

Definitions—to be added to Chapter 85 of the Story County Land Development Regulations

“Best management practices” (BMPs) means actions taken to keep soil and other pollutants out of streams and lakes, designed to protect water quality, and to prevent new pollution.

“Buffer” means an area of land and vegetative area, including desirable trees, shrubs and herbaceous plants that exists and/or is established to separate different land uses or mitigate a risk associated with land use or structure.

“Channel Protection Storage Volume” means practices that will allow for extended detention of the runoff generated by a 1-year, 24-hour duration storm event. This means capturing the runoff volume from a storm of this nature and slowly releasing it over a period of no less than 24-hours to reduce down cutting and streambank erosion.

“Compaction” means the process by which the soil grains are rearranged to decrease void space and bring the grains into closer contact with one another and thereby increase the weight of solid material per cubic foot

“Development” means any manmade change to improved or unimproved real estate including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations.

“Development, Cumulative” means development that occurs at different intervals of time on the same site or adjacent sites that are part of a common development plan or development that occurs simultaneously on adjacent sites that are part of a common development plan.

“Environmentally Sensitive Area” means an area with one or more of the following features or characteristics: wetlands, floodplains, lakes, and streams; features that contribute to infiltration, soil and water retention, and/or groundwater recharge such as highly pervious soils, native grasslands, woodlands or hydric soils; watercourses that provide natural drainage ways for surface water runoff.

“Erosion and Sediment Control” means the use of BMPs that are designed to intercept precipitation and prevent movement of soil particles, including practices that both prevent erosion and those that capture soil particles after they have been dislodged.

“Highly Erodible Soils” means the following soils, according to Story County Natural Resources Conservation Service designations: 138C Clarion Loam, 138C2 Clarion Loam, 138D2 Clarion Loam, 168C Hayden Loam, 168E Hayden Loam, 168F Hayden Loam, 236C Lester Loam, 236C2 Lester Loam, 236D Lester Loam, 236D2 Lester Loam, 236E Lester Loam, 236F Lester Loam, 356G Hayden-Storden Loams, 41D Sparta Loamy Fine Sand, 62C3 Storden Loam, 62D Storden Loam, 62D3 Storden Loam, 62E Storden Loam, 62E3 Storden Loam, 62F Storden Loam, 638C2 Clarion-Storden Loams, 638D2 Clarion-Storden Loams, 65F Lindley Loam.

“Infiltration” means the gradual downward flow of water from the surface through the soil to groundwater and water table reservoirs.

“**Low-Impact Development**” means practices that mimic or preserve natural drainage processes to manage stormwater. These practices include, but are not limited to, protection and restoration of open space and natural resources areas, reduction of impervious cover, distributing and minimizing runoff by utilizing vegetated areas for stormwater treatment, capturing and storing runoff for irrigation, and encouraging infiltration and soil storage of runoff through grass channels, bioswales, bioretention cells and rain gardens.

“**Overbank Flood Protection**” means providing on-site stormwater detention to limit runoff peak flow rates from the 5-year recurrence interval storm event to prevent downstream surcharge of conveyance systems and reduce overbank flooding.

“**Post-development condition**” means the extent and distribution of land cover types anticipated to occur after development activities are completed that impact rainfall, runoff, and infiltration.

“**Pre-development condition**” means the extent and distribution of land cover types present before the initiation of development activity.

“**Pre-settlement condition**” means runoff rates and volumes can be modeled by the using times of concentration and curve numbers based on a meadow in good condition.

“**Staging**” means stabilizing one part of the site before beginning development on another to minimize the time and amount of soil exposed.

“**Stabilization**” means the use of practices that prevent exposed soil from eroding, including temporary measures and permanent measures after the development is completed. Temporary measures include, but are not limited to, grass channels, dust control, mulching, seeding and fertilizing, silt fence, sod, surface roughening, vegetative filter strip, compost blankets, compost filter tubes, rolled erosion control products (RECPs), wattles, flocculants, and turf reinforcement mats (TRMs). Permanent measures include, but are not limited to, sodding, seeding, and planting vegetative material including native turf grass and lawn.

“**Stormwater**” means storm runoff, snowmelt runoff, and surface runoff and drainage.

“**Stormwater Management**” means the use of BMPs that are designed to reduce stormwater runoff, pollutant loads, discharge volumes, peak flow discharge rates and detrimental changes in stream temperature that affect water quality and habitat.

“**Runoff**” means that portion of the precipitation on a drainage area that is discharged from the area by flowing over the ground surface.

“**Time of Concentration**” means the time needed for water to flow from the most remote point in a watershed to the watershed outlet. It is a function of topography, geology and land use within the watershed.

“**Topsoil**” means the upper layer of soil or the A-horizon.

“Watercourse” means any natural or improved stream, river, creek, ditch, channel, canal, conduit, gutter, culvert, drain, gully, swale, or wash in which waters flow either continuously or intermittently.

“Water Quality Volume” means the runoff resulting from a rainfall depth of 1.25” (90% of the rainfall events in Iowa are of this depth or less) that is required to be captured and treated. By managing these storms, the majority of water volume will be treated and many of the “first flush” pollutants of concern will be effectively managed on-site.

Amendments to Chapter 88.05 of the Story County Land Development Regulations

4. Construction Site Erosion and Sediment Control. Sedimentation and erosion pollutes water, degrades land, causes the loss of native vegetation and habitats, and impairs drainage. Development activities cause land to become susceptible to erosion and sedimentation by wind and water. To mitigate the impacts of erosion and sedimentation and to protect natural resources, the following requirements shall apply to development in Story County: Any development that will “disturb” an area of one or more acres is required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for its storm water discharge.

A. Any development of one or more acres is required to obtain a National Pollutant Discharge Elimination System (NPDES) Permit.

B. A. Any development that is not required to obtain an NPDES stormwater discharge permit shall provide temporary sediment barriers to filter runoff so sediment stays on the site. As soon as vegetation is removed by construction activity, sediment barriers shall be used extensively in drainage ditches, waterways, and on the contour. The sediment barrier must be maintained until the project is completed and placed back into a vegetative state. install perimeter control measures on the site prior to commencing development activities, other than those necessary to install the controls, and shall actively maintain the measures until final stabilization of the development site is completed. If the sediment barrier perimeter control measure(s) deteriorates to the point at which it loses its effectiveness, it shall be replaced. Stabilization measures shall be immediately initiated for all areas when development is completed. Other Best Management Practices (BMPs) for staging development and soil quality management and restoration are encouraged for all development. See the Iowa Stormwater Management Manual for more information.

Perimeter control measures. Sediment barriers shall be spaced in accordance with Table 88-3. The following are acceptable materials for perimeter control measures:

- (1) Silt Fence. A silt fence shall be designed to allow water to pass through while retaining the sediment on the site. The maximum drainage area flow to a silt fence should not exceed 1/4 acre per 100 feet of fence. Silt fences should be placed as close as possible to the undisturbed soil and shall use steel posts.
- (2) Compost Filter Tubes. The particle size shall be selected in light of the soil gradations that are to be retained by the device. These devices should be

installed along the contour, as with silt fences. Compost tubes shall not be placed on slopes in excess of a 10% grade. Spacing shall be determined to allow the bottom of the next higher tube to be seen from the one being installed below and shall be placed at least five feet from the toe of a slope to provide for the formation of a sediment basin. The tubes shall be staked and additional compost placed in front of each tube to enhance the ability to collect sediment.

- (3) Wattles. Wattle locations shall be established in the same manner as compost tubes, but installed in shallow trenches (two to four inches deep). Excavated materials shall be placed on the upstream side of the wattle to initiate sediment collection. The wattles shall be staked with wooden stakes and left in place during the establishment of vegetation on the slope.

Table 88-3 Maximum Sediment Barrier Spacing

SILT FENCE SPACING ON SLOPES	
Slope	Placement Interval (feet)
3:1 (33%)	40
4:1 (25%)	50
5:1 (20%)	60
10:1 (10%)	100
< 50:1 (2%)	150
3:1 (33%)	40
4:1 (25%)	50
5:1 (20%)	60
SILT FENCE SPACING IN DITCHES	
Ditch Grade (%)	Approximate Spacing (feet)
1-2	150
2-4	75
4-6	40
>6	25
COMPOST TUBE SPACING	
Slope	Approximate Spacing (feet)
10:1 (10%) - 20:1 (5%)	30
20:1 (5%) - 50:1 (2%)	50
< 50:1 (2%)	75

WATTLE SPACING	
Slope	Approximate Spacing (feet)
> 2:1 (50%)	10
2:1 (50%) - 4:1 (25%)	15
< 4:1 (25%)	20

C. Any of the following types of development that are not required to obtain an NPDES shall be required to submit a Grading Permit Application and Erosion and Sediment Control Plan in addition to other applicable development permit applications prior to commencing development activities:

- (1) Development that will result in the division of land for three or more development lots;
- (2) Development that requires a Conditional Use Permit or Modification;
- (3) Commercial and Industrial Development that requires review and approval of a site development plan by the Board of Supervisors;
- (4) Development on an area with highly erodible soils;
- (5) Development within 1,000 feet of an environmentally sensitive area.

D. Developments required to submit an Erosion and Sediment Control Plan shall meet the following criteria and illustrate that the development is designed and constructed incorporating erosion and sediment control measures that meet *Iowa Statewide Urban Design and Specifications (SUDAS)*, the Iowa Stormwater Management Manual, or other professionally accepted Best Management Practices (BMPs) and the requirements of this chapter through the Erosion and Sediment Control Plan, including a narrative, site plan, and other attachments necessary.

E. Criteria for Erosion and Sediment Control Plan.

- (1) The size of the area to be developed, limits of the development including clearing and grading, and the soil-disturbing activities shall be identified.
- (2) Pre-development and post-development land use, the size of the area to be developed, limits of the development including clearing and grading, the soil-disturbing activities, and proposed changes in grading and drainage patterns. Justification of proposed changes in natural conditions may also be required. Light Detection and Ranging (LIDAR) contour maps may be requested from the Story County Planning and Development Department or a survey of the site's topography may be completed and submitted to determine slopes.

- (3) The type, location, timing of each proposed erosion and sediment control measure and their relationship to the proposed development and the site's character (soils, drainage patterns, slopes, watercourses, land use, etc.) shall be identified. Soil types based on the U.S. Department of Agriculture Natural Resources Conservation Service Soil Survey may be used.
- (4) The maintenance procedures required for each erosion and sediment control measure shall be identified. Such maintenance procedures shall keep the erosion and sediment control measures functioning in an effective manner.
- (5) The amount of area developed shall be limited through staging of development activities.
- (6) The limits of grading and clearing shall be marked on-site to protect areas that will not be developed.
- (7) Sensitive environmental areas within 1,000 feet of a site and any impacts and/or protection for the areas shall be identified.
- (8) A buffer of the 100 feet from the limits of sensitive environmental areas or from a water's ordinary high water mark as determined by the U.S. Army Corps of Engineers shall be required. The buffer may be waived by the Interagency Review Team for repair and maintenance of the features and/or if BMPs are undertaken to have no impact on the features. A waiver request may be submitted as part of the Erosion and Sediment Control Plan. The request shall be routed to the Interagency Review Team for review and approval.
- (9) Stabilization measures shall be immediately initiated on all areas after an area is no longer actively being worked or if an area will not be worked for 14 calendar days.
- (10) Practices to minimize soil compaction and provide soil quality restoration, including, but not limited to, reducing passes made over an area with heavy equipment, not using heavy equipment when soil is wet, tilling, and blending topsoil with compost prior to respreading shall be identified and implemented. Practices shall follow the methods for Soil Quality Management and Restoration in the Iowa Stormwater Management Manual, Iowa SUDAS, or other professionally-accepted methods.
- (11) Topsoil shall not be removed unless required for the function of the proposed project.
- (12) Topsoil that is removed but may be used for restoration after development activities cease shall be preserved on-site when possible and shall be respread to the depth that originally existed. In the case that topsoil depths exceed 12 inches, a maximum of 12 inches of topsoil shall be required to be respread. Soil Quality Management and Restoration Methods in the Iowa Stormwater Management

Manual, Iowa SUDAS, or other professionally-accepted methods shall be followed.

F. Inspections and Responsibility.

- (1) In no instance shall acceptance of the Erosion and Sediment Control Plan and approval of the grading permit by Story County be construed as approval of the design, construction, or concurrence by Story County that all criteria have been satisfied. Story County shall not be liable for any damages resulting from erosion and sedimentation.
- (2) An inspection for compliance with submitted erosion and sediment control plans and requirements of this chapter shall be conducted by Planning and Development Staff as part of the required foundation location inspection for a zoning permit or, if no zoning permit is required, after perimeter and other initial controls, as specified in the plan, have been installed but prior to the commencement of development activities.
- (3) Any amendments or changes to a submitted Grading Permit or Erosion and Sediment Control Plan shall be communicated to the Planning and Development to the Planning and Development and submitted as part of an amended plan prior to their implementation on-site. All amendments shall comply with the requirements for Erosion and Sediment Control in this chapter.

G. Exemptions. The following exemptions to the Erosion and Sediment Control requirements may apply; however, such uses shall not be exempt from adopted Floodplain Management Ordinance (codified in Chapter 80 of this Code of Ordinances) or other State or Federal requirements.

- (1) Agricultural. Except to the extent required to implement Section 335.2, Code of Iowa, the grading permit application and erosion and sediment control plan requirement shall not apply to development that is primarily adapted, by reason of nature or area, for use for agricultural purposes, while so used.
- (2) County Engineer. The grading permit application and erosion and sediment control plan requirement shall not apply to development that is for the maintenance and/or construction of public roads and public road right-of-way, completed by the Story County Engineer.

5. Post-Construction Stormwater Management. Stormwater runoff increases nonpoint source pollution, flooding, siltation, stream temperatures, and streambank erosion. To reduce impacts on water quality maintain existing flow patterns, the following requirements shall apply to development in Story County: ~~and Water Quality. to better replicate natural watershed hydrology and water quality, controlling runoff discharge, volume, frequency and quality to the same as predevelopment runoff conditions. Such development shall incorporate best management practices as outlined in the Iowa Storm Water Management Manual — 2D-1 General Information for BMPs, as amended, and erosion and sediment control practices that~~

~~meet or exceed the Iowa Statewide Urban Design and Specifications (SUDAS) guidelines. (Ordinance No. 184) (Ordinance No. 192) (Ordinance No. 208)~~

- A. Development that meets the any one of the following thresholds shall be required to submit a stormwater management plan, in addition to other applicable development permit applications, prior to commencing development activities:
- (1) Development of one-acre or greater in size;
 - (2) Cumulative development of one-acre or greater in size once the one-acre threshold is proposed to be reached;
 - (3) Development that will result in the division of land for three or more development lots; and
 - (4) Development with a Standard Industrial Classification (SIC) code that falls under the NPDES Industrial Stormwater Permit program.
- B. Criteria for Stormwater Management. Developments required to submit a Stormwater Control Plan shall meet the following criteria:
- (1) The site shall be designed to manage the water quality volume of a rainfall depth of 1.25 inches by infiltration practices.
 - (2) To protect stream channels, the site shall be designed to infiltrate or provide 24-hour extended detention of the channel protection volume defined as the 1 year, 24-hour storm.
 - (3) Stormwater management shall be provided to limit the post-development rate of runoff from the site area during the 5-year through the 100-year, 24-hour storm events to runoff rates equivalent to the pre-development rates from the same storm event.
- C. The stormwater management control plan shall include a site plan, narrative, and other attachments necessary to illustrate how runoff and associated water quality impacts resulting from the development is proposed to be managed meeting the requirements of this chapter and following the Iowa Stormwater Management Manual or other professionally accepted Best Management Practices (BMPs) and/or through low-impact development practices.
- D. Criteria for Stormwater Management Control Plan.
- a. Be prepared by a licensed professional engineer (PE) or landscape architect.
 - b. Identify pre-development and post-development land use, size of the development, and proposed changes in grading, impervious area, and drainage patterns, including volume, rate, and quality. Justification of proposed changes in natural conditions may also be required. Light Detection and Ranging

(LIDAR) contour maps may be requested from the Story County Planning and Development Department or a survey of the site's topography may be completed and submitted to determine slopes.

- c. Identify the proposed stormwater management BMPs or low-impact development practices selected for the site, their purpose, and their location, with clear citations to the Iowa Stormwater Management Manual, or other professionally accepted BMPs, and County Criteria for Stormwater Management in section 88.05(5)(B).
- d. Describe the maintenance procedures required for each selected practice. Such maintenance procedures shall keep the stormwater management BMPs or low-impact development practices functioning in an effective manner.
- e. Sensitive environmental areas within 1,000 feet of a site and impacts and/or protection for the areas shall be identified.
- f. Identify sensitive features' relationship with the subwatershed area (Hydrologic Unit Code 12).
- g. A soil quality management and restoration plan following the Iowa Stormwater Management Manual, Iowa SUDAS, or other professionally accepted BMPs shall be provided.

E. Inspections and Responsibility.

- (1) In no instance shall the acceptance the Stormwater Management Plan by Story County be construed as approval of the engineer or designer's design, design methods, design calculations, detention facilities plan, construction, or concurrence by Story County that all design criteria have been satisfied. Story County shall not be liable for damages resulting from stormwater runoff or discharge of stormwater detention facilities.
- (2) An inspection for compliance with submitted stormwater management plans and requirements of this chapter shall be conducted by Planning and Development Staff as part of the required inspection for a zoning permit.
- (3) Any amendments or changes to a Stormwater Management Plan shall be communicated to the Planning and Development and submitted as part of an amended plan to prior to their implementation on-site. All amendments shall comply with the requirements of the Stormwater Management Criteria and Stormwater Management Plan Criteria in this chapter.

F. Exemptions. The following exemptions to the stormwater management plan requirement may apply; however, such uses shall not be exempt from adopted Floodplain Management Ordinance (codified in Chapter 80 of this Code of Ordinances) or other State or Federal requirements.

- (1) Agricultural. Except to the extent required to implement Section 335.2, Code of Iowa, the stormwater management plan requirement shall not apply to development that is primarily adapted, by reason of nature or area, for use for agricultural purposes, while so used.
- (2) County Engineer. The stormwater management plan requirement shall not apply to development that is for maintenance and/or construction of public roads and public road right-of-way, completed by the Story County Engineer.
- (3) Legally Established Development. Development that has legally occurred prior to the adoption of this Ordinance (Ord. 27x) is not required to be counted towards the cumulative development one-acre threshold. Subsequent development that occurs after the adoption of this Ordinance (Ord. 27x) and meets the one-acre or cumulative once-acre threshold shall be required to meet the stormwater management plan requirements in this Chapter.
- (4) Maintenance of Legally Established Development. The maintenance of development that has legally occurred prior to the adoption of this Ordinance (Ord. 27x), shall not be counted towards the one-acre threshold or cumulative one-acre threshold if the area the maintenance work occurs on is the same as the area previously developed and the post-development runoff coefficient remains the same.