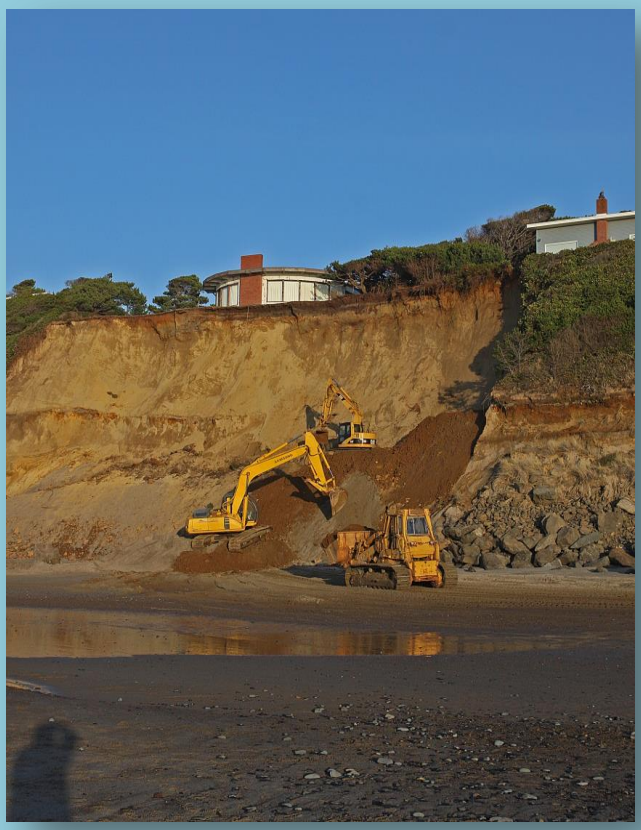

Model Coastal Erosion Overlay Zone

To Be Used In Conjunction With DOGAMI Coastal Hazard Risk Zone Maps And Analyses

Includes Example Comprehensive Plan Amendments and Adopting Ordinance

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Model Coastal Hazards Overlay Zone

[***Note:*** *This model code has been developed by the Oregon Coastal Management Program to aid local governments in further addressing increasing chronic coastal natural hazards. This code language, or portions thereof, are intended to be used as an overlay zone and should be modified as needed to fit with applicable zoning codes. This model overlay zone is intended to be used with DOGAMI risk zone maps and analyses but could be modified to be used with other credible regional hazard maps and analyses.*

Prior to using the model code provisions remember to review your comprehensive plan. The provisions in the model overlay zone are intended to be options to address a variety of chronic coastal hazard issues; however, some comprehensive plan policies will need to be added or updated to insure compatibility with the plan. In addition, it is prudent to seek legal counsel concurrence on all applicable provisions.]

Section 1.100 Coastal Hazard Overlay Zone

(1) Purpose

The purpose of the Coastal Hazard Overlay Zone is to promote the public health, safety, and general welfare by:

(a) identifying areas that may be subject to chronic coastal natural hazards including ocean flooding, beach and dune erosion, dune accretion, bluff recession, land sliding, and inlet migration;

(b) assessing the potential risks to life and property posed by chronic coastal natural hazards, including erosion and earth movement; and

(c) minimizing potential public and private risks and losses to life and property due to these chronic hazards through hazard avoidance and development requirements consistent with Statewide Planning Goals 7, and 18 and the [*applicable natural hazard section*] Section of the [*city/county*] Comprehensive Plan.

It is recognized that risk is ever present in identified hazard areas. The provisions and requirements of this section are intended to provide for full identification and assessment of risk from natural hazards, and to establish standards that limit overall risk to the community from identified hazards to a level acceptable to the community. However, it must be recognized that all development in identified hazard areas is subject to increased levels of risk, and that these risks must be acknowledged and accepted by present and future property owners who proceed with development in these areas.

(2) Applicability of Coastal Hazard Overlay Zone

The following areas are considered potentially geologically hazardous and are therefore subject to the requirements of this section:

(a) Bluff or dune backed shoreline areas within low, medium, high or active hazard zones identified in the Department of Geology and Mineral Industries (DOGAMI) Open File Report [*place applicable DOGAMI Open File Report reference and title here*].

(b) Active or potential landslide areas, prehistoric landslides, or other landslide areas identified in the DOGAMI Open File Report [*place applicable Open File Report reference here*] within or adjacent to hazard risk zones described in (a) above.

(c) Lots or parcels where the average existing slopes are equal to or greater than 25 percent within or adjacent to hazard risk zones described in (a) above.

(d) Any other documented geologic hazard within or adjacent to hazard risk zones described in (a) above and on file in the office of the [*City/County]* of *[insert applicable city or county name*] [*Building Official and/or Planning/Community Development Director*]. A "documented geologic hazard area" as used in this subsection means a unit of land, which is shown by reasonable written evidence to contain geological characteristics/conditions which are hazardous or potentially hazardous for the improvement thereof.

(3) Uses

Within the Coastal Hazard Overlay Zone, all uses permitted pursuant to the provisions of the underlying zone may be permitted, subject to the additional requirements and limitations of this section.

(4) Coastal Hazard Area Permit

(a) Except for activities identified in subsection (4)(b) as exempt, any new development or structure in an area subject to the provisions of this section shall require a Coastal Hazard Area Permit. The Coastal Hazard Area Permit may be applied for prior to or in conjunction with a building permit, grading permit, or any other permit required by the [*city/county*].

(b) Except for beach or dune areas subject to the limitations of subsection (7) of this section, the following activities are exempt from the requirement for a Coastal Hazard Area Permit:

(A) Maintenance, repair, or alterations to existing structures that do not alter the building footprint or foundation;

(B) An excavation which is less than two feet in depth, or which involves less than twenty-five cubic yards of volume;

(C) Fill which is less than two feet in depth, or which involves less than twenty-five cubic yards of volume;

(D) Exploratory excavations under the direction of a certified engineering geologist or

registered geotechnical engineer;

(E) Construction of structures for which a building permit is not required;

(F) Removal of trees smaller than 8-inches dbh (diameter breast height);

(G) Removal of trees larger than 8-inches dbh (diameter breast height) provided the canopy area of the trees that are removed in any one year period is less than twenty-five percent of the lot or parcel area;

(H) Yard area vegetation maintenance and other vegetation removal on slopes less than 25% slopes;

(I) Forest operations subject to regulation under ORS 527 (the Oregon Forest Practices Act);

(J) Maintenance and reconstruction of public and private roads, streets, parking lots, driveways, and utility lines, provided the work does not extend outside the previously disturbed area;

(K) Installation of utility lines not including electric substations;

(L) Emergency response activities intended to reduce or eliminate an immediate danger to life, property, or flood or fire hazard; and

(M) Restoration, repair or replacement of a lawfully established structure in accordance with subsection (13) of this section.

(N) Beachfront protective structures subject to regulation by the Oregon Parks and Recreation Department under OAR 736, Division 20. *[**Note:** This exemption should be included if the jurisdiction chooses "Option 2" in subsection (8) for the regulation of beachfront protective structures.]*

(c) In circumstances where a portion of a lot or parcel is within a bluff or dune backed shoreline hazard zone or landslide risk area as identified in subsection (2), but where all development, construction, or site clearing (including tree removal) will occur on a portion of the lot or parcel entirely outside of the identified hazard area, no further review is required under this section.

(d) Application, review, decisions, and appeals on Coastal Hazard Area Permits shall be in accordance with the requirements for a [*identify procedure type; a "type 2" process for discretionary decisions is recommended*] procedure and decision making process as set forth in Section [*reference applicable procedures section of local code*]. Unless otherwise provided by [city/county] ordinance or other provision of law, any Coastal Hazard Area Permit so issued shall be valid for a time period as specified in the approval decision and shall in no case be valid for more than [*add a time period such as 5 years*] years.

(e) In addition to a land use application form with the information required in Section [*indicate general land use application submittal section here*], an application for a Coastal Hazard Area Permit shall include the following:

(A) A site plan that illustrates areas of disturbance, ground topography (contours), roads and driveways, an outline of wooded or naturally vegetated areas, watercourses, erosion control measures, and trees with a diameter of at least 8-inches dbh (diameter breast height) proposed for removal;

(B) An estimate of depths and the extent of all proposed excavation and fill work;

(C) Identification of the bluff or dune backed hazard zone or landslide hazard zone for the parcel or lot upon which development is to occur. In cases where properties are mapped with more than one hazard zone, a certified engineering geologist shall identify the hazard zone(s) within which development is proposed based on the DOGAMI report referenced above;

(D) An engineering geologic report prepared by a certified engineering geologist which meets the content requirements of subsection (5); and

[***Note:*** *If the jurisdiction wishes to consider other licensed professionals for hazard area report preparation, it should consult with the Oregon Board of Geologist Examiners to determine the appropriateness of including other related professionals such as a registered geologist or registered geotechnical engineer*.]

(E) If engineering remediation is required to make the site suitable for the proposed development, an engineering report, prepared by a registered civil engineer, geotechnical engineer, or certified engineering geologist (with experience relating to coastal processes), which provides design and construction specifications for the required remediation.

(F) A draft copy of a Hazard Disclosure and Liability Waiver which sets forth the following:

(i) A statement that the property is subject to potential chronic natural hazards and that development thereon is subject to risk of damage from such hazards;

(ii) A statement that the property owner has commissioned an engineering geologic report for the subject property, a copy of which is on file with the jurisdiction, and that the property owner has reviewed the engineering geologic report and has thus been informed and is aware of the type and extent of hazards present and the risks associated with development on the subject property;

(iii) A statement acknowledging that the property owner assumes all risks of damage from natural hazards associated with the development of the subject property; and

(iv) A statement releasing the jurisdiction, its agents and employees from any and all claims which may arise as a result of damages, losses or injuries sustained by the property owner and his/her heirs, successors and assigns, from natural hazards.

(f) A decision to approve a Coastal Hazard Area Permit shall be based upon findings of compliance with the following standards:

(A) The proposed development is not subject to the prohibition of development on beaches and certain dune forms as set forth in subsection (7) of this section;

(B) The proposed development complies with the applicable requirements and standards of subsections (6), (7), (8) and (9) of this section;

(B) The engineering geologic report conforms to the standards for such reports set forth in subsection (5) of this section;

(C) The development plans which are the subject of the application conform, or can be made to conform, with all recommendations and specifications contained in the Engineering Geologic Report; and

(D) The proposed development will be within the acceptable level of risk established by the community, as defined in subsection (5)(b) of this section.

(g) In the event the *[city/county]* determines that additional review of a Coastal Hazard Area Permit application by an appropriately licensed and/or certified professional is necessary to determine compliance with the provisions of this section, the *[city/county]* may retain the services of such a professional for this purpose. All costs associated with this review shall be borne by the applicant in accordance with *[reference city/county code section authorizing and setting fees/charges]*.

(h) In approving a Coastal Hazard Area Permit, the *[city/county]* may impose any conditions which are necessary to ensure compliance with the provisions of this section or with any other applicable provisions of this chapter.

(i) If an engineering geologic report required by this section identifies conditions, processes or levels of risk for a specific site that are substantially different than the hazard designations contained in DOGAMI Open File Report [*place applicable DOGAMI Open File Report reference and title here*] then the [*city/county*] may provide notice of such report to the Department of Geology and Mineral Industries (DOGAMI) and Department of Land Conservation and Development (DLCD). The agencies will have 15 days to provide comments and the [*city/county*] shall consider any agency comments in rendering a decision on a Coastal Hazard Area Permit.

[**Note:** *The above provision providing for notice and review by DOGAMI and DLCD is currently under review. Jurisdictions should consult with the department before proposing this language for adoption into a local code.*]

(5) Engineering Geologic Report Standards

(a) Engineering geologic reports required by this section shall be prepared consistent with standard geologic practices employing generally accepted scientific and engineering principles, and shall, at a minimum, contain the items outlined in the Oregon State Board of

Geologist Examiners "Guidelines for Preparing Engineering Geologic Reports in Oregon", [*insert date of issuance of current version of the published guidelines*]. All Geologic Reports are valid as prima facie evidence of the information therein contained for a period of five (5) years. Such reports are valid only for the development plan addressed in the report. The [*city/county*] assumes no responsibility for the quality or accuracy of such reports.

(b) Engineering geologic reports required by this section shall include a statement of the certified engineering geologist's professional opinion as to whether the proposed development will be within the acceptable level of risk established by the community, considering site conditions and the recommended mitigation.

As used in this section, "acceptable level of risk" means the maximum risk to people and property from identified natural hazards deemed acceptable to the community in fulfilling its duty to appropriately protect life and property from natural hazards. For development subject to the provisions of this section, the acceptable level of risk is:

- Assurance that life safety will be protected from the identified hazard(s) for a time period which exceeds the life of the associated structure, considering site conditions and specified mitigation; and
- A [*high likelihood*] that the proposed structures will be protected from substantial damage from the identified hazard(s) for a period of [*50-70*] years, considering site conditions and specified mitigation."

Cascadia megathrust earthquake and tsunami events are exempt from this acceptable level of risk statement as indicated above [*with the exception that this statement identified in subsection 5 (a) and 5 (b) above shall address the following threshold for Cascadia megathrust earthquakes*]*:*

- *It is [Likely] that life safety will be protected from the effects of a Cascadia megathrust earthquake for a time period which exceeds the life of the associated structure, considering site conditions and specified mitigation.]*

[**Note:** Brackets "[]" *denote policy decisions which should be considered by the local government in implementing the proposed code language. To implement the above requirement, a jurisdiction will need to make policy decisions on selecting a minimum qualitative threshold for substantial damage risk and design life for new structures proposed in areas subject to coastal hazards. Design life should provide for a reasonable or typical life expectancy for the structure, e.g. a new dwelling would generally be in the 50-70 year range. In addition, a jurisdiction may address life safety issues related to a Cascadia megathrust earthquake event as indicated above*].

(c) In addition to the requirements set forth in subsection (5)(a, b), engineering geologic reports for lots or parcels abutting the ocean shore shall include the following information, analyses and recommendations:

(A) Site description:

(i) The history of the site and surrounding areas, such as previous riprap or dune grading permits, erosion events, exposed trees on the beach, or other relevant local knowledge of the site.

(ii) Topography, including elevations and slopes on the property itself.

(iii) Vegetation cover.

(iv) Subsurface materials – the nature of the rocks and soils.

(v) Conditions of the seaward front of the property, particularly for sites having a sea cliff.

(vi) Presence of drift logs or other flotsam on or within the property.

(vii) Description of streams or other drainage that might influence erosion or locally reduce the level of the beach.

(viii) Proximity of nearby headlands which might block the longshore movement of beach sediments, thereby affecting the level of the beach in front of the property.

(ix) Description of any shore protection structures that may exist on the property or on nearby properties.

(x) Presence of pathways or stairs from the property to the beach.

(xi) Existing human impacts on the site, particularly that might alter the resistance to wave attack.

(B) Description of the fronting beach:

(i) Average widths of the beach during the summer and winter.

(ii) Median grain size of beach sediment.

(iii) Average beach slopes during the summer and winter.

(iv) Elevations above mean sea level of the beach at the seaward edge of the property during summer and winter.

(v) Presence of rip currents and rip embayments that can locally reduce the elevation of the fronting beach.

(vi) Presence of rock outcrops and sea stacks, both offshore or within the beach zone.

(vii) Information regarding the depth of beach sand down to bedrock at the seaward edge of the property.

(C) Analyses of Erosion and Flooding Potential:

(i) Analysis of DOGAMI beach monitoring data for the site (if available).

(ii) Analysis of human activities affecting shoreline erosion.

(iii) Analysis of possible mass wasting, including weathering processes, land sliding or slumping.

(iv) Calculation of wave run-up beyond mean water elevation that might result in erosion of the sea cliff or foredune (see Stockdon, 1996).

(v) Evaluation of frequency that erosion-inducing processes could occur, considering the most extreme potential conditions of unusually high water levels together with severe storm wave energy.

(vii) For dune-backed shoreline, use established geometric model to assess the potential distance of property erosion, and compare the results with direct evidence obtained during site visit, aerial photo analysis, or analysis of DOGAMI beach monitoring data.

(viii) For bluff backed shorelines, use a combination of published reports, such as DOGAMI bluff and dune hazard risk zone studies, aerial photo analysis, and field work, to assess the potential distance of property erosion.

(ix) Description of potential for sea level rise, estimated for local area by combining local tectonic subsidence or uplift with global rates of predicted sea level rise.

(D) Assessment of potential reactions to erosion episodes:

(i) Determination of legal restrictions of shoreline protective structures (Goal 18 prohibition, local conditional use requirements, priority for non-structural erosion control methods).

(ii) Assessment of potential reactions to erosion events, addressing the need for future erosion control measures, building relocation, or building foundation and utility repairs.

(E) Recommendations:

(i) Use results from the above analyses to establish setbacks (beyond any minimums set by this section), building techniques, or other mitigation to ensure an acceptable level of safety and compliance with all local requirements.

(ii) Recommend a plan for preservation of vegetation and existing grade within the setback area, if appropriate.

(iii) Include a consideration of a local variance process to reduce the building setback on the side of the property opposite the ocean, if this reduction helps to lessen the risk of erosion, bluff failure or other hazard.

(iv) Recommend methods to control and direct water drainage away from the ocean (e.g. to an approved storm water system), or if not possible, to direct water in such a way so as to not cause erosion or visual impacts. In addition, the report shall specify erosion control measures as necessary to conform to the requirements of subsection (9).

(6) Additional Development Limitations in Coastal Hazard Areas

In addition to the conditions, requirements and limitations imposed by any required engineering geologic report, all development subject to a Coastal Hazard Area Permit shall conform to the following requirements:

(a) New development [*should/shall]* be designed and sited in such a manner that improvements may be relocated in the event they are jeopardized by coastal hazards. Considerations shall include:

(A) Construction techniques that will render new buildings readily moveable [*shall be used/should be considered*]

(B) Properties shall possess access of sufficient width and grade to permit new buildings to be relocated or dismantled and removed from the site.

(b) Safest site requirement: Proposed development on lots/parcels within the Coastal Hazard Overlay Zone must be located within an area most suitable for development as determined by a certified engineering geologist as part of an engineering geologic report prepared in accordance with subsection (5). As necessary to comply with this requirement, applicants shall consider seeking a variance to required yards or property line setbacks as authorized in section *[insert code section authorizing the granting of variances to dimensional standards].*

*[**Note:** To best facilitate the use of this "safest site" requirement, it is recommended that jurisdictions incorporate specific language into the local code section containing the standards and requirements for variances which specifies that the reduction of risk from identified geologic hazards can constitute a circumstance justifying a variance from yard, setback or similar dimensional standards.]*

(c) Residential density limitation: Notwithstanding the residential density allowances of the underlying zone, on lots or parcels which are developed with an existing dwelling or dwellings, the construction of additional dwelling units within the [*insert hazard areas deemed appropriate and could include active, high, and medium hazard zone areas*] erosion hazard zone areas is prohibited.

(d) New Infrastructure Requirement: All new infrastructure (e.g., roads, water and sewer lines) shall be located landward of active and high hazard areas, whenever possible.

[***Note:*** F*or bluff-backed shorelines, jurisdictions may wish to consider a standard setback to bluff edge or crest of the bluff for new construction; such a standard would represent a minimum, but could be increased if recommended by the engineering geologist. Generally, a standard setback should be based on an estimated annual erosion rate for the subject site as identified by an engineering geologist, along with a projected design life for a new structure. A jurisdiction could also include a "buffer" distance beyond this potential minimum erosion distance to provide an additional margin of safety. An example of a*

standard based on an annual erosion rate for 60 years, plus a buffer distance, is provided below.]

(e) Minimum Bluff Setback Requirement: The footprint of any new structure or any horizontal addition requiring at least one footing in Coastal Hazard Overlay Zone area must be set back from the bluff edge a distance of 60 times the annual erosion rate (as determined by a certified engineering geologist) plus [*20/or other distance determined to be an adequate buffer*] feet. If the bluff edge is not clearly defined the [*City/County*] shall determine the bluff edge by using the most recent LIDAR data and/or identifying the bluff break of 25% slope or greater. In the case of a series of "stepped" bluffs the determination should be at the highest bluff edge.

(7) Additional Limitations on Development on Beaches and Dunes

In addition to the conditions, requirements and limitations imposed by any required engineering geologic report, all development subject to a Coastal Hazard Area Permit in identified beach and dune areas shall conform to the following requirements:

(a) Construction of residential, commercial, or industrial buildings is prohibited on beaches, active foredunes, other foredunes that are conditionally stable and subject to ocean undercutting or wave overtopping, and interdune areas (deflation plains) that are subject to ocean flooding.

(b) Other development in these areas shall be permitted only if adequate findings are provided to the [*City/County*] which demonstrate that the proposed development is adequately protected from any geologic hazards, wind erosion, undercutting, ocean flooding and storm waves; and is designed to minimize adverse environmental effects. In addition findings shall be provided to address the following:

(A) The type of use proposed and the adverse effects it might have on the site and adjacent areas;

(B) Temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation;

(C) Methods for protecting the surrounding area from any adverse effects of the development; and

(D) Hazards to life, public and private property, and the natural environment that may be caused by the proposed use.

[**Note**: *Some jurisdictions address the above use prohibition/limitation and other Statewide Planning Goal 18 requirements in a separate overlay zone or other set of development standards with specific application only to identified beach and dune areas. For jurisdictions that do not have a separate Goal 18 overlay, the above language will serve to*

address the minimum dune hazard management requirements of Goal 18. Jurisdictions should, as a part of their comprehensive plan, inventory and identify in advance the areas subject to the foredune and interdune development prohibition. To complete this inventory, (or if necessary, for use in case-by-case review), the following provides guidance on the suggested use of the DOGAMI HAZARD Maps to identify Goal 18 prohibition areas set forth in (5)(a) above:]

Beach and dune development prohibition areas include:

1) *All dune backed shoreline areas within active and high hazard areas identified within the DOGAMI Coastal Erosion Hazard zone maps shall be included within the development prohibition area, and*
2) *All dune backed shoreline areas within an area identified by FEMA FIRM maps to be subject to ocean flooding shall be included within the development prohibition area, and*
3) *All dune backed shoreline areas within moderate hazard areas identified within the DOGAMI Coastal Erosion Hazard zone maps shall be included within the development prohibition area if it is determined by a qualified professional that the site is within areas including beaches, active foredunes, other foredunes that are conditionally stable and subject to ocean undercutting or wave overtopping, and interdune areas (deflation plains) that are subject to ocean flooding. Any application for development within a designated moderate hazard area as indicated above shall include this determination.*

(8) Requirements for Beachfront Protective Structures

[***Note:*** *Statewide Planning Goal 18 sets forth an eligibility standard and review criteria for beachfront protective structures. Beachfront protective structures (along with other ocean shore area improvements and activities) are regulated through Oregon Parks and Recreation Department's Ocean Shore Permit process; OPRD is required to issue permits in compliance with local plans and the Statewide Planning Goals. Local governments have the option of implementing the Goal 18 beachfront protective structure provisions through a local permit (which is in addition to the OPRD permit), or they may use the review of the Land Use Compatibility Statement (LUCS) for OPRD permits as a mechanism for applying the eligibility standard. The following subsection provides sample language for each of these options:]*

[Option 1-Local Permit]

(a) A Coastal Hazard Area Permit for a beachfront protective structure shall be issued only where development existed on January 1, 1977, or where an exception to Goal 18, Implementation Requirement 2 has been adopted as a part of the comprehensive plan.

(b) For the purposes of this subsection, "development" means houses, commercial and industrial buildings, and vacant subdivision lots which are physically improved through construction of streets and provision of utilities to the lot.

(c) All beachfront protective structures shall be subject to the following requirements:

(A) Visual impacts shall be minimized;

(B) Necessary access to the beach shall be maintained;

(C) Negative impacts on adjacent property shall be minimized;

(D) Long-term or recurring costs to the public shall be avoided.

(E) Structures shall be designed to minimize adverse impacts on water currents, erosion, and accretion patterns; and

(F) Land-use management practices and non-structural solutions to problems of erosion and flooding shall be preferred to structural solutions; structural solutions shall only be utilized when it is determined that land-use management and non-structural solutions are not adequate.

[**Note:** *Jurisdictions may also use additional standards found within the document "Geological Report Guidelines for Shoreline Protective Structure Applications" located in Attachment E*]

[Option 2-LUCS Review]

(a) In reviewing a Land Use Compatibility Statement (LUCS) for an Oregon Parks and Recreation Department Ocean Shore Permit authorized by ORS 390.640, [City/County] may determine that an application to construct a beachfront protective structure is in compliance with the local comprehensive plan and implementing regulations only if the beachfront protective structure will be placed where development existed on January 1, 1977, or where an exception to Goal 18, Implementation Requirement 2 has been adopted as a part of the comprehensive plan.

(b) For the purposes of this subsection, "development" means houses, commercial and industrial buildings, and vacant subdivision lots which are physically improved through construction of streets and provision of utilities to the lot.

(c) Review and decisions on Land Use Compatibility Statements for Ocean Shore Permits shall be conducted in accordance with the requirements for a [*specify a decision type 1 or 2*] as set forth in section *[reference code section on administrative/decision making procedures]*

[**Note:** *Jurisdictions should consult with legal counsel regarding the appropriate process to be used in issuing decisions on Land Use Compatibility Statements]*

(9) Erosion Control [*and Stormwater Management*] Measures

All development in areas subject to the requirements of this section shall conform to the following standards for erosion control [*and stormwater management*]:

[**Note:** *A jurisdiction may already have these types of provisions within their development code. If so they could make reference to them here. If not, a jurisdiction could add them, or make reference to then, here. Example provisions from Astoria, Oregon and Newport, Oregon are included in Attachments A and B of this document for review and consideration.*

(10) Land Division Requirements

New land divisions in areas subject to the provisions of this section shall:

(a) Include within each lot or parcel a minimum [*1500/or other appropriate minimum area*] contiguous square feet building footprint which is located landward of the high hazard risk zone as identified in subsection (2)(a); and

(b) Wherever possible locate all water and sewer lines and infrastructure, roads, and bridges landward of the high hazard risk zone identified in subsection (2)(a).

[**Note:** *These land division standards could be incorporated into this overlay zone as suggested above, or alternatively, they may need to be placed within the appropriate section of the city or county land division requirements*]

(11) Hazard Disclosure and Liability Waiver

For all development subject to a Coastal Hazard Area Permit, the Hazard Disclosure and Liability Waiver provided for in subsection (4)(f) of this section must be executed by the subject property owner and recorded in the deed records of [*insert name of county here*] County prior to receiving final approval as set forth in subsection (12)(c).

(12) Certification of Compliance

Permitted development shall comply with the recommendations in any required geologic or engineering report. Certification of compliance shall be provided as follows:

(a) Plan Review Compliance: Building, construction or other development plans shall be accompanied by a written statement from a certified engineering geologist stating that the plans comply with the recommendations contained in the engineering geologic report for the approved Coastal Hazard Area Permit.

(b) Inspection Compliance: Upon the completion of any development activity for which the engineering geologic report recommends an inspection or observation by a certified engineering geologist, the certified engineering geologist shall provide a written statement indicating that the development activity has been completed in accordance with the applicable engineering geologic report recommendations. [*A jurisdiction may also wish to specifically include an inspection by the engineering geologist at the foundation system or footing stage to insure compliance prior to substantial additional investments being made*]

(c) Final Compliance: No development requiring an engineering geologic report shall receive final approval (e.g. certificate of occupancy, final inspection, etc.) until the [*City/County*] receives:

(A) A written statement by a certified engineering geologist indicating that all performance, mitigation, and monitoring measures contained in the report have been satisfied;

(B) If mitigation measures incorporate engineering solutions designed by a licensed professional engineer, a written statement of compliance by the design engineer; and

(C) A copy of the recorded Hazard Disclosure and Liability Waiver as required by subsection (10).

(13) Restoration or Replacement of Existing Structures

(a) Application of the provisions of this section to an existing use or structure shall not have the effect of rendering such use or structure nonconforming.

(b) Replacement, repair or restoration of a lawfully established building or structure subject to this section that is destroyed by fire, other casualty or natural disaster shall be permitted. Such a structure may be replaced under the provisions of this subsection with a building or structure up to the same size as the damaged/destroyed building.

(c) A building permit application for replacement, repair or restoration of a structure under the provisions of this subsection shall be accompanied by an engineering geologic report prepared by a certified engineering geologist that conforms to the standards set forth in subsection (5). All recommendations contained in the report shall be complied with in accordance with subsection (12).

(d) An application for replacement, repair or restoration authorized by this subsection shall be processed and authorized as a (Type 1) ministerial action pursuant to Section *[insert appropriate procedural code section reference].*

DEFINITIONS [*These definitions can be placed within this overlay zone as Section 0-0.030 or be included within the general definitions section of the existing zoning code*]

- **building footprint** is the greatest exterior dimensions of a structure, including cantilevered floor areas when extended to ground level. Attached desks, porches and gazebos are excluded from these calculations.

● **buildings, Readily Movable** are buildings/structures that are designed, sited and constructed so as to be readily movable and do not include commercial or industrial structures. Readily movable structures include:

1. Single family dwellings that:
    a) Are [*single unit*], [*single story residential*] structures with less than [*may add a square foot limitation*] square feet of total floor area; and
    b) Have a dimensional width of [*may add a width limitation*] feet or less; and
    c) Are placed on perimeter footing, piling, or other type of foundation that will render them readily movable. Slab-on-grade foundations do not meet this criterion; and
    d) Are composed of stud wall or similar frame type of construction that will render them readily movable. Walls that are constructed of masonry, including stone walls, concrete poured or concrete block walls, and brick veneer walls do not meet this criterion; and
    e) Have access to and from the site of sufficient width and grade to permit the structure to be relocated or dismantled and removed from the site; and
    f) Can be relocated at a reasonable cost relative to other structures of the same size and construction.
2. Manufactured homes that:
    a) Have a dimensional width of [*may add a width limitation*] feet or less; and
    b) Have access to and from the site of sufficient width and grade to permit the structure to be relocated or dismantled and removed from the site.

A detached garage with less than 500 square feet of total floor area, which is bolted to a slab foundation, which does not have living space within or above the structure, and which does not have plumbing or interior walls shall be exempt from any readily movable structure requirements.

- **Certified engineering geologist** is a person who is registered as such by the Oregon State Board of Geologist Examiners

● **crest of the bluff or bluff edge** is the junction separating the bluff face and upland. This feature typically lies at the landward edge of the steeply-sloping bluff face and at the seaward edge of the gently-sloping upland.

● **geologic hazard is a** geologic condition that is a potential danger to life and property which includes but is not limited to earthquakes, landslides, erosion, expansive soils, fault displacement, and subsidence.

● **Geotechnical engineer** is a person who is registered as such by the Oregon Board of Examiners for Engineering and Surveying.

● **risk** is the threat to life and property posed by a hazard.

● **risk zone** is that zone measured as a linear distance landward from a reference feature to a line on the ground which is subject to hazards, and which, on the balance of evidence and in light of scientific knowledge of the moment, it would be prudent to restrict development. Risk zones identified in this chapter are as set forth in the Oregon Department of Geology and Mineral Industries (DOGAMI) Open file Report # [*insert applicable open file report here*].

● **structure** is anything constructed or installed or portable, the use of which requires a location on a parcel of land.

Attachment A

Example Comprehensive plan Amendments

Relating to adoption of a Coastal Hazard Overlay (CHO) Zone intended to be used in conjunction with DOGAMI coastal hazard risk zone maps.

[*Please note that each local comprehensive plan is different and coastal hazard information may be located in different plan "chapters" and be identified by different names (e.g., Coastal Shorelands, Natural Hazards, Beaches and Dunes). Local governments will need to review "their" comprehensive plan to identify what chapters may need to be updated. This following language is intended to aid local governments by providing "sample" implementation or "enabling" language necessary to adopt a coastal hazards overlay zone which utilizes DOGAMI coastal hazard risk zone maps. It also includes some related general goals and policies. Local governments should use existing good goals and policies and supplement/update where needed and desired. This language should not be considered comprehensive. It should be used to strategically revise or replace specific language where considered appropriate.*]

Section 0-0.010 Natural Hazards:

Natural hazards, for purposes of the [*insert applicable jurisdiction*] Comprehensive Plan, are: floods (coastal and riverine), landslides, earthquakes and related hazards, tsunamis, coastal erosion, and wildfires. [*Note: Local governments may (and do) identify and plan for other natural hazards such as weak foundation soils and other hazards unique to a local or regional area*].

Natural hazard areas are those areas subject to a threat of a naturally occurring event that will have a negative effect on people or the environment. Many natural hazards are interrelated, e.g. earthquakes can cause tsunamis.

Section 0-0.020 Natural Hazards Goals:

(1) To protect life and property, to reduce costs to the public, and to minimize damage to the natural resources of the coastal zone that might result from inappropriate development in environmentally hazardous areas.
(2) To identify and evaluate where natural hazards are known or suspected to exist.
(3) To adopt comprehensive plans (inventories, policies and implementing measures) to reduce risk to people and property from natural hazards.
(4) To provide appropriate safeguards for land uses in areas subject to natural hazards.

Section 0-0.030 Natural Hazards Policies: [*Note: The natural hazard policies below are only those that are directly related to adoption of a Coastal Hazard Overlay (CHO) Zone intended to be used in conjunction with DOGAMI coastal hazard risk zone maps. They do not impact other existing plan policies and provisions which should remain.*]

(1) [*Insert applicable jurisdiction*] shall require the provision of adequate safeguards, including requirements and potential limitations before permitting development in identified areas known or suspected of natural hazards.
(2) [*Insert applicable jurisdiction*] shall require site investigation reports (e.g., geologic reports, engineering reports) done by [*insert what qualified professionals the jurisdictions will accept*] prior to review and approval of a proposed development in areas known or suspected of geologic hazards (which include chronic coastal hazards). These reports must clearly identify what measures will be taken to safeguard against existing hazards
(3) [*Insert applicable jurisdiction*] shall maintain maps/analyses of identified natural hazards which are available to the public. These maps and analyses are included within the comprehensive plan by reference here and are listed as follows:
    a. Bluff or dune backed shoreline areas within low, medium, high or active hazard zones identified in the Department of Geology and Mineral Industries (DOGAMI) Open File Report [*place applicable DOGAMI Open File Report reference and title here*].
    b. Active or potential landslide areas, prehistoric landslides, or other landslide areas identified in the DOGAMI Open File Report [*place applicable Open File Report reference here*].
    c. [*list all hazard inventory information previously adopted and not superseded by this new coastal hazard information*]
(4) [*Insert applicable jurisdiction*] shall adopt a coastal hazards overlay zone to address chronic coastal hazard based on coastal hazard information contained in (1) and (2) above. The [*City/County*] shall develop provisions within this overlay zone which provide safeguards to reduce risk to people, property and the natural environment from these potential coastal hazards.
(5) [*Insert applicable jurisdiction*] shall review new hazard inventory information provided by applicable federal and state agencies, or other information deemed credible by applicable federal or state agencies, to evaluate and assess risk to people and property

within the [*City/County*]. The [*City/County*] shall adopt or amend applicable comprehensive plan and implementing ordinances, as necessary, based on the evaluation of risk related to this new information in order to avoid development in hazard areas where the risk to people and property cannot be mitigated.

(6) In adopting comprehensive plan policies and implementing measures to protect people and property from natural hazards, [*Insert applicable jurisdiction*] should consider the benefits of maintaining natural hazard areas as open space, recreation and other low density uses; and the effects of development and mitigation measures in identified hazard areas on the management of natural resources.

(7) [*Insert applicable jurisdiction*] should coordinate their land use plans and decisions with emergency preparedness, response, recovery and mitigation programs.

Attachment B

Sample Adopting Ordinance language

Relating to adoption of a Coastal Hazard Overlay (CHO) Zone intended to be used in conjunction with DOGAMI coastal hazard risk zone maps.

[*Please note that each local comprehensive plan and implementing codes are different and applicable coastal hazard information may be located in different areas. Local governments will need to review "their" comprehensive plan and implementing regulations to identify what areas will need to be updated. This following ordinance is intended to aid local governments by providing an "example" ordinance necessary to adopt a coastal hazards overlay zone, which utilizes DOGAMI coastal hazard risk zone maps, together with all applicable plan and code sections. It should be considered a guide only*]

[*CITY/COUNTY*] OF [*Insert applicable jurisdiction*]

ORDINANCE NO. _____

ORDINANCE AMENDING [*CITY/COUNTY*] OF [*Insert applicable jurisdiction*] COMPREHENSIVE PLAN (ORDINANCE NO. [*Insert ordinance number*]), SUBDIVISION ORDINANCE NO. [*insert ordinance number*], AND ZONING ORDINANCE NO. [*insert ordinance number*], TO UPDATE GEOLOGIC COASTAL HAZARD AREA PROVISIONS

Findings: [*Note: the following are sample findings and will need to be modified as applicable to the jurisdictions process and proposal*]

1. Existing Natural hazards Program: The [*City/County*] of [*insert applicable jurisdiction*] Zoning Ordinance (No. [*insert applicable ordinance number*], as amended) requires that persons interested in developing property within coastal geologically hazardous areas [identify briefly what the current program is for reviewing and approving development within natural hazard areas.]

2. Summary of Proposed Implementing Ordinance Changes: The [*City/County*] of [*insert applicable jurisdiction*] Planning Commission completed a comprehensive review of the natural hazard program section of the Zoning Ordinance Section(s) ([*insert applicable section here*]) and determined that changes are needed to properly implement the [*insert applicable comprehensive plan chapter here*] Chapter of the [*City/County*] Comprehensive Plan. The changes include updates to the maps used to identify when site specific geologic evaluations are needed; replacement of certain provisions that are vague or overly strict with respect to when Coastal Hazard Area Permits are required; new standards for erosion control during construction; a requirement that [*engineering geologists*] perform post-construction certification that development was undertaken in accordance with their recommendations; a requirement that undeveloped lots in land divisions must include buildable sites outside of [*active or high risk areas*]; and other related coastal hazard provisions.

3. **Summary of Proposed Comprehensive Plan Changes:** The [*City/County*] Planning Commission evaluated the Natural Hazards [*replace with applicable chapter name if applicable*] Section of the [*insert applicable comprehensive plan chapter here*] Chapter of the [*City/County*] Comprehensive Plan and determined that the Plan's description of coastal erosion and landslide areas in [*City/County*] needs to be updated to correspond with new mapping, consistent with applicable comprehensive plan language [*if no such language exist it could be replaced with "applicable Statewide Planning Goal requirements"*], which requires the [*City/County*] to maintain and, where necessary, update ordinances that control development in environmentally hazardous areas.

4. History of Planning Commission Involvement: The [*City/County*] Planning Commission reviewed the above referenced changes to the Comprehensive Plan and Zoning Ordinance, including related land division provisions in the [*Municipal/County*] Code, at [*insert number of work sessions here*] separate work sessions from [*insert applicable date here*] through [*insert applicable date here*]. A public workshop was held by staff on [*insert applicable date here*] and public hearings before the Planning Commission were conducted on [*insert applicable date here*] , [*insert applicable date here*], and [*insert applicable date here*] . Affected property owners received direct mail notice of the workshop and initial hearing. The Planning Commission voted to recommend adoption of the proposed amendments ([*City/County*] File No. [*Insert applicable file number here*]).

5. History of [City Council/Board of County Commissioners] Involvement: The [City Council/Board of County Commissioners] held public hearings on [*insert applicable date here*], [*insert applicable date here*] and [*insert applicable date here*] regarding the question of the proposed revisions, and voted in favor of their adoption after considering the recommendation of the Planning Commission, hearing testimony, and evidence in the record.

6. Legal Requirements and Public Notice Met: Information in the record, including affidavits of mailing and publication, demonstrate that all legally required and appropriate public notification was provided for the Planning Commission and [*City Council/Board of County Commissioner*] public hearings.

THE CITY OF [CITY/COUNTY] ORDAINS AS FOLLOWS:
[*Note: the following is sample language and will need to be modified as applicable to the jurisdictions process and proposal*]

Section 1 Findings. The above findings are hereby adopted as support for the [*City Council's/Board of County Commissioner's*] following amendments.

Section 2 Code Definitions. The following definition [*s*] is added to Section {???] Ordinance No.[???] (as amended), to be inserted in alphabetical order:

[*Add any new definitions needed and developed as a result of adoption of the Coastal Hazard Overlay Zone*]

Section 3 Zoning Code Language Additions or Deletions. Section(s) [???] of Ordinance No. [???] (as amended), [*state name(s) of Sections where existing language will be repealed*], is repealed [*in part/in its entirety*] and replaced with a new Section [???], as shown in Exhibit ["??"]. [*Note: identify and include, as part of this section, any existing language which needs to be added or deleted as a result of these amendments. Section 3 may need to be repeated to clearly identify all additions, deletions and replacement language required*]

Section 4 Subdivision Code Additions or Deletions. Section [????] of Ordinance No. [???] is hereby amended to add the following subsection [??]: "[*insert specific new item # and title*]. ["??"]. [*Note: identify and include, as part of this section, any existing language which needs to be added or deleted as a result of these amendments. Section 4 may need to be repeated to clearly identify all additions, deletions and replacement language required*]

Section 5 Comprehensive Plan Additions or Deletions . The [*insert comprehensive plan section*] of the [*insert comprehensive plan chapter*] chapter of Ordinance No. [???] (as amended), is hereby amended as shown in Exhibit ["?"]. [*Note: identify and include, as part of this section, any existing language which needs to be added or deleted as a result of these amendments. Section 5 may need to be repeated to clearly identify all additions, deletions and replacement language required*]

Section 7 Effective Date. This ordinance shall take effect 30 days after adoption.

Date adopted: _____.

Signed by the [*Mayor/Chair*] on _____.

_____
[??????????????]

ATTEST:

_____
[??????????????], City Recorder

Attachment C
City of Newport Erosion Control Measures

2-4-7.045. <u>Erosion Control Measures</u>. In addition to completing a Geologic Report, a certified engineering geologist shall address the following standards.

A. Stripping of vegetation, grading, or other soil disturbance shall be done in a manner which will minimize soil erosion, stabilize the soil as quickly as practicable, and expose the smallest practical area at any one time during construction;

B. Development plans shall minimize cut or fill operations so as to prevent off-site impacts;

C. Temporary vegetation and/or mulching shall be used to protect exposed critical areas during development;

D. Permanent plantings and any required structural erosion control and drainage measures shall be installed as soon as practical;

E. Provisions shall be made to effectively accommodate increased runoff caused by altered soil and surface conditions during and after development. The rate of surface water runoff shall be structurally retarded where necessary;

F. Provisions shall be made to prevent surface water from damaging the cut face of excavations or the sloping surface of fills by installation of temporary or permanent drainage across or above such areas, or by other suitable stabilization measures such as mulching, seeding, planting, or armoring with rolled erosion control products, stone, or other similar methods;

G. All drainage provisions shall be designed to adequately carry existing and potential surface runoff from the twenty year frequency storm to suitable drainageways such as storm drains, natural watercourses, or drainage swales. In no case shall runoff be directed in such a way that it significantly decreases the stability of known landslides or areas identified as unstable slopes prone to earth movement, either by erosion or increase of groundwater pressure.

H. Where drainage swales are used to divert surface waters, they shall be vegetated or protected as necessary to prevent offsite erosion and sediment transport;

I. Erosion and sediment control devices shall be required where necessary to prevent polluting discharges from occurring. Control devices and measures which may be required include, but are not limited to:

(1) Energy absorbing devices to reduce runoff water velocity;

(2) Sedimentation controls such as sediment or debris basins. Any trapped materials shall be removed to an approved disposal site on an approved schedule;

(3) Dispersal of water runoff from developed areas over large undisturbed areas;

J. Disposed spoil material or stockpiled topsoil shall be prevented from eroding into streams or drainageways by applying mulch or other protective covering; or by location at a sufficient distance from streams or drainageways; or by other sediment reduction measures; and

K. Such non-erosion pollution associated with construction such as pesticides, fertilizers, petrochemicals, solid wastes, construction chemicals, or wastewaters shall be prevented from leaving the construction site through proper handling, disposal, site monitoring and clean-up activities.

Attachment D

City of Astoria Development Code

EROSION CONTROL AND STORMWATER MANAGEMENT

3.300. REGULATION OF EROSION CONTROL AND STORMWATER MANAGEMENT.

A. Purpose.

The purpose of this ordinance is to:

1. Minimize impacts associated with excavation and grading,

2. Minimize the erosion of land during clearing, excavation, grading, construction and post-construction activities,

3. Prevent the transport of sediment and other soil borne pollutants into the Columbia River estuary and its tributaries, wetlands and riparian areas,

4. Prevent the transport of sediment onto adjacent property and into City rights of way and storm systems,

5. Prevent the unnecessary clearing, excavation, and stripping of land; and

6. To reduce the amount of soil exposure during construction.

B. Definitions.

The following definitions shall apply for this ordinance:

1. Clearing: Any activity that removes vegetative cover while leaving the root system intact.

2. Erosion: Movement of soil by water or wind.

3. Excavation: Removal of topsoil, gravel, sand, rock or any other type of soil material.

4. Fill: Placement of topsoil, gravel, sand, rock or any other type of soil material.

5. Fill, Structural: Fill that is intended to support structures.

6. Grading: Any combination of excavation and/or fill activities.

7. Regulated Activities: The clearing, grading, excavation, filling, or stripping of land, and post construction activities.

8. Sedimentation: Deposition of soil moved by water or wind from its site of origin.

9. Stripping: Removal of vegetation and roots.
10. Tracking: Movement of soil from a disturbed area onto streets, sidewalks, or adjacent property by vehicle tracks or tires.

11. Undeveloped Site: A lot or parcel of land with no permanent structure such as a dwelling or commercial building or other permanent man made structure.

(Section 3.300 added by Ordinance 04-08, 10-4-04)

3.305. PERMITS.

A. Permit Required.

Persons proposing to clear, grade, excavate, strip, or fill land (regulated activities) shall obtain a permit before commencing any of the following activities unless exempted elsewhere by this ordinance:

1. Any proposed clearing, grading, filling, stripping, or excavating (regulated activity) within 100 feet of a river, bay, stream, watercourse or wetland; or

2. Any proposed regulated activity located more than one hundred feet from a river, bay, stream, watercourse or wetland that exceeds an area of 2,000 square feet; or

3. Any proposed clearing, grading, filling, stripping, or excavating (regulated activity) within 100 feet of a known geologic hazard as indicated on the City's "Areas of High Water and Past Slides" map; or

4. Any proposed clearing, grading, filling, stripping, or excavating (regulated activity) if any portion of the site has a slope of 35% or greater; or

5. The proposed cumulative volume of excavation and fill exceeds ten cubic yards in a 12 month period; or

6. Excavation or fill in excess of one (1) foot deep.

B. Permits in Conjunction with Building Permits.

A grading permit for regulated activities in conjunction with a structure requiring a building permit shall be reviewed and issued as part of the City's building permit process using the standards herein.

C. Permits in Conjunction with a Partition or Subdivision.

A grading permit for regulated activities in conjunction with a partition or subdivision shall be reviewed and issued in conjunction with the partition or subdivision process using the standards herein. New subdivisions or housing developments should cause minimal earth disturbance and removal of trees.

D. Exceptions.

The following activities are exempted from the requirements of this ordinance:

1. Residential landscaping and gardening activities up to 1,000 square feet;

2. Forest management activities in an area zoned Land Reserve (LR) for forest management.

3. Utility construction by public or private utility agencies, involving less than 20 cubic yards of excavation or fill.

4. Emergency repair work by a utility agency. After the emergency repairs are completed, the site shall be subject to the requirements of this ordinance.

E. Permit Review and Approval.

Permits shall be obtained from the Engineering Department. All permits shall be reviewed and approved by both the Engineering Department and Community Development Department for compliance with this Ordinance and other City codes and building codes.

F. Permit Fees.

Permit fees shall be established by City Resolution.

(Section 3.305 added by Ordinance 04-08, 10-4-04)

3.310. INFORMATION REQUIRED.

The following information is required for permits:

A. Site Plan.

A site plan, drawn to an appropriate scale with sufficient dimensions, showing the property line locations, roads, areas where clearing, grading, excavating, stripping, or filling is to occur, the area where existing vegetative cover will be retained, the location of any springs, streams or wetland areas on or immediately adjacent to the property, the general direction of slopes with slope arrows showing direction of water flow on existing slopes and graded slopes, construction access, the location of the proposed development, and the location of soil stock piles, if any.

B. Erosion Control Methods.

The type and location of proposed erosion and sedimentation control measures, both short term and post construction.

C. Stormwater Management Methods.

The type and location of proposed stormwater management from roofs, parking and other impervious surfaces. Stormwater calculations prepared by a Registered Professional Engineer may be required by the City Engineer as part of the permit application.

D. Grading Plan in Steep Areas.

The City shall require a grading plan prepared by a Registered Professional Engineer and/or Registered Engineering Geologist where the disturbed area has an average slope of 35% or greater, the disturbed area is located in known geologic hazard area, or is part of a partition or subdivision. Such grading plan shall, at a minimum, include the following additional information:

1. Existing and proposed contours of the property at two foot contour intervals;

2. Location of existing structures and buildings, including those within 25 feet of the development site on adjacent property;

3. Design details for proposed retaining walls;

4. The direction of drainage flow and detailed plans and locations of all surface and subsurface drainage devices to be constructed.

E. Sedimentation and Erosion Control Plan.

The City shall require that the sedimentation and erosion control plan be prepared by a Registered Professional Engineer where the disturbed area is greater than 20,000 square feet, or the disturbed area has an average slope of 35% or greater.

F. Development Plan.

The City shall require a development plan for the site where the disturbed area is greater than 2,000 square feet to assure the least amount of earth disturbance as necessary, and to assure that the development is consistent with zoning and other City regulations. Such development plan shall, at a minimum, include the following additional information:

1. Site plan as described above;

2. Location of existing and proposed structures;

3. Location of existing and proposed parking, access and egress;

4. Location and square footage of proposed landscaped areas.

G. Ground and Surface Water Diversion Plan.

If property construction will result in alterations of natural hydrology such that damage to neighboring properties will occur, the City shall require that any known ground or surface water be diverted to an alternate natural path or to a man-made system to prevent any damage to other properties that may be affected by the water.

(Section 3.310 added by Ordinance 04-08, 10-4-04)

3.315. GRADING STANDARDS.

A. Cuts.

The following Grading Standards shall be required for cuts:

1. The design shall minimize the need for cuts. The proposed grading plan shall be designed to blend with the existing topography as much as possible without the use of retaining walls.

2. Long, steep cut and fill slopes shall be avoided.

3. The slope of cut surfaces shall not be steeper than is necessary for the intended use and shall not be steeper than two horizontal to one vertical (2:1) unless an engineering geology report determines that a cut at a steeper slope will be reasonable stable and not create a hazard to public or private property.

4. Cuts shall not remove the toe of any slope where a known potential or historic land slide exists as determined by the City Engineer.

5. Cuts shall be set back a minimum of five (5) feet from property lines so as to minimize danger and disturbance to adjoining property.

6. Retaining walls shall be constructed in accordance with the Structural Specialty Codes as adopted by the City.

B. Fills.

The following Grading Standards shall be required for fills:

1. The design shall minimize the need for fills.

2. The slope of fill surfaces shall not be steeper than two horizontal to one vertical (2:1) unless an engineering geology report determines that a steeper slope will be reasonably stable and not create a hazard to public or private property. Fill slopes shall not be constructed on natural slopes steeper than two horizontal to one vertical.

3. Fills shall be set back from property lines a minimum of five (5) feet so as to minimize impact on adjoining property. Retaining walls shall be required by the City where the City Engineer deems it necessary.

4. The ground surface shall be prepared to receive fill by removing vegetation, inappropriate fill, topsoil, and other unsuitable materials, and shall be scarified to provide a bond with the new fill.

5. Any structural fill shall be designed by a Registered Professional Engineer, in accordance with standard engineering practices.

6. Fill material shall be broken into pieces no larger than 12 inches to assure proper compaction.

7. The following items are unsuitable materials and shall not be used for fill:

   a. Roofing material, fiberglass, metals, asphalt, or large slabs of concrete, and other man-made construction debris inappropriate for fill

b. Stumps, organic materials, and other natural debris inappropriate for fill

8. A compaction report shall be required for any area with fill prior to any construction on the site.

C. Drainage.

The following Grading Standards shall be required for drainage:

1. Proposed grading, cuts or fills shall not alter drainage patterns so that additional stormwater is directed onto adjoining property.

2. All cut and fill slopes shall be provided with subsurface drainage as necessary for stability.

D. Streets.

Refer to the Astoria "Street Design Standards" on file in the office of the City Engineer.

(Section 3.315 added by Ordinance 04-08, 10-4-04)

3.320. EROSION AND SEDIMENTATION CONTROL STANDARDS.

A. Authority.

Review and approval of grading permits for regulated activities shall be based on the conformance of the development plans with the standards of this section. Conditions of approval may be imposed to assure that the development plan meets the standards. The City Engineer shall require modifications to the erosion and sedimentation control plan at any time if the plan is ineffective in preventing the discharge of sediment to City streets and storm drains, surface waters, wetlands, or adjacent property.

B. Department of Environmental Quality (DEQ) Standards.

The current DEQ "Best Management Practices for Stormwater Discharges Associated with Construction Activities" document are incorporated as part of this document by reference.

C. General Erosion and Sedimentation Control Standards.

1. Natural vegetation shall be retained and protected wherever possible.

2. Stream and wetland areas shall only be disturbed in accordance with US Army Corps of Engineers and Oregon Division of State Lands permits, as well as

riparian preservation requirements in Astoria Development Code Article 4, "Columbia River Estuary and Shoreland Regional Standards".

3. Sedimentation barriers, as described in the DEQ "Best Management Practices for Stormwater Discharges Associated with Construction Activities" document shall be placed to control sedimentation from entering the river, bay, streams, wetlands, adjacent property or City streets and storm sewers. The barriers shall be installed prior to site clearance or grading activities.

4. The City Engineer or Building Official may require areas to be temporarily stabilized with straw mulch, sod, mat or blanket in combination with seeding, or other acceptable sediment control method. Prior to the completion of construction, such areas shall be permanently stabilized by seeding or other vegetative ground cover.

5. Stormwater catch basins, inlets or culverts shall be protected by sediment traps or filter barriers such as "bio bags".

6. Soil storage piles or fill shall be located so as to minimize the potential for sedimentation of streams, wetlands, adjacent property or City streets or storm sewers. The City Engineer or Building Official may require temporary stabilization of soil storage piles or fill.

7. Temporary sedimentation control, not in conjunction with a structure, shall be required in any situation where the City Engineer or Building Official determine that sedimentation or erosion may affect streams, wetlands, adjacent property, City streets or storm sewers.

8. Erosion and sedimentation control measures shall be continually maintained during the period of land disturbance and site development in a manner that ensures adequate performance. Soil that has been transported by any means to a street or any area where stormwater flows to a storm drain or surface water, shall be cleaned up to prevent transport to the drain or surface water. All temporary erosion and sedimentation control measures shall remain in place until the disturbed area is stabilized with permanent vegetation.

9. The City shall require a graveled construction road or access of sufficient length, depth, width, and rock size to prevent sedimentation from being tracked onto City streets.

10. Sediment trapped by sediment control methods shall be redistributed on-site, removed, or permanently stabilized to prevent further erosion and sedimentation.

11. The City Engineer shall require the cleanup of any streets, catch basins or storm sewers affected by regulated activities on a site at the expense of the person responsible for those regulated activities. Measurable amounts of sediment that

leave the site shall be cleaned up and placed back on the site or disposed of in an approved manner.

12. Under no conditions shall soil on sidewalks, streets, or equipment be washed or hosed into storm sewers, drainage ways, streams or other water bodies.

13. The City shall make periodic inspections to ascertain that erosion and sediment control measures as proposed have been implemented and are being effectively maintained. The City Engineer or the Building Official are authorized to place an immediate "stop work" order on any project that does not meet the standards imposed in this ordinance.

(Section 3.320 added by Ordinance 04-08, 10-4-04)

3.325. STORMWATER MANAGEMENT STANDARDS.

Projects that are 40,000 square feet (land area) or larger shall install a stormwater management system as part of the landscaping requirements. Such a system shall be designed by a Registered Professional Engineer and/or Registered Landscape Architect and shall be capable of meeting the standards in the DEQ "Best Management Practices for Stormwater Discharges Associated with Construction Activities", or other guidelines acceptable to the City Engineer.

(Section 3.325 added by Ordinance 04-08, 10-4-04)

3.330. ENFORCEMENT.

A. Final Inspection.

The City shall review all regulated activities one year after completion and/or installation of permanent vegetation to assure that any erosion control or regulated activity measures installed continue to meet the standard imposed in this ordinance. The applicant shall be responsible for continued maintenance until the City Engineer and Building Official has approved a final inspection on the project.

B. Responsible Party and/or Change of Ownership.

The applicant shall be responsible for the work to be performed in accordance with the approved plans and specifications in conformance with the provisions of this code. In the event of a change of ownership prior to the Final Inspection, the applicant shall enter into a Performance Agreement with the City and proposed new property owner. The Performance Agreement shall, at minimum, identify the party responsible for completion of the project until a Final Inspection has been approved by the City.

C. Continued Maintenance.

If an erosion control or regulated activity measure system fails due to lack of maintenance or breakage, and there are impacts to adjacent property owners, or downstream water quality or quantity as a result of the failure, the City shall perform the maintenance or repair and charge the current property owner for the required repairs.

D. Penalties.

In addition to any other method of enforcement available to the City, including City Code Section 1.010, the provisions of this ordinance may be enforced by the issuance of citations by duly appointed officers of the City pursuant to Astoria City Code Section 6.135.

E. Additional Costs.

Where the City Engineer, Community Development Director, or Building Official deem it necessary, in the interest of public health, safety, or welfare, to incur additional costs such as, but not limited to, the hiring of independent geotechnical experts or other technical expertise, or costs to complete or correct work not completed by the applicant during the course of the project, such costs shall be borne by the applicant. Such costs shall not exceed actual costs.

F. Performance Bond.

The City Engineer or Community Development Director may require that the applicant furnish to the City a performance bond up to, and not to exceed, the value of the cost of the required improvements in order to assure that the conditions imposed are completed in accordance with the plan and specifications as approved by the City Engineer or Community Development Director and that the standards established in granting the permit are observed.

G. Time Limit on Permit.

Authorization of a permit shall be void after 180 days unless substantial construction or use pursuant thereto has taken place. However, the City Engineer or Building Official may, at their discretion, extend authorization for an additional 180 day period upon written request by the applicant and a determination that the conditions of the project or permit application have not changed sufficient to warrant review of a new permit application.

(Section 3.330 added by Ordinance 04-08, 10-4-04)

Attachment E

DLCD Geological Report Guidelines for Shoreline Protective Structure Applications

Produced by the Coastal Processes and Hazards Working Group and Oregon Coastal Management Program staff (DOGAMI, DLCD, and OPRD), this is a list of considerations to be included in geologic reports for oceanfront shoreline protective structures.

This list is a supplement to the applicable requirements of the Oregon Parks and Recreation Department as well as to local standards. It is meant to provide an additional resource for local government review and ordinance updates, OPRD Ocean Shore Program staff, property owners, and geologic consultants.

A. Project Need

1. Analysis of the types of hazards affecting the property

2. Estimated rate of erosion based on visual observations, aerial photo analysis, published reports, such as DOGAMI hazard risk zone studies, and DOGAMI beach monitoring data.

3. Description of the type of property, improvements, or structures that are threatened, and describe the nature of the threat.

B. Evaluation of Alternatives for Wave Attack

1. Description of preferred alternative.

2. Evaluation of hazard avoidance options (siting or relocation).

3. Evaluation of soft stabilization methods (foredune enhancement, beach nourishment, cobble berms.

4. Evaluation of hard stabilization (riprap, seawalls).

5. Evaluation of bio-engineered structures (clay burritos and vegetated terraces).

6. Description of alternatives that have been attempted prior to designation of the preferred alternative.

C. Evaluation of Alternatives for Mass Wasting

1. Vegetation management.

2. Drainage controls.

3. Slope regrading.

4. Reinforcing building structures.

D. Analysis of Impacts from Preferred Alternative

1. Potential for flank scour.

2. Potential toe scour.

3. Shoreline alignment impacts to adjoining properties and non-armored neighbors, including impacts to properties not eligible for shoreline protective structures.

4. Potential for the preferred alternative to cause rip embayments or prolong existing embayment patterns.

5. Reduction in sand supply caused by preferred alternative.

6. Quantify Narrowing or loss of beach area.

7. Impacts from expected maintenance of the project over the lifetime of the structure (include history of maintenance of similar projects nearby if possible and analysis of local sea level rise, and trends in littoral

sand movement. Describe the expected maintenance methods that could occur.

8. Impacts to existing public beach access routes, and provisions to keep access route in a useable condition.

9. Impacts to sites of geologic interest, such as fossil beds or ancient forest remnants

Sources: Guidelines for the Preparation of Technical Reports to the Impacts of Coastal Erosion (Paul Komar, 1993)

Appraisal of Chronic Hazard Alleviation Techniques (Shoreland Solutions 1994)