THE CITY OF KENOSHA
CHART A BETTER COURSE

KENOSHA Stormwater Utility
We have a stake in the lake!

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Stormwater Management Plan Worksheet
Form #PWU006 (rev. 11/16)

Date: _____

The Kenosha Stormwater Utility requires a Stormwater Management Plan to be submitted with the proposed development plans for site plan review. A Stormwater Management Plan is a document describing the stormwater management practices constructed and implemented within the proposed development to ensure compliance with the stormwater management criteria, as set forth by the Kenosha Stormwater Utility. The purposes of a Stormwater Management Plan are to protect the safety and health of the public, property and aquatic environment from the threats due to stormwater from land development activity. This worksheet will provide a basis to the information that shall be provided when preparing a Stormwater Management Plan for a proposed development. This plan shall include a set of complete plans and calculations, stamped by a registered professional engineer.

All items listed are included in the Code of General Ordinances Chapter 36, Post-Construction Stormwater Management and the Kenosha Stormwater Management Criteria.

The requirements are subject to all sites over one (1) acre or as specified by the Stormwater Utility.

Please mark all items as Yes (Y), No (N) or Not Applicable (NA).

Exemptions for Design and Plan Requirements	
	___ Site is associated with agricultural or silviculture activities.
Design Requirements	
Total Suspended Solids	___ Site is a New Development – 80% Reduction must be met. ___ Site is an Infill Development – 80% Reduction must be met. ___ Site is a Redevelopment – 40% Reduction must be met. ___ Calculations for % Reduction are included in the plan (WinSLAMM input and output). ___ Stormwater Management Facilities to address TSS removal are designed according to Chapter 36 Post-Construction Stormwater Management Ordinance, Kenosha Stormwater Management Criteria and DNR Technical Standards – Check all that apply: □ Wet Detention Basin □ Bioretention Basin □ Swales □ Proprietary Devices □ Other (specify):
Infiltration	___ Hydraulic Soil Type □ Soil Type A - Proceed □ Soil Type B – Proceed

	□ Exemption or Exclusion – provide documentation ___ Site is a Residential Development □ 90% Infiltration of pre-development infiltration volume met □ 25% Infiltration of pre-development infiltration volume met □ 1% of site is used for Infiltration – Limitation ___ Site is a Non-Residential Development □ 60% Infiltration of pre-development infiltration volume met □ 10% Infiltration of pre-development infiltration volume met □ 2% of site is used for Infiltration – Limitation ___ Site has parking lots and new road construction □ Pretreatment Included □ 10% Infiltration of the runoff from the two-year, 24-hour design storm with Type II Distribution ___ Calculations of Infiltration Volumes are included in the plan and model input and output (WinSLAMM) ___ Exclusions for Infiltration □ Tier 1 Industrial Facility □ Storage and Loading Areas of Tier 2 Industrial Facility □ Fueling and Vehicle Maintenance Facility □ Areas within 1,000 feet upgradient of Karst Features □ Areas within 100 feet downgradient of Karst Features □ Areas with < 3 feet of separation from bottom of Infiltration System to seasonal high groundwater or top of bedrock (does not prohibit roof runoff) □ Areas with runoff from industrial, commercial and institutional parking lots and roads with < 5 feet separation from bottom of infiltration system to elevation of seasonal high groundwater or top of bedrock □ Areas within 400 feet of community water system well □ Areas within 100 feet of private well □ Areas where contaminants of concern (defined by NR720.03(2) are present in the soil through which infiltration will occur) □ Area where soil does not meet any of the following characteristics between bottom of infiltration system and seasonal high groundwater and top of bedrock -At least 3 foot soil layer with 20% fines or greater -At least 5 foot soil layer with 10% fines or greater

	Exemptions for infiltration □ Areas where infiltration rate < 0.6 inches/hour □ Parking Areas and Access Roads less than 5,000 square feet for commercial and industrial □ Redevelopment Post-Construction Sites □ Infill Development < 5 acres □ Infiltration during periods when soil on the site is frozen □ Roads in Commercial, industrial and institutional land uses □ Arterial Roads in Residential land uses ____ Stormwater Management Facilities to address Infiltration are designed according to Chapter 36 Post-Construction Stormwater Management Ordinance, Kenosha Stormwater Management Criteria and DNR Technical Standards – Check all that apply: □ Bioretention Basin □ Infiltration Basin/Rain Garden □ Infiltration Trench □ Other (specify):
Protective Areas	____ Impervious areas are outside protective area. If not, provide a written explanation. ____ Land disturbing activities are within a protective area. If Yes, check all that apply: □ If no impervious area is within protective area, adequate sod or self-sustaining vegetative cover of 70% or greater shall be established. □ Adequate sod or self-sustaining vegetative cover is sufficient for bank stability, maintenance of fish habitat and filtering of pollutants from upslope overland flow areas under sheet flow conditions. □ Non-Vegetative materials are employed on the bank as necessary to prevent erosion (steep slopes, high velocity areas). Best Management Practices are located within the protective area – Check all that apply: □ Filter Strips □ Swales □ Wet Detention Basins □ Other (specify): Non-Applicable Areas Apply □ Structures that cross or access surface water (boat landing, bridge, culvert) □ Structures constructed in accordance with Section 59.692(1v) Wisconsin Statutes

	□ Post-Construction Runoff does not enter surface water except to the extent that vegetative groundcover necessary for bank stability.
Fuel and Maintenance Facilities	____ Are Fuel and Maintenance Facilities on the Site? ____ Are Best Management Practices designed to reduce petroleum within runoff (no visible sheen)?
Swale Treatment for Transportation Facilities	____ Does the site use swales for runoff conveyance and pollutant removal for transportation facilities? If yes, must have the following: Groundcover □ Vegetated □ Non-Vegetated where appropriate to prevent erosion or provide runoff treatment (riprap, check dams) Swale Velocity Control □ Swale is 200 feet or more in length with a velocity no greater than 1.5 feet per second for the two-year, 24-hour design storm or two-year storm with duration equal to time of concentration. □ Swale is 200 feet or more in length with velocity > 1.5 feet per second then velocity is reduced to maximum extend practicable. Written explanation stating why requirement of > 1.5 feet per second cannot be met. Exemptions Apply Average Daily Vehicles > 2,500 and initial surface water of the state that runoff directly enters is any of the following: □ An outstanding resource water (ORW). □ An exceptional resource water (ERW). □ Water is listed in Section 303(d) of the Federal Clean Water Act and is identified as impaired in whole or in part due to non-point source impacts. □ Water where targeted performance standards are developed under NR 151.004 of the Wisconsin Administrative Code to meet water quality standards.

Plan Requirements

Provide the following:

-Contact information (name, address, telephone number) for the landowner, developer, land operator, certified project engineer, responsible party for installation of stormwater management practices, responsible party for long-term maintenance of the stormwater management practices

-Legal Description of proposed development

-Narrative describing the proposed development

-Brief summary of Design Criteria and methods used for development of Stormwater Management Practices

-Stormwater Management Maintenance Agreement shall be included with the Stormwater Management Plan (see Stormwater Management Maintenance Agreement Application for information required)

-Certification by a registered professional engineer

Description and Site Characteristics for Pre/Post Development conditions shall be delineated by one (1) or more site maps at a scale of not less than one (1") inch equals two hundred (200') feet. The map(s) shall include, at minimum, the following information:

___ Site Location and Legal Description.

___ Pre-developed and revised topography by contours related to USGS survey datum or other datum approved by City Engineer. The topographic contours of the site shall not exceed 2 feet. The topography shall extend at minimum 20 feet outside the site boundaries to show runoff patterns onto, through and from the site.

___ One hundred (100) year Floodplain boundary, shoreland, environmental corridors, and wetland boundaries shall be delineated if applicable.

___ All lakes, streams, and other water bodies illustrated on map shall be named as defined on a USGS 7.5 minute topographic map.

___ Predominant Soil Types and Hydrologic Soil Group Classifications.

___ State Plane coordinates of all manholes and inlets with reference to two nearest reference point monuments which shall be Section or ¼ Section corners.

___ Location, capacity, and dimensions/details of on-site Pre-developed and Post-developed stormwater management facilities such as, but not limited to, the following: manholes, pipes, curbs, gutters, curb inlets, filter strips, swales, detention basins, curb cuts, and drainage grates.

___ Location, extent, detailed drawings, typical cross sections and slope ratios of all pre-developed and post-developed stormwater retention and detention areas and drainage ways – list inlet/outlet elevations, permanent water surface elevation, high water surface elevation, and emergency spillway elevation, if applicable.

___ Location and elevations at top and bottom of pre-developed and post-developed retaining walls

___ Location and footprint of any and all pre-developed and post-developed buildings and structures.

___ Locations and names of pre-developed and post-developed streets and intersections, and the location of parking lots, sidewalks, bike paths and impervious surfaces (excluding single family residences). Map(s) shall clearly differentiate pre-developed and post-developed surfaces.

___ Delineation and dimensions of all pre-developed and post-developed property boundaries, easements, right-of-way, building setbacks, maintenance easements, and other restrictions.

___ Pre-developed and post-developed land use boundaries, including cover type and condition.

___ Post-developed land use cover totals for Impervious and Pervious areas as well as permanent water surface area of all stormwater management facilities.

___ Delineation of pre-developed and post-developed watershed and sub-watershed boundaries used in determination of Peak flow discharges and discharge volumes from the site. (If the watershed extends beyond the site boundaries, a separate watershed map can be supplied.)

___ Location of the pre-developed and post-developed discharge points.

___ Pre/Post developed directional Flow Paths used to calculate existing/proposed time of concentrations.

___ Location of the Emergency Overland Flow.

___ Location of any Regional Treatment Options, if applicable.

___ Identify all pre-developed land cover features, such as, natural swales, natural depressions, native soil infiltrating capacity and natural groundwater recharge areas.

___ Location of any protective areas within the site.

___ Location of wells located within 1,200 feet of pre-developed and post-developed Stormwater Detention Basins, Infiltration Basins, or Infiltration Trenches.

___ Delineation of Wellhead protection areas defined under NR 811.16

Supportive Information and Calculation summaries shall be supplied for all stormwater management requirements as dictated in the checklist under Design Requirements:

___ Pre-developed and post-developed watershed, sub-watersheds, and land use areas (acres, watershed shall be delineated by property lines).

___ Pre-developed and post-developed impervious areas (acres).

___ Pre-developed and post-developed Runoff Curve Numbers.

___ Pre-developed and post-developed Time of Concentration.

___ Pre-developed and post-developed peak flows for the 2-year, 10-year and 100-year, 24-hour storm events for each discharge points.

___ Total suspended solids removal computations to show compliance.

___ Design computations for the runoff volume of the pre-developed and post-developed conditions to show compliance with the infiltration requirements.

___ Design computations for all stormwater drainage facilities such as, but not limited to, inflow/outflow rates, hydrographs, water surface elevations, outlet design computations, runoff discharge volume, velocities, and stage/storage data.

___ Design computations for the 10-year Rational Method flows for all proposed storm conveyance systems.

___ Computation of the available downstream capacity flowing full, overflow level of ditches and the top of the upstream end of the pipe for any culverts.

___ Computation of the downstream capacity using the 5 year rational storm.

___ Design computations to illustrate compliance with pollutant loading criteria (Stormwater Quality Management practices) with pre- and post-stormwater management facilities.

___ Narrative describing all assumptions that were deemed appropriate for design.

___ Explanation of provisions to preserve and use natural topography and land cover features.

___ Explanation of restrictions on Stormwater Management practices by wellhead protection plans, if applicable.

___ Results of investigations of soil and groundwater required for installation of Stormwater Management practices.

___ Impact assessment results on Wetland Functional Values, if applicable.

___ Stormwater Management practices installation schedule .

___ Cost estimate for the construction, operation and maintenance of each Stormwater Management practice.

___ Any additional information that the City Engineer, or designee, may need to evaluate the impacts of the stormwater discharge quality and quantity on the existing area and existing utilities.