

Permit Application Stormwater Checklist for Engineers

Submittal Requirements

- A. Stormwater Memo with 1) narrative*, 2) tables, and 3) calculations
 - * Explain in detail any phasing or swapping being proposed (i.e. swapping treatment of new roof drainage to a different drainage area with an existing untreated parking lot)
- B. Construction Plans. **Commonly missed items:** existing and proposed layouts, labeled contours and tie-ins, storm sewer details/inverts, riprap at pipe outlets, maintenance access for stormwater features; and elevations listed for EOF, LFE, NWL, HWL
- C. Drainage Maps with scale, contours, and naming convention that matches HydroCAD for existing and proposed conditions
 - 1) All new and reconstructed impervious is directed to BMP. Or equivalent area if using swapping.
 - 2) Figure clearly illustrating the 1) areas, 2) quantities, 3) discharge locations of:
 - a) New and reconstructed impervious surfaces and;
 - b) Existing, undisturbed impervious surfaces.
- D. Geotechnical Report indicating soil texture and seasonally high saturated soil elevations - see Infiltration section, infiltration rates, and curve numbers.

Note: Determine seasonally high saturated soil elevations by analyzing colors and textures indicated in the soil profile for [link to redoximorphic features](#) - page 20 (historically, "mottled soils"). Also, use the Normal and High Water Level elevations of surrounding water resources to draw conclusions about seasonally high saturated soils. Observed groundwater levels during Geotech borings, particularly ones done from June-September, may not reflect actual seasonally high saturated soil levels.

 - 1) At least one boring within any proposed infiltration/filtration BMP; See Appendix E of District Rules.
 - 2) Elevations listed in same datum as plan set. Not acceptable: local datum with benchmark.
- E. Contaminated Soils Assessment or Phase 1 (if site is redevelopment and proposed infiltration) [Link to MPCA Contamination Screening Checklist](#)
- F. Stormwater Model (HydroCAD, SWMM)
 - 1) For proposed conditions, CN should be downgraded by one soil type to reflect mass grading under or note provided on construction plans to specify ripping surface soils to 6-inches prior to stabilization
 - 2) Total drainage areas match for existing and proposed, or explanation of why they do not
 - 3) Non-weighted Curve Numbers and infiltration rates that reflect information from Geotechnical Report
 - 4) Dynamic routing and tailwater conditions are used if stormwater features are not free discharge
 - 5) Rate Control (HydroCAD and Tables) for each discharge point
- G. Floodplain (if applicable) - *Coon Creek Watershed District uses District Wide XPSWMM model to evaluate floodplain and may vary from FEMA floodplain. Reach out to the District for potential floodplain on project site*
 - 1) Compensatory storage calculations provided for floodplain fill
 - 2) Figure showing existing proposed floodplain; & clear cut/fill locations used to verify compensatory storage

Continued

Engineers' Stormwater Checklist: **Design Requirements**

Infiltration is required, unless prohibited, for volume reduction.

- Applicants must attempt to include infiltration on site to the maximum extent practicable before proposing alternative BMPs.
 - The entire site needs to be reviewed for any opportunities to provide infiltration.
 - Filtration and wet sedimentation are not volume reduction practices.
 - Economic reasons are not a sole justification for proposing alternative BMPs.
- If volume management cannot be achieved entirely through infiltration, include information providing adequate justification and sequencing analysis for proposing alternative BMPs.

Sequencing:

1. Infiltration
2. Other volume reduction (MIDS, LIDS, Green Infrastructure)
3. Filtration
4. Wet sedimentation

- TP Removal Factor from District Rules Appendix C included in design if sequencing applies.

Infiltration/Filtration

- 1) Meets current MPCA infiltration requirements for design and landscaping: [Link to Minnesota Stormwater Manual- Stormwater Infiltration BMPs](#)
- 2) Meets current MPCA filtration requirements for design and landscaping: [Link to Minnesota Stormwater Manual- Stormwater Filtration BMPs](#)
- 3) 1.1" provided below outlet
- 4) District requires 80% TSS removal for pretreatment. Provide calculations or research that illustrate 80% TSS removal.
- a) SHSAM calculations should be provided for sump structures and should use OK110 particle distribution for non-linear projects. Inputs and summary must be provided. Sumps must have a minimum depth of 4-feet.
 - b) Manufactured Treatment Devices must have documentation for removal rates
 - c) Other pretreatment options should refer to MPCA documents above for design criteria.

NURP Basin

- 1) Meets current MPCA criteria found here: [Link to Minnesota Stormwater Manual- Stormwater Ponds](#)

General Design

District Rules state that all plans and specifications must conform to the provisions of the MPCA Stormwater Manual. The Stormwater Manual has additional information available for current design standards/guidelines that should be reviewed including drawdown times for storm events, designing for land locked basins and when clay or poly liners are required (contamination, groundwater proximity, wetland impacts). [Link to Minnesota Stormwater Manual](#)