

Permanent Stormwater Management Program Implementation Plan

Knox County is required to provide a Permanent Stormwater Management (PSM) Program Implementation Plan to TDEC by 11/30/2022. The following document provides Knox County's implementation plan which, once implemented, will ensure Knox County is in compliance with the PSM requirements of the NPDES permit. This document includes two sections: Current Program Description and a timeline to the status of items necessary to be fully compliant with the permit.

Current Program Description

Knox County currently manages permanent stormwater operation and maintenance by:

Codes and ordinance development and implementation

The requirements for NPDES municipal stormwater permits, TMDLs, watershed assessments and the desire to protect human life, property, aquatic habitats and the quality of life in our communities has brought home the pressing need to manage both stormwater quantity and quality from our developed and developing areas.

The goal of the Stormwater Management Manuals and Stormwater Ordinance documents is to develop and promote a consistent and effective approach and implementation of stormwater management in Knox County. Knox County Stormwater Management regulations and guidance are detailed in Chapter 26 – Environment Article VI. - Stormwater Management of the Knox County Code of Ordinances and in Knox County, TN Stormwater Management Manual Volume 1 (Administration and Procedures) Knox County, TN Stormwater Management Manual Volume 2 (Technical Guidance). The full ordinance and manual can be found here <https://www.knoxcounty.org/stormwater/dev-manual-ordinance.php>; and hard copies can be provided to the division upon request.

Procedures for plans review and criteria for approval

Procedures for plans review and criteria for approval are described in attachment A. These procedures are under review and may change before September 1, 2024, to fully comply with the NPDES Permit. The plans review process ensures design plans comply with all Knox County Ordinances, including the Knox County Stormwater Ordinance. Plans review is conducted on all sites with greater than or equal to 1 acre of disturbed area and sites with 10,000 square feet or more of impervious area.

Procedures for conducting and tracking site inspections

PSM site inspections consist of a construction termination inspection followed by inspections at a minimum every five years. PSM inspections are recorded in Cartegraph, an asset management database that ties constituent requests, field inspections, images, attachments, and asset attributes to active GIS directories. Cartegraph allows Knox County to store, update, audit, and manage all stormwater related information in one place accessible to all departments. Inspections are conducted by Knox County Construction inspectors and/or Knox County Stormwater inspectors. Site inspections may be conducted more frequently in response

ENGINEERING & PUBLIC WORKS

Development Services • Fleet Management • Environment & Planning • Operations

to requests by owners/operators. SOPs for site inspections are under development and are expected to be developed by September 1, 2023.

Stormwater control measure (SCM) operation and maintenance policies

SCM operation and maintenance policies are under development/review and may change before September 1, 2024. Operation and maintenance are currently required and are the responsibility of the owner of the SCM as outlined in the sample Operation and Maintenance Agreement (Attachment B).

Timeline to develop and implement the program

Knox County’s current program does not currently fully comply with the requirements of the new or revised permit. However, through the process and timeline described below the county expects to have a compliant program by September 1, 2024. Items listed here with an expected completion date prior to September 1, 2024, are considered interim milestones.

1. Permanent Stormwater Standards

Current Status	Compliance Plan	Expected Completion Date
Is in place but does not meet current permit standards/ requirements	Incorporate permit requirements into Knox County Ordinance	September 1, 2024

2. Stormwater Mitigation and Public Stormwater Fund

Knox County will not participate in the optional mitigation or public stormwater fund.

3. Water Quality Riparian Buffers

Current Status	Compliance Plan	Expected Completion Date
Is in place but does not meet current permit standards/ requirements	Incorporate permit requirements into Knox County Ordinance	September 1, 2024

4. Codes and Ordinances Review and Update

Current Status	Compliance Plan	Expected Completion Date
Codes and Ordinances are under review.	Incorporate permit requirements into Knox County Ordinance	September 1, 2024

5. Development Project Plan Review, Approval, and Enforcement

Current Status	Compliance Plan	Expected Completion Date
Plans Review Process: Under review	Incorporate any necessary changes into Knox County Ordinance	September 1, 2024
Verification Process to ensure SCMs have been	Develop procedures to comply with this section	Draft Documents 9/1/23 Final September 1, 2024

ENGINEERING & PUBLIC WORKS

Development Services • Fleet Management • Environment & Planning • Operations

installed per design within 90 days: Under Development		
--	--	--

6. Maintenance of Permanent Stormwater Control Measure Assets

Item Element	Current Status	Compliance Plan	Expected Completion Date
Develop and document maintenance and inspection procedures and frequencies for approved SCMs	In place but does not meet current permit standards/requirements	Knox County will inspect all SCM's covered under this permit one year after installation and every 5 years thereafter at a minimum. Owner required maintenance will be enforced through the ERP	Draft Documents 9/1/23 Final September 1, 2024
The development and documentation of the procedure the permittee will use to verify that SCMs are being inspected and maintained including any written reports from the responsible party	In place but does not meet current permit standards/requirements	Knox County will store inspection report in a geodatabase linked to the inventory and tracking geodatabase. Maintenance requirements will be enforced through our ERP.	Draft ERP: 9/1/23 Final Documents September 1, 2024
A clear, documented, legally binding agreement assigning SCM maintenance responsibility to the owner/operator, a third party, or the permittee as appropriate. For SCMs designed to manage stormwater from multiple properties, appropriate deed restrictions shall be recorded; and	In place and meets current permit requirements. These requirements will be reviewed and may be revised.	Maintenance agreements are in place and assign maintenance responsibility to owners. These agreements will be reviewed.	Complete.
An allowance or agreement for	In place and meets current	N/A	Complete.

ENGINEERING & PUBLIC WORKS

Development Services • Fleet Management • Environment & Planning • Operations

permittee personnel to access the SCMs for inspections and provide for enforcement action for failure to maintain SCMs according to agreement.	permit requirements		
--	---------------------	--	--

7. Inventory and Tracking of Permanent Stormwater Control Measure Assets

Current Status	Compliance Plan	Expected Completion Date
In place and meets current permit standards/ requirements	Continue to update inventory and track required elements	Complete.

Attachment A:

Plan Review Process

Development Services

Document # EPW-	Title: Plan Review Process	Print Date: [Date]
Revision # 1.0	Prepared By: A Purkey	Date Prepared: 3/31/2021
Effective Date: [Date]	Reviewed By: [Reviewer's Name]	Date Reviewed: [Date]
Standard: [Standard, Law, or Regulation]	Approved By: [Approver's Name]	Date Approved: [Date]

Policy: The NPDES General Permit for Discharges from Small MS4 Permit Condition 4.2.5.4 (a) & (b) reads in part that the permittee shall develop “a. Procedures for review and approval of development site plans, including inter-departmental consultations and a re-submittal process when modifications to project require changes to approved side development design plan. b. a plans review process that ensures the SCMs are properly designed, installed, and maintained to meet the performance standards established in section 4.2.5”

Purpose: Plan reviewers must ensure design plan compliance with Knox County Stormwater Ordinance, Knox County Sidewalk Ordinance, Knox County Access & Control Policy, TDEC CGP permit requirements.

Scope: Plan review of all sites with greater than or equal to 1 acre of disturbed area and sites with 10,000sqft or more of impervious area.

Responsibilities:

Knox County Civil Plans Reviewer perform compliance review of all proposed developments meeting the conditions 1 acre of disturbed area and/or 10,000sqft of impervious area.

Definitions:

Disturbed Area-Portion of any site that has been altered from existing conditions, including but not limited to the following: providing access to a site, clearing of vegetation, grading, earth moving providing utilities and other services such as parking facilities, stormwater management and erosion control systems, potable water and wastewater systems, altering land forms, or construction or demolition of a structure of land.

Impervious Area- All areas that are gravel, hard surfaces like asphalt, roofs, concrete.

SWPPP-Stormwater Pollution Prevention Plan is a site-specific, written document that:

- Identifies potential sources of pollution at the construction site;
- Describes practices to reduce pollutants
- Describes practices to reduce the quantity of stormwater discharges from the construction site during and after construction
- Identifies procedures the operator will implement to comply with the terms and conditions of a construction general permit
- Is updated as conditions change on the project.

Contents

1.0	Plan Review Submittal.....	4
2.0	Plan Review.....	4
2.2	Tools Required for Review	6
3.0	Bonding	6
4.0	Plan Approval.....	6
5.0	Asbuilts.....	6
6.0	Maintenance Agreements & O&M plan	7
A.	TN NPDES General Permit for Discharges from Small MS4.....	8

Procedure:**1.0 Plan Review Submittal****1.1 Knox County Civil Plan Reviewer****1.2 Submittals either Digital pdf or hard copy****1.2.1 Documents Included**

- Knox County Site Application
- Engineering Calculations for Water Quality and Quantity
- SWPPP Report
- Civil Engineering Site Plans
- SWPPP Plans
- Erosion Sediment Control Checklist
- SWPPP Checklist
- Stormwater Management Plan Checklist
- Other Permits If Required: ARAP, TDOT, TVA, City of Knoxville entrance, TDEC CGP NOC, and Army Core permit

2.0 Plan Review**2.1 Questions to answer**

- Is the site disturbance over 1ac?
- Is there 10,000sqft of impervious proposed or added?
- Is there a stream, pond, or wetlands on site?
- Is there a sinkhole on site?
- Is the property in a FEMA floodplain?
- Is Planning Commission approval required?
- Is the property zoned correctly?
- Does the proposed driveway access TDOT state route, City of Knoxville or local roads?
- Do proposed public roads meet subdivision regulation requirements?
- Are there large steep slopes proposed?
- Are sidewalks required?

2.1.1 Site over 1ac of grading

- Do the SWPPP Plans comply with the current TDEC CGP regulations?
 - Yes
 - If no, markup and comments sent to engineer.

2.1.2 10,000sqft of Impervious Area

- Check Water quality calculations, channel protection and quantity calculations based on Knox County Stormwater Manual
- If required are SPAP conditions meet with proposed water quality

2.1.3 Streams, Ponds, Wetlands, Sinkholes, & FEMA floodplains

- Check for appropriate buffers being applied to streams, ponds, wetlands, and sinkholes.
- Check for stream buffer encroachments and crossing. ARAP required for crossing and work in stream embankments.
- Check for wetland encroachments or filling. 404 Permit required
- Check for proposed fill and structures in FEMA floodplains.
 - If fill or structure is in floodway, a No Rise or CLOMR is required.
 - If fill or structure is past No Fill line and outside of Floodway, a Knox County Engineering flood study is required.
 - MFEs are required to be 1' above 500yr for parcels with FEMA floodplain.
- Check for structures in sinkhole buffer. Structures in buffer require a Geotech report for foundation.

2.1.4 Zoning & Use

- Planning Commission Review Required
 - In zones PR, PC, SC, CR, CN, EC, TO, & TC
 - Storage Units, Apartment Complexes, any kind of Day care, Senior Living Facilities, Landfills, and uses mentioned in Use on Review section of the Zone.
- Proposed Use in Zone
 - Is the use permitted under current Zone?
 - Yes
 - No, either rezoning is required or Planning Commission Review

Ensure plans meet any conditions and requirements set by the Planning Commission in Approved Case Summary documents.

2.1.5 Public Road, Driveways, and Sidewalks

- Check horizontal and vertical profiles for Public Roads to ensure compliance with Subdivision Regulations.
- Check for need of Traffic Letter or Study based on proposed use and/or if the number of driveways exceed what is allowed per Driveway Access Control Policy.
- Check to see if sidewalks are required per Sidewalk Ordinance.

All Traffic Studies and Letters are reviewed by Knox County Transportation Engineer. Variances for driveway locations are required to be approved by Knox County Transportation Engineering.

2.1.6 Steep Slopes

- Check for cuts and fills with slopes of 2:1 with heights greater than 20ft. Benching is required for slope heights exceeding 15'
- Ensure the toe of slope is at minimum 10' from structures.

Once the initial plans are reviewed. A comment Summary sheet is sent to the engineer.

2.1.7 Plan Revisions

- Revisions based on comments from initial review
- Changes due to unexpected field conditions
- New ownership for defuncted development

2.2 Tools Required for Review

- Computer
- Calculator
- Copy of all Ordinances and Manuals
- Pen for Hard Copy markups

3.0 Bonding

3.1 Bond unit prices are updated annually based on TDOT unit prices

3.2 Bonds amounts

- Are set by Civil Plans Reviewer
- Commercial Bonds are one bond that covers grading, hydrology, sidewalks (if required), landscaping (if required), maintenance agreements, O&M plan, and asbuilts
- Residential Bonds have four categories:
 - Road- covers construction of public road infrastructure
 - Sidewalks – covers sidewalks in public ROW
 - Hydrology – covers stormwater infrastructure, ponds, & water quality, maintenance agreements, O&M Plan, and asbuilts
 - Grading – covers erosion sediment control and stabilization, landscaping(if required)

Once bond prices are set, a bond form is created and sent to the Construction Assurance Coordinator. Refer to the Bond SOP for the remaining operations of bonds.

4.0 Plan Approval

Once the proposed plans submitted meet all requirements, the plans are stamped and signed by the Civil Plans Reviewer. Once the bonds are approved, the approved plans and Land Disturbance permit are sent to the Construction Services Supervisor for the Pre-Construction meeting. Refer to Pre-Construction Meeting SOP for rest of operations.

5.0 Asbuilts

Are required for all sites with proposed ponds, water quality, and SCMs used to meet stormwater requirements and SPAP. Submittal includes:

- Asbuilt Engineering Calculations for pond

- Asbuilt surveyed Plan for pond, structures, buffers, etc.
- Development Certification Checklist

Asbuilts are reviewed to ensure the constructed pond and water quality meet Knox County Stormwater Ordinance requirements for the new development. If the constructed facilities do not meet requirements, the pond or water quality facilities are required to be modified to meet requirements and resubmittal of Asbuilts.

6.0 Maintenance Agreements & O&M plan

Maintenance Agreements and Operation & Maintenance Plan are submitted to Eddy Roberts for Review and recording. Refer to the SOP for Maintenance Agreements for further operations.

References:**A. TN NPDES General Permit for Discharges from Small MS4**

Operators of small MS4 are authorized to discharge stormwater runoff into waters of the State of Tennessee in accordance with the various eligibility criteria, administrative procedures, program requirements, and reporting requirements.

B. Knox County, TN Code of Ordinances Chapter 26, Article VI Stormwater Management

The Stormwater management ordinance provides the legal framework for reviewing development permits for stormwater management and floodplain management provisions and for requiring grading permits to control erosion and sediment control problems.

C. Knoxville - Knox County, TN Subdivision Regulations**D. Knox County, TN Code of Ordinances, Appendix A, Article 3 General Provisions****E. Knox County, TN Code of Ordinances, Appendix A, Article 5 Zone Regulations****F. Knox County, TN Code, Chapter 54, Article IV Sidewalk Construction Standards for New Commercial Developments and Residential Developments Greater than 5 Lots.****G. Knox County, TN Access Control and Driveway Design Policy****H. Knox County, TN Stormwater Management Manual Volume 1 and 2**

Attachment B.

COVENANTS FOR PERMANENT MAINTENANCE OF STORMWATER FACILITIES AND BEST MANAGEMENT PRACTICES

**THE TERM STORMWATER FACILITIES MAY REFER TO WATER QUANTITY
AND/OR WATER QUALITY FACILITIES (i.e. detention basins, retention basins, swales,
pipes, oil/water separators, sand filtering devices, etc.)**

_____, (an individual/ a Tennessee or other state corporation/ partnership) with its (office/
residence) located at _____ (hereinafter "Property Owner") grants these Covenants for
Maintenance of Stormwater and/or Water Quality Facilities (hereinafter "Covenants") on this the
____ day of _____, _____.

WITNESSETH:

WHEREAS, The Knox County Stormwater Ordinance requires property owners to enter
into permanent maintenance agreements for stormwater and/or water quality facilities before the
property is developed.

NOW THEREFORE, as a condition of the Engineering Department's issuance of a
Land Disturbance Permit, the Property Owner warrants, covenants, and grants as follows:

1. That they will fully execute a stormwater maintenance facility and stormwater
maintenance documents and the Engineering Department shall record the same in the Register's
Office for Knox County, Tennessee.

The Property Owner further warrants that they are the owner of the property located in Knox
County at _____ and that a final map and plat has been prepared, said map and plat being
prepared by _____ on the _____ day of _____.

The Property Owner further agrees that said map and plat shall be recorded in the Register's
Office as soon as the recording of this stormwater agreement takes place and a copy of the
recorded plat and map be furnished to the Knox County Engineering Department.

2. The Property Owner desires to develop all or a portion of the above described property
according to the Land Disturbance Permit issued by Knox County based on the Property Owner's
site/subdivision plan entitled _____ dated _____ and prepared by _____ (hereinafter "Plan").

3. The Property Owner will construct and maintain the stormwater and/or water quality
facilities in strict accord with the Plan, specifications, calculations, and conditions required by the
Engineering Department.

4. The Property Owner shall provide a surety bond, letter of credit, or cash bond
acceptable to Knox County and in an amount to be determined by the Engineering Department in
a sum sufficient to guarantee that the stormwater and/or water quality facilities are constructed in
accordance with the plan.

5. To ensure that subsequent property owners have notice of these Covenants and the
obligations therein, the Property Owner will include in all instruments conveying any or all of the
above described property on which the stormwater and/or water quality facilities are located, the

specific instrument numbers referencing these Covenants and the recorded subdivision plat indicated in paragraph 12 herein.

6. The Property Owner will maintain the approved stormwater and/or water quality facilities in good working order acceptable to the County Engineering Department. Minimum maintenance of said facilities shall include sediment, debris, oil, hydrocarbons, and foreign materials removal; cutting and removal of woody vegetation on an annual basis; and keeping emergency spillways functional and clear of woody vegetation and debris so that the operation and capacity of the stormwater and/or water quality facilities continue to meet the standards in said Plan.

7. In order to provide access to stormwater and/or water quality facilities by personnel, vehicles and equipment, the Property Owner will provide a twenty (20) foot wide access with an easement from a public street in strict accord with the Plat and any additional conditions required by the Engineering Department. The Property Owner further covenants that no structure or building will be erected on the access easement; that no woody vegetation will be allowed to grow on the access easement; and that no use will be made which will interfere with the use of said easement for the purpose of accessing the facilities. If access to the facilities is obstructed and the County is required to remove the obstruction the County will follow the notice procedure, double lien, and collection process as set forth in paragraph 9 herein. In addition, the easement provided above is further described by Metes and Bounds in said Plan.

8. The Property Owner grants permission to the County, its agents and employees, to enter upon the property to inspect and monitor said facilities whenever the County deems necessary and further for the County or its agents to repair, replace, maintain, and reconstruct said facilities as permitted herein.

9. (a) If the County determines that the stormwater detention and/or water quality facilities are not being maintained in good working order and gives written notice to the current Property Owner to repair, replace, reconstruct, or maintain said facilities within a reasonable time, and the Property Owner fails to comply with the County's notice within the time specified, the Property Owner authorizes the County or its agents to enter upon the Property to repair, reconstruct, replace or perform maintenance on said facilities at the Property Owner's expense.

(b) The Property Owner further authorizes the County to place a lien for double the amount of said expenses of repair, maintenance or reconstruction against the property.

(c) If the Property Owner fails to pay the County after forty-five (45) days written notice, the Property Owner authorizes the County to collect said expenses from the Property Owner through the appropriate legal action, with the Property Owner to be liable for the reasonable expenses of collection, court costs, and attorney fees.

(d) The Property Owner recognizes, however, that this remedy does not obligate the County to maintain or repair any stormwater facilities and/or water quality facilities or restrict the County from pursuing other or additional legal remedies against the Property Owner.

10. These Covenants shall be binding on the Property Owner's heirs, administrators, executors, successors, and assigns, and any and all subsequent property owners. Upon conveyance of the Property, these Covenants shall transfer to and be binding upon the new property owner and the original Property Owner shall be released from any and all responsibilities and obligations under these Covenants.

11. These Covenants are permanent and shall run with the land.

12. The Property Owner shall, upon the recording of this covenant for permanent maintenance of stormwater, record a plat showing and accurately defining the easements for stormwater and/or water quality facilities and the access easements to these facilities on a survey plat of record. The survey plat must reference the instrument number where these Covenants are recorded and contain a note that the Property Owner is responsible for maintaining the facility.

13. The Engineering Department will record the Covenants for permanent maintenance of stormwater facilities and the Property Owner shall be responsible for providing to the Engineering Department a check made payable to the Knox County Register of Deeds in the amount sufficient to pay for the said recording. The property of the recorded document shall be returned to the Property Owner and a copy to the Knox County Law Department before the final plat is signed by the Engineering Department and before all or any portion of the property is transferred or conveyed.

14. Upon the Property Owner's satisfaction of all duties set forth in this Covenant and proof of same, the Property Owner may make application to the County for the return or refund of the bond, letter of credit, or cash bond.

IN WITNESS WHEREOF, WE HAVE SET OUR HANDS THIS [] DAY OF [], [].

PROPERTY OWNER/ AUTHORIZED AGENT:

(Print Name Here) []

(Sign Name Here) []

STATE OF TENNESSEE)
COUNTY OF KNOX)

Before me the undersigned authority, a Notary Public at Large of the State of Tennessee, personally appeared [], with whom I am personally acquainted, or proved to me on the basis of satisfactory evidence, and who, upon oath, executed the foregoing instrument for the purposes therein contained, and who further acknowledged that he or she is an [] of [] and is authorized by [] to execute this instrument on behalf of same.

WITNESS my hand and official seal at office in Knox County, Tennessee this the [] day of [], 20 [].

[]
NOTARY PUBLIC

My Commission Expires: []

KNOX COUNTY, TENNESSEE

By: Knox County Mayor _____

STATE OF TENNESSEE)
COUNTY OF KNOX)

Before me the undersigned authority, a Notary Public at Large of the State of Tennessee, personally appeared _____, with whom I am personally acquainted, and who, upon oath, executed the foregoing instrument for the purposes therein contained, and who further acknowledged that he or she is the Mayor of Knox County, Tennessee and is authorized by Knox County, Tennessee to execute this instrument on its behalf.

WITNESS my hand and official seal at office in Knox County, Tennessee this the _____ day of _____, 20__.

NOTARY PUBLIC

My Commission Expires: _____

APPROVED AS TO LEGAL FORM:

CONTRACT NO. _____

KNOX COUNTY LAW DIRECTOR

DATE