Update on Coastal Bluff Stability Mapping Homer, Alaska

Presenters
Jacquelyn Overbeck and Richard Buzard (not in attendance)

Last met January of this year with a project introduction.

Since then, Richard has been working to:

- complete visual analysis of bluff stability,
- update historical shoreline change analysis,
- compute bluff parameters, and
- conduct initial assessment of stability

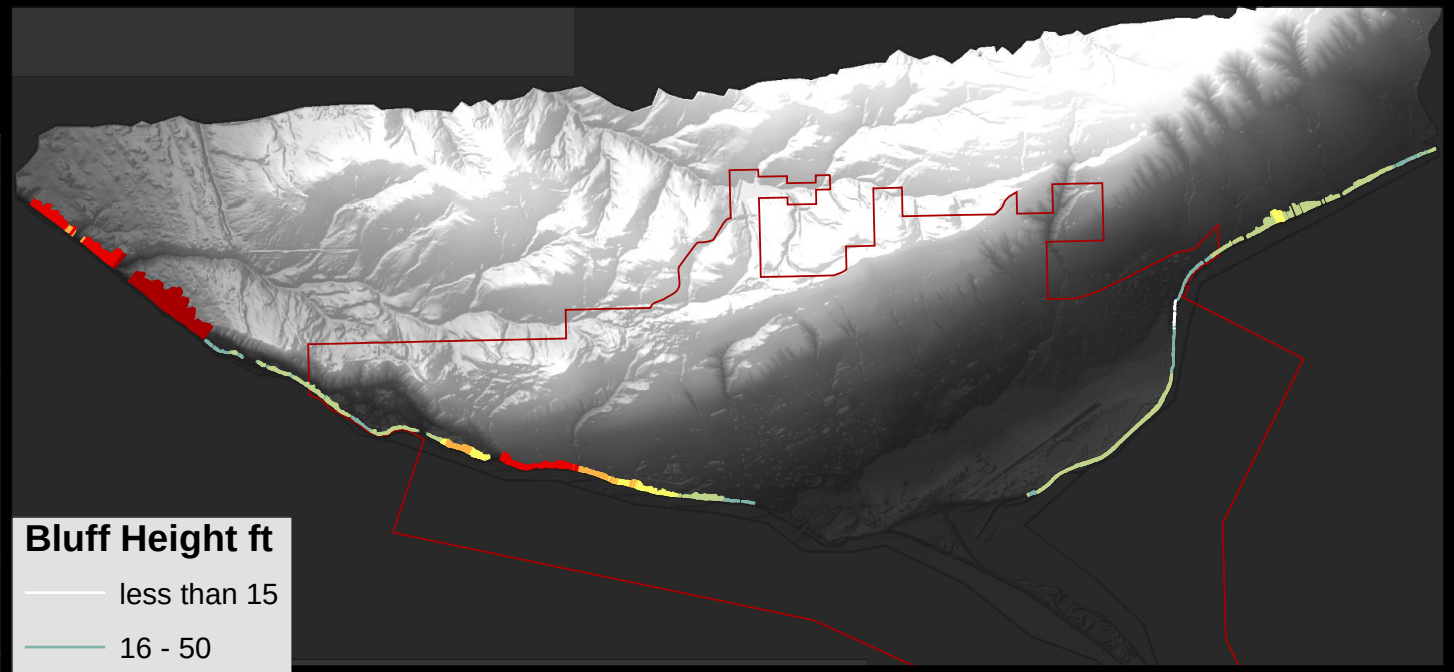
Moving forward, we will develop preliminary maps of bluff stability and create GIS files for the City.

Current Terminology in Homer City Code

Feature	Definition
[1]**average slope**	With respect to two points on the surface of the ground, the ratio, expressed as a percentage, of the difference between their elevations divided by the horizontal distance between them.
[1,2]**bluff**	An **abrupt elevation change in topography of at least 15 feet**, with an **average slope of not less than 200 percent** (two feet difference in elevation per one foot of horizontal distance).
[1,2]**coastal bluff**	A **bluff whose toe is within 300 feet of the mean high water line** of Kachemak Bay.
[2]**Steep slope**	An **elevation change in topography of at least 15 feet**, with an **average slope of not less than 45 percent** (one foot difference in elevation per 2.22 feet of horizontal distance). A steep slope can occur naturally or can be created by excavation into or filling over natural ground.

Homer City Code (November 26, 2018)

Chapter 21.44 SLOPES



Key Points:

Under current code:

- Homer doesn't have coastal bluffs, just steep slopes.
- So it is possible that landowners could have used 15 ft setback as opposed to 40 ft or 1/3 bluff height.

Current Setback Policy

Condition for Structures	Setback distance
May not be closer to the top of a ravine, steep slope, or noncoastal bluff than the lesser of	40 feet; or one-third the height of the bluff or steep slope, but not less than 15 feet
May not be closer to the top of a coastal bluff than	40 feet

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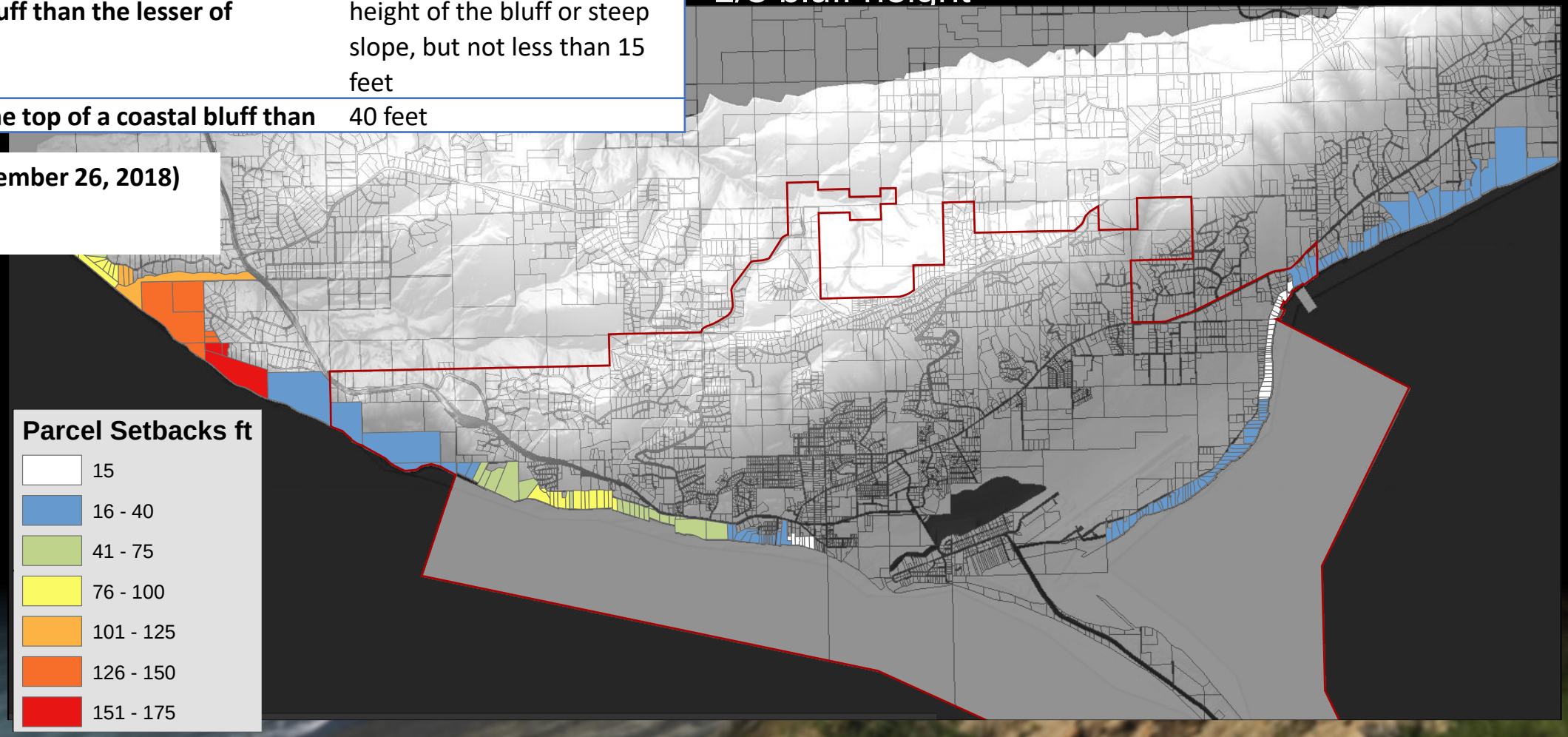
Key Point:

- Under current code, some parcels could have been subject to greater than 40 ft setback, but also could have been as low as 15 ft.

Mapped setbacks if they were based on 1/3 bluff height



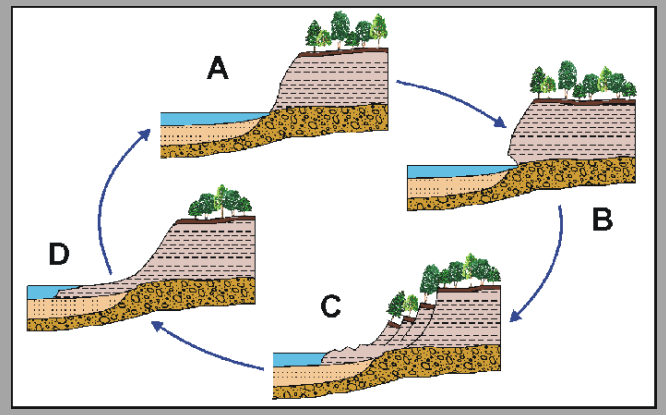
Coastal Bluff Stability Analysis

DGGS is developing a bluff stability map to show what sections of the coast are most at risk to failure.

How far erosion has reached since 1952.

We have measured bluff toe/crest/MHHW.

Possibilities are endless.



Coastal bluff erosion cycle
(Maine Geological Survey)

Slope Percent Change
1952 to 2019

- -50 - -30 (less steep)
- -29 - -10
- -9 - 10 (negligible)
- 11 - 30
- 31 - 50 (more steep)

N
0 2 4 Miles

Preliminary

Coastal Erosion Damages

Most parcels in the City of Homer are already developed.

- Would changes to the zoning code be beneficial?
- Or is this analysis a product for outreach and education of the public?