

Appendix C1
Example Erosion
Control Ordinance

EXAMPLE/DRAFT
EROSION AND NONPOINT SOURCE CONTROL ORDINANCE*

PURPOSE

The purpose of this ordinance shall be to ensure that development or land alteration does not create downstream sedimentation, water quality, flooding, or drainage problems; and provides adequate drainage systems and soil protection for the site being developed. To this end, the following points shall serve as a basis for evaluating all development proposals.

All development proposals shall strive for maximum retention of the morphological features, water bodies, wetlands, native vegetation, and natural qualities of the site; and development shall seek to enhance these natural features and qualities.

All development proposals shall take into account and be judged by the application of current principles of land-use planning, soil science, soils and geotechnical engineering, hydrology, civil engineering, environmental design, architecture, and landscape architecture. Such current understanding includes but is not limited to:

1. Planning of development to fit the topography, soils, geology, hydrology, native vegetation and other conditions existing on the proposed site;
2. Orienting development to the site so that grading and other site preparation is kept to an absolute minimum;
3. Shaping of essential grading to complement the natural land forms and minimizing the padding and/or terracing of building sites;
4. Developing tracts in workable units on which construction can be completed within one construction season so that large areas are not left bare and exposed during the winter-spring period;
5. Accomplishing all paving and establishing the stormwater management systems as rapidly as possible after grading;
6. Establishing the erosion and sedimentation control systems at the earliest possible and most effective time, before, during and after grading;
7. Landscaping of areas around structures, and blending them with the natural landscape;
8. Transferring from natural to post-development water conveyance and storage systems quickly; and
9. Minimizing disruption of existing plant and animal life.
10. Minimizing the total widths of the road prism which includes the paved surfaces, sidewalks, ditches and cut and fill slopes.

* Adapted from ASPO (1975)

APPLICATION

The provisions of this ordinance shall apply to all public and private development, grading, excavation or land alteration activities that disturb or expose more than two (2) acres of soil, other than for agricultural tillage. This includes private development for residential, commercial or industrial purposes; and public roads/streets, sewers, water and wastewater facilities, buildings, and stormwater systems. It also applies to all land and native vegetation disturbance within 50 horizontal feet of the top of bank of any wetland, stream, lake, river or estuary. All activities to which this ordinance applies must be approved by the city/county¹ before any development, grading, excavation or land alteration occurs.

The implementation of the plans approved under the provisions of this ordinance, and the construction, maintenance, replacement, and upgrading of the facilities required is the responsibility of the applicant/contractor until all construction is completed and approved and vegetation/landscaping is established.

APPROVAL STANDARDS

The approval of a development shall be based on:

- maximum implementation in the grading and erosion control plan of the practices and facilities specified in the erosion control handbook provided to the applicant by the city/county;
- conformance to the provisions of this ordinance;
- a grading and erosion control plan which provides assurance to the maximum extent possible that the disturbed area erosion loss will be no more than one (1) ton per acre;
- minimum soil exposure for the development site;
- minimum road prism widths;
- maximum protection against landslides and slope failures;
- water management systems proposed for the development which equal or exceed the controls and standards specified in this ordinance;
- adequate provisions for maintenance during construction and permanent maintenance, including the necessary easements and rights of way if public maintenance is involved; and
- no development proposed for areas with any of the limiting factors present that are specified in this ordinance.

GRADING AND EROSION CONTROL PLAN

A grading and erosion control plan shall be submitted with each application and shall include the following:

1. All information and reports required by this ordinance.
2. Details and contours of the property, including drainage areas which affect the property.²
3. Location of any existing buildings or structures on the property where the work is to be performed, the location of any existing building or structures on land of adjacent owners which are within 100 feet of the property or which may be affected by the proposed grading operation, and proposed locations of structures relative to adjoining topography and property.

4. The direction of drainage flow and approximate grade of all streets (not to be construed as fulfilling the requirements for final street design).
5. The dimensions, elevations, and finish contours to be achieved by the grading, including all cut and fill slopes, proposed drainage channels, and related construction.
6. Detailed plans and locations of all surface and subsurface drainage systems including walls, dams, sedimentation ponds, nonpoint source control facilities, detention storage, and other protective devices to be constructed with, or as a part of, the proposed work. A map must be included that shows the drainage area and the complete existing and proposed drainage system, including major and minor waterways, outfalls, pipes, channels, ditches and natural streams, ponds, lakes, wetlands, and estuaries which may be affected by the proposed development, and the estimated runoff of the area served by the system.
7. A description of methods to be employed in storing or disposing of soil and other material including the location of the disposal site.
8. A schedule showing when each stage of the project will be completed, including the total area of soil surface which is to be disturbed during each stage, and estimated starting and completion dates. The schedule shall limit to the shortest possible period the time that soil is exposed and unprotected³. The existing natural vegetation ground cover shall not be destroyed, removed, or disturbed more than 30 days prior to grading or construction of the required improvements⁴.
9. A revegetation component which emphasizes the use of native vegetation.
10. The boundaries of the clearing limits must be shown on the grading and erosion control plan, and shall be clearly flagged in the field prior to construction. During the construction period, no disturbance beyond the flagged clearing limits shall be permitted. The flagging shall be maintained by the applicant/contractor for the duration of construction.

Erosion control measures utilized for any construction site must be designed to achieve a disturbed area erosion loss of no more than 1 ton per acre per year, based on the Soil Conservation Service (SCS) Revised Universal Soil Loss Equation.

The grading and erosion control plan shall be prepared by a professional engineer registered in the state of Oregon.

The city/county may require that grading and erosion control operations and/or project designs be modified if delays occur which incur weather-generated problems not considered at the time approval was granted.

The city/county may make on-site inspections at any point during the development period to ascertain compliance with the approved grading and erosion control plan and the applicable provisions of this ordinance.

SPECIAL REQUIREMENTS AND DESIGN STANDARDS

Project Engineer

The applicant shall retain a professional engineer registered in the state of Oregon to serve as the project engineer.

It shall be the responsibility of the project engineer: to prepare a grading and erosion control plan; to incorporate into the grading and erosion control plan all recommendations contained in the soils and geotechnical, and water management reports; to include a slope stabilization and revegetation component; to implement and be responsible for all of the provisions of the grading and erosion control plan; to inspect and certify all grading and soil exposing operations; to submit to the city/county monthly status reports on the implementation of the grading and erosion control plan, and the status of erosion and sedimentation related to the development; to act as coordinating agent if the need arises for liaison between other professionals, the applicant, and the city/county; to prepare any revised plans; and to submit to the city/county as-graded grading plans upon the completion of the project.

Prior to and during grading operations, all necessary reports, compaction data, and soils, geotechnical and hydrology/hydraulic recommendations shall be submitted by the project engineer to the city/county.

If, in the course of fulfilling their responsibilities, the project engineer, the soils and geotechnical engineer, or the hydrologist discovers that the work is being accomplished to a substantially lesser standard than required by this ordinance or by the approved final grading and erosion control plan, the discrepancy, if not corrected within five (5) days, shall be reported immediately, in writing, to the project engineer and to the city/county. Recommendations for corrective measures, if applicable, shall be submitted.

If the project engineer, the soils and geotechnical engineer, or the hydrologist of record is changed during the course of the work, the work shall be stopped until a replacement has agreed to accept the responsibility for certification of the work within the area of his/her technical competence.

Soils and Geotechnical Report

Any area proposed for development grading, excavation or land alteration activities, other than for agriculture purposes, shall be investigated to determine the soil and geotechnical characteristics, and a soils and geotechnical engineering report shall be submitted with every application. This report shall include data regarding the nature, distribution, strength and erodibility of existing soils; the soil classifications according to engineering and Soil Conservation Service (SCS) criteria; fault zones; active and inactive slide/slope-failure areas; conclusions and recommendations for grading procedures; design criteria for corrective measures; and opinions and recommendations covering the adequacy of the site(s) to be developed.

The investigation and subsequent report shall be completed and presented to the city/county by a professional engineer registered in the state of Oregon and experienced and knowledgeable in the practice of soil mechanics and geotechnical engineering.

Recommendations included in the soils and geotechnical report shall be incorporated into the design plans and specifications.

Any area within the site which presents one or more of the following limiting factors shall not be subjected to development unless the engineer can demonstrate conclusively to the city/county that these limitations can be overcome in a manner that will prevent hazard to life; hazard to property;

adverse affects on the safety, use, or stability of a public way, drainage channel, stream, lake or estuary; and adverse impact on water quality, wetlands and other environmental considerations.

1. Water table within _____⁵ of the ground surface at any time of the year;
2. Natural slopes greater than _____⁶ percent;
3. Soils with a high shrink-swell potential;
4. Soils with classification of _____⁷

Temporary spoil or fill storage piles should be located on stable areas of the site, and these areas should be designated on the grading and erosion control plan for the project. These temporary piles should not be located at the top of, or on, slopes. If the site is situated entirely on sloping ground, either the spoils should be removed from the site or measures applied to mitigate the instability of the slope caused by the pile. The measures could include limiting the height and slope of the piles, providing temporary drainage, protecting the pile against saturation from rainfall and surface water or groundwater, and providing erosion control. The spoils or fill storage piles should not be located in a manner that will block natural surface water or groundwater. If site conditions are such that this is not possible, provisions should be made to provide temporary culverts, drainage trenches, drainage blankets under the fill pile, or other measures to prevent blockage of water and the saturation of the pile and underlying soil.

Water Management Report

Any area covered by this ordinance and proposed for development grading, excavation or land alteration activities, other than for agricultural tillage purposes, shall be investigated to determine its hydrologic, geohydrologic, and hydraulic characteristics, and a water management report shall be submitted with every application. This report shall include an adequate description, as defined by the city/county, of the hydrology related to the site (including geohydrology), all waterways within and affected by the development, potential nonpoint sources of water pollution, conclusions and recommendations regarding the effect of the proposed development on the expected runoff from the 2, 5, 10, 25, 50 and 100 year recurrence interval storms, the pollutant loading during the two year and six month recurrence interval storms, the flows and hydraulic profiles for these recurrence intervals at key on-site and downstream locations, options and recommendations covering the surface water and groundwater management systems proposed, and the mitigation of on-site and down gradient effects.

The investigation and subsequent report shall be completed and presented to the city/county by a qualified engineer, experienced and knowledgeable in hydrology, geohydrology and hydraulics.

Any area in which the investigation indicates that the proposed development, including the water management systems required by this ordinance, will result in hazard to life or limb; hazard to property; adverse affects on the safety, use or stability of a public way, drainage channel, stream, lake, or estuary; and unacceptable levels of adverse impact on the water quality, wetlands, and other environmental considerations either on-site or down gradient shall not be subjected to development.

Vegetation And Revegetation

The applicant shall include a slope stabilization and revegetation component in the grading and erosion control plan which shall include a complete description of the existing vegetation, the vegetation to be removed and the method of disposal, the vegetation to be planted, and slope stabilization measures to be installed. Native vegetation must be used to the maximum extent possible.

Vegetation shall be removed only when absolutely necessary, e.g., for buildings, filled areas or roads. Topsoil which is removed during construction shall be conserved for later use on areas requiring vegetation or landscaping, e.g., cut and fill slopes.

Vegetation sufficient to stabilize the soil shall be established on all disturbed areas as each stage of grading is completed according to the current erosion control handbook⁸ available from the city/county. Areas not contained within lot boundaries shall be protected with native, fire-resistant species of perennial vegetal cover after all construction is completed. New plants shall be protected and watered until permanently established.

All disturbed soil surfaces shall be stabilized or covered within twelve (12) weeks after disturbance. If the planned impervious surfaces (e.g., roads, driveways, etc.) cannot be established, a temporary treatment adequate to prevent erosion shall be installed on those surfaces.

Construction shall be scheduled to minimize soil disturbance.

The applicant shall be fully responsible for any destruction of native vegetation proposed for retention. He/she shall carry the responsibility both for his/her own employees and for all subcontractors from the first day of construction until the notice of completion is filed. The applicant shall be responsible for replacing such destroyed vegetation.

The use of qualified personnel experienced and knowledgeable in the practice of revegetation is required.

Hydrologic, Hydraulic and Nonpoint Source Controls

1. Interceptor ditches shall be established above all cut slopes of more than five feet vertical height and the intercepted water conveyed to a stable channel or natural drainageway with adequate capacity;
2. Curb, gutter, ditch, and pavement design shall be such that water on roadways is prevented from flowing off the roadway in an uncontrolled fashion;
3. Natural streams, lakes, estuaries and drainageways shall be bioengineered, riprapped or otherwise stabilized below drainage and culvert discharge points for a distance sufficient to convey the discharge without channel erosion;
4. Runoff from areas of concentrated impervious cover (e.g., roofs, driveways, roads) shall be collected and transported to an acceptable discharge point in a conveyance system that has sufficient capacity to accept the discharge without accelerated erosion;
5. Stored or waste material from construction, including soil and other solid materials, shall not be deposited within the 100-year floodplain;
6. Hydrologically related structures in major waterways (major waterways defined as draining an area of 40 acres or more) shall be designed for the 100-year recurrence interval; in minor waterways (minor waterways defined as draining an area of less than 40 acres) they shall be designed for the 25-year recurrence interval; open channels/ditches and culverts that serve only the areas developed shall be designed for the 25 year recurrence interval; storm sewers shall be designed for the 10 year recurrence interval;

7. With the exception of unavoidable road crossings, approved drainage structures, and recreation and open space uses which do not involve the destruction of vegetal cover; development shall be prohibited within the 100-year recurrence interval floodway for major waterways, and the 25-year recurrence interval floodway for minor waterways. For minor waterways a uniform no-development setback of 25 feet on each side of the waterway can be utilized instead of the 25-year floodway;
8. Sedimentation ponds, or the equivalent, designed according to the current erosion control handbook available from the city/county, shall be constructed and maintained downstream from each development, unless sediment catchment facilities are otherwise provided that accomplish the same purposes; and erosion control practices as described in the erosion control handbook shall be applied to the maximum extent possible during site development;
9. The fully-developed water management systems for each phase of the project shall be completed and made operational within _____⁹ after the start of each phase of construction.
10. Alterations of major waterways are prohibited except for approved road crossings and drainage structures;
11. Natural or improved open channel characteristics shall be preserved or provided for in major waterways. Only minor waterways shall be permitted to be enclosed in conduits, except for culverts at road crossings;
12. The city/county may require the applicant to install flow, groundwater, and water quality monitoring devices within any development and pay for monitoring before and during construction; such monitoring shall be to determine and document the function and results of the erosion control practices and facilities employed at the site;
13. Nonpoint source control facilities that significantly reduce the downstream water quality and sedimentation impacts from the site after development shall be designed and installed according to the criteria found in the current water quality facilities handbook available from the city/county.

DEVELOPMENT STANDARDS

The following shall apply to all construction for which this ordinance is applicable:

1. No grading, filling, clearing, or excavation of any kind shall be initiated until the final grading and erosion control plan is formally approved by the city/county.
2. Fill areas shall be prepared by removing organic material, such as vegetation and rubbish, and other material which is determined by the soils and geotechnical engineer to be detrimental to proper compaction or otherwise not conducive to stability; no rock or similar irreducible material with a maximum diameter greater than eight inches shall be used as fill material in fills that are intended to provide structural strength.
3. All retaining walls or facings with a total vertical projection in excess of three feet shall be designed as structural members keyed into stable foundations and capable of sustaining the design loads.

4. Fills shall be compacted to at least 95 percent of maximum density, as determined by AASHO T99 and/or ASTM D698.
5. Cut slopes shall be no steeper than two horizontal to one vertical; subsurface drainage shall be provided as necessary for stability.
6. Fill slopes shall be no steeper than two horizontal to one vertical; fill slopes shall not be located on natural slopes or steeper than 2:1, or where the fill slope toes out within 12 feet horizontally of the top of an existing or planned cut slope.
7. Tops and toes of cut and fill slopes shall be set back from property boundaries a distance of at least three feet plus one-fifth of the height of the cut or fill, but need not exceed a horizontal distance of 10 feet; tops and toes of cut and fill slopes shall be set back from structures a distance of six feet plus one-fifth the height of the cut or fill, but not exceeding 10 feet.
8. Roadways shall be designed to create the minimum amount of land coverage and the minimum disturbance to the soil;
9. Existing vegetation of the deep-rooted perennial variety shall be preserved to the greatest extent possible, particularly near roads; road alignment should follow natural terrain to the extent possible.
10. Variations in road design and road construction shall be considered that keep grading and cut-fill slopes to a minimum.
11. Roads in residential developments that contain slopes greater than 5% shall not exceed two lanes with a traveled way which shall not exceed _____ in width between the back of the curbs.
12. One-way streets shall be permitted and encouraged on slopes greater than 5% and where public safety will not be jeopardized. The traveled way shall not exceed _____ in width between the back of the curbs.
13. The maximum horizontal distance of disturbed soils surface for roadways, including road surface, ditch, cut slope and fill slope in residential developments, that contain slopes greater than 5%, shall not exceed 75 feet.
14. The facilities shown on the grading and erosion control plan must be constructed in conjunction with all clearing and grading activities, and in such a manner as to insure that sediment and sediment laden water do not enter the drainage system, roadways, or violate applicable water quality standards.
15. The facilities shown on the grading and erosion control plan are the minimum requirements for anticipated site conditions. During the construction period, these facilities shall be upgraded as needed for unexpected storm events and to ensure that sediment and sediment-laden water do not leave the site. The facilities shall be inspected daily by the applicant/contractor and maintained as necessary to ensure their continued functioning. The facilities on inactive sites shall be inspected and maintained a minimum of once a month or within the 24 hours following a storm event.
16. Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures may be required to insure that all paved areas are kept clean for the duration of the project.

MAINTENANCE

The owner of any property on which grading or other work has been performed pursuant to a grading and erosion control plan approved or a building permit granted under the provisions of this ordinance shall continuously maintain and repair all graded surfaces and erosion prevention devices, retaining walls, drainage structures or means, and other protective devices, plantings, and ground cover installed or completed; unless other arrangements for such maintenance and repair has been approved by the city/county.

REQUEST FOR WAIVER OR REQUIREMENTS

If the applicant intends to request waiver of any of the provision of this ordinance, he/she must submit a request, in writing, with the grading and erosion control plan. The request shall itemize each requirement for which a waiver is sought and shall state the reason(s) for which each waiver is requested and the impacts of approving the waiver.

FOOTNOTES

- 1 Name of the local development approval organization(s).
- 2 The contour interval and scale required should be specified, based on the local availability of maps.
- 3 Usually two to four months during the dry weather season.
- 4 The minimum prior disturbance period can vary from 15 days to 60 days, depending on local conditions.
- 5 The local jurisdiction should establish a minimum depth to water table distance based on local conditions -- the minimum depths are normally four to six feet.
- 6 The maximum, developable slope for local conditions will usually vary from 15% to 30%, depending on the soils in the area.
- 7 The soil classifications that are particularly unsuitable for construction due to erodibility should be listed.
- 8 This ordinance assumes that the city/county will provide applicants with an "erosion control handbook" that provides the specific details needed in a grading and erosion control plan.
- 9 The permanent water management systems should be available as soon as possible, and a maximum time should be stated -- usually between three weeks and four months depending on the type of development and local soil and water conditions.

Appendix C2
Unified Sewerage Agency
Environmental Protection and
Erosion Control Rules

Chapter 5
ENVIRONMENTAL PROTECTION, EROSION PREVENTION,
AND SEDIMENT CONTROL RULES

- 5.01 General Policy
- 5.02 Erosion Control
- 5.03 Air Pollution
- 5.04 Maintaining Water Quality
- 5.05 Fish and Wildlife Habitat
- 5.06 Control of Noise Levels
- 5.07 Natural Vegetation
- 5.08 Historical and Archaeological Areas
- 5.09 Pesticides, Fertilizers
- 5.10 Contaminated Soils
- 5.11 Enforcement

Chapter 5 - ENVIRONMENTAL PROTECTION, EROSION PREVENTION, AND SEDIMENT CONTROL RULES

PHILOSOPHY STATEMENT: This section contains Erosion Prevention Techniques and Sediment Control Measures. In order to meet the high water quality requirements of the Tualatin River Basin, the use of Erosion Prevention Techniques shall be emphasized, rather than Sediment Control Measures. This shall be especially important on larger construction sites immediately before and during the rainy portion of the year. Erosion prevention techniques are those designed to protect soil particles from the force of rain and wind such that they will not be dislodged and therefore will not erode. These techniques include such things as ground cover, and matting. Sediment control measures are designed to capture soil particles after they have been dislodged, and the measures attempt to retain the soil particles on-site. These measures include such things as silt fences and settling basins. Both erosion prevention techniques and sediment control measures have their appropriate uses, however, numerous case studies have shown that sediment control measures have been relied on too heavily, and that they have proven to be less effective in preventing soil movement than erosion prevention techniques.

5.01 General Policy

It is the policy of USA to require temporary and permanent measures for all construction projects to lessen the adverse effects of construction on the environment. The contractor shall properly install, operate and maintain both temporary and permanent works as provided in this section or in an approved plan, to protect the environment during the term of the project. In addition, these erosion control rules apply to all properties within the USA boundary, regardless of whether that property is involved in a construction or development activity.

Nothing in this section shall relieve any person from the obligation to comply with the regulations or permits of any federal, state, or local authority.

5.02 Erosion Control

5.02.1 Application and Purpose

It is the Agency policy to reduce the amount of sediment and other pollutants reaching the public storm and surface water system resulting from development, construction, grading, excavating, clearing, and any other activity which accelerates erosion.

The provisions of Section 5.02 shall apply to all parcels and all land within the Boundary of the Agency.

5.02.2 Definitions

A. Erosion

Erosion is the movement of soil particles resulting from the flow or pressure from storm water, irrigation water, other water, or wind.

B. Land development

Land development shall have the meaning of Oregon Administrative Rules, Section 340-41-006(22), Adopted December 14, 1989.

C. The property or the site

The property or the site shall mean the subject real property.

D. Visible or measurable erosion

Visible or measurable erosion includes, but is not limited to:

1. Deposits of mud, dirt, sediment or similar material exceeding 1/2 cubic foot in volume on public or private streets, adjacent property, or into the storm and surface water system, either by direct deposit, dropping, discharge, or as a result of the action of erosion.
2. Evidence of concentrated flows of water over bare soils; turbid or sediment laden flows; or evidence of on-site erosion such as rivulets on bare soil slopes, where the flow of water is not filtered or captured on the site using the techniques in this Chapter.
3. Earth slides, mud flows, earth sloughing, or other earth movement which leaves the property.

5.02.3 Erosion Prohibited

Visible or measurable erosion which enters, or is likely to enter, the public storm and surface water system, is hereby prohibited, and is a violation of these rules. The owner/permittee of the property, together with any person who causes such erosion, from which the erosion occurs shall be responsible.

5.02.4 Erosion Control Permits

- A. Except as noted in Section 5.02.4.C, no person shall cause any change to improved or unimproved real property that causes, will cause, or is likely to cause a temporary or permanent increase in the rate of soil erosion from the site

without first obtaining a permit from the Agency or City and paying prescribed fees. Such changes to land shall include, but are not limited to, grading, excavating, filling, working of land, or stripping of soil or vegetation from land.

- B. No jurisdiction shall issue a permit for construction, land development, grading, excavation, fill, or the clearing of land without first verifying in writing that the Agency or City has issued an Erosion Control Permit covering such work, or the Agency or City has determined that none is required. No public agency or body shall undertake any public works project without first obtaining an Erosion Control Permit covering such work, or receiving a determination from the Agency or City that none is required.
- C. No Erosion Control permit (from the Agency or City) is required for the following:
 - 1) For work of a minor nature provided all the following criteria are met:
 - a) The land development does not require a development permit or approval from the local jurisdiction having land use decision authority, and
 - b) No land development activity or disturbance of land surface occurs within 100 feet of a sensitive area defined in Section 6.08.1, and
 - c) The slope of the site is less than 20 percent, and
 - d) The work on the site involves the disturbance of less than 500 square feet of land surface, and
 - e) The excavation, fill, or combination thereof involves less than 20 cubic yards of material.
 - 2) Permits and approvals for land division, interior improvements to an existing structure, and other approvals for which there is no physical disturbance to the surface of the land.
 - 3) A permit shall not be required for activities within USA which constitute accepted farming practices as defined in ORS 215.203.
 - 4) Exception from the permit requirement does not exempt the property from the requirements of Section 5.02.03.

5.02.5 Permit Process

A. Applications for an Erosion Control Permit

Application for an erosion control permit shall include an Erosion Control Plan which contains methods and interim facilities to be constructed or used concurrently and to be

operated during construction to control erosion. The plan shall include either:

- 1) A site specific plan outlining the protection techniques to control soil erosion and sediment transport from the site to less than one ton per acre per year as calculated using the Soil Conservation Service Universal Soil Loss Equation or other equivalent methods established by Board rule. An Erosion Control Information Form (Appendix B) of the Plans - Technical Guidance Handbook, shall be filled out on all Private Developments, Public rights-of-way and Public Works construction sites.
- 2) Techniques and methods contained and prescribed in the Erosion Prevention and Sediment Control Matrix and Methods, hereby included as Appendix V, or the Erosion Prevention and Sediment Control Plans - Technical Guidance Handbook, City of Portland and Unified Sewerage Agency, Revised, February 1994.

B. Site Plan

A site specific plan, prepared by an Oregon registered professional engineer or soils engineer, shall be required when the site is:

- 1) greater than 5 acres (1200-C permit required)
- 2) greater than 1 acre and has slopes greater than 20 percent
- 3) contains or is within 100 feet of an Agency or City identified wetland or a waterway identified on FEMA floodplain maps,
- 4) greater than 1 acre and contains highly erodible soils.

5.02.6 Maintenance

The applicant shall maintain the facilities and techniques contained in the approved Erosion Control Plan so as to continue to be effective during the construction or other permitted activity. If the facilities and techniques approved in an Erosion Control Plan are not effective or sufficient as determined by the Agency or City site inspection, the permittee shall submit a revised plan within 3 working days of written notification by the Agency or City. Upon approval of the revised plan by the Agency or City, the permittee shall immediately implement the additional facilities and techniques of the revised plan. In cases where erosion is occurring, the Agency or City may require the applicant to install interim control measures prior to submittal of the revised Erosion Control Plan.

5.02.7 Inspection

The permittee shall call the Agency or City prior to the foundation inspection of a building for an inspection of the erosion control measures for that property. On a site development project the erosion control measures shall be installed prior to the start of any excavation work.

5.02.8 Physical Erosion

No person shall drag, drop, track, or otherwise place or deposit, or permit to be deposited, mud, dirt, rock or other such debris upon a public street or into any part of the public storm and surface water system, or any part of a private storm and surface water system which drains or connects to the public storm and surface water system. Any such deposit of material shall be immediately removed using hand labor or mechanical means. No material shall be washed or flushed into any part of the storm and surface water system without erosion control measures installed to the satisfaction of the Agency or City, and any such action shall be an additional violation.

5.02.9 Permit Fee

The Agency or City shall collect a reasonable fee for the review of plans, administration, enforcement, and field inspection to carry out the rules contained herein.

5.03 Air Pollution

5.03.1 Dust

Dust shall be minimized to the extent practicable, utilizing all measures necessary, including, but not limited to:

- A. Sprinkling haul and access roads and other exposed dust producing areas with water.
- B. Applying dust palliatives on access and haul roads. -
- C. Establishing temporary vegetative cover.
- D. Placing wood chips or other effective mulches on vehicle and pedestrian use areas.
- E. Maintaining the proper moisture condition on all fill surfaces.
- F. Prewetting cut and borrow area surfaces.
- G. Use of covered haul equipment.

5.03.2 Fumes, Smoke, and Odors

- A. Tires, oils, paints, asphalts, coated metals or other such materials will not be permitted in combustible waste piles, and will not be burned at the construction site.
- B. Open burning shall not be permitted unless approved by the Department of Environmental Quality and the prevailing wind will carry smoke away from nearby built-up areas or communities.
- C. Open burning shall not be permitted within 1,000 feet of a residence or built-up area or within 250 feet of the drip line of any standing timber or flammable growth.
- D. Open burning shall not be permitted during a local air inversion or other climatic conditions that may result in a smoke pall hanging over a built-up area or community.
- E. Open burning shall not be permitted when climatic and moisture conditions are contributing to high danger of forest or range fires as determine by local, state, or federal authorities.

5.04 Maintaining Water Quality

5.04.1

Construction between stream banks shall be kept to a minimum.

5.04.2

Pollutants such as fuels, lubricants, bitumens, raw sewage, and other harmful materials shall not be discharged into or near rivers, streams, or impoundments.

5.04.3

The use of water from a stream, or impoundment shall not result in altering the temperature of the water body enough to affect aquatic life.

5.04.4

All sediment laden water from construction operations shall be routed through stilling basins, filtered or otherwise treated to reduce the sediment load.

5.05 Fish and Wildlife Habitat

5.05.1

The construction shall be done in a manner to minimize the adverse effects on wildlife and fishery resources.

5.05.2

The requirements of local, state, and federal agencies charged with wildlife and fish protection shall be adhered to by the entire construction work force.

5.06 Control of Noise Levels

Construction noise shall be minimized by the use of proper engine mufflers, protective sound reducing enclosures, and other sound barriers. Construction activities producing excessive noise that cannot be reduced by mechanical means shall be restricted to locations where their sound impact is reduced to a minimum at the edge of the work area.

5.07 Natural Vegetation

5.07.1

As far as is practicable, the natural vegetation shall be protected and left in place. Work areas shall be carefully located and marked to reduce potential damage. Trees shall not be used as anchors for stabilizing working equipment.

5.07.2

During clearing operations, trees shall not be permitted to fall outside the work area. In areas designated for selective cutting or clearing, care in falling and removing trees and brush shall be taken to avoid injuring trees and shrubs to be left in place.

5.07.3

Where natural vegetation has been removed, or the original land contours disturbed, the site shall be revegetated, and the vegetation established, as soon as practicable after construction has commenced, except where construction of sewers will be followed by paving.

5.08 Historical and Archaeological Areas

When burial sites, buried camp areas, or village sites, and other distinctive archaeological or historical items are uncovered, or other items suspected of being of historical or archaeological significance are encountered, the contractor shall report the matter to the Agency and City and the state liaison officer. Construction operations shall be stopped until the appropriate authorities can examine the area and give clearance to proceed with the work. Under the Natural Historical Preservation Act, State liaison officers shall be notified when historical or archaeological items are unearthed.

5.09 Pesticides, Fertilizers

5.09.1

The use of pesticides, including insecticides, herbicides, defoliants, soil sterilants, and so forth, and the use of fertilizers, must strictly adhere to federal, state, county, and local restrictions. Time, area, method, and rate of application must be cleared with the local authorities and their requirements followed.

5.09.2

All materials defined in Section 5.09.1 delivered to the job site shall be covered and protected from the weather. None of the materials shall be exposed during storage. Waste material, rinsing fluids, and other such material shall be disposed of in such manner that pollution of groundwater, surface water, or the air does not occur. In no case shall toxic materials be dumped into drainageways.

5.09.3

All personnel shall stay out of sprayed areas for the prescribed time. All such areas should be fenced, appropriately signed, or otherwise protected to restrict entry.

5.10 Contaminated Soils

In the event the construction process reveals soils contaminated with hazardous materials or chemicals the Contractor shall stop work immediately, ensure no contaminated material is hauled from the site, remove his work force from the immediate area of the contaminated area, leaving all machinery and equipment, and secure the area from access by the public until such time as a mitigation team has relieved them of that responsibility. Contractor shall notify the Agency and City and an emergency response team (911) of the situation upon its discovery. No employees who may have come in contact with the contaminated material shall be allowed to leave the site until such time as the emergency response team releases them.

5.11 Enforcement

Failure to comply with any provision of this Chapter or with any term of an Erosion Control Permit, shall be deemed a violation of this ordinance and subject to enforcement action pursuant to applicable Agency and City ordinance.

Also see Appendix V - Erosion Prevention and Sediment Control Matrix and Methods

Appendix V

EROSION PREVENTION AND SEDIMENT CONTROL MATRIX AND METHODS

Establishing Primary Access Point

As one of the initial activities at the start of any earthwork, a gravel driveway shall be established. The driveway shall meet the following:

- 1) The driveway shall begin at curb line, or at the edge of the street or pavement if no curb, and be of sufficient length to allow construction and delivery vehicles to unload material and have access without needing to frequently drive over muddy areas.
- 2) The rock surface must be kept clean and free of mud, either from mud or dirt dropping or washing onto the surface, or from mud or soil "pumping" through the crushed rock from the action of vehicles. If contaminated such that significant mud will be washed or transported onto the streets, then the crushed rock shall be replaced or covered with an additional thickness of crushed rock, or restrict entry if possible.
- 3) The responsibility for design and performance of the driveway remains with the applicant. It is suggested the driveway be a minimum of 20' x 20', 8" thick, and be made of 2" minus or larger crushed rock, or 3/4" minus crushed rock with a geotextile fabric installed between the subbase and rock.
- 4) Tires and equipment shall be washed or otherwise cleaned prior to entering public right of way when the vehicle or equipment has entered a muddy area.

Additional Access

Construction and delivery vehicles and equipment shall use the primary access point (the gravel driveway). Vehicles and equipment shall not access the property from any other point (shall not "hop the curb"), unless required due to the physical layout of the parcel, and not simply due to convenience.

If it is necessary to access the site at other than the primary access point:

- 1) A second temporary or permanent crushed rock access point shall be established if there is an ongoing need to access the property at a second point. Large or difficult properties may require more than one permanent access point.
- 2) If there is only a one time or infrequent need to access the property at other than an established access point, then the

vehicle or equipment may "hop the curb." Each time the vehicle or equipment re-enters the street any mud, dirt, or other such debris that falls or is deposited on the street shall be immediately cleaned using hand labor or mechanical means. "Immediate" shall mean within five minutes of the mud, dirt, or debris being deposited on the street. Mud, dirt and debris shall not be allowed to accumulate to be cleaned up at the end of the day or "later". Under no circumstance shall mud, dirt or debris be washed into the storm and surface water system, without first mechanically cleaning and then protecting downstream facilities.

- 3) Under no circumstance shall vehicles or equipment enter a property adjacent to a stream, water course, or other storm and surface water facility, or a wetland such that it would not be possible to avoid contaminating or depositing mud, dirt, or debris into the water or wetland.

Silt Barriers

Silt barriers shall be installed concurrent with grading, and will be inspected prior to "footing" inspection. They shall be installed downhill of all graded, filled, and stripped areas, and across the path of concentrated flows. They shall be designed and installed to capture erosion on site. Silt barriers can be:

- 1) Hay bales
- 2) Silt fence
- 3) Gravel filter system, such as the early installation of sidewalk base rock. A gravel filter is permitted only when slopes are less than 5 percent.
- 4) Bio-Filter Bags

Exceptions to Silt Barrier Requirement

Silt barriers are not required as described above on a site, or on portions of a site:

- 1) where a "community" Erosion Control Plan is in effect.
- 2) Where there are no concentrated flows and the slope being protected has a grade of less than 2 percent.
- 3) Where flows are collected through the use of temporary or permanent grading or other means such that the flows are routed to an approved settling pond, filtering system, or silt barrier.
- 4) Where there are no concentrated flows, slopes are less than 10 percent, and where the run-off passes through a grassed area which is either owned by the applicant, or approved for such use in writing by the owner of the grassed area. The grass area shall be at least equal in area to the area being protected.

Community Plan

Any individual or group may submit a plan to control erosion from multiple lots, and this shall be referred to as a "Community Erosion Control Plan", or "Community Plan". In such case, the group of lots will be evaluated as if they were one lot.

If an individual lot in a Community Plan is sold to new owners, the new owner may either join the Community Plan (with the approval of the other "community" owner or owners), or will need to submit their own Erosion Control Plan if erosion potential still exists on the parcel. If a lot is sold and the new owner does not join the Community Plan, then the Community Plan must be revised to prevent erosion from entering the withdrawn property.

Protection Measure Removal

The erosion control facilities and techniques shall remain in place and be maintained in good condition until all disturbed soil areas are permanently stabilized by installation of landscaping, seeding, mulching, or otherwise covered and protected from erosion. A final erosion control inspection shall be required prior to transitioning into new ownership.

Miscellaneous

Filter systems may not be used on catch basins in public streets as a part of single family erosion control plans.

Plastic sheeting should generally not be used as an erosion control measure in single family house construction. Plastic sheeting may be used to protect small, highly erodible areas, or temporary stockpiles of material. If used, the path of concentrated flow from the plastic must be protected.

Appendix C3
City of Troutdale
Erosion Control and
Water Quality Standards

- 1 1.040 Flood Hazard and Hillside Overlay District Definitions
- 2 .02 Appeal. A request for a review of the Director's interpre-
- 3 tation of any provision of this ordinance or request for a
- 4 variance from requirements of Chapter 4 - Flood Hazard.
- 5 .04 Area of Shallow Flooding. A designated AO or AH zone
- 6 on the Flood Insurance Rate Map (FIRM). The base flood
- 7 depths range from one to three feet; a clearly defined
- 8 channel does not exist; the path of flooding is unpredict-
- 9 able and indeterminate; and, velocity flow may be
- 10 evident. AO is characterized as sheet flow and AH
- 11 indicates ponding.
- 12 .05 Floodplain or flood-prone area. Any land area susceptible
- 13 to being inundated by water from any source.
- 14 .06 Area of Special Flood Hazard (100 Year Flood Plain). The
- 15 land in the flood plain within a community subject to a
- 16 one percent or greater chance of flooding in any given
- 17 year. Designation on maps always includes the letters A
- 18 or V.
- 19 .07 Base Condition. Condition of property at time of
- 20 adoption of this ordinance.
- 21 .08 Base Flood. The flood having a one percent change of
- 22 being equaled or exceeded in any given year. Also
- 23 referred to as the "100-year" flood. Designation on maps
- 24 always includes the letter A or V.
- 25 .09 Conservation Easement. An easement applied to
- 26 environmentally sensitive lands which prohibits most
- 27 forms of development, and which assures that native
- 28 vegetation will be maintained or enhanced. Conservation
- 29 easements usually affect privately owned land, and are
- 30 enforceable by the City of Troutdale. Trails and limited
- 31 public facilities may be permitted under carefully

- 1 controlled conditions within conservation easements.
- 2 10. Development. Any artificial change to improved or unim-
3 proved real estate, including but not limited to, buildings
4 or other structures, mining, dredging, filling, grading,
5 paving, excavation, vegetation removal, drilling, stream
6 alteration or channeling, or other activities that
7 adversely affect flood hazard potential or water quality
8 within the area of special flood hazard.
- 9 11. Escarpment. A steep slope (25% or greater) separating
10 a gently sloping surface (less than 10 percent slope)
11 from a stream or river channel, and resulting from water
12 and/or wind erosion. The "top of the escarpment" is land
13 immediately above the line where the slope breaks
14 downward to a creek or river.
- 15 .12 Flood or Flooding. A general and temporary condition of
16 partial or complete inundation of normally dry land areas
17 from:
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19 (a) The overflow of inland or tidal waters and/or
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21 (b) The unusual and rapid accumulation of runoff of
surface waters from any source.
- 22 .14 Flood Insurance Rate Map (FIRM). The official map on
23 which the Federal Insurance Administration has delineat-
24 ed both the areas of special flood hazards and the risk
25 premium zones applicable to the community.
26
- 27 .16 Flood Insurance Study. The official report provided by
28 the Federal Insurance Administration that includes flood
29 profiles, the Flood Boundary-Floodway Map, and the
30 water surface elevation of the base flood.
- 31 .18 Floodway. The channel of a river or other water-course
32 and the adjacent land areas that must be reserved in

1 order to discharge the base flood without cumulatively
2 increasing the water surface elevation more than one
3 foot.

4 .20 Lowest Floor. The lowest floor of the lowest enclosed
5 area (including basement). An unfinished or flood
6 resistant enclosure, usable solely for parking of vehicles,
7 building access or storage, in an area other than a
8 basement area, is not considered a building's lowest
9 floor, provided that such enclosure is not built so as to
10 render the structure in violation of the applicable non--
11 elevation design requirements of the Flood Hazard
12 regulations.

13 .22 Manufactured Home. A structure, transportable in one or
14 more sections, which is built on a permanent chassis and
15 is designed for use with or without a permanent founda-
16 tion when connected to the required utilities. For flood
17 plain management purposes the term "manufactured
18 home" also includes park trailers, travel trailers, and area
19 of special flood hazard.

20 .24 Manufactured Home Park or Subdivision. A parcel (or
21 contiguous parcels) of land divided into two or more
22 manufactured home lots for rent or sale.

23 .26 New Construction. Structures for which the "start of
24 construction" commenced on or after the effective date
25 of this code.

26 .27 Slopes. Steep Slope areas include all areas in the City
27 where the slope of the land is 25 percent or greater.
28 Constrained Slope areas include all undeveloped areas
29 where the slope of the land is from 15 to 24 percent.
30 Such slopes are depicted generally on the City of
31 Troutdale "Slopes Map," on file in the Community
32 Development Department.

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.28 Start of Construction. Includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufacture home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundation or the erection of temporary forms nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure.

.29 Stream Bank, Top of. The land area immediately above regularly confining a waterbody, including a stream, river or wetland. The bank has a notably steeper slope than the surrounding landscape. The top of the bank is the first major break in the slope between the toe of the bank at waterline and the surrounding landscape. The top of the bank does not include the entire canyon created by a stream or river, nor does it usually include the entire drainage area of a wetland. The top of the stream bank, as well as the location of the 100-year floodplain and floodway (if known), are depicted generally on the "City of Troutdale Flood Plain and Stream Corridor Map," on file in the Community Development Department.

.30 Structure. A structure is that which is built or constructed, an edifice or building of any kind, or any piece of work articially built up or composed of parts

1 joined together in some definite manner. In addition to
2 buildings, the definition of "structure" includes such
3 artificial constructs as parking lots, fences, roads,
4 utilities and storage tanks.

5 .32 Substantial Improvement. Any repair, reconstruction, or
6 improvement of a structure, the cost of which equals or
7 exceeds 50 percent of the market value of the structure
8 either:

9 (a) before the improvement or repair is started, or

10 (b) if the structure has been damaged and is being
11 restored, before the damage occurred. For the
12 purpose of this definition "substantial improve-
13 ment" is considered to occur when the first alter-
14 ation of any wall, ceiling, floor or other structural
15 part of the building commences, whether or not
16 that alteration affects the external dimensions of
17 the structure.

18 The term does not, however, include either:

19 (c) any project for improvement of a structure to
20 comply with existing state or local health, sanitary,
21 or safety code specifications which are solely
22 necessary to assure safe living conditions, or

23 (d) any alteration of a structure listed on the National
24 Register of Historic Places or a State Inventory of
25 Historic Places.

26 .34 Variance. A grant of relief from the requirements of
27 Chapter 4-Flood Hazard which permits construction in a
28 manner that would otherwise be prohibited by the
29 standards of the FH District.

30 .36 Vegetation, Approved. Vegetation which typically does

1 not require irrigation or fertilization, because it is adapted
2 to natural soil, water and climatic conditions. The list of
3 approved vegetation species is based on the "Portland
4 Plant List" (May 26, 1993) and is on file in the
5 Community Development Department. In contrast,
6 invasive and nuisance vegetation can crowd out
7 approved vegetation species or can be harmful to
8 humans and animals.

9 1.060 Erosion Control and Water Quality Definitions

10 02. Excavation. Any act by which soil or rock is cut into,
11 dug, quarried, uncovered, removed, displaced or
12 relocated.

13 04. Developer. The owners of property or their agents or
14 contractors, or their successors and assigns, who have
15 undertaken or are proposing development which is
16 regulated by Section 5.600.

17 06. Development. See Section 1.020.40.

18 08. Erosion. Detachment and movement of soil, rock
19 fragments, refuse, or any other material, organic or
20 inorganic.

21 10. Fill. Placement of any soil, sand, gravel, clay, mud,
22 debris, refuse, or any other material, organic or
23 inorganic.

24 12. Mulch. Application of plant residue, netting, plastic
25 sheeting or other suitable materials to the land surface
26 to conserve moisture, hold soil in place and aid in
27 establishing plant cover.

28 14. Site. The "site" means the lot, or contiguous lots under
29 the same ownership, that are subject to a development
30 permit or erosion control plan.

- 1 16. Sediment. Any material that is in suspension, is being
2 transported, or has been moved from its site of origin by
3 water, wind, or gravity as a result of erosion.
- 4 18. Stockpile. On-site storage of any soil, sand, gravel, clay,
5 mud, debris, vegetation, refuse or any other material,
6 organic or inorganic, in a concentrated state.
- 7 20. Surface Water Management System. All natural and
8 constructed facilities used to regulate the quantity and
9 quality of surface water, including drainage easements,
10 culverts, storm drains, catch basins, drainage ditches,
11 natural drainageways, stream corridors, rivers, ponds,
12 wetlands and impoundments.
- 13 22. Wetland. Wetlands generally include, but are not limited
14 to, swamps, marshes, bogs, and similar wet areas.
15 Wetlands are those areas that are inundated or saturated
16 by surface or ground water at a frequency and duration
17 sufficient to support, and that under normal conditions
18 do support, a prevalence of vegetation typically adapted
19 for life in saturated soil conditions. (ORS 196.800)

20 1.070 Scope and Compliance

21 A parcel of land may be used, developed by land division or
22 otherwise, and a structure may be used or developed by con-
23 struction, reconstruction, alteration, occupancy or otherwise
24 only as permitted by this code. The requirements of this code
25 apply to the person undertaking a development or the user of
26 a development and to the person's successors in interest.

27 1.080 Consistency with Plan and Laws

28 Actions initiated under this code shall be consistent with the
29 adopted Comprehensive Plan of the City of Troutdale and with
30 applicable state and federal laws and regulations as these
31 plans, laws and regulations may now or hereafter provide.

- 1 4.300 HILLSIDE AND EROSION CONTROL OVERLAY DISTRICT
- 2 4.310 Purpose. The purpose of this overlay district is to promote the
3 public health, safety, and general welfare. Provisions under
4 this section are designed to:
- 5 A. Restrict or prohibit uses, activities or development which
6 is damage-prone or damage-inducing to the land or to
7 water quality;
- 8 B. Require uses vulnerable to landslides, including public
9 facilities which serve such uses, to be protected at the
10 time of initial construction;
- 11 C. Allow the development of land only for those uses which
12 are suitable on steep slopes;
- 13 D. Maintain land and water quality by minimizing erosion
14 and sedimentation, and by restricting or prohibiting
15 development, excavation and vegetation removal in
16 areas with constrained or steep slopes.
- 17 E. To comply with Statewide Planning Goals 6 (Air, Water
18 and Land Resources Quality) and 7 (Natural Hazards).
- 19 4.311 Findings of Fact.
- 20 A. Hillsides within the City of Troutdale represent the
21 abrupt and noticeable changes in slope that mark the
22 edges of the Beaver Creek Canyon, the Sandy River and
23 Arata Creek.
- 24 B. Hillsides are environmentally sensitive areas. If they are
25 not well managed, irreversible damage may occur.
- 26 C. Development, excavation and vegetation removal on
27 slopes of 25 percent or greater will cause erosion and

1 stream sedimentation, and may increase the probability
2 of landslides.

3 D. Unless development, excavation and removal of
4 vegetation on slopes of from 15 to 24 percent are
5 carefully managed and regulated, the probability of
6 erosion, stream sedimentation and landslides will
7 increase.

8 E. Coverage by native plant species and trees is important
9 to maintenance of land and water quality, both for the
10 development site and the City as a whole.

11 F. Fertilizers, pesticides and irrigation contribute to water
12 pollution. Introduced plant species are more likely to
13 require fertilizers, pesticides and irrigation than are native
14 plant species.

15 4.312 Areas of Application. The Hillside and Erosion Control Overlay
16 District shall apply to land on slopes of 15 percent or greater
17 or unconstrained slopes within 30 feet of the top of
18 escarpments associated with rivers or streams. .

19 A. Delineation of Boundaries.

20 The Hillside and Erosion Control Overlay District shall be
21 mapped generally by the City, and shall consist of Steep
22 Slope and Constrained Slope areas.

23 1. Steep Slope areas include all areas in the City
24 where the slope of the land is 25 percent or
25 greater.

26 2. Constrained slope areas include all areas where the
27 slope of the land is between 15 and 24 percent.

- 1 3. These areas are associated primarily, but not
2 exclusively, with the Beaver Creek Canyon, the
3 Sandy River, and Arata Creek.
- 4 4. Specific determination of Steep Slope and
5 Constrained Slope areas shall be made at the time
6 of a development proposal by the applicant for
7 alteration or development for the respective
8 properties within the Hillside and Erosion Control
9 Overlay District based on the topographic map and
10 field survey.
- 11 5. Areas subject to the restrictions and prohibitions of
12 this overlay district are indicated on the map
13 entitled "City of Troutdale Slope Map" on file in
14 the Community Development Department.
- 15 a. Where development, excavation or
16 vegetation removal is proposed for areas with
17 15 percent or greater slope, an on-the-ground
18 topographical survey shall be prepared for the
19 entire site. The survey shall show trees or
20 tree clusters and 2 foot contours, and shall
21 be provided by the property owner or
22 applicant for development approval.
- 23 b. Areas with 15 to 24 percent slopes, and
24 areas with 25 percent or greater slopes, shall
25 be specifically indicated on the required
26 survey maps.

27 B. Warning and Disclaimer of Liability.

28 The degree of landslide protection required by this
29 ordinance is considered reasonable for regulatory
30 purposes and is based on common engineering and
31 scientific practices . Landslides may occur on rare
32 occasions in areas outside of the delineated Steep Slope

1 and Constrained Slope boundaries. This Ordinance does
2 not imply that areas outside the Hillside and Erosion
3 Control Overlay District boundaries or land use
4 permitted within such boundaries will be free from
5 significant mass movement or landslide damage. This
6 Section shall not create City liability for damage
7 resulting from reliance on the provisions of this Section
8 or any administrative decision lawfully made thereunder.

9 4.313 Permitted Uses.

10 A. Uses Permitted - Steep Slope (25% or greater) or
11 unconstrained slopes within 30 feet of the top of
12 escarpments associated with rivers or streams.

13 1. Open space and trails as designated by the "Parks
14 Plan," provided they are constructed consistent
15 with standards on file in the Community
16 Development Department.

17 2. Removal of refuse and unauthorized fill.

18 3. Removal of nuisance or invasive plant species, or
19 planting of approved vegetation species on the
20 Portland Plant List kept on file at the Community
21 Development Department.

22 4. Removal of dead or dying trees that are an
23 imminent danger to public safety as determined by
24 the Director.

25 5. Construction of roads and public utilities necessary
26 to support permitted development on slopes of 15
27 percent or less, subject to construction standards
28 on file in the Public Works Department.

29 6. Expansion of existing roadways and public utility
30 facilities.

- 1 B. Prohibited uses on slopes of 25 percent or greater,
2 unless specifically permitted under Section 4.314:
- 3 1. Man-made structures.
4 2. Vegetation removal.
5 3. Road construction.
6 4. Excavation.
- 7 C. Uses Permitted - Constrained Slope (15 to 24 percent).
- 8 1. Open space.
9 2. At a reduced density and intensity, any use in the
10 underlying district provided the standards of
11 Section 4.314 are met.
- 12 3. Removal of nuisance or invasive plant species, or
13 planting of approved vegetation species on the
14 Portland Plant List and kept on file at the
15 Community Development Department.

16 4.314 Hillside Development Standards.

- 17 A. Standards.
- 18 1. The property shall front on a publicly dedicated
19 street or roadway with a right-of-way width and
20 street improvement standard acceptable to the
21 City. The parcel can be adequately served by
22 municipal water supply and sanitary sewer
23 systems . Development of individual sewage
24 disposal systems shall not be permitted within the
25 Hillside and Erosion Control Overlay District.

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2. Where slopes are 25 percent or greater, or on unconstrained land within 30 feet of the top of escarpments associated with rivers or streams, grading, approved vegetation removal, site preparation and construction shall be prohibited, except where necessary to provide access or utilities to buildable lots with slopes of 15 percent or less.
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- a. Land with slopes of 25 percent or greater shall be conserved and maintained as open space. This may occur through private ownership, through private conditions, covenants and restrictions, through conservation easements enforceable by the City or other public or private nonprofit agency, or where approved by the City Council, dedication to the City or donation to other appropriate public or private nonprofit agency.
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- b. Disturbed areas shall be replanted in approved vegetation and tree cover.
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3. Where development is proposed on slopes of 15 percent or greater:
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- a. The impervious surface area of any residential lot or commercial or industrial site (including driveways, sidewalks, structures, swimming pools, and any other area not covered by vegetation) shall not exceed 30 percent of the constrained (15%-24%) slope area;
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- b. Development shall not result in cuts or fills in excess of three (3) feet except for basement

1 construction unless specifically approved by
2 the Director.

3 c. At least half the constrained slope area shall
4 remain in, or be planted in, approved
5 vegetation. The existing tree canopy shall be
6 retained wherever possible, and shall be
7 considered in meeting this standard.

8 d. If development is proposed on constrained or
9 steep slope areas, a mitigation plan for
10 disturbed areas on constrained or steep slope
11 areas shall be prepared and implemented.
12 This plan shall provide for the replanting and
13 maintenance of approved plant species
14 designed to achieve pre-disturbance
15 conditions.

16 4. The applicant's engineering plans shall certify that
17 runoff and sedimentation from the site will not
18 increase more than 10% above conditions present
19 on the site as of January 1, 1994.

20 5. The applicant's engineer shall provide a
21 construction erosion control plan and water quality
22 plan, consistent with the provisions of Section
23 4.600 and consistent with the City's NPDES
24 program.

25 B. Submission Requirements. For the purpose of minimizing
26 landslide hazards, and where development is proposed
27 on slopes of 15 percent or greater, the Director shall
28 require submission of the following special reports,
29 prepared by professionals in their respective fields:

30 1. Hydrology, Geology and Soils Report. This report
31 shall include information on the hydrological
32 activities of the site, the effect of hydrologic

1 conditions on the proposed development, and any
2 hydrological or erosion hazards. This report shall
3 also include geological characteristics of the site,
4 its suitability for development, its carrying
5 capacity, and any geological hazard that might
6 present a hazard to life and property, or adversely
7 affect the use or stability of a public facility or
8 utility. Finally, this report shall include information
9 on the nature, distribution and strength of existing
10 soils; the adequacy of the site for development
11 purposes; and an assessment of grading
12 procedures required to impose the minimum
13 disturbance to the natural state. The report shall be
14 prepared by a professional engineer registered in
15 Oregon.

16 2. Grading Plan. The grading shall be specific to a
17 proposed physical structure or use and shall
18 include information on terrain (two foot contours
19), drainage, direction of drainage flow, location of
20 proposed structures and existing structures which
21 may be affected by the proposed grading
22 operations, water quality facilities, finished
23 contours or elevations, including all cut and fill
24 slopes and proposed drainage channels. Project
25 designs including but not limited to locations of
26 surface and subsurface devices, walls, dams,
27 sediment basins, storage reservoirs, and other
28 protective devices shall form part of the
29 submission. The grading plan shall also include a
30 construction phase erosion control plan and a
31 schedule of operations and shall be prepared by a
32 professional engineer registered in Oregon.

33 3. Vegetation Report. This report shall consist of a
34 survey of existing vegetative cover, whether it is
35 native or introduced, and how it will be altered by
36 the proposed development. Measures for re-

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vegetation with approved plant species will be clearly stated, as well as methods for immediate and long-term stabilization of slopes and control of soil erosion. The vegetation report shall be prepared by a landscape architect, landscape designer, botanist or arborist with specific knowledge of native plant species, planting and maintenance methods, survival rates, and their ability to control erosion and sedimentation. The applicant will be responsible for replacing any native plant species that do not survive the first two years after planting.

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4. Design Standards. The required reports shall include design standards necessary for the engineer and landscape expert to certify that development on slopes of 15 percent or greater, when combined with impacts from development of lesser slopes, will not increase runoff, sedimentation to affected streams or wetlands, erosion, or landslide potential more than 10% above base conditions. These requirements shall be incorporated as conditions into the final decision approving the proposed development.

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C. Residential Density Allowance and Transfer Provisions.

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1. Slopes of between 15 and 24 percent: the maximum residential density allowed in constrained slopes areas shall be 70 percent of the density otherwise permitted in the underlying residential zoning district. The remaining 30 percent of the otherwise permitted density may be transferred to buildable portions of the site (i.e., areas where slopes are less than 15 percent and outside of the 100-year floodplain).

- 1 2. Slopes of 25 percent or greater: density may be
2 transferred to buildable portions of the site (i.e.,
3 where slopes are less than 15 percent and outside
4 the floodplain) at a rate of one unit per steeply-
5 sloped acre.

- 6 3. The net increase in density as a result of density
7 transfer shall not exceed 50% of the base density
8 that would otherwise be allowed on buildable
9 portions of the lot. Single-family residential lot
10 sizes on buildable land may be as small as 5,000
11 square feet to allow for density transfer.

- 12 4. Exception: Each lot-of-record, that has received
13 planning approval from either Multnomah County
14 or the City of Troutdale, may have one dwelling
15 unit, provided that the siting, engineering, erosion
16 control, water quality and re-vegetation standards
17 of Section 4.314 have been fully satisfied. No new
18 lot shall be approved for development which is
19 exclusively on slopes of 25% percent or greater.

20 4.315 Approval Procedure - Type 1.

- 21 A. The Director shall approve new development for a single-
22 family or two-family dwelling under the Type 1
23 procedure within the Hillside and Erosion Control Overlay
24 District only if the proposed use or structure meets all of
25 these conditions:
 - 26 1. That development standards are met as prescribed
27 under section 4.314;

 - 28 2. That adequate protection is utilized to minimize
29 landslide and erosion hazards, consistent with
30 Section 5.600;

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3. That the applicant provides assurances that development impacts will be minimized on slopes greater than 25 percent, provided however, that a property owner shall not be denied the right to construct a single-family home on a residentially zoned, lot-of-record, approved by Multnomah County or the City of Troutdale prior to January 1, 1994.

4. Notwithstanding the provisions of Section 6.200, Variance, an adjustment of up to 50% from any dimensional standard in the underlying zoning district may be approved under Type 1 procedure, where necessary to avoid construction on slopes of 25 percent or greater or to meet the standards of Section 4.314.

5. That it is in conformance with the provisions of the Troutdale Development Code .

B. The Director shall determine the final boundaries of constrained slope and steep slope areas based on topographical information provided by an engineer or surveyor registered in Oregon. The applicant shall be responsible for submitting such information.

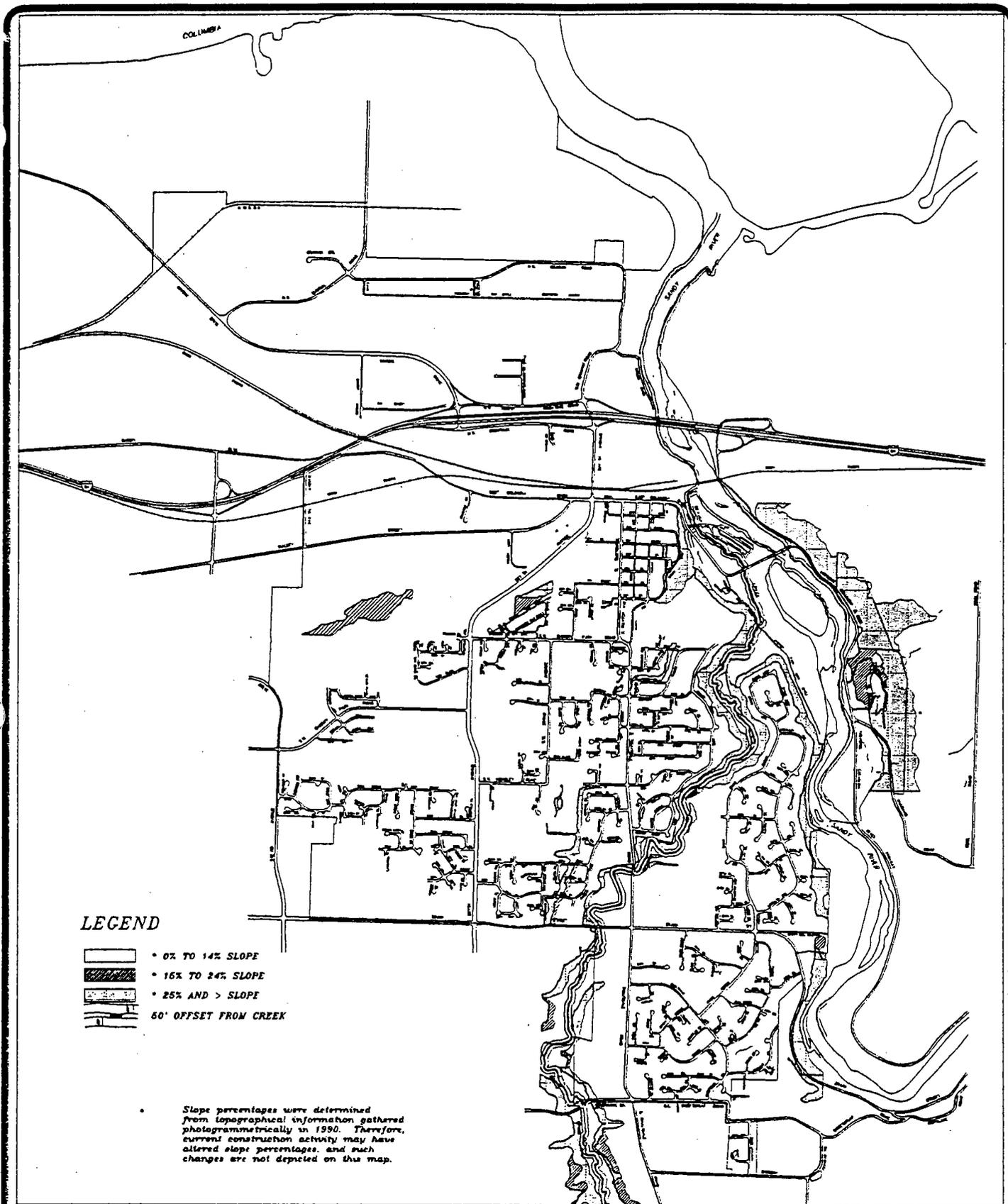
4.316 Approval Procedure - Type 3. The Planning Commission shall approve new developments for more than one single-family or two-family dwelling within the Hillside and Erosion Control Overlay District under a Type 3 procedure provided that the proposed use or structure meets all of these conditions:

A. That development standards are met as prescribed under Section 4.314;

B. That adequate protection is utilized to minimize landslide and erosion hazards, consistent with Section 5.600;

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C. That it is in conformance with the City's Comprehensive Plan, and Troutdale Development Code, provided, however, that policies in the Comprehensive Plan will not be used to discourage needed housing, or to unreasonably increase cost or review time.



LEGEND

-  • 0% TO 14% SLOPE
-  • 15% TO 24% SLOPE
-  • 25% AND > SLOPE
-  60' OFFSET FROM CREEK

Slope percentages were determined from topographical information gathered photogrammetrically in 1990. Therefore, current construction activity may have altered slope percentages, and such changes are not depicted on this map.

FILE NAME: SLOPE
 TITLE BLOCK: TBBX11
 EXTERNAL REFERENCES: TROUTBAS;
 PLOT DATE: 07-05-94
 BY: J.M.
 PREVIOUS REVISION DATE: 06-01-94



DEPARTMENT OF PUBLIC WORKS
 CITY OF TROUTDALE

SLOPE MAP

MULTNOMAH COUNTY, OREGON
 JULY 1994

1 5.600 EROSION CONTROL AND WATER QUALITY STANDARDS.

2 5.610 Purpose. The purpose of these standards is to reduce the
3 amount of sediment and pollutants reaching the public storm
4 and surface water system resulting from development,
5 construction, grading, excavating, clearing, and any other
6 activity which accelerates erosion or increases water pollution.
7 The objective is to control erosion and pollution at its source
8 in order to maintain and improve water quality and reduce
9 downstream impacts.

10 5.611 Applicability. An erosion control and mitigation plan shall be
11 required and approved by the Director under any of the
12 following circumstances:

13 A. Prior to final plat approval for any subdivision, in
14 accordance with Chapter 7.100.

15 B. Prior to Site Orientation and Design Review, in
16 accordance with Chapter 8.050.

17 C. Prior to approval of any building or grading permit that
18 results in:

19 1. Disturbance of 1,000 square feet or more of land
20 surface area.

21 2. Land or native vegetation disturbance within 50
22 horizontal feet of top of bank of any wetland,
23 stream or river.

24 3. Disturbance of land or vegetation affecting 500
25 square feet or more of land area on slopes of 25
26 percent or greater.

27 D. Farming activities are exempt from the provisions of
28 Section 5.611.C.1, provided that the specific land area
29 has been cultivated within the last three years.

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E. Upon a finding that visible or measurable erosion has entered, or is likely to enter, the public storm and surface water system. As used in this section, "visible or measurable erosion" shall include the following:

1. Depositions of soil or sediment exceeding one cubic foot in volume on a public or private street, adjacent property, or into the surface water management system either by direct deposit, dropping, discharge or as a result of erosion.
2. Flows of water over bare soils, turbid or sediment laden flows, or evidence of on-site erosion such as rivulets or bare soil slopes, where the flow of water is not filtered or captured on the site.
3. Earth slides, mud flows, earth sloughing, or other earth movement which leaves the property of origin.

F. Single Family Lot Exemption - Standard Erosion Control Plan.

Standard Erosion Control Plan Option. In lieu of compliance with TDC 5.614 the developer may choose to follow the requirements of the Standard Erosion Control Plan, approved by the Planning Commission and on file in the Community Development Department in the following circumstances:

- a. The lot is 20,000 square feet or less.
- b. No portion of the lot exceeds 5% slope.

Nothing in this section shall relieve any person from the obligation to comply with the regulations or permits of any

1 federal, state, or local authority. See also Troutdale City Code,
2 Chapter 12.09.

3 5.612 Approval Standards. The Director shall make the following
4 affirmative findings prior to approval of an erosion control
5 plan:

6 A. The project has been designed to minimize disturbance
7 of natural topography, native vegetation and soils,
8 consistent with applicable provisions of Sections 4.300
9 (Hillside Preservation) and 4.600 (Flood Hazard).

10 B. The site design maximizes the preservation of healthy
11 trees, understory shrubs and ground cover.

12 C. The plan complies with the applicable technical
13 guidelines, as determined by the Public Works Director.
14 In the case of erosion control standards, the City of
15 Gresham *Erosion Control Plans Technical Guidance*
16 *Handbook*, April 1991 Edition, shall be the recognized
17 authority. In the case of water quality facilities, the
18 *Stormwater Management Manual for the Puget Sound*
19 *Basin*, February 1992 Edition, shall be the recognized
20 authority.

21 5.613 Erosion Control Plan Submission Requirements. The required
22 erosion control plan shall include a narrative description and
23 scaled drawings which address:

24 A. The physical characteristics of the site, including a map
25 of existing topography at 2 foot contour intervals, the
26 location of water areas, and a narrative description of
27 soil characteristics. The requirement for a 2 foot contour
28 map may be waived by the Director where this
29 information is not readily available, and erosion potential
30 is minor.

1 B. The nature of the proposed development, including any
2 phasing plans, which may affect soils or create soil
3 erosion. Areas of excavation, grubbing, clearing,
4 stockpiling, or vegetation removal shall be specifically
5 identified.

6 C. Specific erosion control measures and practices to be
7 used to demonstrate compliance with Section 5.614.

8 5.614 Erosion Control Plan Standards. In addition to compliance with
9 relevant portions of the City's Hillside and Flood Hazard
10 Overlay Districts, the required Erosion Control Plan shall
11 comply with the following standards:

12 A. Control Measures. Specific methods of soil erosion and
13 sediment control shall be used during construction to
14 minimize visible and measurable erosion. In no case shall
15 soil erosion and sediment transport from the site exceed
16 the rate of one ton per acre per year. These methods
17 shall include all of the following:

18 1. The land area to be grubbed, stripped, used for
19 temporary placement of soil, or to otherwise
20 expose soil shall be confined to the immediate
21 construction site only.

22 2. The duration of exposure of soils shall be kept to
23 a minimum during construction. Exposed soils shall
24 be covered by mulch, sheeting, temporary seeding
25 or other suitable material following grading or
26 construction, until soils are stabilized. During the
27 rainy season (November through May), soils shall
28 not be exposed for more than seven consecutive
29 (7) days. All disturbed land areas which will remain
30 unworked for 21 days or more during construction,
31 shall be mulched and seeded.

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3. During construction, runoff from the site shall be controlled, and increased runoff and sediment resulting from soil disturbance shall be retained on-site. Temporary diversions, sediment basins, barriers, check dams, or other methods shall be provided as necessary to hold sediment and runoff.
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4. A stabilized pad of gravel shall be constructed and maintained at all entrances and exits to the construction site. The stabilized gravel pad shall be the only allowable entrance or exit to the site.
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5. Topsoil removal for development shall be stockpiled and reused on-site to the degree necessary to restore disturbed areas to their original or enhanced condition, or to assure a minimum of six inches of stable topsoil for re-vegetation. Additional soil shall be provided if necessary to support re-vegetation.
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6. The removal of all sediments which are carried into the streets, or on to adjacent property, are the responsibility of the developer. The applicant shall be responsible for cleaning and repairing streets, catch basins, and adjacent properties, where such properties are affected by sediments or mud. In no case shall sediments be washed into storm drains, ditches, drainageways, streams, or wetlands. See also Chapter 12.09 of the Troutdale Municipal Code, related to public facilities.
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7. Any other relevant provision of the April 1991 edition of the City of Gresham *Erosion Control Plans Technical Guidance Handbook*, required by the Director.
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- B. Restoration of Vegetation. In addition to compliance with native vegetation removal and enhancement provisions

1 of Sections 4.300 and 4.600 of this code, the developer
2 shall be responsible for re-vegetating public and private
3 open spaces, utility easements, and undeveloped rights-
4 of-way in accordance with an approved Schedule of
5 Installation.

6 1. If the vegetation existing prior to site development
7 is non-native or invasive, it shall be replaced with
8 native or non-invasive plant species.

9 2. Temporary measures used for initial erosion control
10 shall not be left in place permanently.

11 3. Work areas on the immediate site shall be carefully
12 identified and marked to reduce potential damage
13 to trees and vegetation.

14 4. Trees shall not be used as anchors for stabilizing
15 working equipment.

16 5. During clearing operations, trees and vegetation
17 shall not be permitted to fall or be placed outside
18 the work area.

19 6. In areas designated for selective cutting or
20 clearing, care in falling and removing trees and
21 brush shall be taken to avoid injuring trees and
22 shrubs to be left in place.

23 7. Stockpiling of soil, or soil mixed with vegetation,
24 shall not be permitted on a permanent basis.

25 C. Schedule of Installation. A schedule of planned erosion
26 control and re-vegetation measures shall be provided,
27 which sets forth the progress of construction activities,
28 and mitigating erosion control measures.

- 1 D. Responsible Person. The developer shall designate a
2 specific person to be responsible for carrying out the
3 Erosion Control Plan.
- 4 E. Reference Authority. The April 1991 edition of the City
5 of Gresham *Erosion Control Plans Technical Guidance*
6 *Handbook* shall be the primary guide for the City of
7 Troutdale in establishing and reviewing erosion control
8 techniques, methods and requirements. The Director and
9 Public Works Director may also develop regulations and
10 procedures in accordance with the Handbook to
11 implement erosion control measures as needed.
- 12 5.615 Plan Implementation Requirements. An approved Erosion
13 Control Plan shall be implemented and maintained as follows:
- 14 A. Plan Approval Required Prior to Clearing or Grading. No
15 grading, clearing or excavation of land requiring an
16 Erosion Control Plan shall be undertaken prior to
17 approval of the Erosion Control Plan. Erosion control
18 measures shall be installed prior to any stripping or
19 excavation work.
- 20 B. Implementation. The developer shall implement the
21 measures and construct facilities contained in the
22 approved Erosion Control Plan in a timely manner.
- 23 1. During active construction, the developer shall
24 inspect erosion control measures daily during rainy
25 periods. In all cases, the developer shall be
26 responsible for maintenance, adjustment, repair
27 and replacement of erosion control measures to
28 ensure that they are functioning properly without
29 interruption.
- 30 2. Eroded sediment shall be removed immediately
31 from pavement surfaces, off-site areas, and from
32 the surface water management system, including

- 1 storm drainage inlets, ditches and culverts. See
2 also Troutdale Municipal Code, Chapter 12.09. In
3 the event that sediment is inadvertently deposited
4 in a wetland or stream, the developer shall
5 immediately contact the Director and coordinate
6 remedial actions with the City.
- 7 3. Water containing sediment shall not be flushed into
8 the surface water management system, wetlands
9 or streams without first passing through an
10 approved sediment filtering facility or device.
- 11 4. When required by the Director, the developer shall
12 maintain written records of all site inspections of
13 erosion control measures which shall be provided
14 to the Director upon request.
- 15 5. In addition, the developer shall call for City
16 inspection, prior to the foundation inspection for
17 any building, to certify that erosion control
18 measures are installed in accordance with the
19 erosion control plan.
- 20 C. Dust Control. Troutdale is especially susceptible to wind
21 erosion. Therefore, the Director may require that
22 additional dust control measures be included in the
23 Erosion Control Plan. Such control measures may
24 include, but are not limited to, the following:
- 25 1. Sprinkling access and haul roads and other
26 exposed dust producing areas with water.
- 27 2. Applying dust palliatives to access and haul roads.
- 28 3. Establishing temporary vegetative cover.
- 29 4. Placing wood chips, gravel or other effective
30 mulches on vehicle and pedestrian use areas.

- 1 5. Maintaining the proper moisture condition on all fill
2 surfaces.
- 3 6. Pre-wetting cut and fill surface areas.
- 4 7. Using covered haul equipment.
- 5 D. Correction of Ineffective Measures. If the facilities and
6 techniques approved in the Erosion Control Plan are not
7 effective or sufficient to meet the purpose of this
8 section, based on an on-site inspection, the Director may
9 require a revised plan.
- 10 1. The revised Erosion Control Plan shall be provided
11 within 5 working days of written notification by
12 the Director.
- 13 2. The developer shall implement fully the revised
14 plan within 5 working days of approval by the
15 Director.
- 16 3. In cases where serious erosion is occurring, the
17 Director may require the developer to install interim
18 control measures immediately, before submittal of
19 the revised Erosion Control Plan.
- 20 E. Additional Standards. The following additional standards
21 shall apply:
- 22 1. Construction between stream banks shall be
23 prohibited, unless absolutely necessary to
24 construct required public facilities.
- 25 2. Pollutants such as fuels, lubricants, bitumens, raw
26 sewage, and other harmful materials shall not be
27 discharged into or near rivers, streams, or
28 impoundments, and shall be properly stored and
29 disposed.

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3. Discharge of water into a stream, wetland or impoundment shall not result in altering the temperature of the water body enough to affect aquatic life.

4. All sediment-laden water from construction operations shall be routed through stilling basins, filtered, or otherwise treated to reduce the sediment load.

F. Storage. All erodible or toxic materials delivered to the job site shall be covered and protected from the weather and stored according to appropriate health and safety guidelines.

1. Such materials shall not be exposed during storage.

2. Waste material, rinsing fluids, and other such material shall be disposed of in such manner that pollution of groundwater, surface water, or air does not occur.

3. In no case shall toxic materials be dumped into drainageways or onto land.

G. Contaminated Soils. Where the construction process reveals soils contaminated with hazardous materials or chemicals, the Contractor shall stop work immediately; ensure that no contaminated material is hauled from the site; remove the work force from the contaminated area; leave all machinery and equipment; secure the area from access by the public until such time as a mitigation team has relieved them of that responsibility; notify the City of the situation upon its discovery; and prohibit employees who may have come in contact with the contaminated material from leaving the site until released by the Emergency Response Team.

1 H. Duration of Maintenance. Continuing maintenance after
2 development pursuant to the Erosion Control Plan,
3 including re-vegetation of all graded areas, shall be the
4 responsibility of the developer, subsequent developers or
5 property owners.

6 1. Erosion control measures shall be maintained
7 during construction and for one year after
8 development is completed.

9 2. The Director may, upon a finding that soils are
10 completely stabilized, reduce this period.

11 5.616 Special Water Quality Treatment Facilities. Beaver Creek and
12 the Sandy and Columbia Rivers are vitally important to
13 Troutdale's recreational-based economy and to the quality of
14 life of Troutdale residents. Special water quality detention and
15 treatment facilities may be required for major developments
16 draining to Beaver Creek, or the Sandy or Columbia Rivers,
17 designed in accordance with the *Stormwater Management*
18 *Manual for the Puget Sound Basin* (Washington Department of
19 Ecology, February 1992).

20 A. Applicability. The Director shall require water quality
21 treatment or detention facilities for developments which
22 qualify under any of the following:

23 1. The development involves 10 acres or more.

24 2. The development occupies one acre or more of
25 steep slope or constrained slope area.

26 3. The development will cause degradation of water
27 quality in the receiving stream without detention or
28 treatment.

29 4. The development involves paved parking areas
30 (exclusive of single family and two-family

1 residences), fuel storage or dispensing areas,
2 vehicle wash areas, or vehicle maintenance or
3 dismantling areas.

4 B. Responsibility and Treatment Options. Water quality
5 facilities for major developments shall be required for
6 purposes of minimizing water quality impacts on Beaver
7 Creek and the Sandy River, prior to deposition into
8 natural drainageways.

9 1. Water quality facilities shall be designed and
10 constructed by the developer, to ensure that
11 stormwater runoff is treated on site, prior to
12 discharge.

13 2. Treatment may include infiltration devices, grassy
14 swales, treatment ponds or other methods
15 approved by the City, consistent with the
16 *Stormwater Management Manual for the Puget*
17 *Sound Basin*, February 1992.

18 C. Placement of Water Quality Facilities. Placement of
19 water quality facilities shall be limited as follows:

20 1. The water quality facilities shall not be constructed
21 within an existing or created wetlands unless a
22 mitigation plan is approved by the City and the
23 Oregon Division of State Lands.

24 2. The water quality facility shall not be placed on
25 land with slopes of 15% or greater, within 50 feet
26 of the top of the bank of a stream, or within a
27 defined floodway area.

28 3. The water quality facility may be constructed
29 within the 100 year floodplain, provided that the
30 area is (a) outside the area covered by the 25-year
31 flood event, and (b) the water quality facility

1 effectively and exclusively uses native plant
2 species.

3 4. Where the approval authority determines that a
4 more efficient and effective regional site exists
5 within the sub-basin, the water quality facility may
6 be constructed off-site.

7 D. Water Quality Facility Standards. The design and
8 functions of required water quality control facilities shall
9 be determined based on the recommendations of the
10 *Stormwater Management Manual for the Puget Sound*
11 *Basin.*

12 1. The preliminary subdivision plat, site plan, or
13 permit application shall include plans and a
14 certification prepared by a professional engineer
15 registered in Oregon that the proposed stormwater
16 quality control facilities have been designed in
17 accordance with the *Stormwater Management*
18 *Manual for the Puget Sound Basin.*

19 2. The plan shall specifically consider source control
20 of pollution (oil and water separators), runoff
21 treatment, streambank erosion control, wetland
22 impacts, impacts on water quality sensitive areas,
23 and off-site analysis and mitigation (Minimum
24 Requirements 1-14, pp. I-2-5 through I-2-14).

25 3. A long-term (20-year) operation and maintenance
26 plan shall be required. This plan shall document
27 how and by whom the water quality facility will be
28 maintained.

29 4. If the water quality facility is dedicated to the City,
30 maintenance of the facility shall be the
31 responsibility of the developer for at least two

1 years after the facility has been constructed and
2 approved by the City.

3 If the facility is not dedicated to the City, then it
4 shall be the continuing responsibility of the
5 developer.

6 5. In all cases, runoff from impervious areas used for
7 repair, cleaning, refueling, storing or servicing of
8 vehicles and machinery shall be treated on site to
9 remove oil, grease and other chemicals.

10 5.617 Security. Except as provided by Section 5.617.B, after an
11 Erosion Control Plan or Water Quality Facility is approved by
12 the Director and prior to construction or grading, the applicant
13 shall provide a performance bond or other financial guarantee
14 in the amount of 120% of the value of the erosion control and
15 water quality measures necessary to stabilize the site and
16 maintain water quality. Any financial guarantee instrument
17 proposed other than a performance bond shall be approved by
18 the City Attorney.

19 A. Duration. The financial guarantee instrument shall be in
20 effect for a period of at least one year (or two years in
21 the case of a water quality facility), and shall be released
22 when the Director determines that the site has been
23 stabilized (or the water quality facility is operating as
24 designed). All or a portion of the security retained by the
25 City may be withheld for a period of up to five years
26 beyond the one year maintenance period, if it has been
27 determined by the Director that the site has not been
28 sufficiently stabilized against erosion (or the water
29 quality facility is not operating as intended).

30 B. Exemptions. Individual lots zoned for single family and
31 two family residential use prior to the effective date of
32 this Section, and individual lots subject to the standard

1 erosion control plan stated in 5.614 shall be exempt
2 from the security requirements of Section 5.617.

3 C. Conflict. Due to the immediate threat to the public
4 health, safety and welfare posed by failure to comply
5 with the strict provisions of the erosion control measures
6 required under this Section, the provisions of Section
7 5.617 shall supersede the more general provisions of
8 Troutdale Municipal Code Sections 17.050-070, where
9 conflicts exist.

10 5.618 Penalties. Each violation of any provision of this Section, or
11 any failure to carry out the conditions of any approval granted
12 pursuant to this Section, shall be unlawful and a civil
13 infraction subject to the enforcement provisions of Troutdale
14 Municipal Code, Section 17.110, Abatement and Penalty.

15 A. Additional Penalties. In addition to those penalties
16 available under Troutdale Municipal Code, Section
17 17.110, the Director may enforce the following
18 additional penalties:

19 1. Issue a stop work order where erosion control
20 measures are not being properly maintained or are
21 not functioning properly due to faulty installation or
22 neglect.

23 2. Refuse to accept any development permit
24 application, revoke or suspend any development or
25 building permit, or deny occupancy of the subject
26 property until erosion control measures have been
27 installed properly and maintained in accordance
28 with this Section.

29 B. The owner of the property from which the erosion
30 occurs, together with any person or parties who cause
31 such erosion, shall be responsible for mitigating the
32 impacts of the erosion and for preventing future erosion.

33 C. Upon request of the City Administrator or at the
34 direction of the City Council, the City Attorney may

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institute appropriate action in any court to enjoin development of a site or building project which is in violation of this Section, or to require conformance with this Section.

Appendix C4
City of Troutdale
Flood Hazard and
Water Quality Overlay District
(Example of Riparian Protection)

- 1 4.600 FLOOD HAZARD AND WATER QUALITY OVERLAY DISTRICT
- 2 4.610 Purpose. To promote the public health, safety and general
3 welfare, and to minimize public and private losses due to flood
4 conditions or degradation of water quality in specific areas by
5 provisions designed:
- 6 A. To protect human life and health;
- 7
- 8 B. To minimize expenditure of public money and costly
9 flood control projects;
- 10 C. To minimize the need for rescue and relief efforts
11 associated with flooding and generally undertaken at the
12 expense of the general public;
- 13 D. To minimize prolonged business interruptions;
- 14
- 15 E. To minimize damage to public facilities and utilities such
16 as water and gas mains, electric, telephone and sewer
17 lines, streets, and bridges located in areas of special
18 flood hazard;
- 19 F. To help maintain a stable tax base by providing for the
20 sound use and development of areas of special flood
21 hazard so as to minimize future flood blight areas;
- 22 G. To ensure that potential buyers are notified that property
23 is in an area of special flood hazard; and,
- 24 H. To ensure that those who occupy the areas of special
25 flood hazard assume responsibility for their actions.
- 26 I. To maintain and improve water quality.
- 27 J. To minimize erosion and loss of native vegetative cover.

- 1 K. To maintain wetlands within floodplain areas, because
- 2 wetlands help to maintain water quality and maintain
- 3 flood storage capacities.

- 4 L. To avoid any increase in base flood elevations as a result
- 5 of development.

- 6 4.611 Methods of Reducing Flood Losses and Maintaining Water
- 7 Quality.

- 8 In order to accomplish this purpose, this section includes
- 9 methods and provisions for:

- 10 A. Restricting or prohibiting uses which are dangerous to
- 11 health, safety, and property due to water or erosion
- 12 hazards, or which result in damaging increases in erosion
- 13 or in flood heights or velocities;

- 14 B. Requiring that uses vulnerable to floods, including
- 15 facilities which serve such uses, be protected against
- 16 flood damage at the time of initial construction;

- 17 C. Controlling the alteration of natural flood plains, stream
- 18 channels, and natural protective barriers, which help
- 19 accommodate or channel flood waters;

- 20 D. Controlling filling, grading, dredging, and other
- 21 development which may increase flood damage; and
- 22
- 23 E. Preventing or regulating the construction of flood barriers
- 24 which will unnaturally divert flood waters or may
- 25 increase flood hazards in other areas.

- 26 F. Maintaining and reintroducing approved vegetation,
- 27 which minimizes erosion and helps to maintain and
- 28 improve water quality.

- 29 4.612 Applicability.

1 A. This section shall apply to all areas of special flood
2 hazard and water quality impact, including all areas
3 within 50 feet of the top of the banks of Arata, Salmon
4 and Beaver Creeks, and the Sandy River, within the
5 jurisdiction of the City of Troutdale.

6 B. Delineation of Boundaries.

7 The Flood Hazard and Water Quality Overlay District
8 shall be mapped generally by the City. However, the
9 applicant for alteration or development within this
10 overlay district shall be responsible for precisely defining
11 the following, based upon site-specific field surveys or
12 Corps of Engineers data:

- 13 1. 100-year floodplain boundaries.
- 14 2. Floodway boundaries.
- 15 3. The name, location and dimensions of affected
16 streams or rivers and the tops of their banks.
- 17 4. The area enclosed by a continuous line, located 50
18 feet from the tops of streams and river banks.

19 4.613 Basis for establishing the Areas of Special Flood Hazard and
20 Water Quality Impact.

21 A. Maps and Studies Adopted by Reference. Areas subject
22 to the restrictions and prohibitions of this overlay district
23 are indicated on the map entitled "City of Troutdale
24 Flood Plain and Stream Corridor Map" on file in the
25 Community Development Department.

- 26 1. The description of flood-prone areas on this map
27 are based on the areas of special flood hazard
28 identified by the Federal Insurance Administration
29 in a scientific and engineering report entitled "The

1 Flood Insurance Study for the City of Troutdale
2 dated September 30, 1988. If FIRM maps are
3 revised in the future, these revisions will define
4 areas of special flood hazard. This 1988 study,
5 with accompanying Flood Insurance Maps is
6 hereby adopted by reference and declared to be
7 part of this ordinance.

8 2. This map is also based on the City's interpretation
9 of the location of streams, rivers and their banks,
10 and the best topographical information available.

11 B. Topographic Survey. Where development, excavation or
12 vegetation removal is proposed within this overlay
13 district, an on-the-ground topographical survey shall be
14 prepared for the entire site. The survey shall show trees
15 or tree clusters, existing roads, utilities and structures,
16 with 2 foot contours. The survey maps shall be provided
17 by the property owner or applicant for development
18 approval.

19 4.614 Interpretation. In the interpretation and application of this
20 ordinance, all provisions shall be:

- 21 A. considered as minimum requirements;
- 22 B. liberally construed in favor of the governing body; and,
- 23 C. deemed neither to limit nor repeal any other powers
24 granted under State statutes; and
- 25 D. definitions shall be as specified in Section 1.040.

26 4.615 Warning and disclaimer of liability. The degree of flood protec-
27 tion required by this ordinance is considered reasonable for
28 regulatory purposes and is based on scientific and engineering
29 considerations. Larger floods can and will occur on rare occa-
30 sions. Flood heights may be increased by man-made or natural

1 causes. This ordinance does not imply that land outside the
2 areas of special flood hazards or uses permitted within such
3 areas will be free from flooding or flood damage. This
4 ordinance shall not create liability on the part of the City of
5 Troutdale, any officer or employee thereof, or the Federal
6 Insurance Administration, for any damages that result from
7 reliance on this ordinance or any administrative decision
8 lawfully made hereunder.

9 4.616 Permit Required.

10 A. Alteration within Floodplain. A permit shall be obtained
11 before vegetation removal, excavation, construction or
12 development begins within any area of special flood
13 hazard established in Section 4.613. The permit shall be
14 for all structures and all development including fill,
15 vegetation removal, excavation and other activities that
16 may adversely affect water quality or increase flood
17 hazard.

18 B. Uses Permitted - Floodway or Within 50 Feet of Top of
19 Bank:

20 1. Open space and trails as designated by the "Parks
21 Plan," provided they are constructed consistent
22 with standards on file in the Community
23 Development Department.

24 2. Removal of refuse and unauthorized fill.

25 3. Removal of nuisance or invasive plant species, or
26 planting of approved vegetation species on the
27 Portland Plant List kept on file at the Community
28 Development Department.

29 4. Removal of dead or dying trees that are an
30 imminent danger to public safety as determined by
31 the Director.

- 1 5. Construction of public utilities necessary to support
2 permitted development outside the floodplain,
3 subject to construction standards on file in the
4 Public Works Department.

- 5 6. Expansion of existing roadways and public utility
6 facilities.

- 7 C. Prohibited uses within Floodway or 50 feet from top of
8 bank, unless specifically permitted under this Chapter:

- 9 1. Man-made structures.
- 10 2. Vegetation removal.
- 11 3. Road construction.
- 12 4. Excavation.

- 13 D. Uses Permitted within Floodplain, outside of Floodway
14 and 50 feet beyond the top of bank:

- 15 1. Open space and trails as designated by the "Parks
16 Plan," provided they are constructed consistent
17 with standards on file in the Community
18 Development Department.

- 19 2. Removal of refuse and unauthorized fill.

- 20 3. Land planned for residential, public or commercial
21 use at the time of adoption of this section: any
22 structure permitted in the underlying district may
23 occupy up to 30% of the floodplain area,
24 provided the standards of this Code are met.

- 25 4. For land planned for industrial use at the time of
26 adoption of this section: any use or structure

1 permitted in the underlying district may be
2 permitted anywhere within the floodplain area,
3 provided the standards of this Code are met.

- 4 5. Removal of nuisance or invasive plant species, or
5 planting of approved vegetation species, included
6 on the Portland Plant List kept on file at the
7 Community Development Department.

8 4.617 Application for Permit. Applications for a Flood Hazard permit
9 shall be made and may include, but are not limited to:

- 10 A. Plans in duplicate drawn to scale showing the nature,
11 location, dimensions, and elevations of the area in
12 question.
- 13 B. Existing or proposed structures, fill, storage of materials,
14 drainage facilities, and the location of the foregoing.
- 15 C. Elevation in relation to mean sea level, of the lowest
16 floor (including basement) of all structures;
- 17 D. Elevation in relation to mean sea level to which any
18 structure has been floodproofed;
- 19 E. Certification by a registered professional engineer or
20 architect that the floodproofing methods for any
21 nonresidential structure meet the floodproofing criteria in
22 Section 4.629;
- 23 F. Submission Requirements. Except for single-family
24 residences on existing lots, where development is
25 proposed within the floodplain, the Director shall require
26 submission of the following special reports, prepared by
27 professionals in their respective fields:
- 28 1. Hydrology and Soils Report. This report shall
29 include information on the hydrological activities of
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the site, the effect of hydrologic conditions on the proposed development, and any hydrological or erosion hazards. This report shall also include characteristics of the soils on the site, suitability for development, its carrying capacity, and erosion or slumping characteristics that might present a hazard to life and property, or adversely affect the use or stability of a public facility or utility. Finally, this report shall include information on the nature, distribution and strength of existing soils; the adequacy of the site for development purposes; and an assessment of grading procedures required to impose the minimum disturbance to the natural state. The report shall be prepared by a professional engineer registered in Oregon.

2. Grading Plan. The grading plan shall be specific to a proposed physical structure or use and shall include information on terrain (two-foot intervals of property), drainage, direction of drainage flow, location of proposed structures and existing structures which may be affected by the proposed grading operations, water quality facilities, finished contours or elevations, including all cut and fill slopes and proposed drainage channels. Project designs including but not limited to locations of surface and subsurface devices, walls, dams, sediment basins, storage reservoirs, and other protective devices shall form part of the submission. The grading plan shall also include a construction phase erosion control plan and a schedule of operations and shall be prepared by a professional engineer registered in Oregon.

3. Vegetation Report. This report shall consist of a survey of existing vegetative cover, whether it is native or introduced, and how it will be altered by the proposed development. Measures for re-

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vegetation with approved plant species will be clearly stated, as well as methods for immediate and long-term stabilization of slopes and control of soil erosion. The vegetation report shall be prepared by a landscape architect, landscape designer, botanist or arborist with specific knowledge of approved plant species, planting and maintenance methods, survival rates, and their ability to control erosion and sedimentation. The contractor for installation and maintenance will be responsible for replacing any approved plant species that do not survive the first two years after planting.

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G. Approval Standards. The required reports shall include design standards necessary for the engineer and landscape expert to certify that limited development within the floodplain, when combined with impacts from adjacent development, will not increase runoff, sedimentation to affected streams or wetlands, or erosion potential more than 10% above base conditions. These requirements shall be incorporated as conditions into the final decision approving the proposed development.

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1. The impervious surface area of any residential lot or commercial or industrial site (including driveways, sidewalks, structures, swimming pools, and any other area not covered by vegetation) shall not exceed 30 percent floodplain area;

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2. Development shall not result in cuts or fills in excess of three (3) feet except for basement construction unless specifically approved by the City.

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3. Except for land planned for industrial use at the time of adoption of this section, at least half the

- 1 floodplain outside the floodway shall remain
2 vegetated and undisturbed. The existing tree
3 canopy shall be retained wherever possible, and
4 shall be considered in meeting this standard.
- 5 4. If development is proposed within floodplain areas,
6 a mitigation plan for disturbed areas shall be
7 prepared and implemented. This plan shall provide
8 for the replanting and maintenance of approved
9 plant species designed to achieve pre-disturbance
10 conditions.
- 11 5. The applicant's engineering plans shall certify that
12 runoff and sedimentation from the site will not
13 increase more than 10% above conditions present
14 on the site as of January 1, 1994.
- 15 6. The applicant's engineer shall provide a
16 construction erosion control plan and water quality
17 plan, consistent with the provisions of Section
18 5.600.
- 19 7. Assurances and penalties for failure to comply with
20 mitigation, engineering, erosion and water quality
21 plans required under this section shall be as stated
22 in TDC 5.617 and 5.618, respectively.
- 23 4.618 Use of Other Base Flood Data. When base flood elevation data
24 has not been provided in accordance with Section 4.613 the
25 City of Troutdale may obtain, review, and reasonably utilize
26 any base flood elevation and floodway data available from a
27 federal, State or other source, in order to administer the Flood
28 Hazard Overlay District section.
- 29 4.619 Information to be Obtained and Maintained.
- 30 A. Where base flood elevation data is provided through the
31 Flood Insurance Study or required as in Section 4.618,

1 the developer shall obtain and record the actual elevation
2 (in relation to mean sea level) of the lowest floor
3 (including basement) of all new or substantially improved
4 structures, and whether or not the structure contains a
5 basement.

6 B. For all new or substantially improved floodproofed struc-
7 tures:

- 8 1. Verify and record the actual elevation (in relation to
9 mean sea level).
- 10 2. Maintain the floodproofing certifications required in
11 Section 4.619.
- 12 3. Maintain for public inspection all records pertaining
13 to the provisions of this ordinance.

14 4.620 Alteration of Watercourses. Alterations and relocations
15 of the water courses of Arata, Salmon or Beaver Creeks
16 or the Sandy River are prohibited, except to
17 accommodate projects identified in the City of Troutdale
18 Public Facilities Plan.

19 A. The City shall notify adjacent communities and the
20 U.S. Army Corp of Engineers and other affected
21 agencies prior to any alteration or relocation of a
22 watercourse, and submit evidence of such
23 notification to the Federal Insurance
24 Administration.

25 B. The City shall require that the developer maintain
26 the altered or relocated portion of said watercourse
27 so that the flood carrying capacity is not
28 diminished.

29 4.621 Interpretation of FIRM Boundaries or Tops of Banks. Make
30 interpretations where needed, as to exact location of the

1 boundaries of the areas of special flood hazards (for example,
2 where there appears to be a conflict between a mapped
3 boundary and actual field conditions). The person contesting
4 the location of the boundary shall be given a reasonable
5 opportunity to appeal the interpretation as provided in Section
6 4.622.

7 4.622 Variance Procedures.

8 A. The Planning Commission shall hear and decide appeals
9 and requests for variances from the requirements of this
10 code.

11 B. The Planning Commission shall hear and decide appeals
12 when it is alleged there is an error in any requirement,
13 decision, or determination made by the City of Troutdale
14 in the enforcement or administration of this code.

15 C. Those aggrieved by the decision of the Planning
16 Commission, or any taxpayer, may appeal such decision
17 to the City Council, as provided in Chapter 16.
18

19 D. In passing upon such applications, the Planning
20 Commission shall consider all technical evaluations, all
21 relevant factors, standards specified in other sections of
22 this ordinance, and:

23 1. The danger that materials may be swept onto other
24 lands to the injury of others;

25 2. The danger to life and property due to flooding or
26 erosion damage;

27 3. The susceptibility of the proposed facility and its
28 contents to flood damage and the effect of such
29 damage on the individual owner;

- 1 4. The importance of the services provided by the
2 proposed facility to the community;
- 3 5. The necessity to the facility of a waterfront
4 location, where applicable;
- 5 6. The availability of alternative locations for the
6 proposed use which are not subject to flooding or
7 erosion damage;
- 8 7. The compatibility of the proposed use with existing
9 and anticipated development;
- 10 8. The relationship of the proposed use to the
11 Comprehensive Plan and flood plain management
12 program for that area;
- 13 9. The safety of access to the property in times of
14 flood for ordinary and emergency vehicles;
- 15 10. The expected heights, velocity, duration, rate of
16 rise, and sediment transport of the flood waters
17 and the effects of wave action, if applicable,
18 expected at the site; and
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- 20 11. Impacts on water quality or native vegetation.
- 21 12. The costs of providing governmental services
22 during and after flood conditions, including
23 maintenance and repair of public utilities and
24 facilities such as sewer, gas, electrical, and water
25 systems, and streets and bridges.
- 26 E. Upon consideration of the factors of Section 4.622 (D)
27 and the purpose of this ordinance, the Planning
28 Commission may attach such conditions to the granting
29 of variances as it deems necessary to further the
30 purpose of this ordinance.

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F. The City of Troutdale shall maintain the records of all appeal actions and report any variances to the Federal Insurance Administration upon request.

G. Conditions for Variances.

1. Generally, the only condition under which a variance from the elevation standard may be issued is for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items 1-11 in Section 4.622 have been fully considered. As the lot size increases the technical justification required for issuing the variance increases.

2. Variances may be issued for the reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places, without regard to the procedures set forth in this section.

3. Variances shall not be issued within a designated floodway if any increase in flood levels during the base flood discharge would result.

4. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, native vegetation and water quality, to afford relief.

5. Variances shall only be issued upon:

- a. A showing of good and sufficient cause;

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- b. A determination that failure to grant the variance would result in exceptional hardship to the applicant.
 - c. A determination that the granting of a variance will not allow or result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public or conflict with existing local laws and ordinances.
6. Variances as interpreted in the National Flood Insurance Program are based on the general zoning law principle that they pertain to a physical piece of property; they are not personal in nature and do not pertain to the structure, its inhabitants, economic or financial circumstances. They primarily address small lots in densely populated neighborhoods. As such, flood variances from the flood elevations should be quite rare.
7. Variances may be issued for nonresidential buildings in very limited circumstances to allow a lesser degree of floodproofing than watertight or dry-floodproofing, where it can be determined that such action will have low damage potential, complies with all other variance criteria except Section 4.622 (F) [1] and otherwise complies with Sections 4.624-4.625.
8. An applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with a lowest floor elevation below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.

1 4.623 Provisions for flood hazard reduction. In all areas of special
2 flood and water quality hazards, the following standards are
3 required:

4 4.624 Anchoring.

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6 A. All new construction and substantial improvements shall
7 be anchored to prevent flotation, collapse, or lateral
8 movement of the structure.

9
10 B. All manufactured homes must likewise be anchored to
11 prevent flotation, collapse or lateral movement, and shall
12 be installed using methods and practices that minimize
13 flood damage. Anchoring methods may include, but are
14 not limited to, use of over-the-top or frame ties to
15 ground anchors (Reference FEMA's "Manufactured
16 Home Installation in Flood Hazard Areas" guidebook for
additional techniques).

17 4.625 Construction Materials and Methods.

18 A. All new construction and substantial improvements shall
19 be constructed with materials and utility equipment
20 resistant to flood damage.

21 B. All new construction and substantial improvements shall
22 be constructed using methods and practices that
23 minimize flood damage.

24 C. Electrical, heating, ventilation, plumbing, and air
25 conditioning equipment and other service facilities shall
26 be designed and/or otherwise elevated or located so as
27 to prevent water from entering or accumulating within
28 the components during conditions of flooding.

29 D. No construction materials or methods may be used
30 within the floodplain that would impair or damage water
31 quality or native vegetation.

- 1 4.626 Utilities.
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3 A. All new and replacement water supply systems shall be
4 designed to minimize or eliminate infiltration of flood
5 waters into the system;
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7 B. New and replacement sanitary sewage systems shall be
8 designed to minimize or eliminate infiltration of flood
9 waters into the systems and discharge from the systems
10 into flood waters; and,
11
12 C. On-site waste disposal systems shall be located to avoid
13 impairment to them or contamination from them during
14 flooding.
15
16 D. Utility and road placement shall occur outside the
17 Floodplain, and 50' beyond the top of stream or river
18 bank, unless the utility or road is necessary to serve
19 permitted development, and there is no reasonable
20 alternative.

- 18 4.627 Subdivision, Planned Unit Development, Commercial,
19 Industrial, Multi-Family and Public Development Proposals.
20
21 A. All proposals shall be consistent with the need to
22 minimize flood and water quality damage;
23
24 B. All proposals shall have public utilities and facilities such
25 as sewer, gas, electrical, and water systems located and
26 constructed to minimize flood and water quality damage;
27 C. All proposals shall have adequate drainage provided to
28 reduce exposure to flood damage and maintain water
29 quality;
30 D. Where base flood elevation data has not been provided
31 or is not available from another authoritative source, the

1 developer shall provide this information prior to submittal
2 for subdivisions and other proposed developments .

3 4.628 Review of Building Permits. Where elevation data is not
4 available either through Flood Insurance Study or from another
5 authoritative source (Section 4.618), applications for building
6 permits shall be reviewed to assure that proposed construction
7 will be reasonably safe from flooding. The test of
8 reasonableness is a local judgment and includes use of
9 historical data, high water marks, photographs of past
10 flooding, etc., where available. Failure to elevate at least two
11 feet above grade in these zones may result in higher insurance
12 rates.

13 4.629 Specific Standards. In all areas of special flood hazards where
14 base flood elevation data has been provided as set forth in
15 Section 4.613, Basis for Establishing the Areas of Special
16 Flood Hazard or Section 4.618, Use of Other Flood Data, the
17 following provisions are required:

18 A. Residential Construction.

- 19 1. New residential and substantial improvements of
20 any residential structure shall either have the
21 lowest floor, including basement, elevated to the
22 level of the base flood elevations.
- 23 2. Fully enclosed areas below the lowest floor that
24 are subject to flooding are prohibited, or shall be
25 designed to automatically equalize hydrostatic
26 flood forces on exterior walls by allowing for the
27 entry and exit of floodwaters. Designs for meeting
28 this requirement must either be certified by a
29 registered professional engineer or architect or
30 must meet or exceed the following minimum
31 criteria:

- 1 a. A minimum of two openings having a total
2 net area of not less than one square inch for
3 every square foot of enclosed area subject to
4 flooding shall be provided.
- 5 b. The bottom of all openings shall be no higher
6 than one foot above grade.
- 7 c. Openings may be equipped with screens,
8 louvers, or other devices provided that they
9 permit the automatic entry and exit of
10 floodwaters.

11 B. Nonresidential Construction.

12 New construction and substantial improvement of any
13 commercial, industrial or other nonresidential structure
14 shall have the lowest floor, including basement, elevated
15 to the level of the base flood elevation; or together with
16 attendant utility and sanitary facilities, shall:

- 17 1. Be floodproofed so that below the base flood level
18 the structure is watertight with walls substantially
19 impermeable to the passage of water.
- 20 2. Have structural components capable of resisting
21 hydrostatic and hydrodynamic loads and effects of
22 buoyancy;
- 23 3. Be certified by a professional engineer registered in
24 Oregon or an architect that the design and
25 methods of construction are in accordance with
26 accepted standards of practice for meeting
27 provisions of this subsection based on their
28 development and/or review of the structural
29 design, specifications and plans. Such certifica-
30 tions shall be provided to the official as set forth in
31 Section 4.619 (B).

- 1 4. Nonresidential structures that are elevated, not
2 floodproofed, must meet same standards for space
3 below the lowest floor as described in Section
4 4.629 A (2).
- 5 5. Applicants floodproofing nonresidential buildings
6 shall be notified that flood insurance premiums will
7 be based on rates that are one foot below the
8 floodproofed level (e.g. a building constructed to
9 the base flood level will be rated as one foot below
10 that level).
- 11 4.630 Manufactured Homes. All manufactured homes to be placed
12 or substantially improved within Zones A1-30, AH, and AE
13 shall be elevated on a permanent foundation such that the
14 lowest floor of the manufactured home is at or above the base
15 flood elevation and be securely anchored to an adequately
16 anchored foundation system in accordance with the provisions
17 of Section 4.624.
- 18 4.631 Floodways.
- 19 A. Encroachment Prohibited. Prohibit encroachment, including fill,
20 new construction, substantial improvements, and other
21 developments.
- 22 B. Exception: Utilities necessary to serve permitted development,
23 and single family homes on legally-approved lots of record,
24 may be permitted where a professional engineer registered
25 in Oregon certifies that encroachments shall not result in any
26 increase in flood levels during the occurrence of the base flood
27 discharge, and that water quality will not be adversely
28 affected.
- 29 30
- 31 4.632 Encroachments. The cumulative effect of any proposed
32 development shall not increase the water surface elevation of
33 the base flood . On-site flood storage capacity shall not

1 decrease as a result of development, vegetation removal or
2 excavation.

3 4.633 Wetlands.

4 A. Prohibitions. Development, vegetation removal and
5 excavation shall be prohibited on, or within 25 feet of,
6 wetlands located within, or partially within, the Flood
7 Hazard and Water Quality Overlay District.

8 B. Exceptions. Utilities necessary to serve development
9 outside the floodplain may be permitted, provided that
10 the design and re-vegetation standards of this section
11 are met.

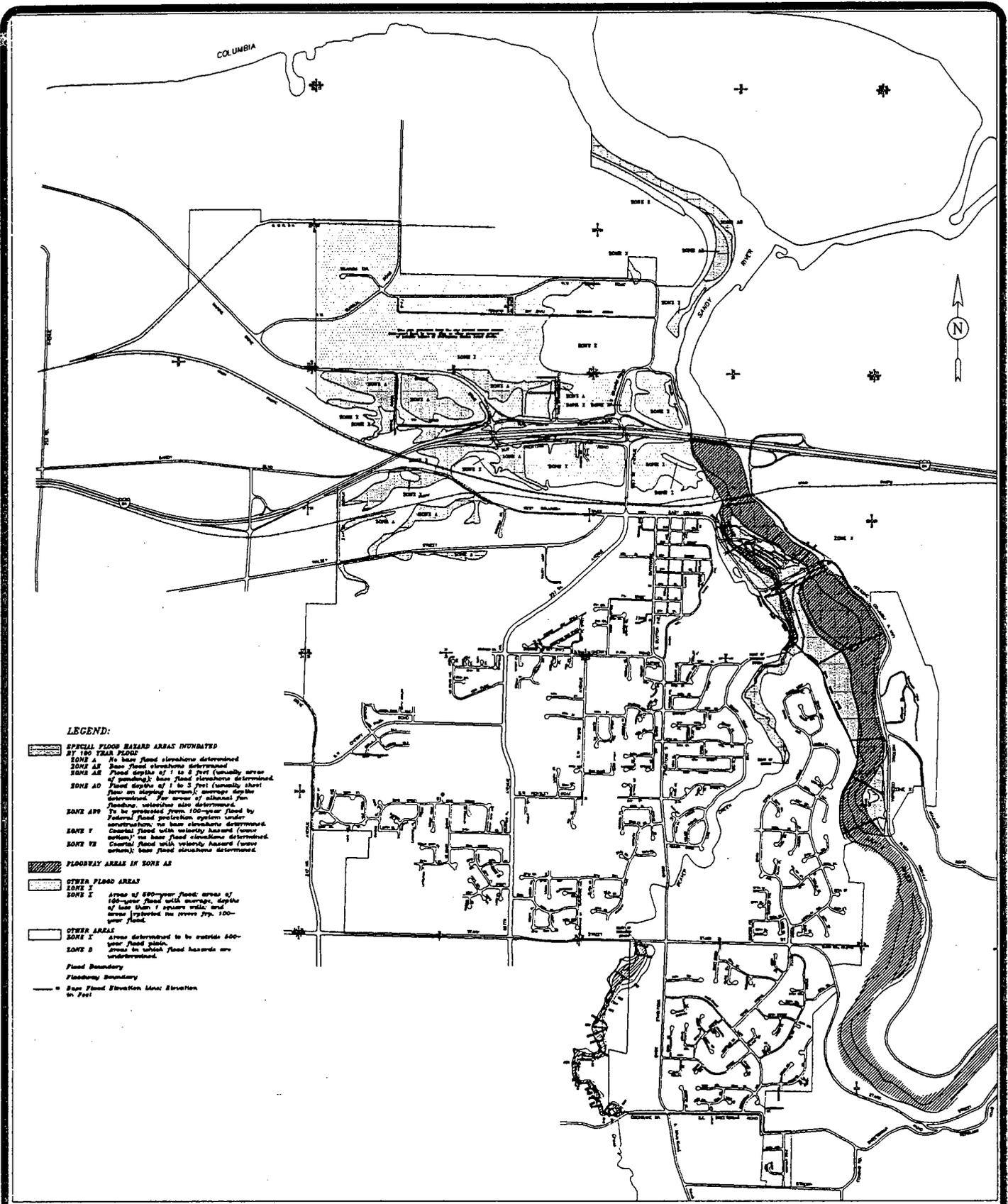
12 4.634 Residential Density Allowance and Transfer Provisions.

13 A. Floodplain. Floodplain areas outside Floodway and 50
14 foot stream bank setback: residential density allowed in
15 this portion of the floodplain shall be 70 percent of the
16 density otherwise permitted in the underlying residential
17 zoning district. The remaining 30 percent of the
18 otherwise permitted density may be transferred to
19 buildable portions of the site (i.e., areas entirely outside
20 the 100-year floodplain and 50 foot stream setback).

21 B. Floodway and Stream Bank Setback. Areas within the
22 Floodway and 50 foot stream bank setback: density may
23 be transferred to buildable portions of the site at a rate
24 of one unit per acre.

25 C. Maximum Density Increase. The net increase in density
26 as a result of density transfer shall not exceed 50% of
27 the base density that would otherwise be allowed on
28 buildable portions of the lot. Single-family residential lot
29 sizes on buildable land may be as small as 5,000 square
30 feet to allow for density transfer.

1 D. Exception. Each lot-of-record, that has received planning
2 approval from either Multnomah County or the City of
3 Troutdale, may have one dwelling unit, provided that the
4 siting, engineering, erosion control, water quality and re-
5 vegetation standards of this Section have been fully
6 satisfied. No new lot shall be approved for development
7 which is exclusively within the Floodway or stream bank
8 setback area.



LEGEND:

- SPECIAL FLOOD HAZARD AREAS INDICATED BY 100 YEAR FLOOD:**
- ZONE A:** No base flood elevations determined
- ZONE AA:** Base flood elevations determined
- ZONE AB:** Flood depths of 1' to 2 feet (usually areas of parking); base flood elevations determined
- ZONE AD:** Flood depths of 1 to 3 feet (usually street flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AP:** To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- ZONE F:** Coastal flood with velocity hazard (near outlet); base flood elevations determined.
- ZONE V:** Coastal flood with velocity hazard (near outlet); base flood elevations determined.
- FLOODWAY AREAS IN ZONE AA**
- OTHER FLOOD AREAS**
- ZONE I:** Areas of 500-year flood; areas of 100-year flood with storage; depths of less than 1 square mile; and areas protected by levees from 100-year flood.
- OTHER AREAS**
- ZONE X:** Areas determined to be outside 500-year flood plain.
- ZONE D:** Areas in which flood hazards are undetermined.
- Flood Boundary**
- Floodway Boundary**
- Base Flood Elevation Mean Elevation in Feet**

FILE NAME: FLOOD
 TITLE BLOCK: TB8X11
 EXTERNAL REFERENCES: TROUTBAS;
 PLOT DATE: 06-01-94
 BY: J.M.
 PREVIOUS REVISION DATE: NONE



DEPARTMENT OF PUBLIC WORKS
 CITY OF TROUTDALE
FLOOD MAP
 MULTNOMAH COUNTY, OREGON
 JUNE 1994