

Goal 7 Areas Subject To Natural Disasters And Hazards

□ Section 3, Landslides, Erosion and Unstable Soils

BACKGROUND

Statewide Planning Goal 7: Areas Subject To Natural Disasters And Hazards

"To protect life and property from natural disasters and hazards."

Statewide Planning Goal 7 prohibits planning or locating developments subject to damage or loss of life in known areas of natural disasters and hazards without appropriate safeguards. Plans are to be based on an inventory of known areas of natural disaster and hazards, including flooding, erosion*, landslides, earthquakes, weak foundations soils or other hazards which may be unique to local or regional areas.

Landslides and soil erosion hazards exist within the Lake Oswego Urban Service Boundary because of the presence of hilly terrain, steep ridges and ravines underlain by unstable geology and overlain by soils which have low carrying capacity for structures. The slope and soil of a hillside are generally balanced with the amount of precipitation, vegetative cover and the underlying geology. However, hillsides are constantly in motion, due to gravity and the effects of weathering and erosion. Any time the load on a susceptible hillside is increased or the stabilizing vegetation altered, erosion or landslide can occur. These disturbances can also increase surface water runoff and affect water quality through erosion and siltation.

Developments in these hazard areas can frequently result in private and public costs, either for repairs to structures, roads or other facilities or for protective measures to prevent future damage. Development in areas of landslides is also more expensive than development in flatter, more stable terrain. Sewer and water lines and roads may also require special engineering in these sensitive areas.

Landslide and soil erosion hazards can be reduced or eliminated by regulating development to ensure slopes prone to severe landslides are not destabilized. Especially important is regulating development in areas where landslides have actually occurred and where severe landslide hazards exist. When development is allowed on slopes, it must be carefully engineered and sensitively placed. Retaining existing vegetation, employing on-site erosion prevention methods during construction and replacing vegetation can moderate landslide and erosion problems.

LOC 16.005, Hillside Protection and LOC 15.005, Erosion Control Standards, regulate development on steep slopes and all development in relation to potential for erosion problems. In addition, the City's land use regulations provide protection for stream corridors, vegetation, and Distinctive Natural Areas often associated with hillsides, ravines and ridge lines. Known potential severe landslide areas are described and mapped in the Engineering Geology Chapter of the Lake Oswego Physical Resources Inventory (LOPRI), March, 1976, on file at City Hall.

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Soils with low strength have been identified by LOPRI - Engineering Geology Section and Soil Conservation Service Soils Survey, Lake Oswego, as Weak Foundation Soils having low strength. Soils which hold a moderate to severe soil weakness warning have also been identified.

The result of placing structures on unstable soils is overall settlement, differential settlement, or soil creep out from under foundations, which results in damage to structures not designed to accommodate the movement or seasonal shrink and swell. Weak soils on slopes can move down slope (soil creep).

Weak foundation soils constitute a hazard only where the weakness is unknown or when foundation design is not addressed to the condition. Engineering solutions are possible to accommodate the development problems associated with unstable soils. In addition, these lands can be left in open space, or structures clustered on stronger soils to prevent possible expense and property loss associated with these hazards. Development Standard 13.005, Weak Foundation Soils, regulates development on unstable soils, requires a soils report describing the nature of the soils and the adequacy of the soils to support intended structures and requires corrective measures, if necessary.

Summary of Major Issues

The following are some of the issues and changed circumstances and conditions which were considered in the update of this element of the Comprehensive Plan.

- LOC 15.005, Erosion Control, was adopted in 1993 to minimize the amount of sediment and other pollutants reaching the surface water management system.
- LOC 16.005, Hillside Protection Standard was adopted in 1992 and revised in 1993 to prevent hazards associated with building on steep slopes.
- LOC 13.005, Weak Foundation Soils was adopted in 1986, to identify in more detail and to minimize hazards associated with development in areas with unstable soils.

GOALS, POLICIES AND RECOMMENDED ACTION MEASURES

GOAL

The City shall protect life and property, from hazards associated with landslides, soil erosion and unstable soils.

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POLICIES

1. Identify areas within the Lake Oswego Urban Services Boundary with a potential for soil erosion hazard, landslide hazard and unstable soils, including the degree of potential hazard.
2. Regulate density and intensity of land use in areas with the potential for unstable soils, known or potential landslide hazards and soil erosion hazard areas, in accord with the degree of hazard.
3. Enact and maintain regulations and standards which require:
 - a. Appropriate engineering and site development measures to prevent damage from hazards associated with erosion, landslides and unstable soils;
 - b. Protection and restoration of natural and topographic features such as ridge lines and vegetation to preserve slope and soil stability;
 - c. Open space preservation of slopes which cannot be developed because of severe landslide and erosion hazard;
 - d. Protection of natural resources associated with steep slopes such as stream corridors, trees and other vegetation and wildlife habitat; and,
 - e. Erosion control measures.
4. Control erosion at its source through minimizing the disturbance of existing vegetation.
5. Require property owners to include erosion and drainage control measures in site planning, during and after development, to prevent increases in surface water runoff, erosion and siltation.
6. Require that land identified with a potential for high erosion hazard will be maintained in open space, unless appropriate evidence demonstrates that engineering can effectively overcome soil and slope limitations.
7. Allow development density proposed on steep slopes and on lands with unstable soils to be transferred to stable portions of the site when these areas are preserved as open space.
8. Allow innovative site and building design, including the clustering of buildings, to avoid development in hazard areas and encourage steep slopes to be used for open space uses.
9. Ensure that public facilities and services are planned to be located in non-hazard areas, where possible. When hazard areas are unavoidable, ensure that public facilities and services are designed to withstand movement of soil and rock.
10. Require the review of any development proposal by the appropriate local, state and federal agencies.

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RECOMMENDED ACTION MEASURES

- i. Minimize ground disturbance during construction by retaining natural vegetation and topographic features such as natural drainage swales, rock outcroppings and ridge lines, to the greatest extent possible, and by using measures to minimize runoff during development and after construction.
- ii. Require expected surface water runoff for all development to be controlled on site, where practical, in order to protect property, stream channels and stream corridors from present and future runoff and sedimentation.
- iii. Promote slope and soil stability and use of the natural drainage system in areas of landslide potential, by retaining areas of existing vegetation to the greatest extent possible.
- iv. Maintain a current inventory of landslide and unstable soil hazards.
- v. Reduce soil erosion problems by inspecting construction site controls, responding to complaints and providing enforcement.
- vi. Reduce intensity of development from that permitted by the zoning code or previous development approval, if necessary, to eliminate or reduce an erosion, landslide or unstable soil hazard.
- vii. Create a public awareness program to educate developers and the general public regarding the importance of erosion control, the City's erosion control program, and ways in which they can promote erosion control.