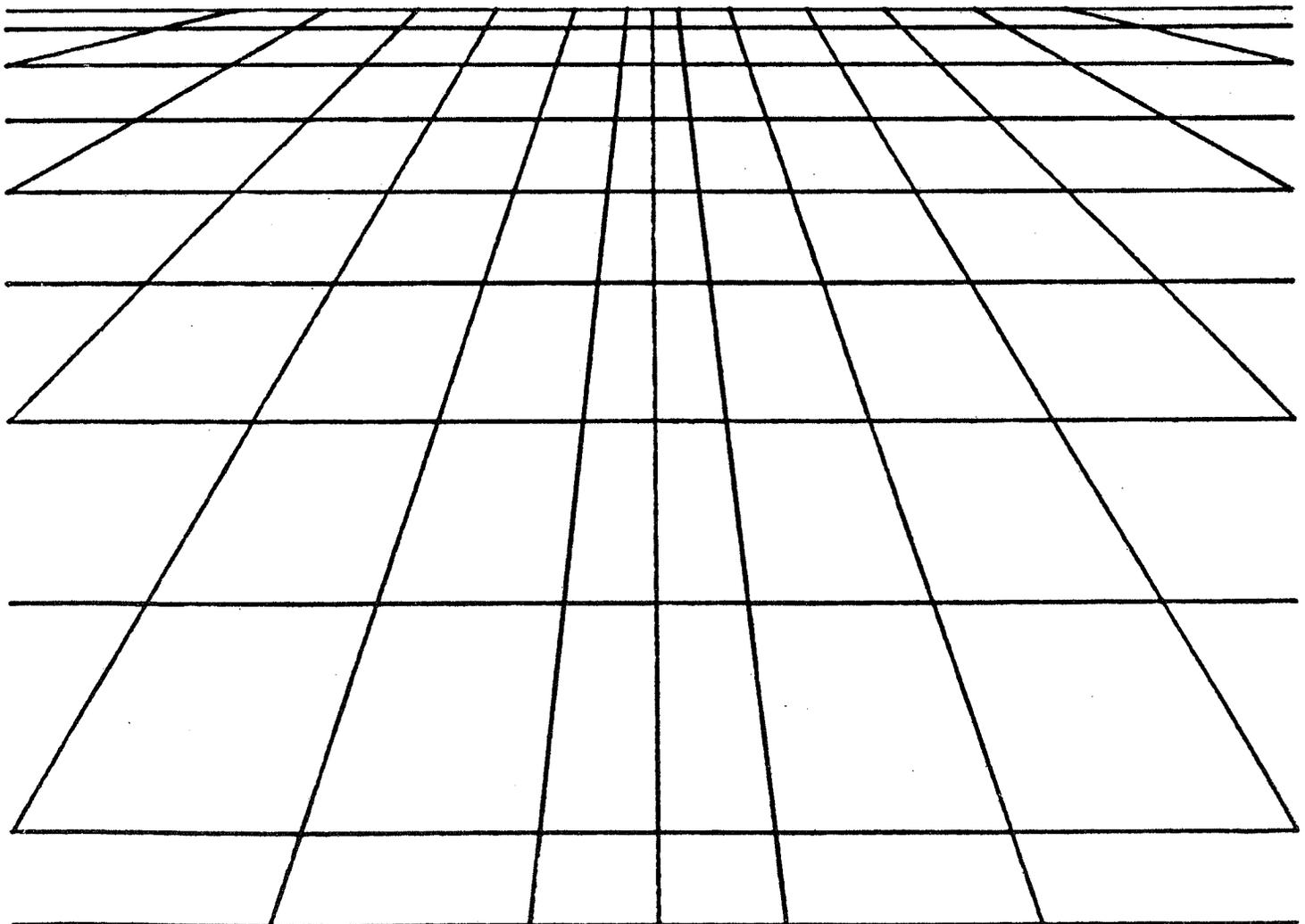


EROSION CONTROL AND STORM WATER MANAGEMENT ORDINANCE

**City of Oak Ridge, Tennessee
MAY 1989**



Introduction

Attached you will find general information on the City of Oak Ridge, Tennessee's Erosion Control and Storm Water Management Ordinance. This includes the Ordinance as adopted by City Council, an Amendment to the Ordinance regarding karst formation, groundwater and sinkholes, the Administrative Policy and Procedures for implementing the Ordinance including guidelines for preparing an Erosion Control and Storm Water Management Plan and copies of the application forms and grading permits for residential housing construction and other land disturbance activities.

If you have any additional questions on the requirements of property owners in carrying out this program, please contact the Public Works Department, Engineering Division, at

220-1807.

425-1807

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TITLE

Adopted AN ORDINANCE TO AMEND THE CODE OF ORDINANCES OF THE CITY OF OAK RIDGE, TENNESSEE, TO INCLUDE PROVISIONS PERTAINING TO KARST FORMATIONS, GROUND WATER, AND SINKHOLES IN ARTICLE IX, TITLED "EROSION CONTROL AND STORMWATER MANAGEMENT," BY DELETING SECTION 9-400, TITLED "PURPOSE," IN ITS ENTIRETY AND SUBSTITUTING THEREFOR A NEW SECTION 9-400; BY DELETING SECTION 9-401, TITLED "DEFINITIONS," IN ITS ENTIRETY AND SUBSTITUTING THEREFOR A NEW SECTION 9-401; BY DELETING SECTION 9-405, TITLED "EROSION CONTROL AND STORM WATER MANAGEMENT PLAN," IN ITS ENTIRETY AND SUBSTITUTING THEREFOR A NEW SECTION 9-405; BY DELETING SECTION 9-406, TITLED "GRADING PERMIT REQUIRED," IN ITS ENTIRETY AND SUBSTITUTING THEREFOR A NEW SECTION 9-406; BY DELETING SECTION 9-407, TITLED "PLAN REVIEW/REQUIREMENTS OF APPLICANT," IN ITS ENTIRETY AND SUBSTITUTING THEREFOR A NEW SECTION 9-407; BY DELETING SECTION 9-420, TITLED "PERFORMANCE CRITERIA," IN ITS ENTIRETY AND SUBSTITUTING THEREFOR A NEW SECTION 9-420; BY DELETING SECTION 9-430, TITLED "RESIDENTIAL DEVELOPMENT - HOUSING CONSTRUCTION," IN ITS ENTIRETY AND SUBSTITUTING THEREFOR A NEW SECTION 9-430; AND BY DELETING SECTION 9-443, TITLED "VIOLATIONS UNLAWFUL.," IN ITS ENTIRETY AND SUBSTITUTING THEREFOR A NEW SECTION 9-443.

NOW, THEREFORE, BE IT ORDAINED BY THE MAYOR AND COUNCILMEN OF THE CITY OF OAK RIDGE, TENNESSEE:

Section 1: The Code of Ordinances of the City of Oak Ridge, Tennessee, is hereby amended by deleting Section 9-400, titled "Purpose," in its entirety and substituting therefor a new Section 9-400, which new section shall read as follows:

Sec. 9-400. Purpose.

Within the City of Oak Ridge, soil erosion and storm water runoff from site excavation, construction and urban development contribute to: degradation of land, waters, and subsurface conditions, dusty conditions, clogged storm sewers, additional road maintenance costs, increased water runoff, groundwater contamination, and localized flooding.

It is the declared intent of the City to promote the conservation of natural resources, including the natural beauties of the land, streams and watersheds, hills and vegetation; to protect public health and safety, including the reduction or elimination of the hazards of earth slides, destabilization of karst terrain, mud flows, rock falls, erosion and siltation; and to minimize the impact of peak water discharges on downstream facilities, by minimizing the adverse effects of grading, cut and fill operations, surface water runoff, alterations in drainage patterns both above and below the surface, and soil erosion. Therefore, the following regulatory provisions of this chapter are adopted for erosion control and storm water management within the City limits.

Section 2: The Code of Ordinances of the City of Oak Ridge, Tennessee, is hereby amended by deleting Section 9-401, titled "Definitions," in its entirety and substituting therefor a new Section 9-401, which new section shall read as follows:

Sec. 9-401. Definitions.

Antecedent Moisture Condition (AMC). The degree of wetness or dryness in the soil which determines how much storm water will be absorbed in the ground. The AMC influences the design of storm water control devices. Based on local and regional studies, an AMC I condition is assumed to correlate closely to actual runoff flows.

Cut. Portion of land surface or area from which earth has been removed or will be removed by excavation; also, the depth below original ground surface to excavated surface.

Detention Basin. A permanent basin constructed to protect downstream facilities by providing temporary storage of surface water runoff on an excavated or developed site and for releasing the stored water at controlled rates not to exceed pre-development discharges under specified storm frequencies.

Downstream Facilities. Any building structure, waterway, property or streets that can be impacted by runoff from property being graded and/or developed in excess of the pre-development discharge rates.

Erosion. Wearing away of land by action of wind, water, or gravity.

Erosion Control and Storm Water Management Plan. The plan required before a grading permit may be issued. It shall consist of a narrative description and appropriate maps that spell out the methods, techniques and procedures to be followed to control erosion and manage storm water runoff from the site during and after development.

Erosion Control Measures. One or more of the following measures, or other methods of slowing or stopping the removal of soil and rock by wind, water or gravity, used singly or in combination, as appropriate:

- (1) *Diversion.* A channel, or channel with supporting ridge (berm, dike or wall), constructed across a sloping land surface along the contour, or with predetermined grades, to intercept and divert surface runoff before it gains sufficient volume or velocity to create harmful erosion. It shall have capacity sufficient for containing storm water runoff at post-development discharge rates, and may have a vegetative lining if required by the anticipated velocities and/or the soil materials in the channel. Flow from a diversion is discharged into a natural area or a grassed waterway.
- (2) *Drains.* Underground conduits or filter drains to reduce surface runoff or lower a high water table.
- (3) *Grade Stabilization Structures.* Drop structures made of concrete, corrugated metal pipe or other suitable materials which dissipate the energy of flowing water by dropping it in a relatively short horizontal distance. These reduce the grade and therefore the velocity in grassed waterways or bare channels to non-eroding limits.
- (4) *Grassed Waterways.* A natural or constructed waterway, usually broad and shallow, covered with erosion resistant grasses used to carry surface water.
- (5) *Land Grading.* Re-shaping the ground surface by grading to planned slopes and configurations that will prevent excessive erosion.
- (6) *Mulching.* The application of plant or other suitable materials on the soil surface to conserve moisture, reduce erosion, and aid in establishing plant cover.
- (7) *Sediment Barrier, Trap, Basin or Perimeter Dike.* A temporary barrier or dam built across a waterway or water course, or at other locations to retain sediment and to permit vegetation and other erosion control features to be established on graded areas.
- (8) *Urban Gutter Drain Sediment Barrier.* Temporary barriers used to prevent sediment from entering storm sewer systems before protective soil cover is established.

- (9) *Urban Stream Bank Protection.* Barriers placed along stream banks, including concrete, sod, rip rap, gabions, and flexible fabric forms filled with gravel or crushed rock, to withstand the erosive force of flowing water.
- (10) *Vegetative Protection.* Plant growth which reduces the impact and erosive effect of storm water for post-development soil conditions. Vegetation alone may not provide protection on soils that are unstable because of their structure, texture, internal water movement, or excessively steep slopes. Vegetative protection may be accomplished by short term seeding, to protect areas for 12 months or less, or by permanent seeding or sodding, to protect areas for more than one year.

Excavation. The act of removing dirt, soil or rock; also, the site of such activity. See *Cut*.

Fill. Portion of land surface or area to which soil, rock or other materials have been or will be added; height above original ground surface after the material has been or will be added.

Grade. The slope or elevation of ground surface prior to and after cutting or filling.

Grading. Any operation or occurrence by which the existing site elevations are changed by cutting, filling, borrowing, stock piling, or where any ground cover, natural or man-made, is removed, or any buildings or other structures are removed or any water course or body of water, either natural or man-made, is relocated on any site, thereby creating an unprotected area. "Grading" shall be synonymous with "land disturbing activity."

Groundwater. Water below the land surface that is free to move under the influence of gravity.

Karst Features. Visible or known features such as sinkholes, disappearing streams, cave entrances, and springs located on karst terrain. Karst terrain is landscape underlain by carbonate rocks, such as limestones and dolomites, have undergone dissolution by groundwater.

Owner. The person(s) or entity holding the registered title to property. The City property tax roll shall be prima facie evidence that the person(s) or entity listed therein is the registered owner.

Permit Holder. The owner of property or owner's representative in whose name a permit has been applied for and issued by the City.

Pre-development Discharge. The present storm water runoff from a site as of the adoption date of this Ordinance and within the storm duration and frequency specified in this Article.

Post Development Discharge. The calculated peak storm water discharge from a fully developed site within the storm duration and frequency specified in this Article.

Remediated Sinkhole. A sinkhole into which soil, rock, dirt, cement, or other material has been deposited in a manner which obstructs or enhances the drainage into the sinkhole.

Sediment. Rock, sand, gravel, silt, or other material deposited by the action of wind, water, or gravity.

Sinkhole: Any natural depression in the surface or ground formed by the subsurface removal of water, soil, rock, or other material, causing the formation of a collapse feature that exhibits internal drainage. Sinkhole depressions may occur gradually or abruptly. Most sinkholes have a closed contour.

Soil Stabilization. Measures which protect soil from erosion.

Stripping. Any activity which removes or significantly disturbs the vegetative surface cover including clearing and grubbing operations.

Section 3: The Code of Ordinances of the City of Oak Ridge, Tennessee, is hereby amended by deleting Section 9-405, titled "Erosion Control and Storm Water Management Plan," in its entirety and substituting therefor a new Section 9-405, which new section shall read as follows:

Sec. 9-405. Erosion Control and Storm Water Management Plan.

- (a) In order to minimize soil erosion and to protect areas from increased storm water runoff, an Erosion Control and Storm Water Management Plan (Plan) shall be required whenever an activity upon property will involve any alterations of karst feature such as remediation of a sinkhole, when the removal of overburden uncovers karst features, clearing, grading, transporting, or other form of permanent or temporary disturbing of land by removal of vegetation or the movement of earth.
- (1) Provision shall be made to accommodate increased runoff caused by changed soil and surface conditions during and after development. Post development storm water discharges to downstream facilities shall not exceed pre-development discharges from the site under the storm duration and frequencies specified in Section 9-420 (1) of this Article.
 - (2) Parties who cause or allow stormwater runoff into karst features shall comply with current State laws respecting such drainage.
 - (3) Temporary soil stabilization measures shall be applied to disturbed areas when and where deemed necessary to minimize soil erosion.
 - (4) Permanent vegetation, improvements such as streets, storm sewers or other features capable of carrying storm water runoff in a safe manner, and diversions, grassed waterways, grade stabilization structures, and similar mechanical control measures required for the site, shall be installed as early during development of the area as possible.
- (b) Erosion and storm water control measures shall be designed and provided in accordance with the requirements of this Article. Areas that are being developed or excavated shall apply the following practical guidelines, fitting the various measures to the soils and topography so as to minimize soil erosion, karst collapse, and storm water runoff potential:

Erosion Control and Storm Water Management Guidelines

- (1) Changes to predevelopment, natural drainage courses shall be minimized.
- (2) Natural vegetation shall be retained and protected wherever feasible during construction.
- (3) Where land must be stripped of vegetation during construction, the exposed area shall be limited to the smallest practical size, and duration of the exposure to the shortest practical time.
- (4) If development occurs on property with karst features or immediate downstream areas have karst features, pre-development natural drainage courses shall be maintained as much as feasible.

- (5) It is recommended that no structures be built within this contour line within the post-development contour line calculated for each sinkhole present on the property for a 24-hour duration storm of 100-year frequency (6.6 inches) as if the sinkhole was completely filled.
- (6) Removal of overburden in areas with karst features shall be minimized.
- (7) Retention of large trees adjacent to karst features.
 - a. Existing healthy mature trees (e.g., with trunks over 12 inches in diameter) whose drip line canopy covers a Karst feature should be protected during grading and construction wherever possible.
 - b. When it is clearly justifiable to remove a healthy tree, it should be replaced in kind by a tree or several trees in the same locale and maintained as required to ensure healthy growth.
- (c) The City Manager or his designated representative shall require that the Plan be developed by a qualified licensed professional engineer, qualified licensed landscape architect or other qualified professional licensed to practice in the specific matters addressed in the plan when potentially hazardous or substantial soil erosion or drainage conditions exist, or when development occurs on property with observable karst features, or where karst features are uncovered during removal of overburden.
- (d) The property lot owner(s) shall be responsible for compliance with all provisions of this Article.
- (e) With the exception of the provisions set forth in Sec. 9-430 the construction of a single-family or duplex (two unit) residence, or addition to an existing single-family or duplex unit, is exempt from submission of a plan.
- (f) The installation, maintenance and repair of any underground public utility shall be exempt from the submission of a plan and the requirement for a grading permit; provided, however, that such land disturbing activity shall comply fully with the remaining provisions of this Article.
- (g) Farming or other accepted agricultural uses, as identified in the "Tennessee Right to Farm Act" [Acts 1982 (Adj. S.), Ch. 6091, Section 43-26-103] or as hereafter amended are exempted from the provisions stated herein.
- (h) Home gardens, home landscaping, or lawn preparations on existing lots or parcels shall be exempted from the provisions stated herein unless the possibility for erosion or alternation of drainage is such to necessitate a grading permit.

Section 4: The Code of Ordinances of the City of Oak Ridge, Tennessee, is hereby amended by deleting Section 9-406, titled "Grading Permit Required," in its entirety and substituting therefor a new Section 9-406, which new section shall read as follows:

Sec. 9-406. Grading Permit Required.

Except as authorized in Section 9-405, no individual or other legal entity shall engage in any land-disturbing activity which will modify the existing grade or may result in increased storm water runoff and soil or rock erosion from water or wind and the movement of sediments, including, but not limited to, clearing, stripping, grading, excavation, transporting, and filling unless

a Grading Permit has first been obtained from the City Manager or his designee. The owner of the property or his representative shall complete an application for the permit on forms provided by the City Manager or his designee and shall include the Erosion Control and Storm Water Management Plan with the application.

Section 5: The Code of Ordinances of the City of Oak Ridge, Tennessee, is hereby amended by deleting Section 9-407, titled "Plan Review/Requirements of Applicant," in its entirety and substituting therefor a new Section 9-407, which new section shall read as follows:

Sec. 9-407. Plan Review/Requirements of Applicant.

- (a) No Grading Permit shall be issued until an Erosion Control and Storm Water Management Plan has been approved by the City Manager or his designee. The Plan shall comply with the minimum performance requirements set forth in Section 9-420 of this Article. The City Manager or his designated representative may require additional information if deemed necessary. The complexity of the Plan shall be commensurate with the severity of site conditions and potential for off-site damage. Each Plan shall contain the name, address, and telephone number of the owner and the developer of the property to be graded, the registration seal and signature of the Engineer or appropriate documentation of professional status of the person who designed the Plan, and a brief project description. The Plan shall include a map minimally drawn to a scale of 1 inch = 100 feet, identifying the site location, boundaries, adjacent properties, floodplain areas, ditch lines, sinkholes and any existing on and off-site structural or natural features of the land which have a significant impact on drainage or sediment control. The proposed erosion control measures and drainage devices to be constructed, and structural changes and improvements to the land, including any plans to remediate sinkholes and associated alterations in drainage patterns, shall be described in the Plan. In addition, a time schedule for completion and periodic maintenance after completion, storm water runoff calculations when needed, pre-development and post development topography and final grade at two (2) foot contour intervals when needed, details of erosion control practices, clearing and grading limits, daily clean-up and site control practices, and any other information needed to accurately depict solutions to development situations may be required.
- (b) The City Manager or his designee shall review the plans and make a determination with respect to the sufficiency of the Erosion Control and Storm Water Management Plan. If the Plan is sufficient and approved by the City, the applicant will be issued a grading permit. If the Plan is determined insufficient, the City shall inform the applicant of deficiencies with the Plan. After corrections and additions, the Plan may be resubmitted to the City for final review and approval, and the issuance of a permit.
- (c) In zoning districts requiring overall site development approval by the Oak Ridge Regional Planning Commission, the Erosion Control and Storm Water Management Plan shall be submitted to the Planning Commission for review and comment during the site review process prior to issuance of the grading permit by the City.

Section 6: The Code of Ordinances of the City of Oak Ridge, Tennessee, is hereby amended by deleting Section 9-420, titled "Performance Criteria," in its entirety and substituting therefor a new Section 9-420, which new section shall read as follows:

Sec. 9-420. Performance Criteria.

In addition to the information requirements specified in Section 9-407 of this Article, the following performance criteria are minimum requirements for controlling soil erosion and storm

water runoff from land-disturbing activities and shall be satisfied in each approved Erosion Control and Storm Water Management Plan.

Plans for effective storm water runoff and erosion control methods shall be formulated using design criteria and procedures in the latest editions of the United States Department of Agriculture, Soil Conservation Service Technical Release No. 55, Second Edition - June 1986, Urban Hydrology for Small Watersheds using the Antecedent Moisture Condition I (AMC-I), the United States Department of Agriculture in cooperation with the State of Tennessee Agriculture Experiment Station - November 1981, The Soil Survey of Anderson County, Tennessee, the Knox County, Tennessee Soil Conservation District, First Edition - June 1981, Erosion and Sediment Control Handbook, the Subdivision Regulations of the City of Oak Ridge, Tennessee, and other standard engineering procedures and references. The foregoing publications named shall be available to the public at cost at the City of Oak Ridge Municipal Building, and for review and reference at the Oak Ridge Public Library.

It shall be the property owner's responsibility to propose a specific practice or combination of practices that shall minimize soil from leaving the site and allow for storm water discharges from a fully developed site consistent with conditions in effect prior to the permitted development. Innovative alternatives to the requirements stated herein shall also be considered when such alternatives meet or exceed the intent of this Article:

- (1) *Storm Water Discharges.* Erosion control measures, storm water and drainage control measures, detention basins, pipes, structures and devices for the development shall be planned, designed, constructed, operated and maintained so that downstream peak discharges after full development are consistent with the pre-development conditions. All storm water improvements shall be designed to sufficiently handle the estimated peak discharge rates from the site using the following criteria: The post development peak discharge rate from a 24-hour duration storm of 25-year frequency (5.5 inches) shall not exceed the pre-development peak discharge rate from a 24-hour duration storm of 10-year frequency (4.8 inches). Emergency spillways shall be required in the design of detention facilities to permit safe passage of storms in excess of this storm criteria. When warranted by local controlling factors (such as location within a drainage basin, protection of downstream facilities, etc.), and based on sound engineering judgment, storm water detention requirements may be modified or waived or a more stringent storm frequency for the design of such improvements may be required. In addition, all swales, roads, etc., shall be designed to prevent flood damage to nearby buildings and other structures by being overtopped during a 24-hour duration storm of a 100-year frequency (6.6 inches) or to structurally carry the equivalent 100-year storm. For each sinkhole present on the property, calculations shall be made to determine the post-development contour line for a 24-hour duration storm of 100-year frequency (6.6 inches) as if the sinkhole was completely filled.
- (2) *Protection of Adjacent Properties.* Properties, rights-of-way and water courses adjacent to and below the site or immediately downstream from the land disturbance shall be protected from sediment deposition and storm water runoff. This may be accomplished by preserving a well-vegetated buffer strip at least 20 feet in width around the lower perimeter of the land disturbance; by installing perimeter controls such as sediment barriers (straw bales and silt fences), filters, dikes, or sediment basins; detention basins; or by a combination of such measures. For each sinkhole present on the property or which receives drainage from the property, calculations shall be made to determine the post-development contour line for a 24-hour duration storm of 100-year frequency (6.6 inches) as if

Emory Valley Watershed
10 pre / 50 post

the sinkhole was completely filled. Changes to terrain, including the remediation of a sinkhole or sinkholes, shall not move this contour line onto adjacent properties. If prior to changes to terrain, the 100-yr storm contour line is on adjacent property, changes to terrain shall not increase runoff into the sinkhole, without written permission from the relevant adjacent property owners.

(3) *Protection of Proposed Development.*

- a. The main floor of all buildings, structures and extensions, existing buildings or structures shall be placed one foot above the elevation of the 100-year flood event. Foundations of all structures shall be designed to withstand flood conditions at the site.
- b. Land may be filled within these 100-year flood boundary limits provided such fill extends twenty-five (25) feet beyond all limits of any structures erected. If such fill areas occurs then the 100-yr flood elevation contour shall be established based on finished contours.

(4) *Temporary Stabilization of Disturbed Areas and Soil Stockpiles.* Temporary soil stabilization shall be applied to disturbed areas when and where deemed necessary to prevent soil erosion. Applicable soil stabilization practices include vegetative establishment, mulching, and the early application of gravel base on areas to be paved. Soil stabilization measures shall be selected to be appropriate for the time of year, site conditions, presence of karst features such as sinkholes, and estimated duration of use. Soil stockpiles not stabilized by vegetation must be stabilized or protected with sediment trapping measures to prevent soil loss.

(5) *Establishment of Permanent Vegetation.* A permanent vegetative cover shall be established on disturbed areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved which, in the opinion of the City Manager or his designated representative, is mature enough to control soil erosion satisfactorily and to survive seasonal weather conditions. The successful establishment of living vegetation shall be guaranteed by the property owner for one (1) year from the initial planting. If it is determined by the City Manager or his designated representative that the vegetation will not withstand season weather conditions, the release of unobligated monies or bonds shall be delayed until such time as the ground cover reaches a satisfactory maturity.

(6) *Timing and Stabilization of Sediment Trapping Measures.* Sediment basins and traps, perimeter dikes, sediment barriers, and other temporary measures intended to trap sediment on-site shall be constructed as a first step in grading and be made functional before upslope land disturbance takes place. Earthen structures such as dams, dikes, and diversions shall be seeded and mulched on a timely basis as dictated by weather conditions and the season of the year. These measures shall be maintained in good working order and shall remain in place until such time as the City deems the area to be stabilized. The sediment trapping requirement may be waived if the site conditions do not warrant its construction.

(7) *Cut and Fill Slopes.* Cut and fill slopes shall be designed and constructed in a manner which will minimize erosion. Consideration shall be given to the length and steepness of the slope, the soil type, upslope drainage area, groundwater

conditions, the surrounding water courses, and other applicable factors. The following guidelines shall be used in formulating an adequate slope design.

- a. Earth cut slopes of 3 horizontal to 1 vertical, and 2 horizontal to 1 vertical fill slopes or less steep shall be preferred for erosion control, maintenance, and drainage concerns. When slopes in excess of 2 horizontal to 1 vertical are deemed necessary, the slope must be adequately stabilized to prevent erosion and degradation within 30 days of completion of the grading operations or as soon as possible to meet the growing season. The type and nature of this stabilization shall be designed and inspected during construction by a qualified licensed professional engineer.
 - b. Sufficient topsoil to adequately cover the disturbed area shall be stock-piled and then used to cover the area prior to the establishment of vegetation.
 - c. Soil surfaces roughened parallel to the contour shall be generally preferred to smooth surface on slopes. Under no condition shall furrows or tracks perpendicular to the contour be allowed on slopes.
 - d. Diversions shall be constructed at the top of cut slopes where runoff from higher areas will damage property, cause soil erosion or prevent the establishment of vegetation on lower areas. Diversions or terraces may also be used to reduce slope length.
 - e. When a natural sheetflow condition for runoff is to be disrupted, the concentrated storm water shall not be allowed to flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume, or slope drain structure.
 - f. All exposed karst features exposed by cutting of overburden must be examined by a qualified licensed professional for appropriate mitigation procedures and the Erosion Control and Storm Water Management Plan shall be written or amended accordingly.
 - g. All diversions (including terraced area diversions) and detention structures on cut surfaces of known karst features must be treated to minimize subsurface infiltration.
- (8) *Protection of Storm Sewer Inlets.* All storm sewer inlets which are operable during construction shall be protected with an urban gutter drain sediment barrier so that sediment laden water will not enter the conveyance system without first being filtered or otherwise treated to remove sediment. Such barriers shall be removed after the land under disturbance is permanently protected against erosion by vegetative or mechanical means. Storm sewers shall be cleaned immediately if sediment clogs the effectiveness of the inlet to handle storm runoff.
- (9) *Working In or Crossing Wet Water Courses.* Construction vehicles shall be kept out of wet water courses to the greatest extent possible. Where in-channel work is necessary, precautions shall be taken to stabilize the work area during construction to minimize erosion. The channel (including bed and banks) shall be restabilized immediately after in-channel work is completed. Where a wet water course must be crossed by construction vehicles regularly during construction, a

temporary stream crossing shall be provided, the design of which must be approved by the City Manager or his designated representative.

- (10) *Working in or Crossing in Floodway Overlay Zoning Districts.* Construction and disturbance activities in a floodway overlay zoning district in the City of Oak Ridge shall be required to provide evidence of obtaining appropriate licenses and permits that may be required by federal and state laws and regulations, or written waiver from such permits and licenses prior to the issuance of a grading permit by the City.
- (11) *Construction Access Routes.* Wherever construction vehicles access routes intersect paved public roads, provisions shall be made to minimize the transport of sediment by runoff or vehicle tracking onto the paved surface by clearing the area at the entrance of all vegetation, roots, and other objectionable material and placing a gravel layer of 2-inch diameter stone at least six inches thick and 12 feet wide extending a minimum of 50 feet from the edge of the hard surface public road. Where sediment is transported onto a public road surface, the roads shall be cleaned thoroughly at the end of each day or more often if deemed necessary. Sediment shall be removed from roads by shoveling or sweeping and be transported to a sediment controlled disposal area. Street washing shall be allowed only after sediment is removed in this manner.
- (12) *Disposition of Temporary Measures.* All temporary erosion control measures shall be disposed of within 30 days after final site stabilization is achieved or after the temporary measures are no longer needed, unless otherwise authorized by the City Manager or his designated representative. Trapped sediment and other disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion.

Section 7: The Code of Ordinances of the City of Oak Ridge, Tennessee, is hereby amended by deleting Section 9-430, titled "Residential Development - Housing Construction," in its entirety and substituting therefor a new Section 9-430, which new section shall read as follows:

Sec. 9-430. Residential Development - Housing Construction.

- (a) A grading permit shall be required prior to the initiation of grading work on any single or duplex (two unit) residential lot. Such permit shall be obtained by the owner of the lot or the representative from the City. Single-family and duplex residential development is exempt from requirements to submit an Erosion Control and Storm Water Management Plan; however, such work shall comply with the following criteria:
 - (1) Prior to beginning site grading, adequate temporary erosion control measures, including but not limited to, preserving natural buffer strips, straw bales and/or silt fences, shall be provided to trap soil from leaving the property onto the street or adjoining property.
 - (2) A sufficient layer of gravel extending onto the property from the public street and free of vegetation, roots, etc., shall be provided to minimize the tracking of sediment onto the street by runoff or vehicles.
 - (3) If sediment is transported from the property onto the public streets, the streets shall be cleaned thoroughly at the end of each day, or more often if deemed necessary, by shoveling or sweeping the material back onto the property.

- (4) Permanent swales/dikes along adjoining lot lines shall be provided as needed to direct on-site drainage to the street or existing drainage ways.
 - (5) Removal of sediment traps shall not occur until after final seeding, strawing and mulching of disturbed earth and the establishment of sufficient grass cover to reduce erosion to pre-disturbance levels.
 - (6) Roof gutters and other permanent storm drainage systems shall be directed to avoid damage to adjacent property owners and City streets.
- (b) An Erosion Control and Storm Water Management Plan shall be required for single-family or duplex residential development if the following circumstances exist: karst features such as sinkholes on or nearby lot, adjoining lakes or streams, lots with slopes exceeding 15% natural grade, floodplain development or large drainage ditches to be crossed by driveways. The requirement that the Plan be developed by a qualified licensed professional engineer, qualified licensed landscape architect, or other qualified professional licensed to practice in the specific matters addressed in the Plan, may be waived by the City Manager or his designee.
- (c) The property lot owner(s) shall be responsible for compliance with provisions of this section.

Section 8: The Code of Ordinances of the City of Oak Ridge, Tennessee, is hereby amended by deleting Section 9-443, titled "Violations Unlawful," in its entirety and substituting therefor a new Section 9-443, which new section shall read as follows:

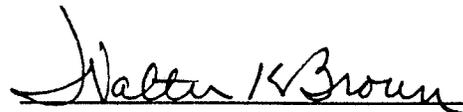
Sec. 9-443. Violations Unlawful.

Violations of any of the provisions of this Article shall be punishable by a penalty not to exceed \$500.00. Each separate day a violation exists may constitute a separate offense.

Section 9. This Ordinance shall become effective ten (10) days after adoption on second reading, the welfare of the City requiring it.

APPROVED AS TO FORM AND LEGALITY:


 City Attorney


 Mayor


 City Clerk

First Reading: 02/02/98
 Publication Date: 02/09/98
 Second Reading: 02/16/98
 Publication Date: 02/33/98
 Effective Date: 02/26/98

TITLE

AN ORDINANCE TO AMEND THE CODE OF ORDINANCES OF THE CITY OF OAK RIDGE, TENNESSEE BY AMENDING CHAPTER 9 TO ADD A NEW ARTICLE IX, TITLED "EROSION CONTROL AND STORM WATER MANAGEMENT," TO PROVIDE FOR EROSION CONTROL AND STORM WATER RUNOFF MANAGEMENT.

NOW, THEREFORE, BE IT ORDAINED BY THE MAYOR AND COUNCILMEN OF THE CITY OF OAK RIDGE, TENNESSEE:

Section 1. The Code of Ordinances of the City of Oak Ridge, Tennessee is hereby amended by amending Chapter 9 to add a new Article IX, titled "Erosion Control and Storm Water Management," which new chapter shall read as follows:

ARTICLE IX. EROSION CONTROL AND STORM WATER MANAGEMENT

Sec. 9-400. Purpose.

Within the City of Oak Ridge, sediment from soil erosion and storm water runoff from site excavation, construction and urban development contribute to degradation of land surfaces and streams, dusty conditions, clogged storm sewers, additional road maintenance costs, increased water runoff and localized flooding.

It is the declared intent of the City to promote the conservation of natural resources, including the natural beauties of the land, streams and watersheds, hills and vegetation; to protect public health and safety, including the reduction or elimination of the hazards of earth slides, mud flows, rock falls, erosion and siltation; and to minimize the impact of peak water discharges on downstream facilities, by minimizing the adverse effects of grading, cut and fill operations, surface water runoff and soil erosion. Therefore, the following regulatory provisions of this chapter are adopted for erosion control and storm water management within the City limits.

Sec. 9-401. Definitions.

(a) Antecedent Moisture Condition (AMC). The degree of wetness or dryness in the soil which determines how much storm water will be absorbed in the ground. The AMC influences the design of storm water control devices. Based on local and regional studies, an AMC I condition is assumed to correlate closely to actual runoff flows.

(b) Cut. Portion of land surface or area from which earth has been removed or will be removed by excavation; also, the depth below original ground surface to the excavated surface.

(c) Detention Basin. A permanent basin constructed to protect downstream facilities by providing temporary storage of surface water runoff on an excavated or developed site and for releasing the stored water at controlled rates not to exceed pre-development discharges under specified storm frequencies.

(d) Downstream Facilities. Any building structure, waterway, property or streets that can be impacted by runoff from property being graded and/or developed in excess of the pre-development discharge rates.

(e) Erosion. Wearing away of land by action of wind, water, or gravity.

(f) Erosion Control and Storm Water Management Plan. The plan required before a grading permit may be issued. It shall consist of a narrative description and appropriate maps that spell out the methods, techniques and procedures to be followed to control erosion and manage surface storm water runoff from the site during and after development.

(g) Erosion Control Measures. One or more of the following measures, or other methods of slowing or stopping the removal of soil by wind, water or gravity, used singly or in combination, as appropriate:

- (1) Diversion. A channel, or channel with supporting ridge (berm, dike or wall), constructed across a sloping land surface along the contour, or with predetermined grades, to intercept and divert surface runoff before it gains sufficient volume or velocity to create harmful erosion. It shall have capacity sufficient for containing storm runoff at post-development discharge rates, and may have a vegetative lining if required by the anticipated velocities and/or the soil materials in the channel. Flow from a diversion is discharged into a natural area or a grassed waterway.
- (2) Drains. Underground conduits or filter drains to reduce surface runoff or lower a high water table.
- (3) Grade Stabilization Structures. Drop structures made of concrete, corrugated metal pipe or other suitable materials which dissipate the energy of flowing water by dropping it in a relatively short horizontal distance. These reduce the grade and therefore the velocity in grassed waterways or bare channels to non-eroding limits.
- (4) Grassed Waterways. A natural or constructed waterway, usually broad and shallow, covered with erosion resistant grasses used to carry surface water.
- (5) Land Grading. Re-shaping the ground surface by grading to planned slopes and configurations that will prevent excessive erosion.
- (6) Mulching. The application of plant or other suitable materials on the soil surface to conserve moisture, reduce erosion, and aid in establishing plant cover.

- (7) Sediment Barrier, Trap, Basin or Perimeter Dike. A temporary barrier or dam built across a waterway or water course, or at other locations to retain sediment and to permit vegetation and other erosion control features to be established on graded areas.
- (8) Urban Gutter Drain Sediment Barrier. Temporary barriers used to prevent sediment from entering storm sewer systems before protective soil cover is established.
- (9) Urban Stream Bank Protection. Barriers placed along stream banks, including concrete, sod, rip rap, gabions, and flexible fabric forms filled with gravel or crushed rock, to withstand the erosive force of flowing water.
- (10) Vegetative Protection. Plant growth which reduces the impact and erosive effect of storm water for post-development soil conditions. Vegetation alone may not provide protection on soils that are unstable because of their structure, texture, internal water movement, or excessively steep slopes. Vegetative protection may be accomplished by short term seeding, to protect areas for 12 months or less, or by permanent seeding or sodding, to protect areas for more than one year.

(h) Excavation. The act of removing dirt or soil; also, the site of such activity. See Cut.

(i) Fill. Portion of land surface or area to which soil, rock or other materials have been or will be added; height above original ground surface after the material has been or will be added.

(j) Grade. The slope or elevation of ground surface prior to and after cutting or filling.

(k) Grading. Any operation or occurrence by which the existing site elevations are changed by cutting, filling, borrowing, stock piling, or where any ground cover, natural or man-made, is removed, or any buildings or other structures are removed or any water course or body of water, either natural or man-made, is relocated on any site, thereby creating an unprotected area. "Grading" shall be synonymous with "land disturbing activity."

(l) Owner. The person(s) or entity holding the registered title to property. The City property tax roll shall be prima facia evidence that the person(s) or entity listed therein is the registered owner.

(m) Permit Holder. The owner of property or owner's representative in whose name a permit has been applied for and issued by the City.

(n) Pre-development Discharge. The present storm water runoff from a site as of the adoption date of this Ordinance and within the storm duration and frequency specified in this Ordinance.

(o) Post Development Discharge. The calculated peak storm water discharge from a fully developed site within the storm duration and frequency specified in this Ordinance.

(p) Sediment. Rock, sand, gravel, silt, or other material deposited by action of wind, water, or gravity.

(q) Soil Stabilization. Measures which protect soil from erosion.

(r) Stripping. Any activity which removes or significantly disturbs the vegetative surface cover including clearing and grubbing operations.

Secs. 9-402 - 9-404. Reserved.

Sec. 9-405. Erosion Control and Storm Water Management Plan.

(a) In order to minimize soil erosion and to protect downstream areas from increased storm water runoff, an Erosion Control and Storm Water Management Plan (Plan) shall be required whenever an activity upon property will involve any clearing, grading, transporting, or other form of permanent or temporary disturbing of land by removal of vegetation or the movement of earth.

(b) Erosion and storm water control measures shall be designed and provided in accordance with the requirements of this Ordinance. Areas that are being developed or excavated shall apply the following practical guidelines, fitting the various measures to the soils and topography so as to minimize soil erosion and storm water runoff potential:

- (1) Provision shall be made to accommodate increased runoff caused by changed soil and surface conditions during and after development. Post development storm water discharges to downstream facilities shall not exceed pre-development discharges from the site under the storm duration and frequencies specified in Section 9-420. (a) of this Ordinance.
- (2) Natural vegetation shall be retained and protected wherever feasible during construction.
- (3) Where land must be stripped of vegetation during construction, the exposed area shall be limited to the smallest practical size, and duration of the exposure to the shortest practical time.
- (4) Temporary soil stabilization measures shall be applied to disturbed areas when and where deemed necessary to minimize soil erosion.
- (5) Permanent vegetation, improvements such as streets, storm sewers or other features capable of carrying storm water runoff in a safe manner, and diversions, grassed waterways, grade stabilization

structures, and similar mechanical control measures required for the site, shall be installed as early during development of the area as possible.

(c) The City Manager or his designated representative shall require that the Plan be developed by a qualified licensed professional engineer or qualified licensed landscape architect when potentially hazardous or substantial soil erosion or drainage conditions exist.

(d) The property lot owner(s) shall be responsible for compliance with all provisions of this Ordinance.

(e) The construction of a single-family or duplex (two unit) residence, or addition to an existing single-family or duplex unit, shall be exempt from submission of a plan; however, such construction shall be required to comply with the requirements set forth in Section 9-430. of this Ordinance.

(f) The installation, maintenance and repair of any underground public utility shall be exempt from the submission of a plan and the requirement for a grading permit provided, however, that such land disturbing activity shall comply fully with the remaining provisions of this Ordinance.

(g) Farming or other accepted agricultural uses, as identified in the "Tennessee Right to Farm Act" [Acts 1982 (Adj. S.), Ch. 609 1.] (Section 43-26-103) or as hereafter amended are exempted from the provisions stated herein.

(h) Home gardens, home landscaping, or lawn preparations on existing lots or parcels shall be exempted from the provisions stated herein unless the possibility for erosion or alteration of drainage is such to necessitate a grading permit.

Sec. 9-406. Grading Permit Required.

Except as authorized in Section 9-405., no individual or other legal entity shall engage in any land-disturbing activity which will modify the existing grade or may result in increased storm water runoff and soil erosion from water or wind and the movement of sediments, including, but not limited to, clearing, stripping, grading, excavation, transporting, and filling unless a Grading Permit has first been obtained from the City Manager or his designee. The owner of the property or his representative shall complete an application for the permit on forms provided by the City Manager or his designee and shall include the Erosion Control and Storm Water Management Plan with the application.

Sec. 9-407. Plans Review/Requirements of Applicant.

(a) No Grading Permit shall be issued until an Erosion Control and Storm Water Management Plan has been approved by the City Manager or his designee. The Plan shall comply with the minimum performance requirements set forth in Section 9-420 of this Ordinance. The City Manager or his designated representative may require additional information if deemed necessary. The complexity of the Plan shall be commensurate with the severity of site conditions and potential for off-site damage. Each Plan shall contain the name, address, and telephone number of the owner and the developer of the property to be graded, the registration seal and signature of the Engineer or Architect who designed the Plan, and a brief project description. The Plan shall include a map minimally drawn to a scale of 1 inch = 100 feet, identifying the site location, boundaries, adjacent properties, floodplain areas, ditch lines and any existing on and off-site structural or natural features of the land which has a significant impact on drainage or sediment control. The proposed erosion control measures and drainage devices to be constructed, and structural changes and improvements to the land shall be described in the Plan. In addition, a time schedule for completion and periodic maintenance after completion, storm water runoff calculations when needed, pre-development and post development topography and final grade at two (2) foot contour intervals when needed, details of erosion control practices, clearing and grading limits, daily clean-up and site control practices, and any other information needed to accurately depict solutions to development situations may be required.

(b) The City Manager or his designee shall review the plans and make a determination with respect to the sufficiency of the Erosion Control and Storm Water Management Plan. If the Plan is sufficient and approved by the City, the applicant will be issued a grading permit. If the Plan is determined insufficient, the City shall inform the applicant of deficiencies with the Plan. After corrections and additions, the Plan may be resubmitted to the City for final review and approval, and the issuance of a permit.

(c) In zoning districts requiring overall site development approval by the Oak Ridge Regional Planning Commission, the Erosion Control and Storm Water Management Plan shall be submitted to the Planning Commission for review and comment during the site review process prior to issuance of the grading permit by the City.

Secs. 9-408 - 9-409. Reserved.

Sec. 9-410. Appeals from Decisions of City Manager or His Designee.

(a) Whenever the City Manager or his designee shall reject or refuse to approve the mode or manner of construction proposed to be followed, or materials to be used, or when it is claimed that the provisions of this article do not apply, or that an equally good or more desirable form of construction can be employed in any specific case, or when it is claimed that the true intent and meaning of this ordinance or any of the regulations thereunder have been misconstrued or wrongly

interpreted, the owner of such property or his duly authorized agent, may appeal from the decision of the City Manager or his designee to the Board of Building Code Appeals. Notice of appeal shall be in writing and filed within sixty (60) days after the decision is rendered by the City Manager or his designee. A fee of thirty dollars (\$30.00) shall accompany such notice of appeal which shall be returned to the appellant if successful.

(b) In case of a condition which, in the opinion of the City Manager or his designee, is unsafe or dangerous, the City Manager or his designee may, in his order, limit the time for such appeal to a shorter period.

(c) Appeals under this section shall be on forms provided by the City Manager or his designee.

(d) The Board of Building Code Appeals shall meet and conduct a hearing on any appeal within 30 days unless the appellant requests or consents to additional time.

Sec. 9-411. Periodic Inspection.

(a) During any development or construction operations covered by this Ordinance, it shall be the responsibility of the permit holder to conduct periodic inspections of the installed erosion control and storm water management measures, and of nearby downstream facilities, to determine if erosion and storm water control is effective. Any damage to downstream facilities caused by on-site erosion, such as clogged storm sewers or inlets shall be immediately repaired or cleaned by the permit holder.

(b) The City Manager or his designees shall periodically make inspection of the graded site to ensure compliance with the requirements of this article and the authorized Erosion Control and Storm Water Management Plan. If the City determines that significant erosion problems are occurring on a graded site despite approved protective practices, the permit holder will be required to take additional corrective actions to protect the adversely affected area. The specifications of the additional measures shall be part of an amendment to the Erosion Control and Storm Water Management Plan.

(c) If it is determined that the permit holder has failed to comply with the approved Plan, a correction notice shall immediately be served upon the permit holder in writing, setting forth the measures needed to come into compliance and specifying time for such compliance. Where an immediate threat to public health and safety exists, verbal notice given by the City Manager or his designee to immediately correct the problem shall be sufficient, but it shall be followed up by written notice. Failure to comply within the time specified shall subject the permittee to a Stop Work Order which shall remain in effect until the work in progress is in compliance with the specifications of the approved Plan.

Sec. 9-412. Fees.

The fees for permits required for inspection of graded sites shall be established by the City Manager as provided for under Section 2-6 of the Code of Ordinances of the City of Oak Ridge. No permit or amendment to a permit shall be valid until such fees have been paid.

Sec. 9-413. Bond Requirements.

Prior to the issuing of a permit, the applicant may be required to provide a cash deposit, bond, certified check, or other form of security acceptable to the City sufficient to complete the erosion control and storm water management measures shown in the approved Plan. The City Manager or his designee shall set the amount and time of the bond, based on the estimated cost of the Plan. Within thirty (30) days of the completion and acceptance of all provisions of the approved Plan, cash deposits or other legal arrangements, or unexpended or unobligated funds thereof shall be refunded or terminated.

Secs. 9-414 - 9-419. Reserved.

Sec. 9-420. Performance Criteria.

In addition to the information requirements specified in Section 9-407 of this Ordinance, the following performance criteria are minimum requirements for controlling soil erosion and storm water runoff from land-disturbing activities and shall be satisfied in each approved Erosion Control and Storm Water Management Plan.

Plans for effective storm water runoff and erosion control methods shall be formulated using design criteria and procedures in the latest editions of the United States Department of Agriculture, Soil Conservation Service Technical Release No. 55, Second Edition - June 1986, Urban Hydrology for Small Watersheds using the Antecedent Moisture Condition I (AMC-I), the United States Department of Agriculture in cooperation with the State of Tennessee Agriculture Experiment Station - November 1981, The Soil Survey of Anderson County, Tennessee, the Knox County, Tennessee Soil Conservation District, First Edition - June 1981, Erosion and Sediment Control Handbook, the Subdivision Regulations of the City of Oak Ridge, Tennessee, and other standard engineering procedures and references. The foregoing publications named shall be available to the public at cost at the City of Oak Ridge Municipal Building, and for review and reference at the Oak Ridge Public Library.

It shall be the property owner's responsibility to propose a specific practice or combination of practices that shall minimize soil from leaving the site and allow for storm water discharges from a fully developed site consistent with conditions in

effect prior to the permitted development. Innovative alternatives to the requirements stated herein shall also be considered when such alternatives meet or exceed the intent of this Ordinance.

(a) Storm Water Discharges. Erosion control measures, storm water and drainage control measures, detention basins, pipes, structures and devices for the development shall be planned, designed, constructed, operated and maintained so that downstream peak discharges after full development are consistent with the pre-development condition. All storm water improvements shall be designed to sufficiently handle the estimated peak discharge rates from the site using the following criteria: The post development peak discharge rate from a 24-hour duration storm of 25-year frequency (5.5 inches) shall not exceed the pre-development peak discharge rate from a 24-hour duration storm of 10-year frequency (4.8 inches). Emergency spillways shall be required in the design of detention facilities to permit safe passage of storms in excess of this storm criteria. When warranted by local controlling factors (such as location within a drainage basin, protection of downstream facilities, etc.), and based on sound engineering judgment, storm water detention requirements may be modified or waived or a more stringent storm frequency for the design of such improvements may be required. In addition, all swales, roads, etc., shall be designed to prevent flood damage to nearby buildings and other structures by being overtopped during a 24 hour duration storm of a 100-year frequency (6.6 inches) or to structurally carry the equivalent 100-year storm.

(b) Protection of Adjacent Properties. Properties, rights-of-way and water courses adjacent to and below the site or immediately downstream from the land disturbance shall be protected from sediment deposition and storm water runoff. This may be accomplished by preserving a well-vegetated buffer strip at least 20 feet in width around the lower perimeter of the land disturbance; by installing perimeter controls such as sediment barriers (straw bales and silt fences), filters, dikes, or sediment basins; detention basins; or by a combination of such measures.

(c) Temporary Stabilization of Disturbed Areas and Soil Stockpiles. Temporary soil stabilization shall be applied to disturbed areas when and where deemed necessary to prevent soil erosion. Applicable soil stabilization practices include vegetative establishment, mulching, and the early application of gravel base on areas to be paved. Soil stabilization measures shall be selected to be appropriate for the time of year, site conditions, and estimated duration of use. Soil stockpiles not stabilized by vegetation must be stabilized or protected with sediment trapping measures to prevent soil loss.

(d) Establishment of Permanent Vegetation. A permanent vegetative cover shall be established on disturbed areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved which, in the opinion of the City Manager or his designated representative, is mature enough to control soil erosion satisfactorily and to survive seasonal weather conditions. The successful establishment of living vegetation shall be guaranteed by the property owner for one (1) year from the initial planting. If it is determined by the City Manager or his designated representative that the vegetation will not withstand seasonal weather conditions, the release of unobligated monies or bonds shall be delayed until such time as the ground cover reaches a satisfactory maturity.

(e) Timing and Stabilization of Sediment Trapping Measures. Sediment basins and traps, perimeter dikes, sediment barriers, and other temporary measures intended to trap sediment on-site shall be constructed as a first step in grading and be made functional before upslope land disturbance takes place. Earthen structures such as dams, dikes, and diversions shall be seeded and mulched on a timely basis as dictated by weather conditions and the season of the year. These measures shall be maintained in good working order and shall remain in place until such time as the City deems the area to be stabilized. The sediment trapping requirement may be waived if site conditions do not warrant its construction.

(f) Cut and Fill Slopes. Cut and fill slopes shall be designed and constructed in a manner which will minimize erosion. Consideration shall be given to the length and steepness of the slope, the soil type, upslope drainage area, groundwater conditions, and other applicable factors. The following guidelines shall be used in formulating an adequate slope design.

- (1) Earth cut slopes of 3 horizontal to 1 vertical, and 2 horizontal to 1 vertical fill slopes shall be preferred for erosion control and maintenance. When slopes in excess of 2 horizontal to 1 vertical are deemed necessary, the slope must be adequately stabilized to prevent erosion and degradation. The type and nature of this stabilization shall be designed and inspected during construction by a qualified licensed professional engineer.
- (2) Sufficient topsoil to adequately cover the disturbed area shall be stockpiled and then used to cover the area prior to the establishment of vegetation.
- (3) Soil surfaces roughened parallel to the contour shall be generally preferred to smooth surface on slopes. Under no condition shall furrows or tracks perpendicular to the contour be allowed on slopes.
- (4) Diversions shall be constructed at the top of cut slopes where runoff from higher areas will damage property, cause soil erosion or prevent the establishment of vegetation on lower areas. Diversions or terraces may also be used to reduce slope length.
- (5) When a natural sheetflow condition for runoff is to be disrupted, the concentrated storm water shall not be allowed to flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume, or slope drain structure.

(g) Protection of Storm Sewer Inlets. All storm sewer inlets which are operable during construction shall be protected with an urban gutter drain sediment barrier so that sediment laden water will not enter the conveyance system without first being filtered or otherwise treated to remove sediment. Such barriers shall be removed after the land under disturbance is permanently protected against erosion by vegetative or mechanical means. Storm sewers shall be cleaned immediately if sediment clogs the effectiveness of the inlet to handle storm runoff.

(h) Working In or Crossing Wet Water Courses. Construction vehicles shall be kept out of wet water courses to the greatest extent possible. Where in-channel work is necessary, precautions shall be taken to stabilize the work area during construction to minimize erosion. The channel (including bed and banks) shall be restabilized immediately after in-channel work is completed. Where a wet water course must be crossed by construction vehicles regularly during construction, a temporary stream crossing shall be provided, the design of which must be approved by the City Manager or his designated representative.

(i) Working in or Crossing in Floodway Overlay Zoning Districts. Construction and disturbance activities in a floodway overlay zoning district in the City of Oak Ridge shall be required to provide evidence of obtaining appropriate licenses and permits that may be required by federal and state laws and regulations, or written waiver from such permits and licenses prior to the issuance of a grading permit by the City.

(j) Construction Access Routes. Wherever construction vehicles access routes intersect paved public roads, provisions shall be made to minimize the transport of sediment by runoff or vehicle tracking onto the paved surface by clearing the area at the entrance of all vegetation, roots, and other objectionable material and placing a gravel layer of 2-inch diameter stone at least six inches thick and 12 feet wide extending a minimum of 50 feet from the edge of the hard surface public road. Where sediment is transported onto a public road surface, the roads shall be cleaned thoroughly at the end of each day or more often if deemed necessary. Sediment shall be removed from roads by shoveling or sweeping and be transported to a sediment controlled disposal area. Street washing shall be allowed only after sediment is removed in this manner.

(k) Disposition of Temporary Measures. All temporary erosion control measures shall be disposed of within 30 days after final site stabilization is achieved or after the temporary measures are no longer needed, unless otherwise authorized by the City Manager or his designated representative. Trapped sediment and other disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion.

Secs. 9-421 - 9-429. Reserved.

Sec. 9-430. Residential Development - Housing Construction.

(a) A grading permit shall be required prior to the initiation of grading work on any single or duplex (two unit) residential lot. Such permit shall be obtained by the owner of the lot or the representative from the City. Single-family and duplex residential development is exempt from requirements to submit an Erosion Control and Storm Water Management Plan; however, such work shall comply with the following criteria:

- (1) Prior to beginning site grading, adequate temporary erosion control measures, including but not limited to, preserving natural buffer strips, straw bales and/or silt fences, shall be provided to trap soil from leaving the property onto the street or adjoining property.
- (2) A sufficient layer of gravel extending onto the property from the public street and free of vegetation, roots, etc., shall be provided to minimize the tracking of sediment onto the street by runoff or vehicles.
- (3) If sediment is transported from the property onto the public streets, the streets shall be cleaned thoroughly at the end of each day, or more often if deemed necessary, by shoveling or sweeping the material back onto the property.
- (4) Permanent swales/dikes along adjoining lot lines shall be provided as needed to direct on-site drainage to the street or existing drainage ways.
- (5) Removal of sediment traps shall not occur until after final seeding, strawing and mulching of disturbed earth and the establishment of sufficient grass cover to reduce erosion to pre-disturbance levels.
- (6) Roof gutters and other permanent storm drainage systems shall be directed to avoid damage to adjacent property owners and City streets.

(b) An Erosion Control and Storm Water Management Plan may be required for single-family or duplex residential development if the following circumstances exist: sinkholes nearby or on the lot, adjoining lakes or streams, lots with slopes exceeding 15% natural grade, floodplain development or large drainage ditches to be crossed by driveways.

(c) The property lot owner(s) shall be responsible for compliance with the provisions of this section.

Secs. 9-431 - 9-439. Reserved.

Sec. 9-440. Existing Areas with Soil Erosion Problems.

Upon written notification from the City Manager or his designee, the owner of any parcel of land which exhibits unstable or eroding soil conditions and impacts downstream properties, rights-of-way or water courses, whether such conditions exist before or arise after enactment of this Ordinance, shall correct the problem within a sixty (60) calendar day period. Upon written request to the City Manager, the period for construction may be extended upon request if seasonal conditions warrant and temporary control measures are installed. Slopes which are found to be eroding excessively shall be provided stabilizing measures until the problem is corrected. Minimum corrective measures may include stabilizing slopes and

revegetating all exposed soil surfaces. Before commencing corrective measures, the owner shall consult with the City Manager or his designee to determine an acceptable method of correction. A plan for soil erosion control shall be submitted to the City Manager or designee for final review and approval prior to initiation of corrective measures.

Sec. 9-441. Maintenance.

(a) All temporary and permanent erosion control and storm water management measures shall be maintained and repaired as needed by property owners to assure continued performance of their intended function, as determined by the City Manager or his designee. Normal maintenance shall include, but not be limited to, mowing, and removal of brush, trees and miscellaneous obstructions and liming and fertilizing on a timely basis.

(b) In cases where permanent storm water management measures are designed and constructed to serve multiple property owners in a development, the City may accept permanent responsibility for maintenance and repair of such measures provided they are satisfactorily constructed, maintained and repaired by the property owner at the time of acceptance.

Sec. 9-442. Correction by the City/Collection of Costs.

(a) If it is determined that a property owner or his representative has failed to correct existing unstable or eroding soil conditions which impact downstream properties, rights-of-way or water courses or has failed to maintain temporary and permanent erosion control and storm water management measures installed after enactment of this Ordinance, or has failed to comply with any of the provisions of this Ordinance, a corrective notice shall be served on the property owner in writing, setting forth the measures needed to come into compliance and specifying time for such compliance. When an immediate threat to public health and safety exists, oral notice given by the City Manager or his designee to immediately correct the problem shall be sufficient, but it shall be followed up by written notice.

(b) Should the property owner fail to remedy the above conditions within the prescribed time, the City Manager shall remedy the condition or cause the same to be done by an appropriate City department or other contractual arrangement. Upon completion of work, the City Manager shall determine the reasonable cost thereof and bill the owner of the property. Should the owner fail to remit to the City the amount of such charge within 30 days from date of such notice, the amount of the bill shall be certified to the Finance Director by the City Manager and shall constitute a lien upon the property for which the expenditure was made.

Sec. 9-443. Violations Unlawful.

Violations of any of the provisions of this Ordinance shall be a misdemeanor punishable by a fine not to exceed \$50.00. Each separate day a violation exists may constitute a separate offense.

Secs. 9-444 - 9-449. Reserved.

Section 2. This Ordinance shall become effective ten (10) days after adoption on second reading, the welfare of the City requiring it.

APPROVED AS TO FORM
AND LEGALITY:

William E. Santif
City Attorney

Ray J. Pruitt
Mayor

Jacquelyn J. Bernard
City Clerk

Distributed to Council: 2/09/89
First Reading: 3/27/89
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Effective Date: 4/20/89

CITY OF OAK RIDGE, TENNESSEE

ADMINISTRATIVE POLICY AND PROCEDURE MANUAL

Subject		Number	
Erosion Control and Storm Water Management		D-370	
Effective Date	Revision	Page	of
May 1, 1989	0	1	10

- 1.0 POLICY STATEMENT: In accordance with Chapter 9, Article IX, of the Code of Ordinances, regulatory provisions have been adopted for erosion control and storm water runoff management within the city limits as established herein.

- 2.0 PROCEDURES: In addition to the specific requirements referenced in the Ordinance, the Community Development Department, Engineering Division, shall use the following guidelines to implement the regulations.

2.1 Guidelines for Erosion Control and Storm Water Management Plan

2.11 The Plan. An Erosion Control and Storm Water Management Plan or "Plan" means a plan for minimizing soil erosion and protecting downstream areas from increased storm water runoff resulting from a land disturbing activity during and after development. No entity shall engage in any land disturbing activity which will modify the existing grade or may result in increased storm water runoff and soil erosion including, but not limited to, clearing, stripping, grading, excavation, transporting, and filling or other form of permanent or temporary disturbing of land by removal of vegetation or the movement of earth unless a Grading Permit has first been obtained from the Engineering Division.

The owner or his representative shall complete an application for the Grading Permit on forms provided by the Division and shall include the Plan with the application. The Plan shall spell out the methods, techniques and procedures to be followed to control soil erosion and manage storm

water runoff. The complexity of the Plan shall be commensurate with the severity of site conditions and potential for off-site damage. It shall consist of two major parts:

- A brief report or adequate notes as a part of the drawings describing the project and giving the purposes, schedule or phasing or major construction activities, schedule of application of conservation practices, engineering plans, assumptions and calculations for storm water management measures.
- A map or maps of the same scale or a base map with overlays, depicting the topography of the area, the limits for clearing and grading, other proposed alterations of the area, the location of the control measures and facilities.

The Plan shall be an integral part of any site or building plan or residential subdivision plan required by the City of Oak Ridge.

The construction of single family and duplex residential units, farming and other accepted agricultural uses, home gardens, home landscaping and lawn preparations on existing lots are exempt from submission of a Plan. A Grading Permit shall be required prior to the initiation of grading work on any single or duplex residential lot. The owner or builder shall complete an application for the permit on forms provided by the Engineering Division.

Practices for erosion control and storm water management shall meet or exceed standards and specifications contained in Erosion Control and Storm Water Management Ordinance, the Knox County, Tennessee Erosion and Sediment Control Handbook, June 1981 edition, and the Soil Conservation Service Technical Release No. 55, Second Edition, June 1986, Urban Hydrology for Small Watersheds using the Antecedent Moisture Condition I (AMC-I). Innovative alternatives to the requirements stated herein shall also be considered when such alternatives meet or exceed the intent of the Ordinance.

Within the City of Oak Ridge, the practices needed to control erosion and manage storm water runoff will vary from site to site. Such factors as degree of slope, nature and types of soil, drainage characteristics, proximity to property boundaries and watercourses, acreage disturbed, amount of cut and fill, as well as other factors have a direct bearing on what combination of practices will result in an adequate erosion control and storm water management plan.

Recognizing the variations from one site to another, the following elements are to be considered in the development of a plan:

2.12 A general statement of the project (included in the narrative).

- Brief description of the overall project, project area, and upstream watershed.
- Date project is to begin and expected date final stabilization will be completed.
- Brief description of erosion and sediment control program.
- Brief description of storm water management program.

2.13 The topographic features (shown on the map).

- The location of the project relative to streets, subdivisions, major streams or other identifiable landmarks.
- Property boundaries, acreage of the project, and adjacent properties.
- Existing contours at an interval and scale that will adequately describe the area. (Minimally drawn to scale of 1 inch = 100 feet for projects greater than 10 acres and 1 inch = 50 feet for smaller projects.)
- Approximate limits of any identifiable flood plain.

- Critical environmental areas located within or in proximity to the project area, such as steep hillsides, natural drainage areas, ditch lines, streams, lakes, ponds, wetlands or areas with unique plant life.
- Nature and extent of existing vegetation.
- Other standard map features including scale and true and grid north arrow.

2.14 The proposed alteration of the area (shown on the map).

- Limits of clearing and grading.
- Areas of cuts and fills.
- Proposed contours at an interval and scale that will adequately describe the area. (Minimally drawn to scale of 1 inch = 100 feet for projects greater than 10 acres, and 1 inch = 50 feet for smaller projects.)
- Roads, buildings, pond areas, and other structures.
- Storm water management facilities and other proposed drainage improvements to serve the site.

2.15 The phasing (or staging) of land disturbing activities (described in the narrative).

- Sequence of site clearing operations.
- Removal and stockpiling of topsoil.
- Major earthmoving and grading.
- Schedule for erosion control and storm water management facility installation.
- Any unique condition at the site that may negatively impact erosion control and storm water runoff.

2.16 Temporary erosion control (vegetative and mechanical) measures for use during active construction (included in the narrative and shown on the map).

- Types of measures and facilities.
- Location of measures and facilities.
- Dimensional details of the facilities.
- Design considerations (mechanical measures only).
- Inspection program by contractor including frequency and schedule.
- The method and frequency of removal and disposal of solid waste materials removed from the control facilities and the project area.
- The method of disposing of temporary structures and materials after they have served their purpose.

2.17 The amount of storm water runoff generated from the project area (described in the narrative.)

- Runoff producing factors considered.
- Peak runoff from a 24-hour duration 10-year frequency storm based on present conditions at the site and on a 24-hour duration, 25-year frequency storm based on a fully developed site.
- Calculations of runoff and methods used to generate numbers.

2.18 The proposed storm water management program (described in the narrative and the location of facilities shown on the map).

- Brief analysis of hydrologic problems posed by storm runoff on downstream areas, including existing hazards and degree of protection required.

- Brief description of permanent measures and facilities designed to cope with potential runoff problems for downstream facilities.
- Plan for the long range maintenance of storm water management facilities.
- If requested, engineering rationale for modifying or waiving storm water detention requirements in the design for runoff control.

2.19 Permanent erosion control measures for long-term protection (describe in the narrative and indicate the location of improvements on the map).

- Types of measures and facilities.
- Location of measures and facilities.
- Dimensional details of facilities.
- Design considerations (mechanical measures only).
- Inspection program by property owner including frequency and schedule.
- Plan for resodding or reseeding of vegetated areas and repairing or reconstructing damaged structural measures.

2.2 Preparation of Plan by Qualified Persons

The City shall require that the Erosion Control and Storm Water Management Plan be developed by a qualified licensed professional engineer or qualified licensed landscape architect when potentially hazardous or substantial soil erosion or drainage conditions exist. Each Plan shall include the registration seal and signature of the engineer or architect who designed the Plan.

Such conditions shall include but are not limited to any of the following:

1. Discharges to or altering of sinkholes.
2. Buildings in excess of 10,000 square feet.

3. Parking surface areas in excess of 40 spaces.
4. Construction within 100 feet of floodplain areas, steep embankments or large drainage ditches.
5. Proposed cut or fill slopes in excess of 2 horizontal to 1 vertical.
6. Single family residential subdivisions or Planned Unit Developments in excess of 5 acres.
7. Where in the opinion of the City Engineer, significant properties, structures or facilities are immediately downstream of the proposed development site that could be impacted by soil erosion and storm water runoff.

2.3 Review/Response to Proposed Plan by City Staff

The City staff shall review and respond to a submitted Erosion Control and Storm Water Management Plan consistent with the existing timetable for the building permit review process.

Upon receipt of an application and the Erosion Control and Storm Water Management Plan from the owner/developer, the Engineering staff shall review the proposal and transmit initial comments back to the developer within 5 - 10 working days, depending on the complexity of the site project and other demands on staff time. Projects such as large industrial or commercial facilities or new residential subdivisions could take up to 15 working days for initial staff response; however, depending on the degree of advance communication and interaction by the developer with the staff prior to submission of plans, such time may be reduced. Upon receipt of owner/developer responses to staff comments, it is expected that an additional 5 - 10 working days shall be required to finalize review and approval of the grading permit. In summary, the entire staff review and approval process from beginning to end shall take approximately 10 - 25 working days depending on the quality and completeness of the submitted plan.

It should be noted that an owner/developer can expedite the site preparation process for a development by submitting the site and grading plans as well as the Erosion Control and Storm Water Management Plan for

review and approval in advance of other detailed building and construction plans required by the City for approval of the project.

2.4 Bond Requirements

Prior to issuance of a Permit, the applicant shall be required to provide a cash deposit, bond, certified check or other form of security acceptable to the Finance Director sufficient to complete the erosion control and storm water management measures shown in the approved Plan.

The method for establishing bond shall be based on the estimated cost of reestablishing a fully disturbed site with permanent vegetation and effective erosion control measures should the project be abandoned and the cost of completing on site storm water detention and other drainage measures.

Bonding requirements shall be waived for smaller projects where the cost for the work is less than \$5,000. Should property owners fail to complete such work after appropriate written notice and request from the City, the City shall be prepared to correct such conditions under the procedures authorized in Section 9-442 of the Ordinance.

Within thirty (30) days after completion and acceptance of all provisions of the approved plan, cash deposits or other legal arrangements or unexpended or unobligated funds shall be refunded or terminated by the City.

2.5 Fee Schedule

The fees for permits required for inspection of graded sites shall be based upon the acreage to be disturbed on the property including clearing, grading, filling or other forms of permanent or temporary disturbing of property. The fee schedule is as follows:

Grading Permit Fee Schedule

Grading Application Fee
(all projects except single
family and duplex
residential housing) \$25.00

Disturbance of Land Fee:

-	First 5 Acres	30.00 per acre disturbed
-	Next 5 Acres	25.00 per acre disturbed
-	Next 25 Acres	20.00 per acre disturbed
-	Each Acre Above 35 Acres	15.00 per acre disturbed

Residential Housing
Construction (Single
and Duplex) No Fee

Correction of Existing
Soil Erosion Problem No Fee

2.6 Public Acceptance of Storm Water Management Measures
Serving Multiple Property Owners

In cases where permanent storm water management measures are designed and constructed to serve multiple property owners in a development, the City may accept permanent responsibility for maintenance and repair of such measures provided they are satisfactorily constructed, maintained and repaired by the property owner at the time of acceptance.

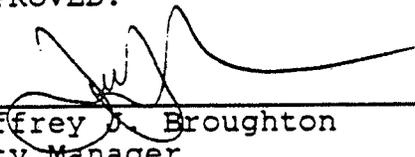
The following conditions shall serve as a guideline for staff in recommending public acceptance of these improvements to City Council for perpetual maintenance.

- The post development condition for the site or project served by the storm water improvement is near its full development potential.
- A field inspection by the City indicates that such improvements have been satisfactorily maintained and/or repaired by the property owner at the time of acceptance.

- Adequate access and easements are provided to the City to enable public vehicles and equipment to reach and maneuver around the storm water measure in order to meet future maintenance obligations.

3.0 RESPONSIBILITY: The Assistant City Manager, Community Development, through the City Engineer, shall be responsible for implementing this policy.

APPROVED:



Jeffrey D. Broughton
City Manager

Application for Residential Grading Permit

Location/Address of Work: _____

Lot No. _____ Block No. _____

Owner: Name: _____ Telephone No. _____

Mailing Address: _____

City: _____

Contractor: Name: _____ Telephone No. _____
(Permit Holder)

Mailing Address: _____

City: _____

Requirements of Permit Holder

A grading permit is required prior to initiation of grading work on any single or duplex (two Unit) residential lot or any addition to an existing residential unit. A copy of the site plan indicating the location of proposed structures, driveways and all areas where grading and land disturbance will be performed must be submitted with this application for staff review.

Under the Erosion Control and Storm Water Management Ordinance of the City of Oak Ridge, all grading work shall comply with the following criteria:

- (1) Prior to beginning site grading, adequate temporary erosion control measures, including but not limited to, preserving natural buffer strips, straw bales and/or silt fences, shall be provided to trap soil from leaving the property onto the street or adjoining property.
- (2) A sufficient layer of gravel extending onto the property from the public street and free of vegetation, roots, etc., shall be provided to minimize the tracking of sediment onto the street by runoff or vehicles.
- (3) If sediment is transported from the property onto the public streets, the streets shall be cleaned thoroughly at the end of each day, or more often if deemed necessary, by shoveling or sweeping the material back onto the property.
- (4) Permanent swales/dikes along adjoining lot lines shall be provided as needed to direct on-site drainage to the street or existing drainage ways.
- (5) Removal of sediment traps shall not occur until after final seeding, strawing and mulching of disturbed earth and the establishment of sufficient grass cover to reduce erosion to pre-disturbance levels.
- (6) Roof gutters and other permanent storm drainage systems shall be directed to avoid damage to adjacent property owners and City streets.

I hereby acknowledge that I have read the above information and agree to comply with the requirements of the Ordinance. I further acknowledge that I have been authorized by the property lot owner(s) to secure this permit in carrying out such site and grading work at the location indicated above.

Signature of Permit Holder

Date

CITY OF OAK RIDGE, TENNESSEE

Application for Grading Permit

Location/Address of Work: _____

Lot No. _____ Block No. _____

Owner: Name: _____ Telephone No. _____

Mailing Address: _____ City: _____

Contractor: Name: _____ Telephone No. _____

(Permit Holder) Mailing Address: _____ City: _____

Engineer: Name: _____ Telephone No. _____

(For Project) Mailing Address: _____ City: _____

Contact: _____ Telephone No. _____

Questions to Applicant

1. Briefly describe the proposed project requiring the grading permit? _____

2. Has the applicant familiarized himself or herself with the Erosion Control and Storm Water Management Ordinance and the Administrative Policies and Procedures associated with the Ordinance?

3. Is an Erosion Control and Storm Water Management Plan (Plan) included with the application?

4. Is the Plan an integral part of any site or building plan or any residential subdivision plan required by the City of Oak Ridge? If not, when will such documents be submitted to the City?

I hereby acknowledge that the above information is true and agree to comply with the requirements of the Ordinance. I further acknowledge that I have been authorized by the property lot owner(s) to secure this permit in carrying out such site and grading work at the location indicated above.

Signature of Permit Holder

Date