

CHAPTER 11 Grading, Erosion and Sediment Control

Section 11-1. Introduction/ Purpose

During the construction process, soil is highly vulnerable to erosion by wind and water. Eroded soil endangers water resources by reducing water quality and causing the siltation of aquatic habitat for fish and other desirable species. Deposits of eroded soil also necessitate maintenance of sewers and ditches and the dredging of lakes. In addition, clearing and grading during construction cause the loss of native vegetation necessary for terrestrial and aquatic habitat. Construction activities also utilize materials and generate wastes, which if not properly controlled can pollute receiving waters.

The purpose of this ordinance is to safeguard persons, protect property, and prevent damage to the environment in the City of Ballwin. This ordinance will also promote the public welfare by guiding, regulating, and controlling the design, construction, use, and maintenance of any development or other activity that disturbs or breaks the topsoil or results in the movement of earth on land in the City of Ballwin.

Section 11-2. Definitions

For the purposes of this ordinance, the following terms, phrases, words, and their derivations shall have the meanings given herein.

Best Management Practices or BMPs: Practices, procedures or a schedule of activities to reduce the amount of sediment and other pollutants in storm water discharges associated with construction and land disturbance activities.

Clearing: Any activity that removes the vegetative surface cover.

Construction or land Disturbance Site or Site: A parcel of land or a contiguous combination thereof, where grading work is performed.

Drainage Way: Any channel that conveys surface runoff through a site.

Erosion: The wearing away of land surface through the action of wind, water, gravity, or any combination of those forces.

Erosion Control: Any BMP that prevents or minimizes erosion.

Grading: Reshaping the ground surface through excavation and/or or fill of material, including the resulting conditions.

Land Disturbance activities: Any activity such as clearing, grading or any other action which results in removal of the natural site vegetation and destruction of the root zone or otherwise results in leaving the ground surface exposed to soil erosion through the action of wind or water.

Perimeter Control: A barrier that prevents sediment from leaving a site by filtering sediment-laden runoff or diverting it to a sediment trap or basin.

Phasing: Clearing a parcel of land in distinct phases, with the stabilization of each phase substantially completed before the clearing of the next.

Runoff coefficient: The fraction of total rainfall that will appear at the outfalls from a site.

Sediment Control: Any BMP that prevents eroded sediment from leaving a site.

Site Disturbance Permit: A permit issued by the City authorizing disturbance of the land at a specific site subject to conditions stated in the permit.

Stabilization: The use of BMPs that prevent exposed soil from eroding including improvements and structures for the control of erosion, runoff, and grading.

Start of Construction: The first land-disturbing activity associated with a development, including land preparation such as clearing, grading, and filling; installation of streets and walkways; excavation for basements, footings, piers, or foundations; erection of temporary forms; and installation of accessory buildings such as garages.

Storm Water Pollution Prevention Plan (SWPPP): A management plan, the purpose of which is to ensure the design, implementation, management and maintenance of BMPs in order to reduce the amount of sediment and other pollutants in storm water discharges associated with land disturbance activities, comply with the standards of the City and ensure compliance with the terms and conditions of the applicable state permits, including adherence to the land disturbance program contained in Missouri state issued MS4 NPDES permit.

Water Course: A natural or artificial channel or body of water, including, but not limited to lakes, ponds, rivers, streams, ditches and other open conveyances that carry surface runoff water either continuously or intermittently.

Section 11-3. Permits

- A) Any person who intends to conduct any land disturbance activity that will disturb 10,000 or more square feet or the city engineer determines that such activity may create an erosion, flooding, or sedimentation hazard must obtain a site disturbance permit from the City.
- B) Any person who buys a lot for construction from a person who has been issued a permit under A above (unless purchased for the purpose of building their own private residence) must obtain a separate site disturbance permit from the City unless the original permittee retains responsibility for the land disturbance activities on the sold lot.
- C) Site disturbance permits are not required for the following activities:
 - 1) Any emergency activity that is immediately necessary for the protection of life, property, or natural resources.
 - 2) Existing nursery and agricultural operations conducted as a permitted main or accessory use.
- D) Each permit application shall bear the name(s) and address(es) of the owner or developer of the site, and of any consulting firm retained by the applicant together with the name of the applicant's principal contact at such firm and shall be accompanied by a filing fee.
- E) Each permit application shall be accompanied by a Storm Water Pollution Prevention Plan, prepared for the specific site by or under the direction of a Professional Engineer or Registered Landscape Architect registered in the State of Missouri and a statement that any land clearing, construction, or development involving the movement of earth shall be in accordance with the Storm Water Pollution Prevention Plan.
- F) The permit applicant will be required to file with the City a faithful performance bond or other improvement security acceptable to the City in an amount of 110% of the value of the work as determined by the City Engineer to cover all costs of improvements, landscaping, maintenance of improvements for such period as specified by the City, and engineering and inspection costs to cover the cost of failure or repair of improvements installed on the site.
- G) The permit applicant will be required to obtain a land disturbance permit issued by the Missouri Department of Natural Resources for any site where one acre or more of land will be disturbed, before beginning any site work authorized by a city permit. This requirement applies to sites of less than one acre that are part of a larger common plan that will ultimately

disturb one acre or more.

Section 11-4. Storm Water Pollution Prevention Plan (SWPPP)

- A) The design requirements in Section 11-5 shall be taken into consideration when developing the Storm Water Pollution Prevention Plan and the plan shall include the following:
- 1) Name, address and telephone number of the site owner and the name, address and telephone number of the individual who will be in overall responsible charge of construction/development activities at the site.
 - 2) Site address or location description.
 - 3) A site map showing the outlines of the total project area, the areas to be disturbed, existing land uses, locations and names of surface water bodies, locations of temporary and permanent BMPs and such other information as the City Engineer may require.
 - 4) Existing contours at a minimum of two foot intervals of the site and at least 50 feet onto the adjoining strips of off-site property and proposed contours after completion of the proposed grading and development, based on United States Geological Survey datum, with established elevations at buildings, walks, drives, street and roads; and information on necessary clearing and grubbing, removal of existing structures, excavating, filling, spreading and compacting.
 - 5) A natural resources map identifying soils, forest cover, and resources protected under other chapters of Ballwin Code of Ordinances.
 - 6) An estimate of the runoff coefficient of the site based on 100% perviousness and the runoff coefficient after the construction addressed in the permit application is completed.
 - 7) Estimated grading, silt control, retaining walls, detention basin outfall and sodding, revegetation, truck wash down area(s) and other items of work related to grading quantities.
 - 8) Details of the site drainage pattern both before and after major grading activities, along with details of the site drainage system that will be utilized during the grading operation. Calculations shall be provided that will verify that the site drainage system has been designed properly.
 - 9) Construction access to site.
 - 10) Description of BMPs to be utilized to control erosion and sedimentation during the period of land disturbance.
 - 11) Description of BMPs to be utilized to prevent other potential pollutants such as construction wastes, toxic or hazardous substances, petroleum products, pesticides, herbicides, site litter, sanitary wastes and other pollutants from entering the natural drainage ways during the period of construction and land disturbance.
 - 12) Description of BMPs that will be installed during land disturbance to control pollutants in storm water discharges that will occur after land disturbance activity has been completed.
 - 13) Location of temporary off-street parking, and washdown area and water sources for related vehicles.
 - 14) Sources of off-site borrow material or spoil sites, and all information relative to haul routes, trucks and equipment. Approval of the haul route from the agency having jurisdiction over the road(s) along the haul route.
 - 15) The anticipated sequence of construction and land disturbance activities, including installation of BMPs, removal of temporary BMPs, stripping and clearing; rough grading; construction of utilities, infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date(s) on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, installation of temporary erosion and sediment control measures, and establishment of permanent vegetation.
 - 16) All erosion and sediment control measures necessary to meet the objectives of this ordinance throughout all phases of construction and after completion of site development. Depending upon the complexity of the project, the drafting of intermediate plans may be required at the close of each season.
 - 17) Seeding mixtures and rates, types of sod, method of seedbed preparation, expected seeding dates, type and rate of lime and fertilizer application, and kind and quantity of mulching for both temporary and permanent vegetative control measures. Off-site areas shall be restored with sod of like type as the existing.

- 18) Provisions for maintenance of erosion, sediment and storm water management control facilities during the site disturbance phase, including easements.
 - 19) Plans for responding to any loss of contained sediment to include the immediate actions the permittee will take in case of a containment failure. This plan must include documentation of actions and mandatory reporting to the Department of Public Works.
 - 20) Schedules and procedures for routine inspections of any structures provided to prevent pollution of storm water or to remove pollutants from storm water and of the site in general to ensure all BMPs are continually implemented and are effective.
- B) The permittee shall amend the Storm Water Pollution Prevention Plan whenever:
- 1) Design, operation or maintenance of BMPs is changed;
 - 2) Design of the construction project is changed that could significantly affect the quality of the storm water discharges;
 - 3) Site operator's inspections indicate deficiencies in the SWPPP or any BMP;
 - 4) Inspections by the City or by the Missouri Department of Natural Resources indicate deficiencies in the SWPPP or any BMP;
 - 5) The SWPPP is determined to be ineffective in significantly minimizing or controlling erosion or excessive sediment deposits in streams or lakes;
 - 6) The SWPPP is determined to be ineffective in preventing pollution of waterways from construction wastes, chemicals, fueling facilities, concrete truck washouts, toxic or hazardous materials, site litter or other substances or wastes likely to have an adverse impact on water quality;
 - 7) Total settleable solids from a storm water outfall exceeds 0.5 ml/L/hr if the discharge is within the prescribed proximity of a "Valuable Resource Water" as defined by the MDNR;
 - 8) Total settleable solids from a storm water outfall exceeds 2.5 ml/L/hr for any other outfall; or
 - 9) The City or the Missouri Department of Natural Resources determines violations of water Quality Standards may occur or have occurred.
- C) The permittee shall:
- 1) Notify all contractors and other entities (including utility crews, city employees, or their agents) who will perform work at the site, of the existence of the SWPPP and what actions or precautions shall be taken while on site to minimize the potential for erosion and the potential for damaging any BMP;
 - 2) Determine the need for and establish training programs to ensure that all site workers have been trained, as a minimum, in erosion control, material handling and storage, and housekeeping; and
 - 3) Provide copies of the SWPPP to all parties who are responsible for installation, operation or maintenance of any BMP.
 - 4) Maintain a current copy of the SWPPP on the site at all times.

Section 11-5. Design Requirements

- A) Grading, erosion control practices, sediment control practices, and water course crossings shall be adequate to prevent transportation of sediment from the site to the satisfaction of the City Engineer.
- B) Cut and fill slopes shall be *no greater than 3:1*, except as approved by the City Engineer to meet other community or environmental objectives.
- C) Clearing and grading of natural resources, such as forests and wetlands, shall not be permitted, except when in compliance with all other chapters of the Ballwin code of ordinances.
- D) Clearing techniques that retain existing vegetation to the maximum extent practicable shall be used and the time period for disturbed areas to be without vegetative cover shall be minimized to the extent practical, to the satisfaction of the City Engineer.
- E) Clearing, except that necessary to establish sediment control devices, shall not begin until all

sediment control devices have been installed and have been stabilized.

- F) Phasing shall be required on all sites disturbing greater than 10 acres, with the size of each phase to be established at plan review and as approved by the City Engineer.
- G) Erosion control requirements shall include the following:
 - 1) Soil stabilization shall be completed within *five days* of clearing or inactivity in construction.
 - 2) If seeding or another vegetative erosion control method is used, it shall become established within *two weeks* or the Department of Public Works may require the site to be reseeded or a non-vegetative option employed.
 - 3) Techniques shall be employed to ensure stabilization on steep slopes and in drainage ways.
 - 4) Soil stockpiles must be stabilized or covered at the end of each workday, or perimeter controls must be in place to prevent silt from the stockpile from leaving the site.
 - 5) The entire site must be stabilized, using a heavy mulch layer or another method that does not require germination to control erosion, at the close of the construction season.
 - 6) Techniques shall be employed to prevent the blowing of dust or sediment from the site.
 - 7) Techniques shall be employed to divert upland runoff past disturbed slopes.
- H) Sediment control requirements shall include:
 - 1) Settling basins, sediment traps, or tanks and perimeter controls.
 - 2) Settling basins shall be provided for each drainage area with 10 or more acres disturbed at one time and shall be sized to contain 0.5 inch of sediment from the drainage area and be able to contain a 2-year, 24-hour storm. If the provision of a basin of this size is impractical, other similarly effective BMPs, as evaluated and specified in the SWPPP, shall be provided.
 - 3) Settling basins shall be designed in a manner that allows adaptation to provide long-term storm water management, as required by the Department of Public Works.
 - 4) Settling basins shall have stabilized spillways to minimize the potential for erosion of the spillway or basin embankment.
 - 5) Protection for adjacent properties by the use of a vegetated buffer strip in combination with perimeter controls.
- I) Water course protection requirements shall include:
 - 1) Encroachment into or crossings of active water courses/riparian areas and wetlands shall be avoided to the maximum extent practicable. Where applicable, all local, state and federal permits and approvals shall be provided to the Department of Public Works prior to the issuance of a site disturbance permit.
 - 2) Stabilization of any watercourse channels before, during, and after any in-channel work.
 - 3) If a defined watercourse is to be re-aligned or reconfigured, clearing and grubbing activities within 50 feet of the watercourse shall not begin until all materials and equipment necessary to protect the watercourse and complete the work are on site. Once started, work shall be completed as soon as possible. Areas within 50 feet of the watercourse shall be recontoured and revegetated, seeded or otherwise protected within five working days after grading has ceased.
 - 4) All storm water conveyances shall be designed according to the criteria of the Metropolitan St. Louis Sewer District (MSD) and the necessary MSD permits obtained. However, the 25-year storm frequency shall be used in computing post development runoff.
 - 5) Stabilization adequate to prevent erosion shall be provided at the outlets of all pipes and paved channels.
- J) Construction site access requirements shall include:
 - 1) A temporary access road provided at all sites including a wash-down area with an identified water sources supporting all active sites,
 - 2) Other measures required by Department of Public Works in order to ensure that sediment is not tracked onto public streets by construction vehicles or washed with wash effluent channeled directly into storm drains.

- K) Control requirements for construction materials, construction wastes and other wastes generated on site shall include provisions, satisfactory to the Department of Public Works, for:
- 1) Spill prevention and control facilities for materials such as paint, solvents, petroleum products, chemicals, toxic or hazardous substances, substances regulated under the Resource Conservation and Recovery Act (RCRA) or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and any wastes generated from the use of such materials and substances, including their containers. Any containment systems employed to meet this requirement shall be constructed of materials compatible with the substances contained and shall be adequate to protect both surface and ground water.
 - 2) Collection and disposal of discarded building materials and other construction site wastes, including those listed in K.1 above.
 - 3) Litter control.
 - 3) Control of concrete truck washouts.
 - 4) Assurance that on-site fueling facilities will adhere to applicable federal and state regulations concerning storage and dispensers.
 - 5) Provision of sufficient temporary toilet facilities to serve the number of workers on site.

Section 11-6. Inspections

- A) The Department of Public Works shall make inspections as hereinafter required and shall notify the permittee wherein the work fails to comply with the Grading, Erosion and Sediment Control Plan as approved. Plans for grading, stripping, excavating, and filling work bearing the stamp of approval of the City Engineer and the City Planner shall be maintained at the site during the progress of the work. To obtain inspections, the permittee shall notify the Department of Public Works at least two working days before the following:
- 1) Start of construction
 - 2) Installation of sediment and erosion measures
 - 3) Completion of site clearing
 - 4) Completion of rough grading
 - 5) Completion of final grading
 - 6) Close of the construction season
 - 7) Completion of final landscaping
- B) The permittee or his/her agent shall make regular inspections of the land disturbance site, including all erosion and sediment and other pollutant control measures, outfalls and off-site receiving waters in accordance with the inspection schedule outlined in the approved SWPPP. Inspections must be scheduled at least once per week and no later than 72 hours after heavy rain. The purpose of such inspections will be to ensure proper installation, operation and maintenance of BMPs and to determine the overall effectiveness of the SWPPP and the need for additional control measures. All inspections shall be documented in written form on weekly reports with copies submitted to the Department of Public Works within 144 hours after the heavy rain. The inspection reports are to include the following minimum information:
- 1) Inspector's name and signature;
 - 2) Date of inspection;
 - 3) Observations relative to the effectiveness of the BMPs;
 - 4) Actions taken or necessary to correct deficiencies; and
 - 5) A listing of areas where land disturbance operations have permanently or temporarily stopped.
- In addition, the permittee shall notify the site contractor(s) responsible for any deficiencies identified so that deficiencies can be corrected within seven calendar days of the inspection report.
- C) The Department of Public Works shall make inspections as deemed necessary to ensure the validity of the reports filed under Subparagraph B or to otherwise ensure proper installation, operation and maintenance of storm water BMPs and to determine the overall effectiveness of the SWPPP and the need for additional control measures.

Section 11-7. Enforcement

- A) Stop-Work Order; Revocation of Permit
In the event that any person holding a site disturbance permit pursuant to this ordinance violates the terms of the permit or implements site development in such a manner as to materially adversely affect the health, welfare, or safety of persons residing or working in the neighborhood or development site so as to be materially detrimental to the public welfare or injurious to property or improvements in the neighborhood, the City Engineer may suspend or revoke the site disturbance permit.

- B) Violation and Penalties
No person shall construct, enlarge, alter, repair, or maintain any grading, excavation, or fill, or cause the same to be done, contrary to or in violation of any terms of this ordinance. Any person violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor and each day during which any violation of any of the provisions of this ordinance is committed, continued, or permitted, shall constitute a separate offense. Upon conviction of any such violation, such person, partnership, or corporation shall be punished by a fine of not more than \$1,000 for each offense. In addition to any other penalty authorized by this Chapter, any person, partnership, or corporation convicted of violating any of the provisions of this ordinance shall be required to bear the expense of such restoration.

- C) Project Closure requirements
Any site development escrows or bonds will be not be fully released to the site operator or permittee until all of the following have been completed:
 - 1) All temporary storm water control BMPs have been removed and the site has been fully stabilized.
 - 2) All permanent storm water control BMPs have been completed
 - 3) All final inspections/certifications have been completed by each of the government jurisdictions involved in authorizing the project.
 - 4) The on-site and off-site areas have been revegetated whereas the City Engineer has determined that erosion is no longer a concern.