



**City of Powell, Ohio
Stormwater Design Guidance Document**

Please note that all construction post-construction management BMPs must be designed in accordance with the current Ohio EPA General Construction Permit.

Drainage Policy

1. All developments are required to control the flow rate of stormwater discharge to that rate which existed prior to development (design criteria specified in Section 1111.053).
2. The tributary area should be delineated using natural land divides.
3. Stormwater drainage facilities within a development must be designed to have capacity and depth to permit future connections to serve the total tributary area at the design storm frequency based on the rate of single family, residential runoff.
4. Surface water drainage from a site must be conveyed to a drainage outlet with adequate capacity. The location all drainage outlets must be approved to the City Engineer.
5. It is the responsibility of the property owner to not change or alter any drainage course, ditch or drainage system on his property that will damage or cause flooding to adjacent, upstream or downstream property owners.
6. A preserved natural area must be maintained at least 120 feet wide on both sides of all streams designated as a state scenic river. No structures or improvements are permitted within this area. (Section 1111.08)
7. For rivers, perennial streams, intermittent streams and ephemeral streams, located within the Olentangy River watershed, the riparian setback as defined in OEPA permit #OHCO00002 shall determine setback requirements.

Drainage Easements (Section 1111.052 (c))

1. A drainage easement may be required along any drainage way or conveyance, facility as deemed necessary by the City.
2. When it is necessary to convey stormwater off-site in order to discharge into an adequate outlet, an easement must be obtained for this off-site drainage course.
3. The developer is responsible for the maintenance of the drainage course unless the easement and/or maintenance agreement requires abutting property owners to repair and maintain the drainage course.
4. All easements must be shown on the final plat and the "final engineering and constructions plan".

Stormwater Runoff Quantity Design

1. Provide a drawing showing the pre-development site with all impervious areas shaded. Provide contour lines with a maximum interval of 1-foot. Illustrate the flow route used to determine the pre-development Time of Concentration.

2. A drawing showing the post-development site with all impervious areas shaded. Provide contour lines with a maximum interval of 1-foot. Illustrate the flow route used to determine the post development Time of Concentration.
3. In tabular form, show the impervious and pervious surface areas for both pre and post-development conditions.
4. Provide composited runoff curve numbers for both pre and post development conditions.
5. Provide calculations to demonstrate that under post developed conditions that the runoff from a 100-year storm is not greater than the peak rate of runoff from a one-year storm under pre-developed conditions. Release rates may not exceed the capacity of the downstream channel or storm sewer.
6. Provide calculations used to determine both pre and post development Time of Concentration.
7. Provide calculations used to determine both pre and post development peak discharge rates.
8. Provide basin sizing calculations.
9. Provide basin volume calculations.
10. Provide orifice plate sizing calculations.

Runoff Quality: Stormwater runoff quality issues will be addressed according to the effective Ohio EPA General Permit OHC000005 (Effective April 23, 2018) and for sites tributary to the Olentangy River Watershed, Ohio EPA General Permit OHCO00002 (Effective June 4, 2014)

1. All sites outside the Olentangy River Watershed that plan to disturb more than one (1) acre must submit to the OEPA a Notice of Intent application form (NOI) at least 21 days prior to the commencement of construction.
2. All sites outside the Olentangy River Watershed that plan to disturb more than one (1) acre of earth must include a Stormwater Pollution Prevention Plan (SWP3). The SWP3 shall be completed in accordance with the SWP3 checklist included below.
3. All sites located within the Olentangy River Watershed that plan to disturb more than one (1) acre must submit to the OEPA a Notice of Intent application form and approvable SWP3 at least 45 days prior to commencement of construction.
4. Sites that disturb less than 1 acre are not required to submit an NOI, but are required to practice stormwater best-management practices.
5. Sites that disturb less than 1 acre shall identify as part of their plan submittal the "best management practices" they intend to utilize to control sediment erosion.

Please reference 1111.05 for complete stormwater management and design requirements.

Storm Water Pollution Prevention Plan (SWP3) Checklist for Construction Activities

Operations that discharge storm water from construction activities are subject to the following requirements and the SWP3 shall include the following items:

1. A description of the nature and type of the construction activity (e.g., low density residential, shopping mall, highway, etc.);
2. Total area of the site and the area of the site that is expected to be disturbed (i.e., grubbing, clearing, excavation, filling or grading, including off-site borrow areas);
3. An estimate of the impervious area and percent imperviousness created by the construction activity;
4. A calculation of the runoff coefficients for both the pre-construction and post-construction site conditions;
5. Existing data describing the soil and, if available, the quality of any discharge from the site;
6. A description of prior significant land uses at the site;
7. A description of prior channelization at the site;
8. An implementation schedule which describes the sequence of major construction operations (i.e., designation of vegetative preservation areas, grubbing, excavating, grading, utilities and infrastructure installation) and the implementation of erosion, sediment and storm water management practices or facilities to be employed during each operation of the sequence;
9. The name and/or location of the immediate receiving stream or surface water(s) and the first subsequent named receiving water(s) and the areal extent and description of wetlands or other special aquatic sites at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project. For discharges to an MS4, the point of discharge to the MS4 and the location where the MS4 ultimately discharges to a stream or surface water of the state shall be indicated.
10. For subdivided developments where the SWP3 does not call for a centralized sediment control capable of controlling multiple individual lots, a detail drawing of a typical individual lot showing standard individual lot erosion and sediment control practices. This does not remove the responsibility to designate specific erosion and sediment control practices in the SWP3 for critical areas such as steep slopes, stream banks, drainage ways and riparian zones;
11. Location and description of any storm water discharges associated with dedicated asphalt and dedicated concrete plants covered by this permit and the best management practices to address pollutants in these storm water discharges;

12. A copy of the permit requirements (attaching a copy of this permit is acceptable);
13. A cover page or title identifying the name and location of the site, the name and contact information of all construction site operators, the name and contact information for the person responsible for authorizing and amending the SWP3, preparation date, and the estimated dates that construction will start and be complete;
14. A log documenting grading and stabilization activities as well as amendments to the SWP3, which occur after construction activities commence.

See OEPA permit #OHCO00002 or #OHC000005 for further detail.

A detailed site map is required by the NPDES construction stormwater general permit.

The site map must include the following items:

1. The location of any delineated boundary for required riparian setbacks;
2. Areas designated as open space or conservation easements and will not have any earth disturbing activities;
3. Limits of earth-disturbing activity of the site including associated off-site borrow or spoil areas that are not addressed by a separate NOI and associated SWP3;
4. Soils types for all areas of the site, including locations of unstable or highly erodible soils;
5. Existing and proposed contours. A delineation of drainage watersheds expected during and after major grading activities as well as the size of each drainage watershed, in acres;
6. Surface water locations including springs, wetlands, streams, lakes, water wells, etc., on or within 200 feet of the site, including the boundaries of wetlands or stream channels and first subsequent named receiving water(s) the permittee intends to fill or relocate for which the permittee is seeking approval from the Army Corps of Engineers and/or Ohio EPA;
7. Existing and planned locations of buildings, roads, parking facilities and utilities;
8. The location of all erosion and sediment control practices, including the location of areas: to be constructed in different phases, to have temporary or permanent preservation of vegetation or land, and areas likely to require temporary stabilization during the course of site development;

9. Sediment and storm water management basins noting their sediment settling volume and contributing drainage area. Ohio EPA recommends the use of data sheets (see ODNR's Rainwater and Land Development manual for examples) to provide data for all sediment traps, sediment basins and storm water management treatment practices noting important inputs to design and resulting parameters such as their contributing drainage area, disturbed area, water quality volume, sedimentation volume, practice surface area, facility discharge and dewatering time, outlet type and dimensions;
10. The location of permanent storm water management practices to be used to control pollutants or provide infiltration of storm water after construction operations have been completed;
11. Areas designated for the storage or disposal of solid, sanitary and toxic wastes, including dumpster areas, areas designated for cement truck washout, and vehicle fueling;
12. The location of designated construction entrances where the vehicles will access the construction site; and
13. The location of any areas of floodplain fill, floodplain excavation, stream restoration or stream crossings.

See OEPA permit #OHCO00002 or #OHC000005 for further detail.

Post Construction Stormwater Best Management Practice Operation and Maintenance Plan (Section 906.03)

1. The developer/property owner shall prepare an Operation and Maintenance Plan meeting the minimum requirements of the latest version of the Ohio EPA NPDES Construction Stormwater Permit for redevelopment and new development projects wherein construction activities will result in the disturbance of one or more acres.
2. The Operation and Maintenance Plan shall be submitted by the developer/property owner to City of Powell for review and approval prior to the City issuing the building permit.
3. The Operation and Maintenance Plan must be a stand-alone document and contain the following:
 - Designate the entity associated with providing the Best Management Practices (BMPs) inspection and maintenance.
 - Indicate routine and non-routine maintenance tasks to be undertaken.
 - Indicate a schedule for inspection and maintenance tasks.
 - Provide proof of any necessary legally binding maintenance easements and agreements that are necessary to properly inspect and maintain the BMP(s).
 - Provide a map showing the location of the BMP(s) that are indicated on the City of Powell approved Storm Water Pollution Prevention Plan (SWPPP) and necessary access and maintenance easements.

- Provide detailed BMP drawings and inspection and maintenance procedures.
- Ensure that the collected pollutants resulting from BMP maintenance activities are disposed of in accordance with local, state and federal guidelines.

Declaration of Covenants and Restrictions

1. A Declaration of Covenants and Restrictions shall be made between the Owner and the City of Powell ensuring that the BMP(s) shall be properly inspected and maintained and shall be included within the Operation and Maintenance Plan.

See Section 906.03 for additional information on **Maintenance and Inspection** requirements.

1147.16 - PRESERVATION AND ENHANCEMENT OF COMMUNITY ENVIRONMENTAL CHARACTER.

The City of Powell has several provisions within its codified ordinances that help to preserve and protect its community environmental character, which provisions are set forth below to facilitate the identification and application of such provisions to all lands within the City of Powell that have these environmental characteristics.

(a) Floodplain Regulations are found at Chapter 1305.

(b) Tree Preservation and Replacement Policy is found at Section 1145.29(c) and

(d). Drainage regulations are found in Section 1145.25.

(d) Ohio Environmental Protection Agency Olentangy River Watershed Permit Requirements:

(1) Portions of the City of Powell that are within the Olentangy River Watershed are subject to the requirements of the Ohio Environmental Protection Agency Special Olentangy River Watershed Permit requirements. These requirements can be found at the following web site (current to 2017): http://epa.ohio.gov/dsw/permits/GP_ConstructionSiteStormWater_Olentangy.aspx#153884563-permit-documents

(e) Areas of high slope greater than 12 percent are a special consideration for design and construction. New construction should avoid areas of high slope. Retaining walls of no greater than four feet shall be utilized as a way to overcome slope considerations when designing structures, driveways, sidewalks or other site development related items. Slope preservation techniques, including but not limited to pier design or bridges, shall be utilized as alternatives to slope clearing, grading and retaining walls greater than four feet high in any location along a slope.

(f) Wetlands are an important part of the local environmental condition. The requirements of the State of Ohio Environmental Protection Agency shall be complied with as part of any new development within the City of Powell.

(g) Streams and riparian corridors shall be protected through the establishment of a Stream Corridor Protection Zone. The delineation, protection, and use of this zone shall be as described in the City of Columbus Storm Water Drainage Manual (current edition 2017), Section 1, from the beginning to Section 1.3, inclusive and as amended going forward. The City Engineer reserves the right to exempt some development areas from this regulation provided that best engineering judgement is used to protect property from flooding and/or erosion.