McHenry County
Department of Planning & Development
2200 North Seminary Ave.
Woodstock, IL 60098
plandev@mchenrycountyil.gov
815.334.4560

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STORMWATER MANAGEMENT ORDINANCE
RUNOFF CONTROL
APPLICANT CHECKLIST

The purpose of this form is to inform applicants of: 1) the requirements for stormwater permits which require runoff control; 2) the standards that staff will employ in reviewing permit submittals; and 3) provide the inspection standards staff will employ to confirm the implemented scope of work is both consistent with the approved scope of work and compliant with the ordinance as adopted by McHenry County. Portions of Runoff Control requirements apply to all classifications of development except those authorized by General Permit Number 1. This checklist is purposely brief and does not replace consulting the County's adopted ordinances and codes.

The information provided in the Office Review Checklist section is for the applicant's general information. This checklist does not restrict staff's ability to review or inspect additional items, as appropriate, based on the permit submittals and construction site observations.

Applicants are ultimately responsible for ensuring that their development complies with the County's adopted zoning and stormwater ordinances and building codes and amendments, which are available on the County's website: www.mchenrycountyil.gov/departments/planning-development/ordinances.

SUBMITTAL CHECKLIST (if the information is not provided, the permit application may be rejected)

- ❑ Basic Requirements
  - A licensed professional engineer shall prepare design calculations, as applicable.
  - Concentrated stormwater discharges shall be conveyed into an existing channel, storm sewer, or overland flow path and shall not result in flood damage.
  - Diversion of stormwater runoff shall be prohibited unless no reasonable alternative exists. The diversion of stormwater runoff shall not result in flood damage at the development site, upstream of the development site, or on downstream adjoining properties.
  - Within a development site, streets, blocks, lots, deed or plat restrictions, parks and other public grounds shall be located in such a manner as to preserve natural streams and channels.
- ❑ Overland Flow Paths
  - Overland flow path shall be provided for all areas of a development site.
    - Overland flow path shall convey all storm events up to and including the base flood event without flood damage at the development site or upstream of the development site.
    - Storm sewers and inlets may be sized to convey the base flood in lieu of an overland flow path for tributary areas less than 20 acres.
  - The flow rate shall be determined using a model or technique identified in Appendix 5 of the SMO and based on:
    - The base flood event considering all onsite and offsite tributary areas.
    - Peak runoff rates determined using hydrograph producing models, shall be based the critical duration.
    - Conveyance of a minimum of 1 cfs/acre of tributary area.
  - Minimum freeboard requirements to the low opening elevation of a new building located adjacent to an overland flow path are as follows:
    - 0.5 feet for tributary areas less than 20 acres;
    - 1.0 foot for tributary area between 20 and 100 acres;
    - 2.0 feet for tributary area greater than 100 acres.
  - Modification of an existing overland flow path shall not result in increased flood heights on adjoining properties or flood damage at the development site.
  - Deed or plat restrictions are required for overland flow paths serving more than one property.

- ❑ Drain Tiles
  - Drain tiles abandoned within disturbed areas shall be removed in their entirety.
  - Drain tiles disturbed within the development site shall be replaced, bypassed or intercepted and connected to the stormwater management system.
  - Observation well or similar inspection/maintenance structures shall be installed where existing drain tiles flow into or out of a development site.
  - Concentrated discharges from a development site shall be connected to existing drain tiles as a secondary, low flow outlet.
  - Drain tile survey is required for Intermediate, Major, Public Road and Mining developments and shall include
    - Location of each slit trench at no less than 50-foot intervals;
    - Location of each drain tile with flow direction arrow, tile size and any connections at adjoining properties; and
    - Summary with drain tile size, material, quality, percentage of tile filled with water, percentage of restrictions cause by sediment, depth of ground cover, and tile system classification.
  - Drain tile survey requirement may be waived if a narrative and supporting evidence is provided to document that drain tiles are not likely to be present on the development site. Supporting evidence may include:
    - Soil maps;
    - Historic aerial photographs;
    - Historic topographic maps; and
    - Wetland maps.
- ❑ Storm Sewers
  - New storm sewers serving regulated development shall provide a minimum capacity of the 10-year critical duration storm.
  - Design shall be based on full flow capacity, unless detailed calculations demonstrate the hydraulic grade line will not exceed the ground elevation.
  - New storm sewers serving regulated development shall have a full flow velocity between 2.5 fps and 8.0 fps.
  - New storm sewers serving more than one property shall be a minimum of 12 in diameter and located in a deed or plat restrictions.
  - Ponding on new inlets shall not exceed 0.5 foot in streets and 1.0 foot in parking lots during the 100-year event.
- ❑ Stormwater Storage Requirements (Detention)
  - Required for regulated development creating 20,000 square feet or more new impervious area.
  - NOT required for regulated development creating 1.0 acre or less of new impervious area; AND
    - The TOTAL (existing and new) impervious area is less than 10% of the contiguous property; and
    - The development will not result in flood damage at the development site, upstream of the development site, or on downstream adjoining properties.
  - NOT required for regulated development when the TOTAL (existing and new) impervious area is less than 5% of the contiguous property; AND
    - A conservation easement is recorded over sufficient undeveloped area; and
    - The development will not result in flood damage at the development site, upstream of the development site, or on downstream adjoining properties.
  - NOT required for regulated Public Road development when less than 1.5 acres of new impervious area is created.
  - Linear impervious areas (less than 12.4 feet wide) may be excluded when calculating the new impervious area *to determine whether stormwater storage is required.* Linear impervious areas are included when stormwater storage is required.
- ❑ Release Rates and Storage Volume for Stormwater Management Facilities
  - Based on the hydrologically disturbed area of the regulated development.
  - Based on only the new impervious area for Public Road developments involving an existing linear impervious surface.
  - Release rates for a detention facility shall not exceed the lesser of the following:
    - 0.04 and 0.15 cfs/acre for the 2 year and 100 year, 24 hour storm; or
    - The existing conditions peak runoff rate; or
    - More restrictive release, if adopted by the MCSC or a certified community.
  - Tributary areas less than 10 acres may use the Detention Volume vs. Percent Impervious Chart (Appendix 6).
  - Tributary areas greater than or equal to 10 acres shall use models/techniques identified in Appendix 5.

- Compensatory storage for flood storage volume lost in a depressional storage area may be added to the required 2 year stormwater storage volume.

❑ Stormwater Management Facilities
- Offsite runoff may be bypassed around a proposed stormwater management facility.
- Shall be sized for the runoff from any public road improvements required as part of the regulated development.
- Shall be designed to dewater within 72 hours following the end of the design storm.
- Stable overflow required to:
  - Convey unattenuated inflow from the 100 year critical duration storm for the entire tributary area,
  - Be at or above the 100 year design high water elevation; and
  - Provide 1-foot of freeboard above the water surface elevation of the 100 year flow through the overflow.
- Minimum 12 inch diameter for single pipe outlets.
- Orifices, weirs, and perforated risers may be used to meet the allowable release rates.
  - Designed to minimize the need for maintenance and prevent tampering,
  - Minimum diameter of 4 inches when a single pipe outlet or an orifice plate is used to restrict the outflow from a detention facility,
  - Diameters less than 4 inches may be used to meet the allowable release rates however the control structure shall be designed to prevent clogging.
- Tailwater conditions shall be incorporated.
- Inlets to the detention facility shall be located as far from the outlet as possible.
- Paved low flow channels are not allowed.
- Side slopes shall be:
  - Maximum of 4:1 in dry facilities or above shoreline areas;
  - Maximum of 10:1 in wet bottom or wetland facilities (from at least 6 inches below to 6 inches above normal water level);
  - 8-foot minimum safety shelf located no more than 1-foot below normal water, required for permanent pool depths greater than 3 feet.

❑ Online Detention
- Not allowed on perennial streams, in HQAR, and where the tributary area is greater than 640 acres or where the offsite to onsite tributary area ratio is greater than 10:1 (unless providing a watershed benefit).
- Release rates shall be 0.04 and 0.15 cfs/acre for the 2 year and 100 year, 24 hour storm; and
  - Based on the total area tributary to the facility areas (orifice shall be upsized for accommodate increased release rate with no additional storage volume required);
  - Shall be evaluated at the design impoundment elevation of on-site 2 year and 100 year storm volume for the hydrologically disturbed;
  - Shall not exceed the existing conditions release rates.
- Any required compensatory storage volume shall be in addition to the required detention volume.
- Meet IDNR/OWR and USACE requirements for modifications to a channel to accommodate online detention, if applicable.
- Impoundment of a channel shall allow the migration and movement of present or potentially present indigenous species that require access upstream and downstream of the impoundment as part of their life cycle.

❑ Detention within WOTUS and IWMC (see also Wetlands and Waters Development Checklist)
- A maximum infiltration rate of 2 in/hr (4.6×10^{-5} fps) is allowed.
- Detention within WOTUS shall meet the requirements of the USACE, if applicable.
- Detention within IWMC shall require IWMC mitigation, unless:
  - Facility is vegetated according to the standards of the Native Plant Guide for Streams and Stormwater Facilities in Northeastern Illinois, and
  - Pre-development IWMC is comprised of:
    - Farmed wetlands;
    - Non-farmed wetlands that are not HQAR covered by at least 85% or more of Reed canary grass, Purple loosestrife, Common reed or Buckthorn;
    - Non-farmed wetlands that are not HQAR with a FQI of 7 or less;
    - Open water that is not HQAR.

❑ Infiltration based Detention Facilities
- Underlying soils shall have an infiltration rate of at least 0.5 inch per hour. Site specific infiltration rate shall be determined by a qualified professional.

- Bottom of the infiltration facility shall be at least 4 feet above the seasonal high groundwater elevation. Site specific seasonal high groundwater elevation shall be determined by a qualified professional.
- Design high water level shall be:
  - 200 feet from water supply wells and onsite waste disposal systems.
  - 10 feet from any building foundation.
- Pre-treatment shall be provided to prevent obstruction of the infiltration facility.
- Runoff from the following areas shall not be routed to an infiltration facility:
  - Areas subject to frequent winter deicing; and
  - Other areas where precipitation will be exposed to potential contaminants.
- Maximum side slope shall be 4:1.

❑ As-built plans for Stormwater Management Facilities:
- A tabular summary of the as-built stormwater storage volumes for design storm events;
- Stage-storage-discharge data for the stormwater management facility;
- Size and invert elevations of the outlet control and overflow structures; and
- As-built analysis of the overflow structure.

❑ Other Stormwater Management Facility Requirements
- Maintenance plan shall be recorded for the stormwater management system. May be waived for Minor and Intermediate Development.
- Shall be located in a deed or plat restriction with access to/from the public right-of-way for facilities serving more than one property.
- Stormwater management facilities within subdivisions, Planned Unit Developments, and manufactured home parks with 5 or more parcels platted after December 1, 2014 shall be located within an outlot.
- The stormwater management system for a regulated development shall be functional prior to the issuance of a certificate of occupancy or a certificate of completion.

❑ Runoff Volume Reduction Hierarchy (applies to Major, Public Road, and Mining Development)
- Provide a narrative describing how the development utilizes one or more of the following strategies to minimize the increase in runoff volume from the development site:
  - Preservation of natural features of the development site (e.g. natural storage and infiltration characteristics, floodplains, wetlands, prairies and woodlands);
  - Preservation of the existing natural streams, channels and drainageways;
  - Minimization of impervious surfaces created at the development site;
  - Conveyance of stormwater in open vegetated channels;
  - Natural landscaping as an alternative to turf grass;
  - Structural measures that provide water quality and quantity control;
  - Structural measures that provide only quantity control.

❑ Water Quality Protection (Required for highly impervious development sites, multi-family residential and non-residential developments)
- Water quality treatment devices shall be designed to remove both floatable and settleable pollutants.
  - Runoff from increased impervious areas shall be directed through a hydrodynamic separator, or into a catch basin fitted with a hooded outlet cover.
  - Alternate treatment methods providing a similar or higher level of water quality treatment may be approved by the Enforcement Officer.
- For Public Road Developments:
  - Runoff from increased impervious areas shall be directed through a vegetated swale, across a vegetated filter strip, or into a catch basin.
  - Alternate treatment methods providing a similar or higher level of water quality treatment may be approved by the Enforcement Officer.
- Pre-treatment shall be provided for stormwater runoff directed towards Class V injection wells and infiltration based practices in Sensitive Aquifer Recharge Areas.

- ❑ Watershed Specific Requirements (see also Watershed Specific Area Development Checklist)
  - Crystal Lake Watershed. Any regulated development that hydrologically disturbs more than 20,000 square feet of land within this watershed (Appendix 9) shall comply the following:
    - Incorporate runoff volume reduction practices to infiltrate, evaporate, or transpire at least 95% of the annual stormwater runoff volume from hydrologically disturbed areas.
    - Perform an evaluation of the development site and field testing practices in accordance with Chapter 2.1 of the City of Crystal Lake - Crystal Lake Watershed Stormwater Management Design Manual.
    - Design the development site in accordance with sections 3.4-3.7 and section 5.1 of the City of Crystal Lake - Crystal Lake Watershed Stormwater Management Design Manual (www.crystallake.org/your-government/departments/community-development/engineering/watershed).
- ❑ Plats of Subdivisions, Planned Unit Developments, and manufactured home parks
  - Plans and plats shall show the BFE, as well as the limits of flood hazard areas, public bodies of water, WOTUS, IWMC, and buffer areas.
  - Include a signed statement by a licensed professional engineer that accounts for changes in the drainage of surface water in accordance with the Plat Act (765 ILCS 205/2).
  - Shall specify the minimum low opening elevation for each lot adjacent to an overland flow path, the minimum lowest adjacent grade for each lot adjacent to a flood hazard area, and the maximum impervious area allowed on each lot for the provided stormwater storage volume.
  - A preliminary or final Planned Unit Development or Plat of Subdivision shall not be approved, unless the PUD or Plat is subject to meeting the minimum standards of this Ordinance.
  - A final Planned Unit Development or Plat of Subdivision with an area greater than 5 acres platted after December 1, 2014 shall state the maximum impervious area allowed for each lot or parcel of land based on the design of the stormwater management system.
  - A parcel being subdivided adjacent to a State or County right-of-way shall notify the highway authority of the proposed subdivision in writing, and request that the highway authority provide the amount of additional capacity in any stormwater detention facility to be constructed in the subdivision for the future availability of the highway authority for meeting stormwater detention requirements of any future public construction on the highway.

OFFICE REVIEW CHECKLIST (may be used by Applicant for further clarification of the permit review process)

STORMWATER

- ❑ Verify development plans and design calculations to meet the ordinance requirements:
  - Runoff Control (basic, overland flow paths, drain tiles, and storm sewers provisions)
  - Water Quality Protection (if increased impervious areas)
  - Flood Hazard Area Development
  - Wetlands and Waters Development
  - Watershed Specific Area Development
- ❑ Verify Engineering Site Plan / Septic / Architectural Site / Building Plans are coordinated.
- ❑ As-built plans for stormwater management facilities.

Miscellaneous Items Required Prior to Issuance

- ❑ Verify other agency permits are received (e.g., USACE, IDNR, SWCD), as required
- ❑ Verify well and septic system permit is received, if required ***[MCDH Environmental Apps]***
- ❑ Verify recorded deed restriction/easement language and/or maintenance plan documents, if necessary
- ❑ Verify authorization or easement for work on neighboring property, if necessary
- ❑ Verify Township Highway Commissioner, MCDOT, or IDOT approval received, if applicable
- ❑ Verify IEPA receipt for Class V Injection Well inventory, if required

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