

Stability Improvement Area <sup>1,2</sup>	NORTHWEST SEATTLE						NORTHEAST SEATTLE			CAPITOL HILL			SOUTH SEATTLE				
	Broadview	25th Ave. N.W.	Carkeek	Blue Ridge	Golden Gardens	Shishole	Burke Gilman	Inverness	Laurelhurst	North Capitol Hill	Interlaken	West Capitol Hill	Mount Baker	25th Avenue South	West Beacon Hill	Duwamish	Rainier Beach
<b>Number of Landslides</b>																	
High Bluff Peeloff	3			2	6	4	2										
Groundwater Blowout	18			11	1	6	1				1				6	1	1
Deep-seated	2		1	3	2		1	5		1	10	2	3	4	13	3	4
Shallow Colluvial	22	8	12	5	17	9	35	17	20	8	22	11	8	6	16	19	21
Unidentified	2									5	9	3	3		3	1	1
Total	47	8	13	21	26	19	39	22	20	14	42	16	14	10	38	24	27
<b>Subsurface Conditions<sup>3</sup></b>																	
Colluvium Over Glacially Overridden Clay				X	X						X		X	X		X	X
Colluvium Over Glacially Overridden Sand and Gravel																	
Colluvium Over Glacially Overridden Sand-Clay		X	X	X	X		X	X					X				
Colluvium Over Glacially Overridden Till-Sand-Clay	X				X	X			X	X		X	X		X		
Colluvium Over Glacially Overridden Till-Clay													X				X
Sand-Clay Contact (Tubbs, 1974) Mapped in Area	X	X	X	X	X	X	X	X							X	X	
<b>Contributing Causes of Instability</b>																	
Steep Topography	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Loose Fill or Colluvium on Slope	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Colluvium Over Clay					X						X		X	X		X	X
High Groundwater Levels (Seepage and Springs)	X	X		X	X	X	X	X			X	X		X	X	X	X
Road Cuts and Fills (Public)			X											X		X	X
Undercutting and Filling (Private)			X		X	X	X			X	X		X	X		X	X
Improperly Directed Surface Water				X	X								X				
Heavy Rainfall with Surface Runoff (Trigger Mechanism)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Stability Improvements</b>																	
	<b>Unit<sup>7</sup></b>																
Homeowner Education	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Storm Drain Maintenance/Improvement (Curbs/Gutters/Catchbasins)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trench Subdrains (10 ft deep)																	
Trench Subdrains (15 ft deep w/ trenchbox)					1,600						200						
Finger Drains																	
Springhead Drains																	
Horizontal Drains-Cleaning					8,450												
New Horizontal Drains					7,500												
Mechanically Stabilized Earth Wall <sup>5</sup>					5,000		5,000				2,200			1,200			
Geotextile Reinforced Soil Slope																	
Slope Grading (Excavation)																	
Machine Formed Curbs				400										1,300			
Retaining/Catchment Wall (10 ft high)				17,000	4,000		5,000		500	5,000	9,400	7,000	5,500		2,250	3,000	19,500
Fill Stabilization-Excavation and Replacement (20 ft wide, 7 ft deep) <sup>4</sup>											2,000						
Excavation											2,000						
Soil Backfill and Compaction											2,000						
Asphalt Paving (4-inch thick including base)											860						
Machine Formed Concrete Curbs											385						
Drainage Improvements <sup>6</sup>																	

**General Note:**  
The Stability Improvements presented here are general types of measures that could be considered by the City, private property owners, or both, to improve stability. The number, length, square footage, etc., listed are very rough estimates of work on City and/or private properties presented only as a basis to formulate order-of-magnitude budgets.

- Notes:**
- This table should be used in conjunction with the text describing each Stability Improvement Area, and with the cost data presented in Table 2-1.
  - The stability improvements listed here are preliminary and are presented to provide the city and private property owners with data for use in prioritizing work and developing order-of-magnitude budgets. Final scopes of work and corresponding cost estimates should be based on additional engineering studies and subsurface explorations.
  - Subsurface conditions may vary within a particular Stability Improvement Area. Many sites contain fill material on a slope or at the top of the slope.
  - Includes excavation of listed volume of material (CY), replacement soil backfill and compaction, installation of drainage improvements (if necessary), asphalt paving, and installation of machine formed concrete curbs. See individual costs for each of these items, as deemed necessary.
  - Standard MSE wall.
  - If necessary, type and quantity will depend upon site conditions.
  - CY = cubic yard, EA = each, LF = lineal foot, SF = square foot, SY = square yard

**Seattle Landslide Study  
Seattle Public Utilities  
Seattle, Washington**

**STABILITY IMPROVEMENT AREAS  
NORTHWEST, NORTHEAST,  
CAPITOL HILL, SOUTH SEATTLE**

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**SHANNON & WILSON, INC.**  
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