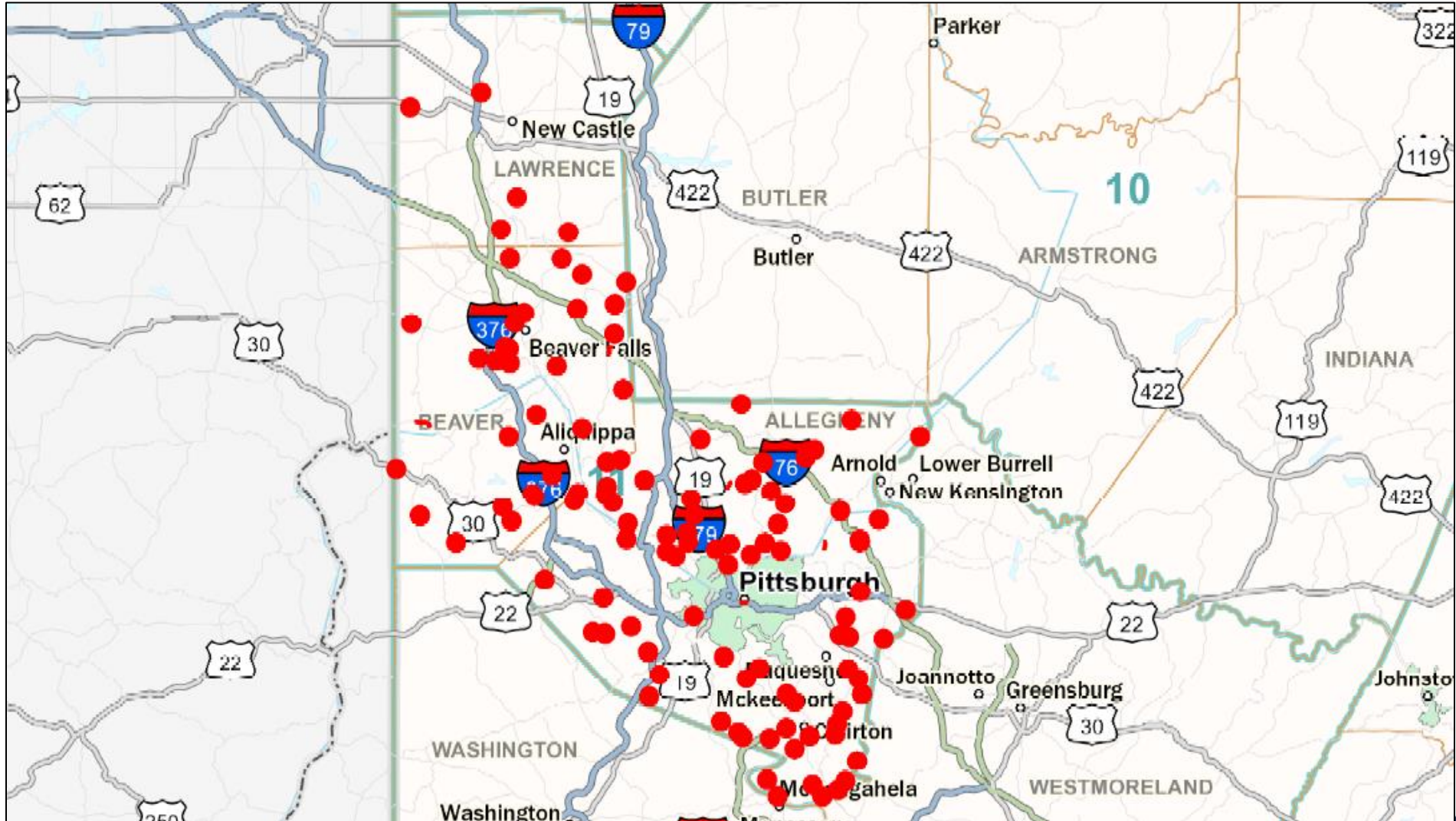
Landslide Causes (cont'd)

- Changing water content and weathered rock are the most frequent triggers for landslides.
- Water content changes over time. The clay-rich soils and weathered rocks common in the greater Pittsburgh area readily absorb moisture and soften.
- Landslides may move as a solid block of soil sliding on a weak layer or as a very thick fluid, flowing like wet concrete or oatmeal, deforming as it flows. Increased soil moisture can soften the key material and has been shown to either initiate or accelerate movement.
- The Pittsburgh Red Beds (as well as other red bed layers) are a layer of claystone rock that deteriorate when exposed to water. When deteriorated, this layer can act like a lubricated plane for all material above to slide.

Types of Embankment Failures



Dist. 11-0 Landslide Locations



➤ Dist. 11-0 Geohazard Inventory & Rating System

PENNDOT DISTRICT 11-0 GEOHAZARD INVENTORY AND RATING SYSTEM															
Number of Outstanding High Priority Geohazards =		40 Sites													
Number of Outstanding Medium Priority Geohazards =		47 Sites													
Number of Outstanding Low Priority Geohazards =		36 Sites													
Total Number of Outstanding Geohazards ⁽¹⁾ =		123 Sites													
LOCATION								GEOHAZARD CATEGORY RATINGS							
STATE ROUTE ⁽²⁾	SECTION	COUNTY	BEGIN SEGMENT	BEGIN OFFSET	END SEGMENT	END OFFSET	LOCAL ROAD NAME	ADT RATING	CAUSE OF GEOHAZARD RATING	LENGTH OF ROADWAY IMPACTED RATING	HEIGHT OF FAILURE RATING	DEPTH TO VOID / MINED SEAM RATING	ROADWAY LIMITS IMPACT RATING	SURROUNDING AREA IMPACTS RATING	TOTAL GEOHAZARD RATING
4022		Allegheny	0130	1835	0130	1930	Reis Run Rd	9	81	3	9		243	81	426
0018		Beaver	0060	1161	0060	1520	Frankfort Rd	9	81	9	81		81	81	342
0028	A60	Allegheny	0160	1795	160	1985	Allegheny Valley Ex	81	81	9	27		9	81	288
0068	B41	Beaver	0050		0050		Midland Rd	9	81	9	27		81	81	288
0168		Beaver	0300		0300		Beaver Rd	9	81	9	9		81	81	270
2026		Allegheny	0030	0900	0030	1200	Kline Av	9	27	27	27		81	81	252

Geohazard Inventory

REF Drop Down

REF Functional Class

REF ADT



Geohazard Rating Criteria

ADT		TYPE_OF_GEOHAZARD		LENGTH_OF_ROADWAY_IMPACTED		HEIGHT_OF_FAILURE_RELATIVE_TO_ROADWAY	
THRESHOLD	VALUE	THRESHOLD	VALUE	THRESHOLD	VALUE	THRESHOLD	VALUE
1	3	Creep Failure	27	1	3	1	3
1000	9	Landslide (Redbeds/Colluvium)	81	99	9	10	9
5000	27	Other		249	27	50	27
10000	81	Pipe Outlet Erosion	9	500	81	100	81
		Rockfall with Drop Zone	9				
		Rockfall with Fence	3				
		Rockfall with Jersey Barrier	27				
		Rockfall with No Protection	81				
		Sheet Flow	3				
		Stream Scour	27				
		Subsidence	27				

DEPTH_TO_VOID_MINED_SEAM		ROADWAY_LIMITS_IMPACT		SURROUNDING_AREA_IMPACT	
THRESHOLD	VALUE	THRESHOLD	VALUE	THRESHOLD	VALUE
1	81	Both Lanes	243	Frequent Maintenance	9
50	27	Debris in Both Lanes	243	Maintenance Costs of Closure	81
100	3	Debris in Drop Zone	3	Other	0
		Debris in Lane	81	Periodic Maintenance	9
		Debris in Shoulder	9	Political Implications	81
		Dip in Road	27	Rural Road with Low ADT	3
		Into Lane	81	School, EMS, Police, and/or Fire Impacts	27
		Lane Distress	9		
		Lane Undermined	27		
		One Lane and Shoulder	81		
		Other			
		Shoulder Backup Failing	3		
		Shoulder Failing	9		
		To White Line	27		

Revised Rating Ranges	
Low Priority	
18 - 70	
Medium Priority	
71 - 149	
High Priority	
150 - 648	

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[Spreadsheet](#)

Questions/Feedback

