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STAFF REPORT FOR THE PLANNING COMMISSION WORKSESSION
April 1, 2019

GEOLOGIC HAZARDS REGULATIONS
(PC-2018-10262)

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SECTION 1.0 INTRODUCTION

This project, PC-2018-10262, is intended to address landslide mitigation policies, strategies, objectives and action items identified in the following three county plans.

1. Multnomah County Comprehensive Plan (2016)
   https://multco.us/landuse/comprehensive-plan
2. Multnomah County Multi-Jurisdictional Natural Hazards Mitigation Plan (2017)
   https://multco.us/em/natural-hazard-mitigation-plan-document-library
3. Multnomah County Climate Action Plan (2015)
   https://multco.us/sustainability/2015-climate-action-plan

The purpose of this Worksession is for Commissioners to provide direction to staff on policy choices presented within this staff report so that amendments to the county Geologic Hazards code can be drafted.

A briefing introducing the project to the Planning Commission occurred November 5, 2018. Since that briefing, land use staff introduced this project to community members at neighborhood association meetings held in Corbett (2/20/19 NEMCA meeting) and at Sauvie Island (2/21/19 SICA meeting). Community members thanked staff for the update and did not advocate for any particular legislative outcome. A similar project update has been scheduled with the Forest Park neighborhood association on April 16, 2019.

MULTNOMAH COUNTY COMPREHENSIVE PLAN (2016)

Chapter 7 (Natural Hazards) of the Multnomah County Comprehensive Plan provides background information and policy direction on a range of community hazards including landslides, floods, wildfires and earthquakes. Note: County 'Hillside Development' (HDP) regulations were renamed the 'Geologic Hazards' (GH) regulations after completion of the Comprehensive Plan.

As stated on page 7-3 of the Comprehensive Plan, *"Landslides can threaten people, property, and natural resources, and often occur in connection to human activity and other hazards such as erosion, flooding, and earthquakes. Susceptibility to landslides is related to underlying geology, the steepness of a slope, instability associated with previous landslides, soil type, moisture content, and human activity. Multnomah County currently regulates development on steep slopes to address risks in such areas related to erosion or landslides. The incidence of landslides is likely to increase in the future due to the impacts of climate change as increased winter rainfall leads to more soil and slope instability, particularly following prolonged periods of precipitation when the soil is saturated with water."*

This project, PC-2018-10262, will consider the following Comprehensive Plan policies and strategies related to minimizing landslide hazard risk and damage:

Areas Susceptible to Landslide

Policy 7.1: Direct development and landform alterations away from areas with development limitations related to potential hazards associated with steep slopes (over 25%) and other areas shown to be potentially susceptible to landslides or their impacts based on available County and state data associated with these hazards. Allow for exceptions based upon a showing that design and construction techniques can prevent or mitigate public harm or associated public cost and prevent or mitigate adverse effects to nearby properties.

Strategy 7.1-1: Update the County's regulatory slope hazard map, as needed, to more accurately reflect the location of steep slopes and areas potentially susceptible to landslide hazards.

Strategy 7.1-2: Evaluate and revise the Hillside Development and Erosion Control Overlay zone, as needed, to implement up-to-date regulatory approaches for addressing landslide hazards.

Policy 7.2: Protect lands having slopes greater than 25% and lesser slopes shown to be potentially susceptible to landslides from inappropriate development or slope alteration. Consider possible adverse effects on nearby homes and public and private infrastructure.

Strategy 7.2-1: Designate lands with slope greater than 25% and lesser slopes determined to be potentially susceptible to landslides as having development

limitations and apply appropriate standards to new development on these designated lands. Slope alteration and site disturbance shall be minimized and measures taken to stabilize slopes, minimize erosion, and replant areas where vegetative cover will be removed.

Strategy 7.2-2: Investigate the advisability of requiring property owners to record landslide-related limitations as deed restrictions.

MULTNOMAH COUNTY MULTI-JURISDICTIONAL NATURAL HAZARDS MITIGATION PLAN (2017)

In addition to the Comprehensive Plan, the 2017 Multnomah County Multi-Jurisdictional Natural Hazards Mitigation Plan (NHMP) describes natural hazard risks shared by the region and identifies action items related to a wide range of hazards. Specifically, Appendix E of that Plan identifies the following landslide hazard related action item for Multnomah County Land Use planning.

NHMP Action Item 53: Review the hillside development ordinance to consider amendments that address areas at risk from landslides for areas not already identified on the County Slope Hazard Map or otherwise subject to the hillside development zoning code.

MULTNOMAH COUNTY CLIMATE ACTION PLAN (2015)

Finally, as stated in the Multnomah County Climate Action Plan, *"Changes in the intensity of winter rains may increase the incidence of landslides, particularly following prolonged periods of precipitation that happen when the soil is already saturated with water. With more rain, groundwater levels can rise, increasing the risk of large, deep landslides."* This project, PC-2018-10262, will also consider Climate Action Plan Objective 15F.

15F Landslide Risk - Manage the increased risk of landslides due to increased winter rainfall by: a) Incorporating landslide and hazard risk reduction polices into the updated Comprehensive Plan. b) Identifying, mapping and monitoring landslide hazard areas with agency partners. c) Incorporating landslide hazard reduction approaches into infrastructure planning projects, land use policies and city codes. d) Providing outreach and education on reducing landslide risks to private property owners.

SECTION 2.0 SUMMARY OF EXISTING COUNTY GEOLOGIC HAZARD REGULATIONS

Multnomah County first adopted Hillside Development zoning maps and associated development regulations in 1991. Those provisions are referred to today as the Geologic Hazards (GH) regulations, which continue to apply to lands, identified on the county's slope hazard map or on lands with average slopes of 25 percent or more. The purpose of the GH regulations is to promote public health and safety, to minimize losses due to earth movement hazards and minimize erosion. A copy of the current county GH regulations is attached as A.1a, which

outlines exempt activities, application information requirements, approval standards and definitions.

In general summary, the GH provisions require that either an Oregon Certified Engineering Geologist or Geotechnical Engineer prepare either a geological report or complete a geologic form prepared by the county (Attachment A.1b) certifying that the site is suitable for the proposed development.

The Land Use Planning program typically issues less than 10 Geologic Hazard permits in any given year which accounts for ~2% of total annual land use permit activity. The Geologic Hazard permit application fee is currently $969 and the permit follows the Type 2 land use review process, taking 4-6 months on average to process.

As stated on page 7-3 of the Comprehensive Plan, *"Since the Hillside Development Overlay Zone was put into effect, newer data has become available from the Oregon Department of Geology and Mineral Industries (DOGAMI) that identifies other locations that also may be susceptible to landslides, such as locations of previous landslides and/or other areas where soil conditions increase susceptibility."*

SECTION 3.0 DOGAMI LANDSLIDE MAPS SUMMARY

Since 2015, DOGAMI has released updated landslide hazard maps through three different publications focusing on different locations across Multnomah County:

1. **Bull Run Watershed in Eastern Multnomah County -** *Surficial and Bedrock Engineering Geology, Landslide Inventory and Susceptibility and Surface Hydrography of the Bull Run Watershed, Clackamas and Multnomah Counties, Oregon. Special Paper 46 (2015).*
2. **Western, Central, Eastern and Southern Portions of Eastern Multnomah County -** *Landslide Inventory Maps. Open File Report 0-17-03 Plates 1-4 (2017)*
3. **Central and Western Multnomah County** – *Landslide Hazard and Risk Study, Interpretive Map 57 (2018)*

Combining the landslide hazard maps from these study areas helps form a more complete picture of landslide hazards in Multnomah County according to the best available scientific data. Landslide hazard maps from these three publications are shown in following on-line map viewer, which also displays the county's existing Geologic Hazards maps for comparison: **https://bit.ly/2jRgJpr**

In general, DOGAMI's updated mapping identifies lands that have failed at some point in the past (landslide deposits), and lands which according to DOGAMI's modeling are prone to future landslides (landslide susceptibility areas). The information below summarizes staff's key findings after comparing the existing county Geologic Hazard map to the more recent DOGAMI landslide hazard maps (deposits and susceptible areas):

SNAPSHOT OF MULTNOMAH COUNTY'S PLANNING JURISDICITON[1]

Total Area (unincorporated lands)	272 square miles (174,359 acres)
Total Tax Lots (unincorporated lands)	7,401
Total Buildings (unincorporated lands)	10,031[2]

SUMMARY OF EXISTING COUNTY REGULATIONS (GEOLOGIC HAZARD MAPS AND STEEP SLOPES OUTSIDE MAPPED AREAS)

Below is a summary of key observations from a detailed Geographic Information System (GIS) spatial mapping analysis of the landslide hazard maps conducted by Multnomah County staff (see Attachment A.4 for detailed GIS analysis results).

Existing County Geologic Hazard Maps

- 13% jurisdictional coverage by area (36 square miles)
- Cover 934 buildings (9.3% of the buildings in county jurisdiction)
- Cover 2,980 tax lots (both full and partial tax lot coverage) which equates to 40% of the tax lots in county jurisdiction

Slopes ≥ 25% Falling Outside Existing Geologic Hazard Areas in County Planning Jurisdiction

- 26% jurisdictional coverage by area (71.8 square miles)
- Include 338 buildings (3.3% of the buildings in county jurisdiction)
- Include 1,085 tax lots (both full and partial tax lot coverage) which equates to 14.6% of the tax lots in county jurisdiction

Key Summary: Non-exempt development within a Mapped Geologic Hazards Overlay or on slopes greater than or equal to 25% is currently subject to Geologic Hazards Permit. Therefore, the current Geologic Hazard regulations (mapped overlay + lands ≥25%) apply to 39% of the county jurisdiction, and includes 1,272 buildings, and all or a portion of 4,065 tax lots (54.9% of the total number of tax lots in the county jurisdiction).

SUMMARY OF UPDATED DOGAMI LANDSLIDE HAZARD MAPS AND STEEP SLOPES OUTSIDE UPDATED MAPPED AREAS

DOGAMI Landslide Hazard Maps (Includes Landslide Deposits and Susceptible Lands of Moderate and High Risk)[3]

- 42% jurisdictional coverage by area (115 square miles)
- Include 4,811 buildings (47% of the total buildings in our jurisdiction)

- Cover 6,239 tax lots (either full or partial tax lot coverage) which equates to 84% of the total number of tax lots

Slopes ≥ 25% Falling <u>Outside</u> DOGAMI Landslide Hazard Maps (Includes Landslide Deposits and Susceptible Lands of Moderate and High Risk)[3]

- 8.5% jurisdictional coverage by area (23.19 square miles)
- Include 58 buildings (0.57% of the buildings in county jurisdiction)
- Include 1,062 tax lots (both full and partial tax lot coverage) which equates to 14.39% of the tax lots in county jurisdiction

Key Summary:

In just comparing the updated DOGAMI hazard maps[3] to the existing county Geologic Hazard Maps; the updated DOGAMI hazard maps increase area coverage by 29%, increase the number of buildings covered by 37% and increase the number of tax lots either fully or partially covered by 44%.

When stepping back and including lands ≥25% that fall outside of DOGAMI mapped areas, we see the regulated area would now apply to 50.5% of the county jurisdiction, and include 4,869 buildings (48.5% of total buildings), and all or a portion of 7,301 tax lots (98.4% of the total number of tax lots in the county jurisdiction).

SECTION 4.0 POLICY QUESTIONS

Staff offers the following four policy questions for the Planning Commission to consider during the Worksession. Policy questions emerged as staff reviewed the updated DOGAMI landslide maps for our jurisdiction and while reviewing landslide development regulations adopted by other jurisdictions (see summary in Attachment A.3).

In general summary, the policy choices are:

<u>Policy Choice 1)</u> – Whether updates to county hazard maps should include DOGAMIs moderate <u>and</u> high landslide risk areas, or high risk areas only?

DOGAMI's rating of high and moderate risk <u>is a relative risk rating</u> generated by two types of risk analysis: 1) hazard and asset exposure, and 2) Hazus computer program earthquake-triggered landslide risk modeling. As stated in DOGAMI's **Central and Western Multnomah County** – Landslide Hazard and Risk Study, Interpretive Map 57 (2018); "Although we cannot predict when the next landslide events will occur or how big they will be, we were able to provide a detailed understanding of landslide events in the past, the estimated scale of a potential disaster, the areas susceptible to future landslides, and an estimate of what the damage and loss might be." Therefore, these were the factors considered by DOGAMI when assigning various relative risk ratings to lands in Multnomah County.

Policy Choice 2) – Whether an applicant should be required to obtain professional services from either a Certified Engineering Geologist or Geotechnical Engineer or, whether review by both professionals should be required?

A Geotechnical Engineer's focus is typically on the engineering foundation design of a structure. A Certified Engineering Geologist's focus is generally broader in the assessment of the stability of the building site, although there is crossover in subject matter expertise between both professions. Often times a Geotechnical Engineer and Certified Engineering Geologist partner together to design a project.

Policy Choice 3) - Whether a landslide-related deed restriction should be required to be recorded to alert future property owners?

Policy Choice 4) – Whether a Geologic Hazard permit review threshold should be added for tree removal?

POLICY CHOICE RELATED TO UPDATING COUNTY SLOPE HAZARD MAP

POLICY CHOICE 1a:
Medium & High Risk
 	
Repeal existing Slope Hazard Map and adopt landslide hazard information produced by the Department of Geology and Mineral Industries (DOGAMI) including:
 	
• Landslide deposits *(materials that have detached and moved downhill at some point in the past)*
• Scarps *(Locations failure planes are visible at the surface)*
• Scarp flanks *(buffers behind scarps used to estimate future retrogressive failure areas)*
• Areas of shallow landslide susceptibility (moderate and high risk), and
  o *A 'shallow' slide is defined by DOGAMI as having a failure surface less than 15-feet deep.*
• Areas of deep landslide susceptibility (moderate and high risk)
  o *A 'deep' slide is defined by DOGAMI as having a failure surface greater than 15-feet deep.*
	Staff Note: Comprehensive Plan Strategy 7.1-1 directs staff to *"Update the County's regulatory slope hazard map, as needed, to more accurately reflect the location of steep slopes and areas potentially susceptible to landslide hazards."*
	
	Areas identified by DOGAMI as having a low risk of landslide susceptibility are not being considered for regulation because all areas in the county are mapped as high, moderate or low risk. Including areas of low risk would subject all development to Geologic Hazards review, regardless of location, which is not the intent of this project.
	
	Policy choice 1a lends itself to the possibility of a tiered regulatory scheme where a higher bar could be set for projects located in high-risk areas.

	This policy choice would result in updates to the county Geologic Hazard map to include: • 115 square miles of jurisdictional coverage (42% of jurisdiction) • 4,811 buildings (47% of total) • 6,239 tax lots (84% of total)
POLICY CHOICE 1b: **High Risk Only** **Repeal existing Slope Hazard Map and adopt landslide hazard information produced by the Department of Geology and Mineral Industries (DOGAMI) including:** • Landslide deposits • Scarps • Scarp flanks • Areas of shallow landslide susceptibility (high risk only), and • Areas of deep landslide susceptibility (high risk only)	**Staff Note:** Comprehensive Plan Strategy 7.1-1 does not define the phrase 'potentially susceptible' to landslide hazards. This policy choice would exclude areas mapped by DOGAMI as having moderate susceptibility risk and would include the following on an updated Geologic Hazards Map: • 67 square miles of jurisdictional coverage (25% of jurisdiction) • 2,458 buildings (25% of total) • 594 tax lots (8% of total) As compared to the existing county Geologic Hazards maps; this policy choice would increase area coverage by 12%, increase number of buildings affected by 15.7% and decrease the number of tax lots that are either fully or partially covered by 32%.

POLICY CHOICE RELATED TO UPDATING COUNTY GEOLOGIC HAZARDS REGULATIONS – GEOTECHNICAL OVERSIGHT

POLICY CHOICE 2a: **Retain existing code allowance for**	**Staff Note:** County code requires that the applicant retain the professional preparing the Geologic Hazards application.

professional review by <u>either</u> a Certified Engineering Geologist <u>or</u> a Geotechnical Engineer.	
<u>POLICY CHOICE 2b:</u> **Amend the code to require joint professional review by <u>both</u> a Certified Engineering Geologist and a Geotechnical Engineer.**	**Staff Note:** Staff recommends this policy choice after discussions with professionals working in the geotechnical industry because this approach is common, it will result in additional professional oversight and may help identify site stability issues during the design phase. However, this approach will likely increase the cost of application preparation. This is the requirement of other jurisdictions including the cities of Portland and Salem, and is the approach recommended by the Oregon Department of Land Conservation and Development [Planning for Natural Resources: Oregon Technical Resources Guide (2000)]. If the Commission desires to limit the circumstances when review by both professionals should be required; staff recommends the Commission consider the following approach which requires dual professional review when developing in or near lands which have failed in the past or are modeled by DOGAMI as having high risk of future failure: <u>Both</u> a Certified Engineering Geologist and a Geotechnical Engineer are required when development is proposed in the following areas: • Landslide deposits, • Scarps, • Scarp flanks, • Areas of shallow landslide susceptibility (<u>high risk</u>), or • Areas of deep landslide susceptibility (<u>high risk</u>), or Either a Certified Engineering Geologist or a Geotechnical Engineer are required when development is proposed in the following areas: • Areas of shallow landslide susceptibility (<u>moderate risk</u>), • Areas of deep landslide susceptibility (<u>moderate risk</u>), or • On lands with average slopes of 25 percent or more on property not identified on the Slope Hazard map.

POLICY CHOICE RELATED TO DEED RESTRICTION RECORDATION

POLICY CHOICE 3a: **Do not adopt a provision requiring property owners to record landslide-related limitations as deed restrictions.**	**Staff Note:** See Comprehensive Plan Strategy 7.2-2: *"Investigate the advisability of requiring property owners to record landslide-related limitations as deed restrictions."* The Geologic Hazards code does not currently require recording of a deed restriction or other similar document.
POLICY CHOICE 3b: **Adopt a provision requiring property owners to record landslide-related limitations as deed restrictions.**	**Staff Note:** Instituting some sort of deed restriction requirement will help inform future buyers of any on-going conditions related to a Geologic Hazards permit which could include tree preservation and stormwater management requirements as determined appropriate by the applicant's geotechnical professional. The county could consider requiring a property owner to commit to accepting responsibility of earth movement risk and waiving the right to assert claims against the county, based on permit issuance, although the scope of any particular recording requirement will need to be researched with county legal counsel. Covenants are currently required in certain circumstances by county code to assure tree preservation, preserve mining rights, assure removal of abandoned wind turbine systems, to prevent development of the remainder of resource tracts not qualifying for development rights (Large Acreage & Template Dwellings, Lots of Exception, Customary Farm Dwelling), to prevent the use of an accessory structure as a dwelling, to prevent the use of an accessory dwelling unit from being used for short term rental, and to preserve right to farm laws of ORS 30.936. Snohomish County, Washington regulations require covenant recordation for development in geologically hazardous areas. A copy of Snohomish County's Landslide Hazard Area covenant is attached as Exhibit A.5 and is titled *"Covenant Running with the Land With Acknowledgement and Acceptance of Risk, Duty to Inform, and Waiver (Landslide Hazard Area)"*.

POLICY CHOICE RELATED TO TREE CLEARING

POLICY CHOICE 4a: **Adopt a provision requiring Geologic Hazard Review when a certain amount of trees are removed. Staff seeks policy direction on defining this threshold.**	**Staff Note:** Concern has been raised by community members that the cutting of trees can cause slope instability and this concern is validated by landslide science. The Geologic Hazards standards currently apply to development and ground disturbing activity. The definition of development includes any act requiring a permit including removal of vegetation. Removing trees does not always require a permit and therefore tree removal is not always an activity qualifying as development under the Geologic Hazards code. Additionally, tree cutting does not always involve ground disturbance and therefore can be exempt from county Geologic Hazard review. The code may benefit from amendments clarifying that a certain amount of tree removal (regardless of other permit requirements) requires a Geologic Hazards permit. Approaches taken by other jurisdictions vary. A few examples include the following. A number of other jurisdictions do not call out tree removal as a permit trigger. • Permit review required for removal of any non-hazardous tree removal in a geologically hazardous area (Snohomish County, WA, and • Permit review required for any tree removal on slopes >60% (Salem, OR). Includes removing all or 30% or more of the crown, trunk, or root system of a tree. • Permit review required for removing five (5) or more trees on a site with an average slope of at least 20% (Portland, OR). As a starting point for discussion, staff recommends the Commission consider a permit trigger when five (5) or more mature trees are removed from a regulated area including mapped slope hazard area or slopes outside the mapped area 25% or more. Mature trees could be defined as 6-inch Diameter at Breast Height (DBH) to match the definition in the county Significant Environmental Concern regulations. The number five (5) trees aligns with the number used in the City of Portland providing some degree of regulation consistency for developers.
POLICY CHOICE 4b:	**Staff Note:** This retains current Geologic Hazard permit triggers.

Do not adopt a provision requiring Geologic Hazard Review when a certain amount of trees are removed.	

SECTION 5.0 ATTACHMENTS

ATTACHMENT A.1a	Existing Multnomah County Geologic Hazards Regulations
ATTACHMENT A.1b	Existing Multnomah County Geologic Hazards Permit Form -1 (GHP Form-1)
ATTACHMENT A.2	April 12, 2018 Oregonian Article *"Study Finds 37,000 Multnomah County Residents Live in Landslide Zones"* (Elliot Njus)
ATTACHMENT A.3	Sampling of key landslide development regulations in other jurisdictions (*not an exhaustive list of regulations or jurisdictions regulating development in landslide prone areas*)
ATTACHMENT A.4	Detailed GIS assessment of existing and updated landslide hazard maps conducted by Multnomah County Asset Management
ATTACHMENT A.5	Snohomish County, Washington – *"Covenant Running With the Land with Acknowledgement and Acceptance of Risk, Duty to Inform, and Waiver (Landslide Hazard Area)"*

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[1]*Includes lands regulated by Multnomah County Land Use Planning: Rural Planning Areas, Pleasant Valley and Interlachen. Excludes urban unincorporated lands managed by cities.*

[2]*Building footprints obtained from Metro data. Building layer information collected in 2008 and does not show post-2008 development.*

[3]*Includes landslide deposits (pre-historic deposits, historic deposits, and scarp flanks) and includes shallow and deep susceptible areas of moderate and high risk of landslide. Areas of low landslide susceptibility risk areas are excluded.*