CHAPTER 2 – LAND ALTERING ACTIVITIES

2.00 General

The Standards established by this chapter are intended to represent the minimum design standards for land altering activities (clearing, grading, and erosion control work).

Compliance with these Standards does not relieve the designer of the responsibility to apply sound professional judgment to protect the health, safety, and welfare of the general public. Additionally, since these are minimum standards, special site conditions and environmental constraints may require a greater level of protection than would normally be required under these Standards. The designer must apply these Standards bearing in mind these constraints.

Conditions may change after land altering activities, or construction has started due to unforeseen conditions. Design elements of the proposed project may have to be changed to comply with the conditions of any permits, codes and regulations, or these Standards.

The primary objective of this chapter is to control erosion at its source as a means of controlling water pollution, flooding, and habitat damage downstream. Typical examples of techniques for source control are limiting cleared areas (especially on steep terrain or adjacent to other sensitive areas), seasonal limits on work, mulching, hydroseeding or covering cleared areas as soon as work has finished, control of land use in sensitive areas, and establishment and maintenance of setbacks and buffer areas.

Secondary containment measures must be provided to back up the above measures in case of failure. These backup measures include desilting ponds and sediment traps, filter fencing and straw bales, catch basin filtration, and management plans. One method cannot be relied on without the other - both are mandatory to protect property, lives, and habitat.

Land altering activities are those activities which are commonly referred to as clearing (the act of vegetation removal from the land surface by mechanical or chemical means - often referred to as land clearing), grubbing (the act of root vegetation removal from beneath the surface of the earth - usually in association with clearing), excavation (the mechanical removal of earth material), filling (deposition of earth material placed by artificial means), grading (excavation or filling or combination thereof), compaction (densification of earth material by artificial means), stockpiling (temporary deposition of earth material placed by artificial means), and stabilizing (counteracting the actions of gravity, wind, or water).

2.01 Seasonal Limits

Land altering operations shall be limited by the seasonal limitations specified below:

A. When land altering activities are interrupted by heavy rain, operations shall not be resumed until the City determines that erosion control facilities are operating satisfactorily;

B. Work shall be stopped, and the site shall be secured from erosion at any time when weather conditions change or the threat of heavy rain makes erosion problems likely, as determined by the City Engineer;

C. From October 1st through April 30th, no soils shall remain exposed for more than two (2) days. From May 1st through September 30th, no soils shall remain exposed for more than seven (7) days; and

D. No earthwork shall take place on slopes in excess of 25% between the dates of October 1st and May 1st. This period may be shortened or extended according to the City Engineer.

2.02 Preservation of Existing Vegetation and Soils

A. Existing vegetation shall be preserved whenever possible.

B. Construction equipment access, construction of impervious surfaces, excavations, and fills shall be kept outside the root protection zone of any trees to be preserved.

1) The root protection zone shall be calculated as a 1-foot radius for each 1 inch of trunk diameter at breast height (4.5 feet from the natural ground surface).

2) Where land altering activity and construction operations cannot avoid the need for temporary access over the root protection zone, a tree protection plan prepared by an arborist shall be submitted. The tree protection plan shall be designed to safeguard the health of the protected tree(s) from any of the following construction activities that are proposed within the root protection zone:

a. Excavation and fill;

b. Material stockpiles;

c. Trenching; or

d. Vehicle and equipment access.

C. Soils shall be protected from disturbance whenever it is not necessary for the purposes of construction of proposed improvements to disturb them.

2.03 Temporary Erosion/Sedimentation Control

A. Prior to any land altering activity, devices for interception of all runoff from the cleared area shall be installed. Said interception shall preclude discharging silt-laden runoff from the proposed land development to downstream properties to the maximum extent possible with the best available technology. Said interception shall cause all silt-laden runoff to be conveyed by open swale or other means to whatever temporary facility is necessary or required to remove silt from said runoff prior to discharge to downstream properties. Sequence of work shall be specified on the plans.

B. Care shall be taken so as to deposit no material from sites of land altering activity onto public rights-of-way, adjoining properties, and areas of the site designated for protection of vegetation or soils. If such depositions occur, it shall be the responsibility of the Permittee to immediately remove such material and restore to the original conditions.

C. Since site conditions may change rapidly during construction due to construction activity, weather, and other factors, it should be anticipated that the erosion control measures on the approved plan might become ineffective. Under special conditions, measures additional to those showing on the plan may be required by the City, in order to control erosion and sedimentation.

E. The types of erosion and sedimentation controls as outlined in the Stormwater Management Manual of Western Washington (SWMMWW) shall be utilized in such combination as is necessary to achieve the level of erosion control required by these Standards and to meet water quality objectives. Erosion control facilities shall be periodically inspected, and maintenance performed in order to ensure their proper functioning as required by the approved erosion and sedimentation control management plan.

F. Small and large parcel developments shall implement erosion control plan(s) as required by the following:

1) *Construction Access.* Construction vehicle access shall be limited, wherever possible, to only one (1) route. Access points shall be stabilized with 2- to 6-inch diameter clean rock

(quarry spalls) to minimize tracking of sediment (mud) onto public roads. Evidence of tracking of material from a construction site may require construction activities to cease until corrections are made. Vehicles not performing a construction activity shall not be permitted off-street. Worker personal vehicles shall be parked on adjacent streets or other approved areas.

2) *Roadways*. If sediment is transported onto a road surface, the roads shall be cleaned thoroughly at the end of the workday, or more often if necessary.

   Significant soil deposits shall be removed from roads by shoveling or sweeping. Street washing, which must be approved by the City Engineer, shall be allowed only after sediment is removed in this manner. Prior to washing, all inlets and downstream facilities must be protected.

3) *Clearing Limits.* At the site, mark clearing limits and/or any easements, setbacks, sensitive/critical areas and their buffers, trees, and drainage courses.

4) *Exposed Soils.* All exposed and un-worked soils shall be stabilized by suitable application of BMPs, including but not limited to sod or other vegetation, plastic covering, mulching, or application of ground base on areas to be paved. All BMPs shall be selected, designed, and maintained in accordance with the SWMMWW. Construction materials such as lumber shall be delivered and stored in designated locations that are stabilized and protected from erosion.

5) *Staging.* Sediment ponds and traps, perimeter dikes, sediment barriers, and other BMPs intended to trap sediment on-site shall be constructed as a first step in grading. These BMPs shall be stabilized and functional before land-disturbing activities take place. Earthen structures such as dams, dikes, and diversions shall be seeded and mulched according to the timing noted above.

6) *Infiltration Systems.* Permanent infiltration systems shall be isolated and protected from sedimentation by sediment traps, sacrificial systems, duplicate systems, or redundant systems.

7) *Waterways.* Properties and waterways downstream from development sites shall be protected from erosion due to increases in the volume, velocity, and peak flow rate of stormwater runoff from the project site. Acceptable BMPs include temporary or permanent detention ponds and temporary infiltration BMPs limiting the discharge from a 2-year storm to one-half (1/2) the pre-development 2-year storm peak runoff rate.

8) *Water bodies and adjacent properties.* Water bodies and adjacent properties shall be protected from sediment deposition by appropriate use of vegetative buffer strips, sediment barriers or filters, dikes, mulching, or by a combination of these measures and other appropriate BMPs. Each owner, builder, or permit holder shall install and maintain inlet protection on storm drain inlets impacted from construction activity on their site.

9) *Conveyance Systems.* All temporary on-site conveyance channels shall be designed, constructed, and stabilized to prevent erosion from the expected velocity of flow from a 2-year, 24-hour frequency storm for the developed condition. Stabilization adequate to prevent erosion of outlets, adjacent stream banks, slopes, and downstream reaches shall be provided at the outlets of all conveyance systems. BMPs shall be selected, designed, and maintained in accordance with the SWMMWW. Outlet protection shall also include energy dissipation structures or devices that retard peak flows to non- erosive conditions.

10) *Storm Inlets.* All storm drain inlets shall be protected so that stormwater runoff shall not enter the conveyance system without first being filtered or otherwise treated to remove

sediment. BMPs shall be selected, designed, and maintained in accordance with the BMP manual. Other BMPs may be utilized, provided they have prior approval by the City Engineer.

11) *Maintenance.* All erosion and sediment control BMPs shall be inspected, maintained, and repaired as needed to ensure continued performance of their intended function. Maintenance and repair shall be conducted in accordance with the SWMMWW or approved site plan. Damaged BMPs shall be replaced or repaired.

12) *Underground Utility Construction.* The construction of underground utility lines shall be subject to the following criteria:

    a. Where feasible, no more than 500 feet of trench shall be opened at one time;

    b. Excavated material shall be placed to minimize runoff into the trench and adjacent roadway consistent with safety and space considerations;

    c. Trench dewatering devices shall discharge into a sediment trap or sediment pond;

    d. BMPs shall be used to control erosion during and after construction.

13) *Construction Site Dewatering.* Dewatering devices shall discharge into a sediment trap or sediment pond.

14) *Control of Pollutants Other Than Sediment on Construction Sites.* All pollutants other than sediment that occur on-site during development shall be handled and disposed of in a manner that does not cause contamination of stormwater in accordance with the SWMMWW.

15) *Removal of Temporary BMPs.* All temporary erosion and sediment control BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment shall be removed or stabilized on-site. Disturbed soil areas resulting from removal shall be permanently stabilized.

    a. Where temporary erosion and sediment control BMPs are installed during the site development phase of a residential subdivision for the protection of bioretention, rain garden, or permeable pavement BMPs that are planned to be constructed during the homebuilding phase, then these BMPs may remain in place during the transition from site development to homebuilding with approval of the City Engineer.

2.04 Protection of LID BMPs

A. Protection of LID BMPs is required in accordance with the SWMMWW. The types of controls outlined in the SWMMWW shall be utilized in such combination as is necessary to prevent compaction of soils at the location of LID BMPs and to prevent sediment from entering the location of infiltrating LID BMPs that have been excavated to final grade.

B. *Additional protections are recommended*. At the discretion of the City Engineer, any of the further protections described below may be required if BMPs are insufficient to protect LID BMPs.

C. *Construction Sequencing*. Sequence construction to avoid directing sediment toward LID BMPs:

1) Limit land altering activities after bioretention and permeable pavement facilities have been rough graded.

2) Grade residential lots during the site development phase of a residential subdivision.

3) Avoid land disturbing activities during rainfall.

D. *Enhanced Coordination*. The protection of LID BMPs may require enhanced coordination between contractors:

1) Conduct site visits with equipment operators to show areas where equipment must be excluded to protect LID BMPs;

2) Inform all contractors of protection measures for LID BMPs;

3) Install protective fencing around bioretention facilities to ensure that foot traffic, vehicle traffic, and equipment are excluded from the facility footprint.

E. *Excavation.* LID BMPs must be excavated in a manner that avoids compaction:

1) Excavate LID BMPs only when soils are dry;

2) For bioretention and rain gardens:

a. Operate equipment adjacent to the BMP and not in its footprint;

b. Use lightweight low ground-contact pressure equipment;

c. Scarify bottom grade to a depth of 12 inches after final excavation.

F. *Construction Protection of Permeable Pavements.*

1) Use the back-dumping method to install the aggregate base.

2) Exclude all vehicles from areas where permeable pavements are planned.

Avoidance of all traffic on permeable pavements may not be feasible. In cases where equipment or vehicles unavoidably must have access to locations where permeable pavements are planned, the following protective measures are indicated:

a. Exclude vehicles until the aggregate base has been placed or the first lift of porous asphalt has been laid;

b. Cover the aggregate base or permeable pavement surface with geotextile covered by gravel (not for use over pavement) or steel plates;

c. After site stabilization remove the geotextile and other protective coverings, replace the aggregate base if fouled with sediments, or clean the pavement surface, if necessary;

d. Complete the pavement installation.

3) Permeable pavement surfaces used for staging must be protected with tarps or steel plates.

2.05 Permanent Erosion Control and Vegetation and Soil Restoration

A. Permanent erosion control shall be required per the requirements of the SWMMWW.

B. Soils shall be restored, and vegetation restoration or landscaping installation shall be completed on those areas of the site disturbed by the land altering activity which are not covered by permanent surface improvements (i.e. buildings, parking lots, etc.) at the earliest possible time consistent with appropriate planting times. The soil shall be stabilized and amended in accordance with the SWMMWW BMP T5.13: Post Construction Soil Quality and Depth, prior to vegetation restoration.

C. In no case will the period between the land altering operation and final and complete soil restoration, permanent erosion control, or vegetation planting for a given project or project

phase be longer than one (1) year. Said planting shall restore the vegetation on site to a condition equal to or better than the precleared condition to the maximum extent possible. Temporary erosion and sedimentation control measures shall be maintained in full operating condition for all areas to be restored until said restoration is complete and the site fully stabilized.

2.06 100-Year Flood Plain

A. Encroachments, including fills, new construction, substantial improvements, and other development within the regulatory floodway that would result in any increase in flood levels during the occurrence of the "100-year" flood discharge shall be prohibited.

B. "100-year flood" means the flood having a one percent (1%) chance of being equaled or exceeded in any given year.

C. Delineation of the "100-year" flood plain shall be in accordance with the elevations established by the U.S. Geological Survey's Flood Insurance Study (latest published edition) for the U.S. Department of Housing and Urban Development.

2.07 Environmental Protection During Construction

A. General Policy and Requirements

1) It is the policy of the City of Stevenson 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.

The City may, in addition, require that a construction project be scheduled so as to minimize erosion or other environmental harm.

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

2) For all projects, the prohibitions and regulations of this section shall apply. The City may temporarily suspend the work or require additional protection measures if it appears, based upon observed conditions of the project, that the approved plan is insufficient to prevent environmental harm and that such suspension or additional measures will prevent or minimize such harm.

B. Air Pollution Control

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. Obtaining water from a hydrant will require specific authorization from the applicable water jurisdiction.

b. Applying DOE approved 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. Pre-wetting cut and borrow area surfaces.

g. Use of covered haul equipment.

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 shall not be burned at the construction site. They will be removed from the site in accordance with DOT rules and regulations as they are no longer deemed necessary for use in the construction process.

b. Open burning shall not be permitted unless approved by the Southwest Washington Air Pollution Control Authority and the Fire Marshal'sOffice.

c. Open burning shall not be permitted within 1,000 feet of a structure 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 determined by city, state, or federal authorities.

f. All open burning shall be constantly attended by a crew with a supply of fire- fighting tools and equipment. The number and size of fires shall be limited to such that the burning crew can adequately control them.

B. Maintaining Surface Water Quality

1) Construction between stream banks shall be kept to a minimum.

2) Pollutants such as fuels, lubricants, bitumens, raw sewage, and other harmful materials shall not be discharged into or near rivers, streams, or impoundments. Sterilizing water from water line construction activities shall not be directly discharged into the public storm drainage system.

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.

C. Fish and Wildlife Habitat Preservation

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

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.

D. Natural Vegetation

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.

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. All remaining debris from cutting or removing trees is to be removed from the site. The natural grade is to be restored and reseeded.

E. Historical and Archaeological Areas

When burial sites, buried camp areas, 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 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.

The Washington Criminal Code prohibits disinterment of a corpse without permission of the appropriate authorities.

F. Use of Pesticides

1) The use of pesticides including insecticides, herbicides, defoliants, soil sterilants, and so forth, must strictly adhere to federal, state, county, and local restrictions. Time, area, method, and rate of application must be approved by all relevant authorities and their requirements followed.

2) All materials 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 a manner that pollution of groundwater, surface water, or the air does not occur. In no case shall toxic materials be dumped into drainageways.

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.

~~**2.08 Signage**~~

~~Erosion control signage approved by the City Engineer shall be installed at each point of entry for any subdivision or short plat prior to issuance of provisional acceptance by the City.~~

~~Removal of signage shall occur no sooner than the latter of: certificates of occupancy have been issued for seventy percent (70%) of the lots; or there being less than ten (10) unoccupied lots remaining within the development; or as determined by the City Engineer.~~

~~2.09~~2.08 ~~2.10~~ ~~Contractor~~ **Certification** **Required**

All development activities performed by licensed contractors shall be supervised by an individual who shall have successfully completed formal training in erosion and sediment control during construction by a recognized organization~~.~~ (Certified Erosion and Sediment Control Lead). A certificate of successful completion of such training shall be submitted at the pre-construction conference. This shall not apply to single-family residential ~~homeowners constructing their own~~and residential duplex development activity.