1008 STORM DRAINAGE (3/24/05)

1008.01 PURPOSE

To minimize the amount of stormwater runoff resulting from development utilizing nonstructural controls where possible, maintain and improve water quality, prevent and/or reduce soil erosion, prevent structural and environmental damage.

1008.02 PLAN FOR STORM DRAINAGE AND EROSION CONTROL

A. A storm drainage and erosion control plan will be required for all significant residential, commercial, industrial and recreational development. This requirement includes all proposals in or immediately adjacent to an area of Open Space on the Comprehensive Plan Map, in or adjacent to an identified Major Hazard area and in areas of or adjacent to an area having an historic localized flooding problem resulting from storm drainage. The plan shall contain at a minimum:

1. The methods to be used to minimize the amount of runoff siltation, and pollution created from the development both during and after construction. Site specific considerations may be incorporated. The plan shall be consistent with the specific drainage basin or subbasin plan.

2. An analysis of source controls as an alternative method to control stormwater runoff, such as detention and storage techniques.

3. Statement of consistency with County stormwater improvement standards and Comprehensive Plan.

B. The County may require that the applicant design and construct a drainage system which will insure that offsite impacts caused by that development can be mitigated.

C. Facilities developed onsite may be used to implement a basinwide or subbasin drainage management plan, if necessary.

1008.03 GENERAL STANDARDS

A. All development shall be planned, designed, constructed and maintained to:

1. Protect and preserve existing natural drainage channels to the maximum practicable extent (see Section 1002);

2. Protect development from flood hazards;

3. Provide a system by which water within the development will be controlled without causing damage or harm to the natural environment, or to property or persons within the drainage basin;

4. Assure that waters drained from the development are substantially free of pollutants, including sedimentary materials, through such construction and drainage techniques as sedimentation ponds, reseeding, phasing of grading;

5. Assure that waters are drained from the development in such a manner that will not cause erosion to any greater extent than would occur in the absence of development;

6. Provide dry wells, french drains, or similar methods, as necessary to supplement storm drainage systems;

7. Avoid placement of surface detention or retention facilities in road right-of-way.

B. Where culverts cannot provide sufficient capacity without significant environmental degradation, the County may require the water course to be bridged or spanned.

C. In the event a development or any part thereof is traversed by any water course, channel, stream or creek, gulch or other natural drainage channel, adequate easements for storm drainage purposes shall be provided to the County or a utility district. This does not imply maintenance by the County. (4/12/82)

D. Channel obstructions are not allowed, except as approved for the creation of detention, retention, or hydropower facilities approved under the provisions of this Ordinance. Fences with swing gates may be utilized. (4/12/82)

E. Prior to acceptance of a storm sewer system by the County, the storm sewers shall be flushed and inspected by the County. All costs shall be borne by the developer. (10/11/82)

1008.04 SPECIFIC STANDARDS

A. Siting, sizing and development of drainage control facilities shall be consistent with accepted engineering practices. Basin or subbasin plans previously adopted by the County shall guide the development of drainage control facilities except when such plans are superseded by new basin or subbasin plans, or when such plans are in conflict with the following provisions, or other provisions of Section 1008:

1. Drainage detention ponds constructed in the drainage channel shall be planned for a ten (10) year frequency storm at full basin development. Detention ponds located outside the channel shall be planned for at least a twenty-five (25) year frequency storm at full site development. This requirement may be reduced by staff when site conditions, such as terrain or geologic hazard, limit development of detention ponds, and when other drainage control methods appropriate to the site are provided.

2. The rate of release or outflow from a detention facility shall not exceed the rate of runoff from the undeveloped site during a five (5) year frequency storm. This may be accomplished with an adjustable flow valve or a system of orifices or other appropriate mechanism accommodating a five (5) year outflow. Each facility constructed in the channel shall provide an overflow which will allow volumes exceeding a ten (10) year frequency storm to spill. Each facility constructed outside the channel shall provide an overflow which will allow volume exceeding a twenty-five (25) year frequency storm to spill.

3. In all residential development, except Special High Density (Residential), slope of the edges of a retention or detention pond shall not exceed 1:3. Maximum depth should not exceed three (3) feet. Adequate security measures must be provided to prevent a safety hazard. Drainage must be designed to prevent water ponding unless a year-around pond is incorporated in the site design.

4. For commercial, industrial and Special High Density (Residential) development, maximum side slope of drainage facilities shall not exceed 1:1. Shallower slopes may be required as appropriate to maintain slope stability.

   Access for maintenance equipment shall be provided. Depth should not exceed twelve (12) feet. The burden of justification increases with depth of the facility. Detention or retention facilities must be integrated with the site design. Adequate security measures must be provided to prevent a safety hazard. Drainage facilities must be designed to prevent water ponding unless a year-around pond is incorporated in the site design.

5. Detention facilities may be allowed in conjunction with parking lots or commercial or industrial rooftops. Underground detention pipes are discouraged in areas of high groundwater.

6. Rooftop detention is generally not acceptable on residential structures. Rooftop detention must not exceed bearing characteristics of the structure or soils. An emergency overflow shall be provided.

7. Parking lot detention is acceptable if water depth does not exceed twelve (12) inches at the deepest point. Asphalt surfaces to be inundated shall be minimized. A minimum slope of one (1) percent must be provided.

8. All outflow shall be conveyed to the nearest natural drainageway. The developer or property owner (including maintenance association if appropriate) shall be responsible for construction and maintenance of the facility. An adequate surety bond for construction may be required.

B. Flow Alteration

1. Natural drainage pattern shall not be substantially altered at the periphery of the site.

2. Greatly accelerated release of stored water is prohibited. Flow shall not be diverted to lands which have not previously encountered overland flow from the same upland source unless adjacent downstream owners agree.

1008.05 In addition to the above requirements, the following shall apply to land developments within the Tualatin River basin: (9-12-91)

A. Erosion Control Plan (9/12/91)

For land development, all preliminary plats, site plans, permits, and public works projects shall include an erosion control plan containing methods and/or interim facilities to be constructed or used concurrently with land development and to be operated during construction to control the discharge of sediment in the stormwater runoff. The erosion control plan shall utilize:

1. Protection techniques to control soil erosion and sediment transport to less than one (1) ton per acre per year, as calculated using the Soil Conservation Service Universal Soil Loss Equation or other equivalent methods. The erosion control plan shall include temporary sedimentation basins or other sediment control devises when, because of steep slopes or other site-specific considerations, other onsite sediment control methods will not likely keep the sediment transport to less than one (1) ton per acre per year. Any sediment basins constructed shall be sized using 1.5 feet minimum sediment storage depth plus 2.0 feet storage depth above for a settlement zone. The storage capacity of the basin shall be sized to store all of the sediment that is likely to be transported and collected during construction while the erosion potential exists. When the erosion potential has been removed, the sediment basin, or other sediment control facilities, can be removed and the site restored as per the final site plan. All sediment basins shall be constructed with an emergency overflow to prevent erosion or failure of the containment dike, or

2. A soil erosion control matrix derived from and consistent with the universal soil loss equation approved by Clackamas County.

B. Water Quality Control Facilities (9/12/91)

All plats, site plans, building permits, or public works projects, (see paragraph 5 of this subsection for exceptions) require permanent stormwater quality control facilities to control phosphorus loadings associated with stormwater runoff from the development site. Permanent stormwater quality control facilities for phosphorus shall meet the following requirements:

1. Stormwater quality control facilities shall be required to be constructed to remove 65 percent of the phosphorus from the runoff from 100 percent of the newly constructed impervious surfaces. Impervious surfaces shall include pavement, buildings, public and private roadways, and all other surfaces with similar runoff characteristics.

2. The stormwater quality control facilities shall be designed to meet the removal efficiency specified in paragraph 1 of this subsection for a mean summertime storm event totaling 0.36 inches of precipitation with an average return period of 96 hours.

3. Stormwater quality control facilities required by this subsection shall be approved only if the following are met:

   a) For developments larger than one acre, the plat or site plan shall include plans and a certification prepared by an Oregon registered professional engineer, or registered professional in erosion control, that the proposed stormwater control facilities have been designed in accordance with criteria expected to achieve removal efficiencies for total phosphorus required by paragraph 1 of this subsection.

   b) A financial assurance, or equivalent security, shall be provided by the developer that assures that the stormwater control facilities are constructed according to the plans established in the plat or site plan approval.

   c) Each permanent stormwater quality control facility shall file with the County an operation and maintenance plan for the stormwater quality control facility. The operation and maintenance plan shall allow for public or private ownership, operations, and maintenance of individual permanent stormwater quality control facilities.

4. An exception may be granted to subsection B of this section in exchange for a onetime in-lieu fee. The fee will be an option when, because of the size of the development, topography, or other factors, the County determines that the construction of onsite permanent stormwater treatment systems is impracticable or undesirable.

   a) The in-lieu fee shall be based upon a reasonable estimate of the current prorated cost for the County to provide stormwater quality control facilities for the land development being assessed the fee. Estimated costs shall include costs associated with offsite land and rights-of-way acquisition, design, construction, and construction inspection.

5. The following are not required to comply with paragraphs 1-4 of this subsection:

   a) Single- and two-family dwellings on existing lots of record. (3/24/05)

   b) Sewer lines, water lines, utilities, or other land development that will not directly increase nonpoint source pollution once construction has been completed and the site is either restored to or not altered from its approximate original condition.

C. Definitions (9/12/91)

"Land Development" refers to any human-induced change to improved or unimproved real estate, including but not limited to construction, installation, or expansion of a building or other structure, land division, drilling, and site alteration such as that due to land surface mining, dredging, grading, construction of earthen berms, paving, improvements for use as parking or storage, excavation, or clearing.

"Erosion Control Plan" shall be a plan containing a list of best management practices to be applied during construction to control and limit soil erosion.

"Public Works Project" means any land development conducted or financed by a local, state, or federal government body.

"Stormwater Quality Control Facility" refers to any structure or drainageway that is designed, constructed, and maintained to collect and filter, retain, or detain surface water runoff during and after a storm event for the purpose of water quality improvement. It may also include, but not be limited to, existing features such as wetlands, water quality swales, and ponds which are maintained as stormwater quality control facilities.

"In-lieu fee" means a fee collected by a jurisdiction in lieu of requiring construction of onsite stormwater quality control facilities.