

CHAPTER 4  
STORMWATER MANAGEMENT  
Master List of Amendments

**The reason for the adoption of this new Stormwater Ordinance is based on a required action directed by TDEC. The current Stormwater Ordinance was based on the 2014 Construction General Permit for Stormwater discharges and adopted in 2016 and is out of date with the recently Passed 2022 CGP. The new ordinance is an amended copy of the 2023 MTAS model Stormwater Ordinance. The proposed ordinance has been reviewed by TDEC and it meets all TDEC Ordinance Checklist requirements.**

Table of Contents Section

1. 14-403 – Omit 14-403 **Waivers**. Add Section 14-403 **Construction Stormwater Management**.
2. 14-404 – Omit 14-404 **Stormwater system design: construction and permanent stormwater management**. Add Section 14-404 **Permanent stormwater management: design and construction inspection**.
3. 14-405 – Omit 14-405 **Permanent storm water management: operation, maintenance, and inspection**. Add Section 14-405 **Permanent Stormwater Control Measure (SCM) maintenance and inspection**.
4. 14-406 – Omit 14-406 **Existing and ongoing developments**. Add Section 14-406 **Permanent Stormwater Control Measure: new development, existing locations and ongoing developments**.

Ordinance Body

1. Section 14-401 – Sub-section d. – **Administering Entity**. Omit - **The city's director of public works and utilities**. Replace with - **The City Manager or his designee**
2. Section 14-402 Definitions - **Added Definitions**

**Analytical monitoring**-Test Procedures for the Analysis of Pollutants - Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act (the "Act"), as amended, under which such procedures may be required. Pollutant parameters shall be determined by using sufficiently sensitive methods in Title 40 C.F.R. § 136, as amended, and promulgated pursuant to Section 304 (h) of the Act. The chosen methods must be sufficiently sensitive as required in state rule 0400-40-03-.05(8).

**Aquatic Resource Alteration Permit (ARAP)** physical alterations to properties of the waters of the state require an ARAP or a §401 Water Quality Certification (§401 certification). ARAP means a permit issued pursuant to T.C.A. § 69-3-108 of the Act, which authorizes the alteration of properties of waters of the state that result from activities other than discharges of wastewater through a pipe, ditch, or other conveyance.

**Clearing** refers to removal of vegetation and disturbance of soil prior to grading or excavation in anticipation of construction activities. Clearing may also refer to wide area land disturbance in anticipation of non-construction activities. Clearing, grading, and excavation do not refer to

clearing of vegetation along existing or new roadways, highways, dams, or power lines for sight distance or other maintenance and/or safety concerns, or cold planing, milling, and/or removal of concrete and/or bituminous asphalt roadway pavement surfaces. The clearing of land for agricultural purposes is exempt from federal stormwater NPDES permitting in accordance with Section 401(1)(1) of the 1987 Water Quality Act and state stormwater NPDES permitting in accordance with the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.).

**Commencement of construction:** the initial disturbance of soils associated with clearing, grading, excavating or other construction activities.

**Control measure** refers to any Best Management Practice (BMP) or other method used to prevent or reduce the discharge of pollutants to waters of the state.

**CWA** means the Clean Water Act of 1977 or the Federal Water Pollution Control Act (33 U.S.C. 1251, et seq.)

**Design storm** is a storm event as defined by Precipitation-Frequency Atlas of the United States. Atlas 14. Volume 2. Version 3.0. U.S. Department of Commerce. National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Springs, Maryland or its digital product equivalent. The estimated design rainfall amounts, for any return period interval (i.e., 1,-yr, 2-yr, 5-yr, 25-yr, etc.,) in terms of either depths or intensities for any duration, can be found by accessing the data available at [https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html) . The Design Storm Events for Jefferson City are as follows: An adequate drainage system is one that is designed to meet a 2,5, and 10-year storm event. For an outfall in a drainage area of a total of 5 or more acres, a temporary (or permanent) sediment basin that provides storage for a calculated volume of runoff from a 5-year, 24-hour storm and runoff from each acre drained, or equivalent control measures, shall be provided until final stabilization of the site. A drainage area of 5 or more acres includes both disturbed and undisturbed portions of the site or areas adjacent to the site, all draining through the common outfall. Where an equivalent control measure is substituted for a sediment retention basin, the equivalency must be justified. Runoff from any undisturbed acreage should be diverted around the disturbed area and the sediment basin and, if so, can be omitted from the volume calculation. Sediment storage expected from the disturbed areas must be included and a marker installed signifying a cleanout need.

An **ecoregion** is a relatively homogeneous area defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables. Ecoregions can be determined for specific stream segments by using Tennessee's Online Water Quality Assessment Data viewer <http://tdeconline.tn.gov/dwr>.

**Exceptional Tennessee Waters** are surface waters designated by the Tennessee Department of Environment and Conservation as having the characteristics set forth at Tennessee Rules, Chapter 0400-40-03-.06(4). Characteristics include waters within parks or refuges; scenic rivers;

waters with threatened or endangered species; waters that provide specialized recreational opportunities; waters within areas designated as lands unsuitable for mining; waters with naturally reproducing trout; waters with exceptional biological diversity and other waters with outstanding ecological or recreational value.

**Level 1** - Fundamentals of Erosion Prevention and Sediment Control training and certification program administered by University of Tennessee Water Resources Research Center (<https://tnepsc.org/index.asp>).

**Level 2** - Design Principles for Erosion Prevention and Sediment Control for Construction Sites training and certification program administered by University of Tennessee Water Resources Research Center (<https://tnepsc.org/index.asp>).

**Linear Project** is a land disturbing activity as conducted by an underground/overhead utility or highway department, including, but not limited to, any cable line or wire for the transmission of electrical energy; any conveyance pipeline for transportation of gaseous or liquid substance; any cable line or wire for communications; or any other energy resource transmission ROW or utility infrastructure, e.g., roads and highways. Activities include the construction and installation of these utilities within a corridor. Linear project activities also include the construction of access roads, staging areas and borrow/spoil sites associated with the linear project. Land disturbance specific to the development of residential and commercial subdivisions or high-rise structures is not considered a linear project.

**Monitoring** refers to tracking or measuring activities, progress, results, etc., and can refer to non-analytical monitoring for pollutants by means other than 40 C.F.R. § 136 (and other than state- or federally established protocols in the case of biological monitoring and assessments), such as visually or by qualitative tools that provide comparative values or rough estimates.

**Municipality** means any incorporated city or town, county, metropolitan or consolidated government, or special district of this state empowered to provide storm water facilities.

**Operator** means any person who owns, leases, operates, controls, or supervises a source. Including, but not limited to, an owner or operator of any “facility or activity” subject to regulation under the NPDES program.

**Permanent Stabilization** means that all soil disturbing activities at the site have been completed and one of the three following criteria is met:

- A perennial, preferably native, vegetative cover with a uniform (i.e., evenly distributed, without large bare areas) density of at least 70 percent has been established on all unpaved areas and areas not covered by permanent structures, and all slopes and channels have been permanently stabilized against erosion.

- Equivalent permanent stabilization measures such as the use of riprap; permanent geotextiles; hardened surface materials including concrete, asphalt, gabion baskets or Reno mattresses have been employed.
- For construction projects on land used for agricultural or silvicultural purposes, permanent stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural or silvicultural use.

**Point source** (or Outfall) means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include introduction of pollutants from non-point source agricultural and silvicultural activities, including stormwater runoff from orchards, cultivated crops, pastures, range lands, forest lands or return flows from irrigated agriculture or agricultural stormwater runoff. In short, outfall is a point where runoff leaves the site as a concentrated flow in a discrete conveyance

**Pollutant** means sewage, industrial wastes, or other wastes.

**Priority construction** means those construction activities discharging directly into, or immediately upstream of, waters the state recognized as unavailable condition for siltation or Exceptional Tennessee Waters.

A **rainfall event** is defined as any occurrence of rain preceded by 10 hours without precipitation that results in an accumulation of 0.01 inches or more. Instances of rainfall occurring within 10 hours of each other will be considered a single rainfall event.

**Registered Engineer and Registered Landscape Architect** An engineer or landscape architect certified and registered by the State Board of Architectural and Engineer Examiners pursuant to Section 62-202, Tennessee Code Annotated, to practice in Tennessee.

**Runoff coefficient** means the fraction of total rainfall that will appear at the conveyance as runoff. Runoff coefficient is also defined as the ratio of the amount of water that is not absorbed by the surface to the total amount of water that falls during a rainstorm.

**Sediment basin** A temporary basin consisting of an embankment constructed across a wet weather conveyance, an excavation that creates a basin or by a combination of both. A sediment basin typically consists of a forebay cell, , impoundment, permanent pool, primary spillway, secondary or emergency spillway and surface dewatering device. The size and shape of the basin depends on the location, size of drainage area, incoming runoff volume and peak flow, soil type and particle size, land cover, and receiving stream classification (i.e., waters with unavailable parameters, Exceptional TN Waters, or waters with available parameters).

**Significant Contributor** is defined as a source of pollutants where the volume, concentration, or mass of a pollutant in a stormwater discharge can cause or threaten to cause pollution, contamination, or nuisance that adversely impact human health or the environment and cause or contribute to a violation of any applicable water quality standards for receiving water.

**Soil or Topsoil** means the unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of plants.

**Steep Slope or Steep Grade** means a natural or created slope of 35% grade or greater.

**Stream** as defined by TCA 69-3-103(38) "stream" means a surface water that is not a wet weather conveyance.

**Stormwater associated with industrial activity** is defined in 40 C.F.R. 122.26(b)(14) and incorporated here by reference. Most relevant to the City is 40 C.F.R. 122.26(b)(14)(x), which relates to construction activity including clearing, grading, filling and excavation activities, including borrow pits containing erodible material. Disturbance of soil for the purpose of crop production is exempt from NPDES permit requirements, but stormwater discharges from agriculture-related activities that involve construction of structures (e.g., barn construction, road construction, pond construction) are considered associated with industrial (construction) activity. Maintenance to the original line and grade, hydraulic capacity; or to the original purpose of the facility (e.g., re-clearing, minor excavation performed around an existing structure necessary for maintenance or repair and repaving of an existing road) is not considered a construction activity.

Construction **Stormwater discharge-related activities** mean activities that cause, contribute to or result in point source stormwater pollutant discharges. These activities may include excavation, site development, grading and other surface disturbance activities; and activities to control stormwater including the siting, construction and operation of best management practices (BMPs).

**Stormwater Pollution Prevention Plan (SWPPP)** is a written site-specific plan required by the Tennessee Construction General Permit (CGP) that includes a narrative pollution prevention plan and graphical erosion and sediment control plan. In its basic form, the plan contains a site map, a description of construction activities that could introduce pollutants to stormwater runoff, a description of measures or practices to control these pollutants, and erosion and sediment control plans and specifications. The SWPPP should be prepared in accordance with the Tennessee Erosion and Sediment Control Handbook (latest edition).

**Take of an endangered species** means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct.

**Tennessee Erosion and Sediment Control (TDESC) Handbook** is a guidance manual issued by the Division of Water Resources for the purpose of developing Stormwater Pollution Prevention Plans and Erosion and Sediment Control Plans required by the Construction General Permit CGP.

**Temporary stabilization** is achieved when vegetation or non-erodible surface has been established on the area of disturbance and construction activity has temporarily ceased. Under certain conditions, temporary stabilization is required when construction activities temporarily cease.

**Treatment chemicals** are polymers, flocculants or other chemicals used to reduce turbidity in stormwater discharges by chemically bonding to suspended silts and other soil materials and causing them to bind together and settle out. Common examples of anionic treatment chemicals are **polyacrylamide-chitosan (PAM-CS)**.

**Turbidity** is the cloudiness or haziness of a fluid caused by individual particles (suspended solids) that are generally invisible to the naked eye, similar to smoke in air.

**Waters with unavailable parameters** means any segment of surface waters that has been identified by the TDEC as failing to support one or more classified uses. Unavailable parameters exist where water quality is at, or fails to meet, the levels specified in water quality criteria in Rule 0400-40-03-.03, even if caused by natural conditions. In the case of a criterion that is a single response variable or is derived from measurement of multiple response variables, the unavailable parameters shall be the agents causing water quality to be at or failing to meet the levels specified in criteria. Resources to be used in making this determination include biennial compilations of impaired waters, databases of assessment information, updated GIS coverages (<https://tdeconline.tn.gov/dwr/>), and the results of recent field surveys. GIS coverages of the streams and lakes not meeting water quality standards, plus the biennial list of waters with unavailable parameters, can be found at <https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-quality-reports---publications.html>.

**Water quality riparian buffer** means a permanent strip of natural perennial vegetation adjacent to a stream, river, wetland, pond, or lake that contains dense vegetation made up of grass, shrubs, and/or trees. The purpose of a water quality riparian buffer is to maintain existing water quality by minimizing the risk of any potential sediments, nutrients, or other pollutants reaching adjacent surface waters and to further prevent negative water quality impacts by providing canopy over adjacent waters.

A **one-week period** is a synonym for a calendar-week; typically, a period from Sunday through Saturday

**Water quality treatment volume (WQTV)** is a portion of the runoff generated from impervious surfaces at a new development or redevelopment project by the 1-year 24-hour design storm. The WQTV is further determined by the type of treatment provided.

**Wet weather conveyances** are man-made or natural watercourses, including natural watercourses that have been modified by channelization, that meet the following:

- The conveyance carries flow only in direct response to precipitation runoff in its immediate locality.

- The conveyance’s channels are at all times above the groundwater table.
- The flow carried by the conveyance is not suitable for drinking water supplies.

Hydrological and biological analyses indicate that, due to naturally occurring ephemeral or low flow under normal weather conditions, there is not sufficient water to support fish or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two months. (Tennessee Rules, Chapter 0400-40-3-.04(3)).

Removed Definitions will be redlined on Current ordinance

3. Section 14-403 Waivers – Remove entirety of Section replace with **14-403. Construction Stormwater Management**

**From this point the ordinance effectively shifts an entire section backward from the current ordinance. Much of the information is the same but there are so many changes, it would be less confusing to just abandon the current ordinance in its entirety and adopt the proposed Stormwater Ordinance. To not cause confusion with the master list, I will highlight the primary changes from the Proposed Stormwater Ordinance Section 14-403 through 14-410.**

**Proposed Ordinance Section 14-403 Construction Stormwater Management would strongly mirror the information in the current section 14-404 Stormwater system design: construction and permanent stormwater management. The primary changes are:**

**14-403 Sub-Section (6) adopts a new Land Disturbance Permit Fee Schedule. It is based off the size of land that is going to be disturbed which provides a fair cost to the developer to offset the cost for City employees required inspections (Stormwater and Utility).**

- (1) Land disturbance/Grading/Stormwater Construction Permit- Persons seeking the issuance of any land disturbance permit must provide proof of coverage under the Tennessee Construction General Permit (CGP) (if applicable) when requested; and a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the city when requested.
  - a. Copies of additional applicable local, state or federal permits (i.e.: ARAP, approved hydrologic determination, etc.) must also be provided to the city.
  - b. The City has the authority to withhold local permits prior to receiving copies of the aforementioned permits.
  - c. In circumstances where no such permits have been required, the city may still require a SWPPP as part of the land disturbance permit application.

Land Disturbance Permit Fee Schedule:

<b>Disturbed Acreage</b>	<b>From</b>	<b>To</b>
0.01 – 0.99 Acres	\$50.00	\$50.00
1.00 – 5.00 Acres	\$50.00	\$250.00
5.00 – 10.00 Acres	\$250.00	\$500.00
10.00 – 20.00 Acres	\$500.00	\$1,000.00
20.00 – 30.00 Acres	\$1,000.00	\$1,500.00
30.00 – 100.00 Acres	\$1,500.00	\$5,000.00
>100.00 Acres	\$5200.00	

**Proposed Ordinance Section 14-404 Permanent Stormwater Management: design and construction inspection. This section will include some of the Current 14-405 Permanent stormwater management: operation, maintenance, and inspection. It focuses on plan review and design requirement guidance. The primary Changes are:**

**14-404 Sub-Section (5 through 8) includes the water quality treatment volume design table. This identifies the treatment volume required based on the treatment provided. It also includes a Treatment Train Calculation to ensure 80% of total suspended solids are removed when utilizing Manufactured Treatment Devices.**

(5) The quantity of the WQTV depends on the type of treatment provided, as established in the following table:

**Water Quality Treatment Volume and the Corresponding SCM Treatment Type  
For the 1-Year, 24-Hour Design Storm**

<b>SCM Treatment Type</b>	<b>WQTV</b>	<b>Notes</b>
Infiltration, evaporation, transpiration, and/or reuse	Runoff generated from the first 1 inch of the design storm	Examples include, but are not limited to, bioretention, stormwater wetlands, and infiltration systems.
Biologically active filtration, with an underdrain	Runoff generated from the first 1.25 inches of the design storm	To achieve biologically active filtration, SCMs must provide minimum of 12 inches of internal water storage.
Sand or gravel filtration, settling ponds, extended detention ponds, and wet ponds	Runoff generated from the first 2.5 inches of the design storm or the first 75% of the design storm,	Examples include, but are not limited to, sand filters, permeable pavers, and underground gravel detention systems. Ponds must provide forebays comprising a minimum of 10% of the total design volume. Existing regional detention ponds are not subject to the forebay requirement.
Hydrodynamic separation, baffle box settling, other flow-through manufactured treatment devices (MTDs), and treatment trains using MTDs	Maximum runoff generated from the entire design storm	Flow-through MTDs must provide an overall treatment efficiency of at least 80% TSS reduction. Refer to subparagraph (2)(d) of this rule

(6). Limitations to the application of certain stormwater control measures include, but are not limited to:

- a. Where a potential for introducing pollutants into groundwater exists, unless pretreatment is provided;
- b. Where pre-existing soil contamination is present in areas subject to contact with infiltrated runoff;
- c. Presence of sinkholes or other karst features.

(7). Pre-development infiltrative capacity of soils at the site must be taken into account in selection of runoff reduction management measures.

(8). **Treatment Train Calculations**

a. **Treatment Trains using MTDs.**

Treatment trains using MTDs must provide an overall treatment efficiency of at least 80% TSS reduction utilizing the following formula:

$$R=A+B-(A \times B) / 100$$

Where:

R = total TSS percent removal from applications of both SCMs,  
A = the TSS percent removal rate applicable to the first SCM, and  
B = the TSS percent removal rate applicable to the second SCM.  
TSS removal rates for MID must be evaluated using industry-wide standards.  
TSS removal rates for other SCMs must be from published reference literature.

b. Treatment trains not using MTDs.

Treatment trains using infiltration, evaporation, transpiration, reuse, or biologically active filtration followed by sand or gravel filtration, settling ponds, extended detention ponds or wet ponds may subtract the treated WQTV of the upstream SCMs from the WQTV of the downstream SCMs.

**Proposed Ordinance Section 14-405 Permanent SCM maintenance and inspection. Will strongly mirror Current Ordinance 14-405. Covering the As Built requirements. No significant changes.**

**Proposed Ordinance Section 14-406 does include the requirement for a Stormwater Maintenance Agreement which the City has enacted, but the remainder of sections 14-406 through 14-410 will strongly mirror the current Stormwater Ordinance with many of the differences being wording clarification making the Ordinance Easier to navigate and providing more clarity on the wording of the requirements.**

(1) On-site stormwater management facilities inspection and maintenance agreement<sup>1</sup>

- a. Where the stormwater facility is located on property that is subject to a development agreement, and the development agreement provides for a permanent stormwater maintenance agreement that runs with the land, the owners of property must execute an inspection and maintenance agreement that shall operate as a deed restriction binding on the current property owners and all subsequent property owners and their lessees and assigns, including but not limited to, homeowner associations or other groups or entities.
- b. The maintenance agreement shall:
  - i. Assign responsibility for the maintenance and repair of the stormwater facility to the owners of the property upon which the facility is located and be recorded as such on the plat for the property by appropriate notation.
  - ii. Provide for a periodic inspection by the property owners in accordance with the requirements of subsection (5) below for the purpose of documenting maintenance and repair needs and to ensure compliance with the requirements of this ordinance. The property owners will arrange for this inspection to be conducted by individual(s)

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approved by the City who will submit a signed written report of the inspection to the City. It shall also grant permission to the City to enter the property at reasonable times and to inspect the stormwater facility to ensure that it is being properly maintained.

- c. Provide that the minimum maintenance and repair needs include but are not limited to: the removal of silt, litter and other debris, the cutting of grass, cutting and vegetation removal, and the replacement of landscape vegetation, in detention and retention basins, and inlets and drainage pipes and any other stormwater facilities. It shall also provide that the property owners shall be responsible for additional maintenance and repair needed to meet the intended design specification of the stormwater facility.
- d. Provide that maintenance needs must be addressed in a timely manner, on a schedule to be determined by the city.
- e. Provide that if the property is not maintained or repaired within the prescribed schedule, the City shall perform the maintenance and repair at its expense and bill the same to the property owner. The maintenance agreement shall also provide that the City's cost of performing the maintenance shall be a lien against the property.