

BILL NO. 24-12988 INTRODUCED BY PATKE

ORDINANCE NO. 24-13956

AN ORDINANCE REPEALING CHAPTER 420 OF THE
CODE OF THE CITY OF WASHINGTON, MISSOURI AND
ENACTING IN LIEU THEREOF A NEW CHAPTER 420

BE IT ORDAINED by the Council of the City of Washington, Missouri, as
follows:

SECTION 1: Chapter 420 of the Code of the City of Washington, Missouri is
hereby repealed.

SECTION 2: There is hereby enacted a new Chapter 420 of the Code of the City
of Washington, Missouri as follows:

SEE EXHIBIT A ATTACHED HERETO AND INCORPORATED HEREIN BY
REFERENCE AS IF FULLY SET FORTH

SECTION 3: All ordinances or parts of ordinances in conflict herewith are
hereby repealed.

SECTION 4: This ordinance shall be in full force and effect from and after its
passage and approval.

Passed: 05-20-24

ATTEST: Sherril Kiekamp

[Signature]
President of City Council

Approved: 05-20-24

ATTEST: Sherril Kiekamp

[Signature]
Mayor of Washington, Missouri

EXHIBIT A

Article I Purpose and Intent

Section 420.005 Purpose; Intent.

A. Purpose. The purpose of this Chapter is to provide minimum standards, controls and criteria for stormwater management. The principal design consideration in this Chapter is to minimize the harmful physical and economic effects of erosion, sedimentation and flooding from stormwater runoff. This is to be accomplished through the requirement of special measures to mitigate erosion, both during and after construction, the detention and controlled discharge of the differential runoff from the development and a well-designed stormwater conveyance system.

B. Intent. The intent of this Chapter is to ensure that the drainage of surface waters will not be changed by new construction, or that if surface water drainage is to be changed, reasonable provision has been made for collection and diversion of such surface waters into public areas or drains which the property owner or developer has a right to use, and that such surface waters will be planned for so as to reduce the likelihood of damage to adjacent properties.

Article II Interpretation

Section 420.010 Minimum Requirements And Interpretation Of Provisions.

A. Minimum Requirements. The provisions of this Chapter shall be considered the minimum requirements for the promotion of the public health, safety, and welfare. Where provisions of this Chapter impose greater restrictions than those of any statute, other ordinance or regulation, the provisions of this Chapter shall be controlling. Where the provisions of any statute, other ordinance or regulation impose greater restrictions than this Chapter, the provisions of such statute, other ordinance or regulation shall be controlling.

B. Interpretation And Application. In interpreting and applying the provisions of this Chapter, they shall be held to be the minimum requirements for the promotion of the public safety, health, convenience, comfort, morals, prosperity and general welfare. It is not intended by this Chapter to interfere with or abrogate or annul any ordinance, rules, regulations or permits previously adopted or issued, and not in conflict with any of the provisions of this Chapter or this Title, or which shall be adopted or issued pursuant to law relating to the development of property, the use of buildings or premises, and likewise not in conflict with this Chapter or this Title; nor is it intended by this Chapter to interfere with or abrogate or annul any easements, covenants or other agreements

between parties; except, that if this Chapter imposes a greater restriction, this Chapter shall control.

C. Reference To State Law, Rules, Or Regulations. Whenever any provision of this Chapter refers to or cites a section of the relevant State law or rules and regulations and that section is later amended or superseded, this Chapter shall be deemed amended to refer to the amended section or the section that most nearly corresponds to the superseded section.

D. Use Of Words And Phrases.

1. For the purpose of this Chapter, certain terms and words are hereby defined. Words used in the present tense shall include the future; the singular number shall include the plural and the plural the singular; the word "building" shall include the word "structure" and the word "shall" is mandatory and not directory.

2. The terms "shall" and "must" are mandatory and not discretionary; the words "may" or "should" are permissive.

3. The words and phrases expressly defined herein shall be given the defined meaning, unless indicated otherwise by the context.

4. Words and phrases which are not defined herein shall be given their usual meaning except where the context clearly indicates a different or specified meaning.

5. The words "use" or "occupy" shall include the words "intended," "designed," or "arranged" to be "used" or "occupied."

Article III Terminology

Section 420.015 Definitions.

For the purposes of this Chapter, the following terms shall be deemed to have the meaning indicated below:

BEST MANAGEMENT PRACTICES or BMPs

Practices, procedures or a schedule of activities to reduce the amount of sediment and other pollutants in stormwater discharges associated with construction and grading activities.

DESIGN STORM EVENT

A storm of a specified duration expected to occur having a given probability of occurrence in any given year, generally described in frequency intervals.

1. A 100-year storm event will have a one (1) in one hundred (100) [one percent (1%)] chance of occurring in any given year.
2. A twenty-year storm event: five percent (5%).
3. A ten-year storm event: ten percent (10%).

DETENTION FACILITY

A surface water runoff storage facility that is normally dry but is designed to hold (detain) surface water temporarily during and immediately after a runoff event.

DIFFERENTIAL RUNOFF

The difference between the calculated volume and rate of runoff discharged from a site after development versus the calculated volume and rate of runoff discharged from the predeveloped site.

DITCH or DRAIN

Any watercourse or conduit, whether open or enclosed, natural or artificial, by which waters coming or falling upon lands are carried away.

DRAINAGE STRUCTURES

Those structure other than ditch, drain or pumping plants which are intended to promote or aid drainage. Such structures may be independent from other drainage work or may be part of or incidental to such work. The term includes, but is not restricted to, dams, catch basins, bulkheads, walls, spillways, flumes, drop boxes, pipe outlets, junction boxes and structures, the primary purpose of which is to prevent the erosion of soil into a drain.

FILTER STRIP

A belt of vegetation preserved to protect the stream bank, provide infiltration, intercept sediment and other pollutants and reduce stormwater flow and velocity.

FREEBOARD

The difference in elevation between the top of the detention basin dam and the design surface water elevation.

MAJOR STORM EVENT

A storm of a specific duration expected to occur with a frequency of once every one hundred (100) years.

RATIONAL METHOD

An empirical formula for calculating peak rates of runoff resulting from rainfall.

RETENTION FACILITY

A surface water runoff storage facility always contains (retains) a substantial volume of water to serve recreational, aesthetic, water supply or other functions. Surface water is temporarily stored above the normal stage during and immediately after runoff events.

SCS TR-55

Soil Conservation Service Technical Release 55, Urban Hydrology for Small Watersheds, from the Natural Resources Conservation Service.

STORMWATER MANAGEMENT PLAN

The drawings, computations, data, proposed contours, reports, etc., that identify how stormwater runoff is to be handled.

STORMWATER MANAGEMENT SYSTEM

All means, natural or man-made, used for conducting stormwater runoff to, through or from a drainage area to the point of outlet.

STORMWATER RUNOFF

Water that results from precipitation which is not absorbed by soil, evaporated into the atmosphere or entrapped by ground surface depressions and vegetation.

STREAMBANK

Top of existing: The top of the natural incline bordering a stream.

TIME OF CONCENTRATION

An estimate of the time of surface water flow from the hydraulically most remote part of the drainage area to the point in question.

TRIBUTARY AREA

All of the area that contributes stormwater runoff to a given point.

Article IV Permit Requirements

Section 420.025 Permit Required.

A. No person shall commence any construction, substantial improvement or other development that affects the drainage of surface or subsurface water without first obtaining a building permit and/or grading permit (if applicable) from the Building and/or Engineering Department. No permit shall be issued for any proposed alteration which:

1. Will increase the amount and/or rate, or adversely affect the quality, of surface water draining onto other properties;
2. Will damage other properties;
3. Does not conform to the general drainage laws of the State, the ordinances of the City, and, in particular, the rules, regulations, and standards of this Chapter; and
4. Alters or removes wetlands from their present location without City, State, Federal permits as may be required.

Section 420.030 Grading Permit.

A. Purpose

1. The purpose of this Chapter is to control soil erosion on land that is undergoing development for non-agricultural uses and to preserve the natural terrain and waterways of land within the City of Washington. Soil erosion may result in the loss of valuable top soil, the degradation of water quality and obstruct stormwater flows in storm sewers, road ditches and natural watercourses.

2. The provisions in this regulation are intended to promote land preservation and 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. Application of the regulations in this document is intended to control soil erosion and sedimentation.

B. Scope of Authority.

Any person, firm, corporation or business proposing to remove any ground vegetation, to disturb or fill the land or to store soil within the City of Washington shall apply to the Engineering Department for approval and issuance of a grading permit. State and Federal permit conditions that are more stringent than the requirements set forth herein shall govern.

c. Grading Permit Required.

It shall be unlawful for the owner of a property and/or that owner's agent to perform land disturbance activities affecting five thousand (5,000) square feet or more, without obtaining a grading permit. Also any grading, filling, excavating or any change in the grade of property that involves the moving, depletion or replacement of more than fifty (50) cubic yards of material or changes the existing elevation by more than two (2) feet requires a permit. A permit is also required for any land disturbance that is part of a common plan that would meet the above requirements. Common plans can get individual permits for each lot or one to cover the entire site with all lots included.

1. Exemptions.

A grading permit will not be required for the activities listed below, provided that no change in drainage patterns or sedimentation onto adjacent properties will occur.

- a. Land disturbance activities in public rights-of-way covered by a special use permit.
- b. Land disturbance activities for or by any public utility for the installation, inspection, repair or replacement of any of its facilities.
- c. Land disturbance activities in quarries and permitted sanitary landfills that do not drain off the property.
- d. Land disturbance activity of land for farming, nurseries, landscaping or gardening or similar agricultural or horticultural use whenever there is substantial compliance with recommendations or standards of the local soil conservation authority.
- e. Removal of existing or dying grass or similar vegetation by disturbing not more than a maximum area of ten thousand (10,000) square feet and resodding or reseeding with new landscaping to include preparation of the seed bed; provided erosion and sediment control measures are provided until the grass or other vegetation is established.
- f. Gardening and similar activities on property occupied by one- or two-family dwellings.
- g. Any emergency activity that is immediately necessary for the protection of life, property or natural resources.

Section 420.035 Permit Requirements.

A. Plan Submittal Requirements

Two (2) sets of plans (construction drawings) or electronic file shall be submitted to the Engineering Department for review and approval along with the escrow and inspection fee. Initially submitted plans must include all items in Subsections (1) and (2) of this Section and must be supplemented by all items in Subsection (3) of this Section prior to

issuance of any permit, unless an item is waived pursuant to Waiver of Requirements section.

1. General information.
 - a. Name, address and telephone number of property owner or permittee.
 - b. Property address and location map of land disturbance property.
 - c. Property boundaries and adjacent property owners.
 - d. A site map showing the outlines of the total project area and land disturbance areas.
 - e. Total acreage of site or property.
 - f. Total acreage of land disturbance.
 - g. Name and address of engineering firm or engineer.
 - h. Existing land use and zoning.
 - i. North arrow and plan scale. The plan scale shall be one (1) inch equals twenty (20) feet to one (1) inch equals fifty (50) feet in any increments of ten (10) feet on one or more sheets not less than eight and one-half (8 1/2) inches by eleven (11) inches or greater than thirty-six (36) inches by forty-eight (48) inches in size. The Zoning Administrator may authorize a different plan scale, so long as the scale is in ten-foot increments and the resulting site plan clearly shows the information required herein.
 - j. Existing surface contours at interval no greater than two (2) feet to at least twenty-five (25) feet beyond the land disturbance activity area.
 - k. FEMA flood panel number and delineation of 100-year flood plain and floodway.
 - l. Location of soil types, wooded areas, watercourses, wetlands, surface water bodies and soil borings.
 - m. Location of all underground and above ground utilities, including pipelines.
 - n. Delineation of the vegetative buffer plan.
 - o. Natural watercourses showing top and toe of banks.
 - p. Proposed access to the site either from public right-of-way under a permit issued by the governing agency or through private property under an easement or license.
 - q. All proposed permanent improvements to be constructed as part of the land disturbance activity.
 - r. Proposed surface contours at intervals no greater than two (2) feet to at least twenty-five (25) feet beyond the land disturbance activity area.
 - s. Statement that "The contractor shall request inspection two (2) days in advance of construction startup".

- t. A signed statement by the permittee assuming full responsibility for the performance of the land disturbance activities and that all State, County and private property or roads will be adequately protected.

2. Specific design information.

- a. The sequence of all land disturbance activities including those listed below, and all installations of erosion and sediment controls listed below, shall be shown on construction plans:
 - (1) Stripping and clearing;
 - (2) After changes in drainage courses;
 - (3) Construction of underground infrastructure;
 - (4) Construction of structures, such as buildings, pavement, retaining walls;
 - (5) Final grading; and
 - (6) Landscaping.
- b. The City Engineer may require that separate construction plans be submitted for separate phases of the project.
- c. Stabilization of any stream bank erosion problems existing in natural watercourses that are to be left undisturbed, that may jeopardize private lots, public utilities or detention facilities.
- d. Details of any temporary drainage system proposed to be installed in connection with any and all phases of land disturbance activity.
- e. Details of proposed water impoundment structures, embankments, sediment or debris basins, grass or lined waterways and diversions with the details and locations of proposed stable outlets and the location of any downstream impoundments which could be affected by the proposed land disturbance activities.
- f. Location of construction traffic entrance and wash-off pad.
- g. Description of erosion and sediment controls that will be installed prior to and during land disturbance activity to control pollutants in stormwater discharges.
- h. Description and location of permanent erosion and sediment controls after land disturbance activities have ended.

B. Other required submittals. Other items, if applicable, must be submitted prior to issuance of a grading permit.

- a. Alternative material and vendor specifications for erosion and sediment control devices.
- b. Other City permits, such as flood plain development permit, special use permit, demolition permit and building permit for retaining walls.

- c. Permits from other governmental agencies, such as United States Army Corps of Engineers Section 404 permit and Missouri Department of Natural Resources Section 401 permit.
- d. Missouri Department of Natural Resources land disturbance permit.
- e. Performance guarantee
- f. Executed easements needed for land disturbance activities or access.
- g. Payment of base inspection fee required by this Chapter.

C. Waiver of Requirements.

The applicant may request a waiver of specific plan submittal requirements to the Engineering Department. The City Engineer may grant the request for a waiver, including a reduction in base inspection fees, upon determining that the item to be waived is not applicable to the project under review or that the request for a waiver is justified and that the remaining information on the submitted plans or permit application is sufficient to show that the work will comply with the objectives and principles of this Chapter.

D. Performance Guarantee.

In order to obtain a grading permit, the applicant must insure or guarantee the stabilization of the site upon completion or stoppage of the land disturbance activity.

1. The applicant, or a contractor for the applicant, shall post a performance guarantee with the City in the amount established in this Section.
2. Amount Of Performance Guarantee.
The amount is a \$5,000 escrow per acre of land disturbed. The minimum fee is \$1,000.

E. Release Of Performance Guarantee Funds.

The City Engineer shall authorize release of all remaining performance guarantee funds only when the City Inspector certifies that all land disturbance work has been completed, all temporary sediment and erosion control measures have been properly removed or abandoned, all permanent site improvements have been constructed and approved, including stormwater management facilities, and all soil subject to the grading permit is stabilized, including permanent vegetation.

F. Transfer of Grading Permit.

A Permittee remains bound to said permit even after transfer of land ownership.

G. Requirements Before Construction Startup.

It is the responsibility of the permittee to ensure that the following items are performed prior to construction startup, unless deemed non-applicable to the project by the City Engineer.

1. Schedule a pre-construction inspection with the Engineering Department prior to the start of any land disturbance activity other than installing erosion control BMP's.
2. Notify City Engineer whenever new erosion control BMP's have been installed or any changes to erosion control plan submitted has changed.
3. Identify proposed good housekeeping practices to control general site pollutants, such as construction wastes, site litter, construction debris, dust and sanitary wastes.
4. Identify toxic or hazardous substances, petroleum products, pesticides, herbicides and other pollutants that will be used on site. Identify pollution control method for each substance and submit an emergency management plan for responding to any loss of toxic materials due to a containment failure. This plan must include documentation of actions and mandatory reporting to the City.
5. Provide an erosion and sediment control installation sequencing schedule.

H. Plan Modifications During Construction.

Field Modifications. The permittee shall modify already approved plans or modify descriptions of pollution prevention methods in any of the following circumstances.

1. Inspections by the City Engineer or by the Missouri Department of Natural Resources indicate deficiencies.
2. Inspections by the permittee indicate deficiencies.
3. Either the permittee or the City Engineer determines that the current installations are ineffective in significantly minimizing or controlling erosion of land or sedimentation in streams or lakes.
4. Either the City Engineer or the Missouri Department of Natural Resources determines that total settleable solids from a stormwater outfall exceeds two and one-half (2.5) milliliters per liter per hour (ml/L/hr) or one-half (0.5) ml/L/hr in the event the land disturbance activity is within a valuable water resource area as determined by the Missouri Department of Natural Resources.
5. Either the City Engineer or the Missouri Department of Natural Resources determines that violations of Water Quality Standards 10 CSR 20-7.031(3) may occur or have occurred.
6. Either the City Engineer or the Missouri Department of Natural Resources determines that the pollution prevention methods submitted to the City as required are 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.

Section 420.040 Inspections and Reports.

- A. City Inspections.
1. The permittee consents to the City inspecting the proposed development site and all work in progress and to payment of additional inspection fees above the base inspection fee, if any, as authorized by ordinance.
 2. The City Engineer or his designee shall make inspections and either approve that portion of the work completed or notify the permittee in writing when the work fails to comply with the conditions of the grading permit.
 3. The permittee shall notify the City Engineer or his designee at least two (2) working days before the following activities to obtain timely inspection:
 - a. Establishment of stream buffer boundaries.
 - b. Start of land disturbance or construction;
 - c. Installation of erosion and sediment controls;
 - d. Completion of site clearing;
 - e. Completion of rough grading;
 - f. Completion or suspension of final land disturbance activity;
 - g. Close of the construction season; and
 - h. Completion of final landscaping.
 4. The City Engineer or his designee shall inspect the property periodically for compliance with these regulations, after a substantial rain event and after any notice to correct issued. The City Engineer or his designee may inspect the property upon receipt of a citizen complaint concerning erosion or sediment control issues.
- B. Permittee Inspections And Reporting.
1. The permittee shall make regular inspections of the permitted site, observing all erosion and sediment control and other pollutant control measures, outfalls and off-site receiving waters. The inspections must be conducted by a person knowledgeable in the principles and practice of erosion and sediment controls, who possess the skills to assess conditions at the construction site that could impact stormwater quality and to assess the effectiveness of the erosion and sediment controls used.
 2. Inspections must be made by the permittee at least once per 14 days and no later than two (2) working days after a substantial rain event. A reduction in the weekly inspections may be waived by the City Engineer for the following reasons:
 - a. The entire site is temporarily stabilized;
 - b. Runoff is unlikely due to winter conditions, such as snow cover or frozen ground; and

- c. Construction is during arid periods when no erosion or sediment has occurred.
3. All inspections by the permittee shall be documented and submitted through the City SWPPP Inspection Portal, located on the City website, or other approved method at the time interval specified in the permit. A report of each inspection shall be kept on site by the permittee if possible. Falsification of reports is in violation of the permit and cause of immediate suspension or revocation of the permit. The inspection reports are to include the information set out in the City's standard inspection template.
4. The permittee shall be responsible for correcting any deficiencies identified within seven (7) calendar days of the date of inspection required by this Subsection identifying these deficiencies.
5. The City Engineer shall make additional inspections as necessary to ensure the validity of the reports filed and, where applicable, to confirm the correction of reported deficiencies.

Section 420.045 Violations, Corrections, and Enforcement.

A. Violations.

1. It shall be a violation of this Chapter to construct, enlarge, alter, repair or maintain any land disturbance activity, excavation or fill, or cause the same to be done, contrary to any provision of this Chapter.
2. It shall be a violation of this Chapter to fail to install and maintain any erosion and sediment control measures and systems authorized and required by a duly issued grading permit.
3. It shall be a violation of this Chapter to fail to comply timely with any notice to correct issued or correct timely any deficiencies identified by the permittee.
4. The need to halt or reduce the permitted construction or grading activity in order to maintain compliance with the permit conditions shall not be a defense to the permittee in an enforcement action.

B. Notice To Correct, Notice Of Violation And Service Of Notices.

1. Upon confirming any violation or deficiency, the City Engineer shall issue a written notice to correct directing abatement of those violations and/or correction of that deficiency within a specified timeframe or within seven (7) calendar days. The notice shall state that failure to comply with its terms shall constitute an additional violation of this Chapter.
2. Upon confirming failure to comply or respond timely with any notice to correct, the City Engineer shall issue a written notice of violation, including a stop work order and notice of fines as authorized by Subsection (C) of this Section.

3. Notwithstanding the foregoing provisions of this Subsection, when the City Engineer finds that any person has undertaken land disturbance activity without a grading permit required by this Chapter, the City Engineer shall issue a notice of violation including a stop work order and notice of fines as authorized by Subsection (C) of this Section and such fines shall accrue from the day on which such unauthorized land disturbance commenced.
4. The City Engineer shall serve any written notice authorized by this Subsection by posting one (1) copy at the work site and by hand-delivering or e-mailing other copies to any and all persons responsible for the violation or deficiency.

C. Enforcement.

1. Stop work order. The City Engineer shall also have the right to stop all or any part of the construction activities and development until all corrections set out in such notice have been satisfactorily made. To that end, the City Engineer shall issue and post on the site a written order directing that such construction activities and development be stopped immediately and shall serve that written order upon any person, firm, corporation or business engaged in such construction activities and development at the site that is the subject of the violation. Every day that such work continues shall constitute a separate violation. This Chapter does not preclude remedies available under Federal, State or common law.
2. Forfeiture of performance guarantee. In the event of a violation or deficiency that is not resolved in a reasonable time, the performance guarantee proceeds may be used by the City to install pollution prevention controls to stabilize the site subject to the grading permit. Prior to resumption of work, permittee must post a new performance guarantee.
3. Fines. Any person responsible for a violation of this Chapter shall be guilty of a misdemeanor and liable for a fine not to exceed one thousand dollars (\$1,000.00) a day. Every day that such violation is ongoing shall constitute a separate violation.
4. Enforcement. It shall be the duty of the City Engineer to enforce this Chapter. In discharging that duty the City Engineer may request and shall receive, so far as may be necessary in the discharge of that duty, the assistance and cooperation of other City Officials including, but not limited to, the following: the Chief of Police, Building Official, and Code Enforcement.
5. Actions for fines and injunctive relief. In the event of a violation, the City Engineer may request the City Counselor to institute in the Circuit Court an appropriate action for fines and injunctive relief against the person or persons responsible for that violation.

Section 420.050 Closing of Grading Permit

The City Engineer shall close grading permits upon permittee's stabilization of all soil at the site subject to the permit and release the entire or remaining performance guarantee as authorized.

Article V Post-Construction

Section 420.060 Flood Control

A. Post-Construction – Flood Control

- a. Purpose. A development's stormwater drainage system shall be designed to:
 1. Protect natural waterways.
 2. Convey upstream and on-site stormwater runoff to a natural watercourse or to a storm drainage facility.
 3. Provide protection from the design storm event and address the major storm so as to prevent major property damage and loss of life.
- b. Plans And Calculations
 1. A drainage map shall be developed from a base reproduction of the site plan or grading plan. The existing and proposed contours shall be shown, normally at two-foot intervals, for the subject property, extending off-site one hundred (100) feet or less as determined by the Engineering Department for proper design of the proposed improvements. Contour intervals other than the above shall be used as determined by the site topography. Only United State Geological Survey datum shall be used. Locations and elevations of bench mark references are available from the Engineering Department.
 2. The location of existing and proposed property lines, streets, sinkholes, railroads, areas within the tract subject to inundation by stormwater and other significant natural features, such as wooded areas and rock formations, etc., shall be included on the map. All existing and proposed stormwater facilities, such as inlets, manholes, pipes, culverts, bridges, channels, etc., and all existing and proposed improvements required for proper design review, such as pavement, buildings, etc., shall be included on the map.

3. The runoff details shall be required, showing individual flows for each existing and proposed structure and cumulative flows in pipes and gutters, including "Q" and area. The map shall show all bodies of water, such as ponds or lakes (including surface area and elevation) and all waterways (including their names or the names of creeks or rivers they flow into).
 4. Lots shall be laid out so as to provide positive drainage away from all buildings. Individual lot drainage shall be shown and coordinated with the drainage pattern for the area and designed so that runoff from one (1) lot will not adversely affect an adjoining lot. All necessary grading to direct stormwater runoff shall be located within a drainage easement.
 5. All computations, plans and specifications related to the implementation of this Section must be prepared and sealed by a professional engineer registered in the State of Missouri.
 6. Elevation versus discharge relationship for the basin.
 7. Elevation versus storage relationship for the basin.
 8. Inflow calculations and data for all required frequencies.
 9. Hydraulic grade line computations for pipes entering and leaving the basin for all required frequencies.
 10. Site plan with two-foot contours showing land to be developed and adjoining land whose topography may affect the layout or drainage of a basin site and the location of streams and other runoff channels.
 11. Basic information regarding the receiving watercourse and affected downstream structures to a distance of two hundred (200) feet from the site. Additional analysis of the receiving stream of greater distances from the site shall be performed if required by the City Engineer.
 12. A summary of routing calculations for all required frequencies.
 13. All computations, plans and specifications related to the implementation of this Section must be prepared and sealed by a professional engineer registered in the State of Missouri.
- c. Design criteria
1. Projects shall be designed to detain on site or offsite as approved and released at a rate not to exceed the allowable release rates for the 2-year, 10-year, and 100-year 24-hour events.

2. The 2-year, 10-year, and 100-year, 24-hour inflow hydrographs shall be determined by using Technical Release 55 (TR-55), "Urban Hydrology for Small Watersheds" from the Natural Resources Conservation Service, formerly Soil Conservation Service (SCS). The inflow hydrograph shall be developed based on the actual flow and timing characteristics upstream of the detention facility. The Rational Method for calculating stormwater runoff may be used for watersheds up to ten (10) acres.
3. The rainfall distribution shall be Type II. The rainfall quantities to be used are from NOAA's National Weather Service, Atlas 14 Point Precipitation Frequency Estimate, and shall be as follows: 3.29" for the 2-year 24-hour storm, 4.82" for the 10-year 24-hour storm, and 7.94" for the 100-year 24-hour storm.
4. The volume of detention may be provided through permanent detention facilities such as dry basins or ponds, permanent ponds or lakes, underground storage facilities or in parking lots. It is noted that when runoff volume reduction BMPs are utilized within the tributary area upstream of a flood volume detention basin, the quantified runoff reduction may be used to adjust tributary area TR55 Curve Numbers (CN) for detention basin sizing.
5. The engineer shall make every effort to locate the detention facility at or near the lowest point of the project such that all of the on-site runoff will be directed into the detention facility.
6. Flows from offsite, upstream areas should be bypassed around the detention facility to ensure that the proposed detention facility will function as designed and will provide effective control of downstream flows with development in place. If offsite flows are directed into a detention facility, the allowable release rates shall not be modified without City Engineer approval. Modifying the release rate to accommodate offsite flows may reduce or eliminate the effectiveness of the detention facility, because it will no longer control the increased volume of runoff during the critical time period of the watershed.
7. Detention basin volume will be based on routing the post-developed 2-year, 10-year, and 100 year, 24-hour inflow hydrographs through the detention facility while satisfying the appropriate allowable release rate. The routing computations shall be based on an application of the continuity principle, (i.e., level pool routing).

d. Calculation Of Runoff.

1. The method of calculating and routing stormwater runoff shall be as stated herein. The drainage area shall consider all on- and off-site lands contributing to the proposed development's drainage system. Capacity for such facilities shall be based on the maximum potential water shed development permitted by the Zoning Ordinance, Chapter 400.
2. Either the Rational Method or the TR-55 Method for calculating stormwater runoff may be used for watersheds up to ten (10) acres.
3. Figures A (rainfall intensity - referenced above) and B (runoff factors) shall be utilized with the Rational Method.[3]
[3] Editor's Note: Figures A and B are included as attachments to this Chapter.
4. For watersheds larger than ten (10) acres, the SCS TR-55 Method shall be utilized. Other methods to determine peak runoff must be approved by the City Engineer prior to acceptance.
5. The minimum percentage of imperviousness to be used in design shall be based on the zoning district as shown in the following table:

Zoning District	Minimum Percentage Impervious
Pre-developed	5%
R-1A Single-Family	45%
R-1B Single-Family	50%
R-1C Single-Family Attached	50%
R-1D Single-Family	50%
R-2 Two-Family	60%
R-3 Multiple Family	70%
C-1 Limited Commercial	85%
C-2 General Commercial	85%
C-3 Central Commercial	90%
M-1 Industrial	90%
M-2 Industrial	90%
PD Planned Development Districts	TBD based on plan type

Zoning District**Minimum Percentage Impervious**

Parking, streets, roofs

100%

6. The minimum percentage of imperviousness for Planned Development Districts shall be dictated by the development plan proposed for the specific district.
 7. Special uses, such as schools, churches, etc., shall have the differential runoff computed and approved by the City Engineer.
 8. Special circumstances may dictate that the developed impervious area may differ from that shown in the above table. An example may be single-family lots of larger than ten thousand (10,000) square feet. Calculations prepared by a registered professional engineer may be submitted to the City Engineer for his/her evaluation to determine if a minimum impervious area which differs from that shown in the above table may be utilized. Likewise, the City Engineer may determine that the percent of impervious area for a particular development differs from that shown in the above table.
 9. See Figure B[4] for the runoff factor to be utilized for various impervious conditions and rainfall durations.
[4] Editor's Note: Figure B is included as an attachment to this Chapter.
- e. Inlets. Calculations shall be submitted to demonstrate the capacity of all inlets. Such calculations must consider the cross-slope of the pavement, depth of water at the curb face, size of opening and the longitudinal grade of street. Street inlets and inlets in parking areas shall reduce the spread and depth of flow to acceptable levels during the ten-year design storm. The acceptable level of flow for a minor access or local access street would maintain an eight-foot travel lane with a maximum one-inch depth. One clear ten-foot travel lane must be maintained for a collector street, and two (2) clear ten-foot travel lanes must be maintained for a major street. Any area inundated by water ponding at an inlet during the ten-year storm event shall be located within an easement or right-of-way. The effects of the 100-year storm event shall also be analyzed to ensure no property damage or dangerous conditions result. Inlets located on continuous grades may be designed to permit a portion

of flow to bypass the structure; however, calculations for the downstream structure must consider the bypass.

Section 420.070 Water Quality

Post-Construction – Water Quality

A. Purpose

Post-Construction — Water Quality. In order to preserve the quality of water in natural streams, it is important to provide a mechanism to remove contaminants on the site prior to water entering the natural watercourse. Typically called post-construction BMPs (best management practices), these methods identify a critical water quality volume that will need to receive a treatment to remove certain contaminants. These improvements, whether structural or non-structural, will remain in place after the construction is completed. The concepts introduced in the following Subsections are taken from the APWA MARC Manual of Best Management Practices For Stormwater Quality, October 2012. Nothing in the following Subsections shall change or replace any of the City's detention ordinances.

B. Requirements

1. This requirement shall apply to redevelop and new development that exceeds one acre or more disturbed or sites that are part of a common plan development that exceeds one acre or more disturbed, the following assumptions may be made:

a. The water quality volume WQv for off-site areas is not required. The following equations are used to determine the storage volume, WQv (in acre/feet of storage):

$$WQv = [(P)(Rv)(A)]/12$$

$$P = 1.14 \text{ inches of rainfall}$$

Where:

$$WQv = \text{Water quality volume (in acre-feet)}$$

$$Rv = 0.05 + 0.009 (I) \text{ where } I \text{ is percent impervious cover}$$

$$A = \text{Area in acres}$$

b. Measuring Impervious Cover. The measured area of a site plan that does not have vegetative or permeable cover shall be considered total impervious cover.

c. Multiple Drainage Areas. When a project contains or is divided by multiple drainage areas, the WQv volume shall be addressed for each drainage area.

- d. Off-Site Drainage Areas. The WQv shall be based on the impervious cover of the proposed site. Off-site existing impervious areas may be excluded from the calculation of the water quality volume requirements.
 - e. BMP Treatment. The final WQv shall be treated by an acceptable BMP(s) from the list presented in this Chapter or other approved methods which may include bioretention, permeable pavers, or others. Reference the APWA MARC Manual of Best Management Practices For Stormwater Quality, October 2012 for guidance.
 - f. Extended Detention For Water Quality Volume. The water quality requirements can be met by providing an extended draw down of all or a portion of the water quality volume (WQv) in conjunction with other systems.
 - g. Infiltration trenches / basins for Water Quality Volume. Practices that capture and temporarily store the WQv before allowing it to infiltrate into the soil over a two-day period include:
 - 1. Infiltration trench
 - 2. Infiltration basin
 - 3. Infiltration practices will be allowed on sites where it is proven that infiltration will work. Percolation rates shall be determined for proper use.
 - h. Open Channel Practices. Vegetated open channels that are explicitly designed to capture and treat the full WQv within cells formed by check dams or other means. The drawdown period of each channel shall be less than 24 hours.
 - i. Filter Strip. Filter strips can be provided at the edge of impervious areas where sheet flow is occurring. The edge shall be protected to avoid erosion.
- C. Stream Channel Setbacks. A setback of twenty-five (25) feet from the top of an existing ordinary high water mark on any channel identified on the most current USGS Topographic Survey, shall be avoided. The setback shall clearly be defined on the applicant's site plan and identified in the field by staking.
- D. Gutter downspout disconnect. Gutters and downspouts shall not extend to within 5 feet of any Right-of-Way line or property line, and shall not be directed toward neighboring property to cause damage.

Section 420.070 Detention, Retention, and Stormwater Management System Facilities

General Design Features.

- A. Dry Bottom Basins. A stormwater detention facility, natural or artificial, which normally drains completely between spaced runoff events, may be

constructed to temporarily detain the stormwater runoff so that the rate at which it is released is the same rate as before development. The following features shall be incorporated into the design of any detention basin:

1. Freeboard. Detention storage areas shall have adequate capacity to contain the storage volume of tributary stormwater runoff with at least one (1) foot of freeboard above the water surface.
2. Outlet Control Works. Outlet works shall be designed to limit peak outflow rates from detention storage areas to or below peak flow rates that would have occurred prior to the proposed development.
3. Outlet works shall not include any mechanical components or devices and shall function without requiring attendance or control during operation, unless specifically approved by the City Engineer.
4. Emergency Overflow/Spillway. Emergency structures shall be provided to permit the safe passage of runoff generated in excess of the 100-year design storm event. Antivortex measures shall be provided.
5. Maximum Depth. The maximum planned depth of stormwaters stored shall not normally exceed five (5) feet.
6. Side Slopes. The maximum side slopes for gassed basins shall not normally exceed one (1) foot vertical for three (3) feet horizontal.
7. Limits Of Ponding. In no case shall the limits of maximum ponding be closer than thirty (30) feet horizontally from any building and less than two (2) feet vertically below the lowest sill elevation.
8. Interior Drainage. The basin should be designed to drain within a 24 hour period unless utilized as extended detention for water quality. Minimizing erosion shall be considered for flows from inflow structure to outflow structure.
9. Multipurpose Basin. If the detention basin is to have other uses, the design of the basin bottom should include underdrains, engineering soils, or other methods to expedite drying of the bottom between runoff events.
10. Aesthetics. Designs should result in aesthetically pleasing configurations which will enhance public acceptability. Consideration should be given to adding signs for education about the purpose of the Facilities.
11. A orifice diameter of less than 3.0" will require a special internal control for orifice protection. For orifice between 3" and 1 1/2" diameter, an internally controlled orifice shall be used with slot width less than or equal to 1/3 of orifice diameter. Less than 1 1/2" orifice will not be allowed.

- B. Wet bottom basin: a stormwater retention facility, natural or artificial, which maintains a fixed minimum water elevation between runoff events. Wet bottom basins may also be used to temporarily detain the differential runoff from the development. In addition to the general design features enumerated above for dry bottom basins, the following features should also be incorporated into the design of any wet bottom basin:
1. Normal Pool Depth. In order to minimize weed growth, the normal pool depth should be four (4) feet minimum.
 2. Fish should not be kept in Stormwater Retention Facilities.
 3. Facilities For Emptying. In order to ease cleaning of the pond or shoreline maintenance, the pond design should include provisions for emptying the pond. City shall be notified in advance of any cleaning and emptying of facilities, and City shall be present to inspect.
 4. Low Flow By-Pass. The design of any pond may include a low flow by-pass channel or pipeline to divert runoff that can be accommodated by downstream drainageways.
 5. Side Slopes Below Normal Pool. The side slopes below the normal pool elevation may exceed the maximum side slope permitted above normal pool (3:1 slope). The design shall, however, include provisions for a safety ledge having a depth of water not greater than three (3) feet immediately adjacent to the shoreline.
 6. Forebay. In order to minimize siltation of the pond, a forebay should be included in the design. Calculations for sediment volume and forebay sizing shall be submitted to the City Engineer.
- C. Rooftop Storage. Detention storage may be met in total or in part by detention on roofs. Details of such design, which shall be included in the building permit application, shall include the depth and volume of storage, details of outlet devices and down drains, and elevations of overflow provisions. Direct connection of roof drains to sanitary sewers is prohibited.
- D. Parking Lot Storage. Paved parking lots may be designed to provide temporary detention storage of stormwater on all or a portion of their surfaces. Outlets will be designed so as to slowly empty the stored waters. Depth of storage shall be a maximum of eight (8) inches.
- E. Other Detention Methods. All or a portion of the detention storage may also be provided in underground or surface detention facilities, to include basins, tanks, bioretention, permeable pavers, or swales, etc. Emergency overflow conditions shall be considered in all methods
- F. Shared Facilities And Regional Detention
1. The City retains the right to require on-site detention storage in all cases in which the proposed development will generate excess runoff that adversely affects the carrying capacity of the receiving watercourse and/or adversely affects adjoining property owners. In

certain cases the applicant may make use of off-site or regional detention facilities, in lieu of on-site facilities, as described below:

a. Off-Site facility, two (2) or more developments: if two (2) or more developments, including that of the applicant, have provided for a common system.

b. Off-site facility by City: if an off-site stormwater management system has been either constructed or programmed or identified for construction by the City and the applicant has agreed to contribute to or participate in the construction thereof. Such contribution shall be determined per the following Subsection (E)(3)(b)(1).

(1) Stormwater Management Fund.

(a) Eligibility. It is determined that no immediate adverse effects will result to adjacent property and a contribution is made to the Stormwater Management Improvements Fund. Such fund is described in Subsection (E)(3)(b)(1)(c), Establishment Of Fund, below. Developments which have a differential runoff of three (3) cfs or less for the ten-year, twenty-minute event utilizing the Rational Method will be considered as prime candidates for a contribution in lieu of on-site detention. It is the City's intention to provide regional detention storage to accommodate these smaller developments. The City Council will render all decisions concerning participation in the Stormwater Management Fund.

(b) Contribution. The contribution shall be an amount equal to a cost estimate prepared by a professional engineer for site specific improvements necessary to provide detention as provided herein. Such estimate shall not include the cost of any land necessary for detention purposes. All cost estimates for site specific detention facilities shall be subject to review and approval by the City Engineer. The developer may request that the City Engineer provide the necessary cost estimate.

(c) Establishment Of Fund. The Stormwater Management Improvements Fund shall be and is hereby created. Said fund shall be

reserved for funding improvements to stormwater systems owned and maintained by the City and for no other purposes unless authorized in the ordinance. All contributions made by parties developing within the City in accordance with Subsection (E)(3) of this Section shall be deposited to said fund. Said fund shall be deposited in an interest-bearing account.

- G. Maintenance: Each owner of the property being developed has the responsibility and duty to properly operate and maintain any stormwater management system which has not been accepted for maintenance by the City. The responsibility for maintenance of the system in subdivision projects shall remain with the developer until such time as the stormwater management system escrow for such development has been released. Upon release of escrow, the maintenance responsibility goes to vested property owners within the subdivision.
1. The final plat of the subdivision shall contain language substantially as follows: "The owner of each lot within this subdivision shall maintain the stormwater management system serving this subdivision unless the stormwater management system has been accepted for maintenance by the City of Washington, Missouri. The maintenance costs shall be shared equally with each owner of any lot served by the stormwater management system." There shall also be recorded with the final plat of the subdivision deed restrictions containing the same language.
 2. The responsibility for maintenance in single-lot development shall remain with the general contractor and owner until final inspection of the development is approved and an occupancy permit is issued. After occupancy, the maintenance of the management system shall be vested in the owner of the project.
 3. All such privately owned and maintained systems shall be subject to periodic inspection by the City Engineer or his/her representative. The owner in charge of maintenance shall conduct annual inspections that are reported to the City. The City of Washington, Missouri, upon failure of the responsible party to maintain the systems shall be given Notice of Violation and given 3 weeks to respond to the violation and work with the City Engineer to determine a reasonable timeframe for corrections to be made. Failure to correct the deficiencies within the agreed upon timeframe shall result in a fine of not less than one hundred dollars (\$100.00) per day. If the responsible party fails to correct the deficiencies and maintain the system within the time prescribed the City shall maintain the system and charge the cost thereof against

the responsible party. The costs shall be certified to the City Clerk who shall cause a special tax bill therefore against the property to be prepared and to be collected by the Collector with other taxes assessed against the property. The special tax bill from the date of its issuance shall be a first lien on the property until paid and shall be prima facie evidence of the recitals therein and of its validity and no mere clerical error, informality in the same or in the proceeding leading up the issuance shall be a defense thereto. Such tax bills if not paid when due shall bear interest at the rate of eight percent (8%) per annum.

4. A proper access easement to such stormwater management systems shall be provided, and a minimum ten-foot wide hard surface designed to support construction traffic with a maximum twelve percent (12%) grade shall be provided within such easement. A permeable, flexible plantable concrete block pavement system is preferred in residential areas.
5. At the time plat approval, the developer may request for dedication to the City to take over the detention facility for maintenance. This request shall be accompanied by a stormwater impact fee, payable to the stormwater fund, in the amount of 10 years of anticipated basin maintenance, certified by an engineer. Once accepted, the City will immediately begin maintenance of said facility.

H. Existing Basin Maintenance Request

- i. The City reserves the right to accept maintenance responsibility of existing detention facilities at the request of all lots served by the facility.
- ii. Requests shall be submitted in writing and signed by each owner of each lot within the subdivision to which the facility serves.
- iii. Only detention facilities that serve residential subdivision will be reviewed for acceptance.
- iv. Detention facilities that are wet, such as ponds or lakes, will not be considered as these facilities provide other sources of benefit to the owners of the subdivision.
- v. Upon the City accepting the facility, the owner(s) of the lot to which the detention basin resides upon, shall provide the City with an easement to allow for maintenance, improvements, and storage of water.
- vi. The City reserves the right to reject any requests for dedication for City maintenance responsibility.

I. Storage Capacity.

- a. The rates (pre-developed and post-developed) of runoff shall be determined for the two-, ten and 100-year rainfall frequencies. The storm duration shall be the twenty-four-hour event when the SCS TR-55 method is utilized and a minimum twenty-minute event

when the Rational Method is utilized. Rainfall data shall be determined using the most current twenty-four-hour rainfall data published by the National Weather Service (NWS) Technical Paper 40 (TP40).

- b. Stormwater shall be detained on site or adjacent property under agreement and metered out at the rate of an undeveloped site for the above frequencies and minimum duration to prevent possible flooding and erosion downstream. Design criteria to establish this differential runoff rate shall be as provided in Subsection (B), Design Criteria. Note that stormwater pipes shall be sized to carry the total developed tributary upstream water shed. No reduction in pipe size shall be permitted because of detention.
- c. Detention basin volume will be based on providing adequate storage for the 100-year storm event of the required duration. Each post-developed runoff hydrograph (two, ten, and 100-year) shall be routed through the detention facility while satisfying the appropriate allowable release rate. The routing computation shall be based on an application of the continuity principle. The discharge rate shall be based on the maximum head conditions in the detention facility.

J. Other Management Techniques. Management techniques other than detention facilities may be utilized by the development, provided that the techniques proposed meet the intent of this Section and provide a benefit to the watershed that equals or exceeds the benefit that a detention facility would provide. Such techniques would include pervious pavement systems and improved vegetation conditions.

ARTICLE VI

Improvements And Design Standards

Section 420.080 Alteration Of Ditches, Drains, And Drainage Structures.

No person shall construct, alter, relocate, remove, or destroy any ditch, drain, or drainage structure upon any real property within the City, whether subdivided or not, without complying with this Chapter.

Section 420.085 Alteration Of Contours.

No person shall alter the contours of any real property within the City, whether subdivided or not, so as to change the flow of water into or through any ditch, drain, or drainage structure without obtaining a permit and complying with the provisions of this Chapter.

Section 420.090 Improvement And Design Standards.

A. Material And Construction Standards.

- 1. Storm pipes shall be protected from excessive bearing pressures by placing them outside the forty-five-degree influence zone of building

- structures unless an engineering calculation shows the pipe material or soil condition to be adequate for the subjected load.
2. Pipes on slopes of twenty percent (20%) or greater shall be anchored securely with concrete anchors or equal to prevent the pipe from creeping downhill.
 3. Pipes or structures constructed on fill shall be stable and protected against settlement by compacting fill material to ninety-five percent (95%) of the modified proctor maximum dry density, per AASHTO T180 (ASTM D1557).
 4. Pipes thirty-six (36) inches or larger may be placed on a curved alignment utilizing alignment radii established by the pipe manufacturer.
 5. The receiving surface where pipes discharge shall be protected from erosion by evaluating the discharge velocity for the ten-year design storm. The use of energy-dissipating devices may be necessary to reduce the velocity to acceptable levels for the receiving surface.
 6. A manhole, inlet or junction box shall be located at changes in pipe size, grade, alignment or material.
 7. The angle between influent and effluent pipes shall be not less than ninety degrees (90°) and the drop between inverts shall be not less than one-tenth (0.1) foot.
 8. Manhole and inlet castings located in travel ways shall be capable of withstanding traffic loads and shall be constructed flush with the finished surface.
 9. All materials and appurtenances for stormwater management systems shall conform to current standards of the American Society for Testing and Materials (ASTM).
 10. Manholes shall be precast or cast-in-place concrete, brick, concrete block, with concrete or brick risers and approved manhole covers.
 11. A new drainage channel or pipe shall intersect an existing drainage channel at a maximum angle of sixty degrees (60°).
 12. All trenches under roadway pavement shall be backfilled with Missouri Department of Transportation (MoDOT) Type I aggregate in six-inch layers and compacted to ninety-five percent (95%) of the modified proctor maximum dry density per AASHTO T180 (ASTM D1557).
 13. All piping shall be bedded per the manufacturer's requirements.
 14. Grated inlets will not be allowed without special approval by the City Engineer.
 15. All materials used in the construction of storm sewers shall be subject to inspection and approval of the City Engineer.
 16. Acceptable pipe material is as follows.
 17. Reinforced concrete pipe shall conform to the requirements of the Specifications for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe, ASTM C76. Strength class or classes shall be as required per design

- specifications of the latest edition of the Concrete Pipe Handbook as published by the American Pipe Association.
18. Corrugated metal pipe shall conform to the requirements of AASHTO M36, Standard Specification for Zinc Coated (Galvanized) Pipe, or the Standard Specifications for AASHTO M196 Corrugated Aluminum Pipe. Structural design requirements shall be per the latest edition of the Handbook of Steel Drainage and Highway Construction Products, as published by the American Iron and Steel Institute.
 19. Corrugated polyethylene pipe shall conform to the requirements of AASHTO M294, Standard Specifications for Corrugated Polyethylene Pipe. All polyethylene pipe should be installed according to ASTM D2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
 20. Dual wall and triple wall polypropylene pipe shall conform to the requirements of AASHTO M330, Standard Specification for Polypropylene Pipe, ASTM F2736 for sizes twelve (12) inches to thirty (30) inches and ASTM F2764 for sizes thirty (30) inches to sixty (60) inches. All polypropylene pipe shall be installed according to, ASTM F2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
 - a. Reinforced concrete pipe and corrugated polypropylene complying with the provisions in Section 420.035(F)(16), above, shall be required under road pavement.
 - b. A minimum pipe size of twelve (12) inches is required to prevent blockage.
 - c. All construction details pertaining to stormwater drainage shall be in accordance with the Metropolitan St. Louis Sewer District requirements and standards for construction of sewers and drainage facilities, unless otherwise noted herein.

Section 420.095 Sediment Control and Revegetation of Disturbed Areas
Sediment And Erosion Control Standards

- A. **General.** Sediment and erosion control will be accomplished by applying conservation practices that will reduce the potential for damage from these hazards. Control practices use trapping, filtering or diversion techniques to protect adjacent properties from land disturbance activities.
- B. **NPDES Stormwater Permits.** Construction sites, where the area to be disturbed is one (1) acre or more, must apply for a stormwater discharge permit from the Missouri Department of Natural Resources. If required, the applicant must obtain and submit proof of an NPDES stormwater permit to the City, before plans will be approved. Permit requirements are set forth in 10 CSR20-6.200 of the Missouri clean water laws.
- C. **When Controls Are Required.** Sediment and erosion control shall be implemented to prevent damage to off-site property, drainage facilities or

- watercourses. Generally, standard vegetative and structural practices, as specified below, that filter, divert or promote the settlement of sediment particles from storm runoff shall be provided in the following situations:
- i. To prevent sediment-laden runoff from leaving disturbed areas.
 - ii. To isolate disturbed areas from erosive surface runoff associated with significant undisturbed areas.
 - iii. To protect storm drainage conveyance systems at operable inlets.
- D. Types Of Controls. The stormwater management plan shall be selected, installed, operated and maintained to adequately control erosion, capture sediment and prevent pollution. To achieve these goals BMPs in accordance with the concepts and methods described in either of the following two (2) documents should be utilized.
- i. Protecting Water Quality, MDNR (Latest Edition).
 - ii. Field Manual on Sediment and Erosion Control BMPs. Jerald S. Fifield, Ph.D., CPESC, Forester Press, Latest Edition.
 - iii. The developer is not limited to the use of BMPs identified in the above publications. Engineering professionals are encouraged to design innovative ways to address site specific conditions.
- E. Sediment And Erosion Control Plan. Where natural vegetation is removed during grading operations, it shall be replaced as specified herein. The sediment and erosion control plan shall indicate the proposed phasing of the project to include conveyance systems, detention facilities, clearing, rough grading and construction, final grading, landscaping. When grading operations are substantially complete or have been suspended for fourteen (14) days, revegetation shall occur. Such revegetation shall meet the below criteria for either temporary or intermediate seeding.
- F. Temporary Seeding. This is the establishment of fast-growing annual vegetation to provide economical erosion control for up to twelve (12) months and reduce the amount of sediment moving off the site. This practice applies when the landscape is anticipated to be disturbed within the next twelve (12) months. The required application rates are as follows: one (1) bushel of wheat or oats per acre; 10-20-10 fertilizer at four hundred (400) pounds per acre; eighty (80) to one hundred (100) bales of straw mulch per acre.
- G. Intermediate Seeding. This is the establishment of perennial vegetation on disturbed areas for periods longer than twelve (12) months. This type of vegetation provides economical long-term erosion control and helps prevent sediment from leaving the site. The required application rates are the same as for temporary seeding with the addition of forty (40) to fifty (50) pounds per acre of fescue grass seed. The application of fescue is not required during the period of May 15 to August 15. However, it shall be applied as soon as weather conditions permit following August 15.
- H. Off-Season Cover. Revegetation is still required in all seasons using alternative seed mixes better suited for growth in the summer and winter.

Alternative stabilization methods may be explored such as erosion matting or mulch cover.

- I. Reseeding. Reseeding shall occur at any time at the direction of the City Engineer if necessary to obtain the desired erosion control benefits. Vegetation types other than those specified herein may be utilized upon approval of the Engineer.
- J. Minimum Requirements. The criteria established herein are the minimum requirements for erosion and sediment control. The owner may at any time establish permanent vegetation which exceeds these requirements.

ARTICLE VII Illicit Discharge

Section 420.100 Stormwater Quality Management And Illicit Discharge Control.

1. Purpose And Intent. The purpose of this Section is to provide for the health, safety and general welfare of the citizens of the City of Washington through the regulation of non-stormwater discharges to the storm drainage system to the maximum extent practicable as required by Federal and State law. This Section establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit process. The objectives of this Section are:
 - a. To regulate the contribution of pollutants to the municipal separate storm sewer system (MS4) by stormwater discharges by any user.
 - b. To prohibit illicit connections and illicit discharges to the municipal separate storm sewer system (MS4).
 - c. To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this Section.
2. Applicability. This Section shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.
3. Responsibility For Administration. The City of Washington shall administer, implement and enforce the provisions of this Section. Any powers granted or duties imposed upon the City Administrator may be delegated by the City Administrator to persons or entities acting in the beneficial interest of or in the employ of the City.
4. Severability. The provisions of this Section are hereby declared to be severable. If any provision, clause, sentence or paragraph of this Section or the application thereof to any person, establishment or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this Section.

5. Ultimate Responsibility. The standards set forth herein and promulgated pursuant to this Section are minimum standards; therefore, this Section does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution nor unauthorized discharge of pollutants.
6. Discharge Prohibitions.
 - a. Prohibition Of Illegal Discharges. No person shall discharge or cause to be discharged into the municipal storm drain system or watercourses any materials, including, but not limited to, pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than stormwater.
 - b. The commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:
 - i. The following discharges are exempt from discharge prohibitions established by this Section as long as there are no impacts to waters of the state: water line flushing or other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising groundwater, groundwater infiltration to storm drains, uncontaminated pumped groundwater, foundation or footing drains, sump pumps (not including active groundwater dewatering systems), crawl space pumps, air-conditioning condensation, springs, non-commercial washing of vehicles, natural riparian habitat or wetland flows, swimming pools [if dechlorinated — typically less than one (1) PPM chlorine], emergency firefighting activities and any other water source not containing pollutants.
 - ii. Discharges specified in writing by the authorized enforcement agency as being necessary to protect public health and safety.
 - iii. Dye testing is an allowable discharge, but requires a verbal notification to the authorized enforcement agency prior to the time of the test.
 - iv. The prohibition shall not apply to any non-stormwater discharge permitted under an NPDES permit, waiver or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver or Missouri Department of Natural Resources (MoDNR) and other applicable laws and

regulations and provided that written approval has been granted for any discharge to the storm drain system.

7. Prohibition Of Illicit Connections.
 - a. The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.
 - b. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
 - c. A person is considered to be in violation of this Section if the person connects a line conveying sewage to the MS4 or allows such a connection to continue.
8. Suspension Of MS4 Access.
 - a. Suspension Due To Illicit Discharges In Emergency Situations. The City of Washington may, with appropriate notice, suspend MS4 discharge access to a person in order to prevent an actual or threatened discharge which presents or may present imminent and substantial danger to the environment or to the health or welfare of persons or to the MS4 or waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the authorized enforcement agency may take such steps as deemed necessary to prevent or minimize damage to the MS4 or waters of the United States or to minimize danger to persons.
 - b. Suspension Due To The Detection Of Illicit Discharge. Any discharge to the MS4 in violation of this Section may result in termination of MS4 access. If such termination would abate or reduce an illicit discharge, the City shall notify the violator of the proposed termination of its MS4 access. The violator may petition or request a hearing before the City Council, but must suspend the illicit discharge until after the reconsideration and hearing are held.
 - c. A person commits an offense, if the person reinstates MS4 access to premises suspended or terminated pursuant to this Section without the prior approval of the authorized enforcement agency.
9. Industrial Or Construction Activity Discharges. Any person subject to an industrial or construction activity NPDES stormwater discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the City of Washington prior to the allowing of discharges to the MS4.
10. Monitoring Of Discharges.
 - a. Applicability. This Section applies to all facilities that have stormwater discharges associated with industrial activity, including construction activity.
 - b. Access To Facilities And Records.

- c. Facility operators shall provide to the City of Washington copies of records that must be kept under the conditions of an NPDES permit to discharge stormwater.
 - d. Upon consent of the property owner, the City of Washington may install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition in by the discharger at its own expense; however, such equipment shall remain the property of the City of Washington. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy. No person shall damage such equipment or alter such equipment so that proper results cannot be obtained.
 - e. If the City of Washington has been refused access to any part of the premises from which stormwater is discharged or if the property owner is not available to give consent to access the premises, the City may, upon demonstrating probable cause to believe that there may be a violation of this Section or a need to inspect and/or sample to verify compliance with this Section or any order issued hereunder, seek issuance of an administrative search warrant from any court of competent jurisdiction.
11. Requirement To Prevent, Control And Reduce Stormwater Pollutants By The Use Of Best Management Practices (BMPs). The City of Washington will adopt requirements identifying best management practices (BMPs) for any activity, operation or facility which may cause or contribute to pollution or contamination of stormwater, the storm drain system or waters of the United States. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses through the use of these structural and non-structural BMPs. Further, any person responsible for a property or premises, which is or may be the source of an illicit discharge, will be required to implement, at said person's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the municipal separate storm sewer system (MS4). Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this Section. These BMPs shall be part of a Stormwater Pollution Prevention Plan (SWPPP) as necessary for compliance with requirements of the NPDES permit.
12. Watercourse Protection. Every person owning property through which a watercourse passes or such person's lessee shall keep and maintain that part of the watercourse within the property free of trash, debris, excessive vegetation and other obstacles that would pollute, contaminate or

significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse so that such structures will not become a hazard to the use, function or physical integrity of the watercourse.

13. Notification Of Spills. Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into stormwater, the storm drain system or waters of the United States, said person shall take all necessary steps to ensure the discovery, containment and cleanup of such release. In the event of such a release of hazardous materials, said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the City in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the City of Washington within three (3) business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three (3) years.

14. Enforcement.

- a. Notice Of Violation. Whenever the City Engineer finds that a person has violated a prohibition or failed to meet a requirement of this Section, the City Engineer may order compliance by written notice of violation to the responsible person. Such notice and order may require without limitation:

- i. The performance of monitoring, analyses and reporting;
- ii. The elimination of illicit connections or discharges;
- iii. That violating discharges, practices or operations shall cease and desist;
- iv. The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property; and
- v. The implementation of source control or treatment BMPs

- b. The City Engineer may order that such work be completed by implementing the following procedure:

- i. If any section of this code, including, but not limited to, soil, mud, earth, sand, gravel, rock, stone, concrete, or other materials, or liquids from any site are deposited, dropped upon or permitted to roll, flow, stand, or wash upon or over any public street, street improvement, road, sewer, storm drain, watercourse,

right-of-way, or any other public property in any manner, it shall be deemed a nuisance which is detrimental to the property, health, safety and welfare of the public, and the owner of the site shall be notified and shall abate the nuisance within specified timeframe or within four (4) hours of notification. Notification may be made by telephone, fax, personal contact or site posting. The notice will include the time notified and deadline for abating the violation.

ii. If the owner of the site fails or refuses to abate the nuisance within six (6) hours after time specified on notification, the owner shall be issued a summons to appear in the Circuit Court. The City shall then cause the nuisance to be abated at the property owner's expense. The expense for abating the nuisance shall also be assessed against the owner of the site, and against the site, and a special tax bill shall be issued against said site for said expenses.

iii. Any person found to be in violation of any provision of this Article shall be subject upon conviction to a fine of not less than two hundred fifty dollars (\$250.00), as well as the costs of removal of the materials from the public street, street improvement, road, sewer, storm drain, watercourse, right-of-way, or any other public property.

iv. If the property owner fails to abate the violation and/or restore the affected property within the time prescribed following notice or appeal, the work may be done by the City or a contractor designated by the City Administrator and the expense in accordance with the City's procedures for abatement of a nuisance. The property owner shall be responsible for all costs of such work.

v. Appeal Of Notice Of Violation. Any person receiving a notice of violation may appeal the determination and order of the City Administrator. The notice of appeal must be received within thirty (30) days from the date of the notice of violation. Hearing on the appeal before the City Council or its designee shall take place within thirty (30) days from the date of receipt of the notice of appeal. Any aggrieved party shall then be entitled to judicial review in accordance with the provisions of the Missouri Administrative Procedures Act.