

TOWNSHIP OF WARWICK

Lancaster County, Pennsylvania

ORDINANCE NO. 298

AN ORDINANCE TO AMEND THE WARWICK TOWNSHIP CODE OF ORDINANCES, CHAPTER 270, TO MAKE REVISIONS RELATING TO THE TOWNSHIP MS4 AND TO UPDATE ADMINISTRATIVE PROVISIONS.

BE AND IT IS HEREBY ORDAINED AND ENACTED by the Board of Supervisors of the Township of Warwick, Lancaster County, Pennsylvania, as follows:

Section 1. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article I, General Provisions, §270-2, Statement of findings, Subsection B, shall be amended to provide as follows:

- B. A comprehensive program of SWM, including reasonable regulation of development and activities causing accelerated runoff and based on the concepts of Low Impact Development (LID), is fundamental to the public health, safety, welfare, and the protection of the people of Warwick Township and all the people of the Township and all of the people of the Commonwealth, their resources, and the environment.

Section 2. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article I, General Provisions, §270-3, Purpose, to add a new Subsection M, which shall provide as follows:

- M. Provide processes and standards for the determination that implemented best management practices are installed as designed and functioning as intended.

Section 3. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article I, General Provisions, §270-11, Duty of persons engaged in development of land, to add new §270-12, MS4 protection, and §270-13, Reduction of pollutants in stormwater, which shall provide as follows:

§270-11. Duty of persons engaged in development of land.

Notwithstanding any provision(s) of this chapter, including exemptions, any landowner or any person engaged in the alteration or development of land which may affect stormwater runoff characteristics shall implement such measures as are reasonably necessary to prevent injury to health, safety, or other property. Such measures also shall include actions

as are required to manage the rate, volume, direction, and quality of resulting stormwater runoff in a manner which otherwise adequately protects health, property, and water quality.

- A. Each structural BMP installed pursuant to this chapter shall be maintained and operated by persons engaged in the development or redevelopment of land so as to preserve and continue its function in controlling stormwater quality and quantity at the degree or amount of function for which the structural BMP was designed until transfer of ownership and responsibilities has been successfully completed.

§270-12. MS4 protection.

Any person or entity owning or occupying a premises through which the MS4 passes, or conducts activities subject to this chapter in which the MS4 passes or receives drainage from the site in which the activities are subject to this chapter, shall:

- A. Keep and maintain that part of the premises reasonably free of trash, debris, sediment, and other obstacles which may pollute, contaminate, or retard the flow of water to or through the MS4.
- B. Maintain existing structures within or adjacent to the MS4 so that those structures will not become a hazard to the use, function, or physical integrity of the MS4.
- C. Protect inlets or other entry points to the MS4, including inlets off-site or downstream, to the maximum extent practicable in which activities, equipment, or materials could result in the discharge of a pollutant or a non-stormwater discharge.
- D. Protect receiving waters, and reduce / prevent discharge of pollutants from the MS4 to receiving waterways in accordance with the requirements of the Township's MS4 permit.

§270-13. Reduction of pollutants in stormwater.

Any person or entity engaged in activities which may result in discharges to the MS4 shall, to the maximum extent practicable, undertake all measures to reduce the risk of non-stormwater discharges and polluted discharges. The following requirements shall apply:

- A. Every person or entity undertaking an activity or use of a premise that may cause contribute to stormwater pollution or contamination, illicit discharges, or non-stormwater discharges to the MS4 shall implement structural and/or non-structural BMPs to reduce or prevent a polluted discharge. BMPs shall be maintained routinely throughout the life of the activity.

Section 4. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article II, Definitions of Terms, shall be amended by adding or revising the following definitions in alphabetical order:

ILLICIT CONNECTION – Any man-made physical connection or prohibited connection to the MS4 that conveys an illicit discharge.

ILLCIT DISCHARGE – Any discharge to the MS4 that is not composed entirely of stormwater or polluted stormwater, except for discharges allowed under an NPDES Permit, discharges conditionally allowed under the MS4 Permit, and discharges authorized by this chapter as set forth in §270-81E.

MUNICIPAL SEPARATE STORM SEWER SYSTEM PERMIT (MS4 PERMIT) – The NPDES Permit regulating discharges from the MS4 issued to Township by DEP.

REGULATED ACTIVITIES – Activities, including earth disturbance activities, that involve the alteration or development of land in a manner that may affect stormwater runoff. Regulated activities shall include, but not be limited to:

- A. Land development subject to the requirements of Chapter 285, Subdivision and Land Development;
- B. Removal of ground cover, grading, filling or excavation;
- C. Construction of new or additional impervious or semi-impervious surfaces (driveways, parking lots, etc.), and associated improvements;
- D. Construction of new buildings or additions to existing buildings;
- E. Installation or alteration of stormwater management facilities and appurtenances thereto;
- F. Diversion or piping of any watercourse;
- G. Any other regulated activities where the Township determines that said activities may affect any existing watercourse's stormwater management facilities, or stormwater drainage patterns; and,
- H. Any activities where the Township determines that said activities may affect the water quality of stormwater discharges or generate non-stormwater discharges to the MS4 and/or receiving waterbodies.

Section 5. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article III, Stormwater Management Standards, §270-31, General requirements, shall be amended as follows:

* * *

- I. All regulated activities shall include such measures as necessary to:
 - (1) Protect health, safety, and property;
 - (2) Meet the water quality goals of this chapter by implementing measures to:

- (a) Protect and/or improve the function of floodplains, wetlands, and wooded areas.
 - (b) Protect and/or improve native plant communities including those within the riparian corridor.
 - (c) Protect and/or improve natural drainageways from erosion.
 - (d) Minimize thermal impacts to waters of this Commonwealth.
 - (e) Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.
 - (f) Reduce or prevent to the maximum extent practicable the discharge of a pollutant, polluted stormwater or an illicit discharge to the MS4.
- J. Incorporate methods described in the BMP Manual. If methods other than green infrastructure and Low Impact Development (LID) methods are proposed to achieve the volume and rate controls required under this chapter, the SWM Site Plan must include a detailed justification demonstrating that the use of LID and green infrastructure is not practicable.

* * *

- O. A planting plan is required for the entire project site, including all vegetated stormwater BMPs. The planting plan must be shown as part of the PCSM Plan and/or SWM Site Plan.
 - (1) Native or naturalized/non-invasive vegetation suitable to the soil and hydrologic conditions of the development site shall be used unless otherwise specified in the BMP Manual.
 - (2) Invasive vegetation may not be included in any planting schedule.
 - (3) The limit of existing, native vegetation to remain shall be delineated on the plan along with proposed construction protection measures.
 - (4) Prior to construction, a tree protection zone shall be delineated at the dripline of the tree canopy. All trees scheduled to remain during construction shall be marked; however, where groups of trees exist, only the trees on the outside edge need to be marked. A forty-eight-inch-high snow fence or forty-eight-inch-high construction fence mounted on steel posts located eight feet on center shall be placed along the tree protection boundary, or another method of identification approved by the Township prior to construction. No construction, storage of material, temporary parking, pollution of soil, or regrading shall occur within the tree protection zone.

- (5) All planting shall be performed in conformance with good nursery and landscape practice. Plant materials shall conform to the standards recommended by the American Association of Nurseryman, Inc., in the American Standard of Nursery Stock.
 - (a) Planting designs are encouraged to share planting space for optimal root growth whenever possible.
 - (b) No staking or wiring of trees shall be allowed without a maintenance note for the stake and/or wire removal within one year of planting.
 - (c) Attachment 11 - Appendix F herein provides seed mix templates for guidance. Final approval of the planting plan is subject to the review and approval of the Township.

* * *

- W. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification to the adjacent property owner(s). Such stormwater flows shall be subject to the requirements in §§270-34B, 270-34C, and 270-34D.

Section 6. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article III, Stormwater Management Standards, §270-36, Riparian corridors, shall be amended to add a new Subsection H which shall provide as follows:

- H. Required riparian buffers, upon being planted and permanently established with the required vegetation, shall be professionally inspected, and certified by a qualified professional that the established vegetation meets the requirements of the approved planting plan including required native vegetation, permanent establishment, free from invasives, and other such requirements.

Section 7. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article III, Stormwater Management Standards, §270-37, Stormwater management facility design requirements, Subsection B, Subsurface storage facilities, Paragraph (2), Distribution system requirements, shall be amended to add a new Subparagraph (d) which shall provide as follows:

- (d) Dewatering features. When required, dewatering shall be provided through the use of underdrain, surface device, or alternate approved by the Township Engineer. If the facility is to be used for infiltration, the dewatering device should be capable of being disconnected and only be made operational if the basin is not dewatering within the required timeframe.

Section 8. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article III, Stormwater Management Standards, §270-38, Other design

requirements, shall be amended and new §270-30, Wetlands, and §270-40, Easements, shall be added which shall provide as follows:

§270-38. Other design requirements.

- A. Amended soils. Areas with amended soils shall be restricted for use within the bottom of rain gardens and stormwater management basins that are within a stormwater or drainage easement identified on a recorded plan to ensure that the future owners of such facilities are aware of the restrictions associated with the amended soil areas.
- B. All amended soils specified within BMP basins shall be required to be certified for use to meet water quality and water recharge provisions. If on-site soils are utilized as part of the amended soils, the topsoil shall be certified including acceptable permeability, PH, clay content, etc.

§270-39. Wetlands.

No development or earthmoving activities shall involve uses, activities or improvements which would entail encroachment into, the regrading of, or the placement of fill in wetlands in violation of State or Federal regulations.

§270-40. Easements.

- A. The developer shall reserve easements where storm water management facilities, floodplains or wetlands are existing or proposed as required in §270-31.R, whether located within or beyond the boundaries of the project site. If storm water management facilities, floodplains or wetlands are to be installed or created beyond the boundary of the property, the developer shall provide the Township with all necessary easements, in a form acceptable to the Township Solicitor, clearly demonstrating that the developer has the right to install storm water management facilities on such adjoining property and/or create floodplains or wetlands upon such adjoining property.
- B. Easements shall have a minimum width of twenty (20) feet and shall be adequately designed to provide area for (a) the collection and discharge of water, (b) the maintenance, repair and reconstruction of all storm water management facilities, (c) the passage of machinery for such work, and (d) the preservation of floodplains and wetlands. The easements shall clearly identify who has the right of access and the responsibility of maintenance.
- C. Storm water management facilities shall be centered within the easement.
- D. To the fullest extent possible, easements shall be centered on or be adjacent to lot lines.

- E. Nothing shall be placed, planted, set, or put within the area of an easement that would adversely affect the function of the easement or conflict with the easement agreement.

Section 9. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article IV, Stormwater management site plan requirements, §270-43, SWM Site Plan information, Subsection E, shall be amended to provide as follows:

- E. The following signature block for the Township:

Warwick Township SWM Site Plan Approval Certification

On _____, 20____, Warwick Township approved this project, and all conditions have been met. This approval includes the complete set of plans and information that are filed with the Township in File No. _____, based upon its conformity with the standards of the Warwick Township Stormwater Management Ordinance.

(Vice) Chairman Signature

(Assistant) Secretary Signature

Section 10. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article IV, Stormwater Management Site Plan Requirements, §270-43, SWM Site Plan Information, shall be amended by adding new Subsections L, M, N, O, P, Q, and R, which provide as follows:

- L. The plans should clearly indicate the need for a pre-construction meeting to be held prior to earth moving activities and recordation of the plan and include personnel from the following:
- Warwick Township
 - Warwick Township Municipal Authority
 - Warwick Township Engineer
 - The Lancaster County Conservation District
 - The equitable owner
 - The consulting firm that prepared the plan
 - Site operator (entity with day-to-day control of the site)
 - The excavator
 - Anyone else deemed necessary
- M. A note indicating that all items needing inspection shall be coordinated by the owner and/or site operator (contractor). All requests for required inspections by the contractor are to be deemed as approved requests on behalf of the owner.
- N. The actual existing and proposed lot coverage in square feet, in addition to the percentages, should clearly be shown on the data provided on the plan. This should correlate to the design information in the required Post Construction Stormwater

Management Report to be used as a benchmark for all future impervious surface changes.

- O. When applicable, notation should be added to the plan stating that “all impervious surfaces to be removed are to be removed full depth, including any stone base” so as to receive credit as a post development condition pervious surface in the stormwater management design. A statement, signed by the owner and any successor, acknowledging that the impervious surfaces to be removed full depth function as the SWM Facilities for this project and cannot be added back or altered or increased unless a revised plan is approved by the Township must be provided.
- P. A note indicating construction site operators are required to control waste at the construction site that may cause adverse impacts to water quality. These wastes can include discarded building materials, concrete washout, chemicals, litter, and sanitary waste.
- Q. PCSM Title Blocks outlining each individual post-construction stormwater management BMP and/or facility in accordance with Appendix 13.
- R. A note indicating that seeding should be applied in a manner that provides uniform coverage across the area and re-seeding to achieve uniform coverage may be required if uniform coverage is not achieved.

Section 11. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article IV, Stormwater Management Site Plan Requirements, §270-44, Additional information, Subsections C and D, shall be amended to provide as follows:

- C. Where an NPDES Construction Permit is required, a general description of the overall approach, techniques, controls, BMPs, and methods for managing non-stormwater generating activities (including, but not limited to concrete washouts and saw-cutting operations), waste (including, but not limited to solid waste and sanitary/septic waste), materials (including, but not limited to fertilizers/herbicides), and related inspection and maintenance activities must be recorded in a written plan that is maintained on site.
- D. Verification of an approved and proven to be implemented agricultural Erosion and Sediment Control Plan or Conservation Plan and a Manure Management Plan or Nutrient Management Plan for agricultural uses.

Section 12. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article IV, Stormwater Management Site Plan Requirements, §270-45, Supplemental information, shall be amended as follows:

- A. In areas of carbonate geology, a detailed geologic evaluation prepared by a registered geotechnical professional must be submitted as part of the SWM site plan. The report shall include, but not limited to the following:

- (1) The location of the following karst features;
 - (a) Sinkholes.
 - (b) Closed depressions.
 - (c) Lineaments in carbonate areas.
 - (d) Fracture traces.
 - (e) Caverns.
 - (f) Intermittent lakes.
 - (g) Ephemeral disappearing streams.
 - (h) Bedrock pinnacles (surface or subsurface).
- (2) A plan for remediation of any identified karst features.
- (3) Impacts of SWM facilities on adjacent karst features, and impacts of karst features on adjacent SWM facilities.

* * *

- E. During construction, stormwater management infiltration systems shall have the subgrade tested and approved by a geotechnical professional, including performing infiltration testing. All documentation shall be submitted to the Township. If the stormwater facilities do not have an acceptable subgrade or infiltration rates, a corrective action plan shall be submitted for review and approval by the Township, Conservation District, and DEP.
- F. For all proposed stormwater management systems designed for the infiltration of stormwater in areas of Karst geology, a signed and sealed letter of concurrence shall be provided from the geotechnical professional supporting the proposed stormwater management systems.

Section 13. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article V, Plan Processing Procedures, §270-53, Pre-application meeting, shall be amended by adding a new Subsection F which shall provide as follows:

- F. Potential impacts to the MS4 (including inlets to the MS4 off-site but may receive drainage from the site) and possible protection measures and BMPs.

Section 14. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article V, Plan Processing Procedures, §270-54, Stormwater management site plan submission, shall be amended by adding a new Subsection F which shall provide as follows:

- F. Final plan approval does not negate or remove the requirements that the applicant is required to ensure implemented structural BMPs are maintained upon installation and actually perform as intended and designed.

Section 15. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article V, Plan Processing Procedures, §270-57, Financial security, Subsection F, Schedule of inspections, shall be amended to add a new Paragraph (5) which shall provide as follows:

- (5) During construction, stormwater management infiltration systems shall have the subgrade tested and approved by a geotechnical professional, including performing infiltration testing. All documentation shall be submitted to the Township. If the stormwater facilities do not have an acceptable subgrade or infiltration rates, a corrective action plan shall be submitted for review and approval by the Township, Conservation District, and DEP.

Section 16. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article V, Plan Processing Procedures, §270-57, Financial security, Subsection G, Final inspection, shall be amended to add a new Paragraph (4) which shall provide as follows:

- (4) An Infiltration Trench Certification Form shall be fully executed and submitted to the Township documenting and certifying the installation of the subsurface infiltration systems. The Township shall be contacted for the Infiltration Trench Certification Form.

Section 17. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article V, Plan Processing Procedures, shall be amended to add a new §270-60, Pre-construction meeting and plan recordation, which shall provide as follows:

§270-60. Pre-construction meeting and plan recordation.

- A. The plans should clearly indicate the need for a pre-construction meeting to be held prior to earth moving activities and include personnel from the following:
- Warwick Township
 - Warwick Township Municipal Authority
 - Warwick Township Engineer
 - The Lancaster County Conservation District
 - The equitable owner
 - The consulting firm that prepared the plan
 - The excavator
 - Anyone else deemed necessary

- B. Upon approval by the Township, Stormwater Management Plans must be recorded at the Lancaster County Recorder of Deeds office. Proof of recordation must be provided to the Township. Plans will not be released for recording until the above mentioned preconstruction meeting has been conducted with all required parties.

Section 18. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article VI, Operation and Maintenance, §270-61, Responsibilities of developers and landowners, shall be amended as follows:

- A. The landowner, successor and assigns shall maintain all SWM facilities in good working order in accordance with the approved O&M plan.

* * *

- F. Enumerate permanent SWM facilities as permanent real estate appurtenances and record as deed restrictions or easements that run with the land.
- G. The Township may take enforcement actions against a landowner for any failure to satisfy the provisions of this article.
- H. Stormwater management facilities such as permanent basins that are to be dedicated to a homeowners association, shall not be officially dedicated to the homeowners association until such time that the stormwater facilities have been inspected and approved by the Township and the DEP NPDES Notice of Termination has been officially received.

Section 19. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article VI, Operation and Maintenance, §270-63, Operation and Maintenance (O & M) Plan Contents, Subsection B, shall be amended to provide as follows:

- B. The following shall be addressed in the O&M plan:
- (1) Description of maintenance requirements, including, but not limited to, the following:
- (a) Regular inspection of the SWM facilities. To assure proper implementation of BMPs, maintenance and care SWM BMPs should be inspected by a qualified person, which may include the landowner, or the owner's designee, according to the following minimum frequencies:
- [1] Annually starting at the time of final inspection and release of financial security by the Township.
- [2] During or immediately after the cessation of a ten-year or greater storm.
- [3] As specified in the O&M Agreement pursuant to §270-62.

- (b) All pipes, swales and detention facilities shall be kept free of any debris or other obstruction and in original design condition.
 - (c) Removal of silt from all permanent structures which trap silt or sediment in order to keep the material from building up in grass waterways, pipes, detention or retention basins, infiltration structures, or BMPs, and thus reducing their capacity to convey or store water.
 - (d) Re-establishment of vegetation of scoured areas or areas where vegetation has not been successfully established. Selection of seed mixtures and planting criteria shall be subject to approval by the Township. Appendix F to this chapter provides seed mix templates for guidance.
- (2) Riparian forest buffer management plan prepared in accordance with Chapter 102, Section 14(b)(4) if required.
 - (3) Identification of a responsible individual, corporation, association or other entity for ownership and maintenance of both temporary and permanent SWM facilities and erosion and sedimentation control facilities.
 - (4) Establishment of suitable easements for access to all facilities.
 - (5) Two copies of the inspection report required in §270-63B(1)(a) shall be provided to the Township within 60 days of completion of the inspection.

Section 20. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article VI, Operation and Maintenance, §270-64, Maintenance of storm water management facilities during development, shall be amended by adding a new Subsection F which shall provide as follows:

F. All other maintenance activities that may be necessary as directed by the Township.

Section 21. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article VI, Operation and Maintenance, §270-66, Maintenance of existing facilities/BMPs, shall be amended and a new §270-67, O & M Verification Forms, shall be added which shall provide as follows:

§270-66. Maintenance of existing facilities/BMPs.

SWM facilities existing on the effective date of this chapter which have not been accepted by the Township or for which maintenance responsibility has not been assumed by a private entity such as a homeowners' association shall be maintained by the individual landowners. Such maintenance shall include at a minimum those items set forth in §270-63B above. The private entity (homeowners association or landowner) must observe and document the BMP is performing as intended (e.g. draining within the time specified in the facility design). If the Township determines at any time that any permanent SWM facility has been

eliminated, altered, blocked through the erection of structures or the deposit of materials, or improperly maintained, the condition constitutes a nuisance and the Township shall notify the landowner of corrective measures that are required, and provide for a reasonable period of time, not to exceed 30 days, within which the landowner shall take such corrective action. If the landowner does not take the required corrective action, the Township may either perform the work or contract for the performance of the work and bill the landowner for the cost of the work plus a penalty of 10% of the cost of the work. If such bill is not paid by the landowner within 30 days, the Township may file a municipal claim against the property upon which the work was performed in accordance with the applicable laws. The Township shall have the right to choose among the remedies and may use one or more remedies concurrently.

§270-67. O & M verification forms.

- A. The Township is subject to the terms and conditions of an issued MS4 Permit. One condition included in the permit requires the Township to ensure stormwater management facilities and BMPs are operating as intended/designed and maintained as required. To meet this condition, the Township requires the completion and return of an O&M verification form for each stormwater management facility and BMP owners annually verifying inspections and maintenance is occurring.
- B. Contact the Township to obtain copies of the O&M verification forms.

Section 22. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article VIII, Prohibitions, §270-81, Prohibited discharges and connections, shall be amended to provide as follows:

§270-81. Prohibited discharges and connections.

- A. The following connections are prohibited, except as provided in §270-81E below.
 - (1) Any drain or conveyance, whether on the surface or subsurface, that allows any nonstormwater discharge including sewage, process wastewater, and wash water to enter a municipal separate storm sewer (if applicable), or waters of this commonwealth, and any connections to the storm sewer from indoor drains and sinks.
 - (2) Any drain or conveyance connected from a commercial or industrial land use to the municipal separate storm sewer (if applicable) which has not been documented in plans, maps, or equivalent records, and approved by the Township.
 - (3) Chlorinated pool or fountain discharge.
 - (4) Commercial and industrial air conditioner condensate.

- B. Illicit discharges.
- (1) Except as provided in §270-81E, it is unlawful for any person or entity to cause a non-stormwater discharge to the MS4.
 - (2) It is unlawful for any person or entity to cause either individually or jointly any discharge into or from the MS4 that results in or contributes to a violation of the MS4 Permit, including the discharge of a pollutant.
 - (3) Any person or entity that causes a non-stormwater discharge or a discharge into or from the MS4 that results in or contributes to a violation of the MS4 Permit, including the discharge of a pollutant, is subject to the enforcement provisions of §270-92.
- C. No person shall allow, or cause to allow, discharges into waters of this commonwealth which are not composed entirely of stormwater, except:
- (1) As provided in §270-81E below; and
 - (2) Discharges allowed under a state or federal permit.
- D. No person shall place any structure, fill, landscaping or vegetation into a SWM facility or within a drainage easement that will limit or diminish the functioning of the SWM facility in any manner.
- E. The following discharges are authorized unless they are determined to be significant contributors to pollution to the waters of this Commonwealth:
- (1) Discharges from firefighting activities.
 - (2) Potable water sources including water line flushing and fire hydrant flushing, if such discharges do not contain detectable concentrations of Total Residual Chlorine (TRC).
 - (3) Non-contaminated irrigation drainage.
 - (4) Non-contaminated air conditioning condensate and water from geothermal systems.
 - (5) Springs.
 - (6) Water from crawl space pumps.
 - (7) Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used.

- (8) Flows from riparian habitats and wetlands.
- (9) Uncontaminated water from foundations or from footing drains.
- (10) Lawn watering.
- (11) Dechlorinated swimming pool discharges.
- (12) Uncontaminated groundwater.
- (13) Water from individual residential car washing where only environmentally friendly cleaning agents are utilized.
- (14) Routine external building wash down (which uses environmentally friendly detergents or other compounds)
- (15) Diverted stream flows.
- (16) Rising groundwaters.

F. In the event that the Township or DEP determines that any of the discharges identified in §270-81E significantly contribute to pollution of the waters of this commonwealth, the Township or DEP will notify the responsible person(s) to cease the discharge.

Section 23. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article VIII, Prohibitions, shall be amended to add a new §270-84, Containment and notification of spills, which shall provide as follows:

§270-84. Containment and notification of spills.

Any person owning or occupying a premises who has knowledge of any significant release of pollutants or non-stormwater discharges from those premises that may enter the MS4 shall immediately take all reasonable action to contain the release and minimize any non-stormwater discharge. The person shall notify the Township within four (4) hours of the non-stormwater discharge.

Section 24. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, Article IX, Enforcement and Penalties, §270-95, Modification of provisions, shall be retitled “Modification/waiver of provisions” and shall be amended to provide as follows:

§270-95. Modification/waiver of provisions.

If the Township determines that any requirement under this chapter cannot be achieved for a particular regulated activity, the Township may, after an evaluation of alternatives, approve measures other than those in this chapter, subject to the following:

- A. Waivers or modifications of the requirements of this chapter may be approved by the Township if enforcement will exact undue hardship because of peculiar conditions pertaining to the land in question, provided that the modifications will not be contrary to the public interest and that the purpose of the chapter is preserved. Cost or financial burden shall not be considered a hardship. Modification may be considered if an alternative standard or approach will provide equal or better achievement to the Maximum Extent Practicable of the purpose of the chapter. A request for modifications shall be in writing and accompany the Stormwater Management Site Plan submission. The request shall provide the facts on which the request is based, the provision(s) of the chapter involved and the proposed modification.
- B. The provisions of this chapter not relating to water quality are intended as minimum standards for the protection of the public health, safety, and welfare. The Township reserves the right to modify or to extend them conditionally in individual cases as may be necessary in the public interest; provided, however, that such variation shall not have the effect of nullifying the intent and purpose of this chapter, and that the applicant shows that to the satisfaction of the Township that the applicable regulation is unreasonable, or will cause undue hardship, or that an alternative proposal will allow for equal or better results. The list of such modifications, along with an explanation of and justification for each modification, shall be included on the plan. This section does not apply during an enforcement action.
- C. In granting waivers/modifications for provisions of this chapter not relating to water quality, the Township may impose such conditions as will, in its judgment, secure substantially the objectives of the standards and requirements of this chapter.
- D. No waiver or modification of any regulated stormwater activity involving earth disturbance greater than or equal to one acre may be granted by the Township unless that action is approved in advance by DEP or the delegated county conservation district.
- E. No waiver or modification can be granted that would conflict with the requirements of the MS4 Permit.

Section 25. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, shall be amended by adding a new Appendix F, Warwick Township Seed Mix Template, which is attached hereto as Exhibit A to this Ordinance.

Section 26. The Warwick Township Code of Ordinances, Chapter 270, Storm Water Management, shall be amended by adding a new Appendix G, PCSM Title Block, which is attached hereto as Exhibit B to this Ordinance.

Section 27. All other sections, parts and provisions of Warwick Township Code of Ordinances shall remain in full force and effect as previously enacted and amended.

Section 28. In the event any provision, section, sentence, clause or part of this Ordinance shall be held to be invalid, illegal or unconstitutional by a court of competent jurisdiction, such

invalidity, illegality or unconstitutionality shall not affect or impair the remaining provisions, sections, sentences, clauses or parts of this Ordinance, it being the intent of the Board of Supervisors that the remainder of the Ordinance shall be and shall remain in full force and effect.

Section 29. This Ordinance shall take effect and be in force five (5) days after its enactment by the Board of Supervisors of the Township of Warwick as provided by law.

DULY ORDAINED AND ENACTED this 17th day of August, 2022, by the Board of Supervisors of the Township of Warwick, Lancaster County, Pennsylvania, in lawful session duly assembled.

TOWNSHIP OF WARWICK
Lancaster County, Pennsylvania

Attest: Barbara Kreider
(Assistant) Secretary

By: [Signature]
(Vice) Chairman
Board of Supervisors



EXHIBIT A

STORMWATER MANAGEMENT
270 Attachment 11
Township of Warwick
Appendix F: Warwick Township Seed Mix

Dry Sun

Full sun tolerant grass meadow with seasonal interest wildflowers.

Use: detention basin side slopes and open, upland areas

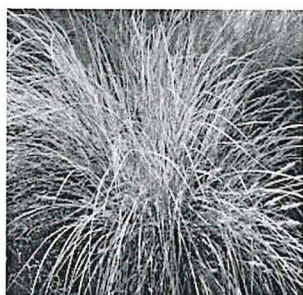
Grass and Wildflower Seed Mix - Warm season grasses and hardy sedges make up this grass mix for tough, dry sites. The sedges provide reliable, early season cover, while the warm season grasses retain their structure and fall color through the winter months. Wildflowers (forbs) provided are reliable and tolerant of most upland conditions. This mix does well in harsh conditions and dry, shallow soils. If weed seed is prevalent, use the Grasses only, without the wildflowers, during the establishment period.

Specifications:

Site Conditions: 6.2 -7.2 - Silt Loam to Sandy Loam
Rate: 29 lbs. of seed/acre
Total seeds per sq ft = 200

Plant Ratio:

13 Wildflowers (forbs)
9 Grasses (graminoides)
22 Total Species



Carex vulpinoidea



Andropogon ternarius



Carex bicknellii



Bouteloua curtipendula



Schizachyrium scoparium

Dry Sun Grass Seed Mix (graminoides)

<i>Botanical name</i>	Common Name	Qty (oz)	Height	Season/color	Notes
<i>Andropogon ternarius</i>	Split-Beard Bluestem	12.94	2 - 4'	Warm	Flowers, taller, nicer than blue stem, provides additional warm season grass coverage.
<i>Bouteloua curtipendula</i>	Sideoats Grama	73.33	1 - 3'	Warm	Attractive, warm season grass, very reliable from seed.
<i>Carex bicknellii</i>	Prairie Sedge	7.76	1 - 3'	Cool	
<i>Carex brevior</i>	Plains Oval Sedge	4.55	1 - 4'	Cool	Upland sedge, flops in spring, tall
<i>Carex projecta</i>	Loose-headed Oval Sedge	2.13	1 - 2'	Cool	
<i>Carex vulpinoidea</i>	Fox Sedge	3.52	1 - 3'	Cool	Reseeds well
<i>Elymus virginicus</i>	Virginia Rye	83.81	2 - 4'	Cool	
<i>Juncus tenuis</i>	Path Rush	0.22	1'	Cool	Tolerates a wide range of conditions, reliable.
<i>Schizachyrium scoparium</i>	Little Bluestem	117.33	2 - 3'	Warm	Reliable warm season grass



Allium cernuum



Echinacea pallida



Penstemon digitalis



*Pycnanthemum
tenuifolium*



Zizia aurea

Dry Sun Wildflowers Seed Mix (Forbs)

<i>Botanical name</i>	Common Name	Qty (oz)	Height	Season/color	Notes
<i>Allium cernuum</i>	Nodding Pink Onion	17.37	1 - 2'	Summer	Reliable, summer blooming.
<i>Asclepias tuberosa</i>	Butterfly Weed	10.23	1 - 3'	Summer	
<i>Coreopsis lanceolata</i>	Tickseed	11	2 - 3'	Spring	Reliable short term species, good indicator of germination success
<i>Echinacea pallida</i>	Pale Purple Coneflower	50.77	2 - 4'	Summer	Hot and dry
<i>Eupatorium coelestinum</i> (<i>Conoclinium</i>)	Mistflower	1.51	1 - 3'	Fall	Salt tolerant
<i>Mondarda punctata</i>	Horsemint	4.89	1 - 2'	Summer	Reliable, biennial
<i>Penstemon digitalis</i>	White Beardtongue	6.77	2 - 4'	Spring	Hardy
<i>Pycnanthemum tenuifolium</i>	Slender Mountain Mint	1.16	2 - 3'	Summer	Lacy in garden setting, finer, can use broad leaf herbicide, reliable, tolerates a wide range of conditions (pollinator species)
<i>Rudbeckia hirta</i>	Black Eyed Susan	2.87	1 - 3'	Summer	Reliable short term species, good indicator of germination success.
<i>Solidago nemoralis</i>	Gray Goldenrod	1.76	1 - 3'	Fall	Reliable, fall flowering
<i>Tradescantia ohioensis</i>	Ohio Spiderwort	11	2 - 4'	Spring	Reliable, tolerates drier conditions than <i>T. virginiana</i>
<i>Verbena stricta</i>	Hoary Vervain	12.57	2 - 4'	Summer	Increase diversity, tolerant of dry, rocky conditions
<i>Zizia aurea</i>	Golden Alexander	20	1 - 3'	Spring	Full sun

Nurse Crop Seeding Rates:

- Spring Seeding: Spring Oats (*Avena sativa*): 20 lb/acre
- Early Spring to Later Summer Seeding: Grain Rye (*Secale cereale*): 30 lb/acre
- Fall Seeding: Cereal Rye (*Secale cereale*): 30 lb/acre

Seed Sources:

Prairie Moon Nursery – info@prairiemoon.com, 866-417-8156
 Ernst Conservation Seed - sales@ernstseed.com, (800) 873-3321

Warwick Township Seed Mix Template

Wet Sun

Grass and wildflower seed mix that tolerates periodic inundation of water and consistent moisture in full sun.

Use: detention basin floor, bioswales and swales

Grass and Wildflower Seed Mix – wet soil tolerant sedge species dominate this mix to provide quick and reliable cover. Rain Garden wildflowers provide diversity and seasonal interest.

Specifications:

Site Conditions: 6.2 -7.2 - Silt Loam to Sandy Loam
Rate: 26 lbs. of seed/acre
Total seeds per sq ft: 200

Plant Ratio:

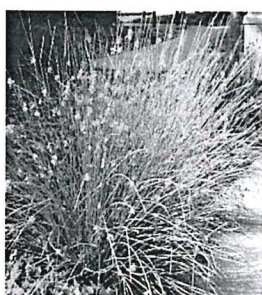
9 Grasses (graminoides)
12 Wildflower (Forbs)
21 Total species



Carex vulpinoidea



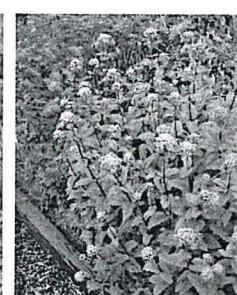
Carex bicknellii



Juncus effusus



Lobelia siphilitica



Eupatorium coelestinum

Wet Sun Grass Seed Mix (*graminoides*)

<i>Botanical name</i>	Common Name	Qty (oz)	Height	Season/color	Notes
<i>Carex bicknellii</i>	Prairie Sedge	23.29	1 - 3'	Cool	
<i>Carex crinita</i>	Fringed Sedge	5.74	2 - 5'	Cool	
<i>Carex normalis</i>	Spreading Oval Sedge	8.8	1 - 3'	Cool	Fine textured, reliable
<i>Carex stricta</i>	Tussock Sedge	2.49	1 - 4'	Cool	
<i>Carex vulpinoidea</i>	Fox Sedge	11	1 - 3'	Cool	
<i>Elymus riparius</i>	River Bank Wild Rye	110	2 - 4'	Cool	Increase numbers of reliable germinators.
<i>Elymus virginicus</i>	Virginia Rye	157.14	2 - 4'	Cool	
<i>Juncus effusus</i>	Common Rush	0.66	2 - 5'	Cool	
<i>Tridens flavus</i>	Purpletop	23.32	2 - 5'	Warm	Warm season grass, tolerates a wide range of conditions



Asclepias incarnata



Eupatorium coelestinum



Lobelia siphilitica



Verbena hastata



Zizia aurea

Wet Sun Wildflowers Seed Mix (Forbs)					
<i>Botanical name</i>	Common Name	Qty (oz)	Height	Season/color	Notes
<i>Asclepias incarnata</i>	Swamp Milkweed	18.33	3 - 5'	Summer	
<i>Chelone glabra</i>	White Turtlehead	2.87	2 - 4'	Fall	
<i>Eupatorium coelestinum</i> (<i>Conoclinium</i>)	Mistflower	2.87	2 - 4'	Fall	
<i>Eupatorium purpureum</i> (<i>Eupatoriadelphus</i>)	Purple Joe-Pye weed	1.05	3 - 7'	Summer	
<i>Euthamia caroliniana</i> (<i>Solidago tenuifolia</i>)	Slender Goldentop	0.38	1 - 3'	Fall	
<i>Hypericum punctatum</i>	Dotted St. John's Wort	0.76	1 - 2'	Summer	Reliable, early flowering, lower matrix
<i>Lobelia siphilitica</i>	Great Blue Lobelia	1.76	1 - 4'	Fall	
<i>Penstemon digitalis</i>	White Beardtongue	5.08	2 - 4'	Spring	Reliable, tolerates a wide variety of conditions
<i>Pycnanthemum muticum</i>	Big Leaf Mountain Mint	0.4	2 - 3'	Summer	
<i>Pycnanthemum virginianum</i>	Mountain Mint	3.6	3 - 4'	Summer	
<i>Verbena hastata</i>	Blue Vervain	4.73	3 - 5'	Summer	
<i>Zizia aurea</i>	Golden Alexander	32	1 - 3'	Spring	Early season color variation

Nurse Crop Seeding Rates:

- Spring Seeding: Spring Oats (*Avena sativa*): 20 lb/acre
- Early Spring to Later Summer Seeding: Grain Rye (*Secale cereale*): 30 lb/acre
- Fall Seeding: Cereal Rye (*Secale cereale*): 30 lb/acre

Seed Sources:

Prairie Moon Nursery – info@prairiemoon.com, 866-417-8156
 Ernst Conservation Seed - sales@ernstseed.com, (800) 873-3321

Warwick Township Seed Mix Template

Rain Garden

Base seed mix with selective wildflowers added in plug / quart size containers for seasonal interest.

Use: Rain Gardens and bio-retention areas

Grass Seed Mix and Wildflower Plugs - grass seed mix comprised of sedges and rushes that provides quick cover and reliable cover in tough, rain garden conditions. Live perennial wildflower plants are added into the seed bed in plug or quart size depending on the need for quick cover and budget.

Specifications:

Site Conditions: 6.2 -7.2 - Silt Loam to Sandy Loam

Rate: 22 lbs. of seed/acre

Area in sq ft = 1000

Total seeds per sq ft = 200

Plant Ratio

6 Grasses (graminoides)

6 Total species



Carex brevior



Chelone lyonii Pink



Asclepias incarnata



Eupatorium coelestinum



Zizia aurea

Rain Garden Grass Seed Mix (graminoides)

Botanical name	Common Name	Qty (oz)	Height	Season/color	Notes
<i>Carex annectens xanthocarpa</i>	Small Yellow Fox Sedge	0.16	1 - 5'	Cool	Reliable, tolerates a wide range of conditions
<i>Carex brevior</i>	Plains Oval Sedge	0.55	1 - 3'	Cool	Very reliable, tolerates a wide range of conditions
<i>Carex vulpinoidea</i>	Fox Sedge	0.7	1 - 3'	Cool	
<i>Elymus virginicus</i>	Virginia Rye	6.67	2 - 4'	Cool	
<i>Juncus effusus</i>	Common Rush	0.03	2 - 5'	Cool	
<i>Juncus tenuis</i>	Path Rush	0.02	1'	Cool	Reliable, low height matrix

Nurse Crop Seeding Rates:

- Spring Seeding: Spring Oats (*Avena sativa*): 20 lb/acre
- Early Spring to Later Summer Seeding: Grain Rye (*Secale cereale*): 30 lb/acre
- Fall Seeding: Cereal Rye (*Secale cereale*): 30 lb/acre

Notes:

1. Use the following Ecotypes if available: North East - PA, NY, NJ, CT, MD
2. Grass only seed mix to be supplemented with perennial live plants, see below.

Seed Sources:

Prairie Moon Nursery – info@prairiemoon.com, 866-417-8156
Ernst Conservation Seed - sales@ernstseed.com, (800) 873-3321

Wildflower Planting – add the following species in plug or quart size, 12” to 18” on center, to areas pre-seeded with the Rain Garden Grass Seed Mix above.

<i>Botanical name</i>	Common Name	Qty	Size	Install notes	Height	Bloom time	Notes
<i>Amsonia tabernaemontana</i>	Blue Star Flower	15	1 QT	Plant in groups of 3	3 - 4'	May - Jun	Tolerates mesic-wet conditions, early flowering
<i>Asclepias incarnata</i>	Swamp Milkweed	50	PLUG	Plant at lowest grade in rain garden	2 - 4'	Jun - Aug	
<i>Aster novi-belgii</i>	New York Aster	6	1 QT		3 - 4'	Aug - Oct	
<i>Chelone lyonii</i> Pink	Turtlehead	50	PLUG		3'	Aug - Sept	Tolerates drier conditions than C.glabra
<i>Eupatorium coelestinum</i>	Mistflower	50	PLUG		2 - 3'	Sept - Oct	Tolerates a wide range of conditions, self seeding.
<i>Eupatorium dubium</i>	Three Nerved Joe Pye Weed	9	1 QT	Plant in groups of 3	2 - 5'	Jul - Sept	Tolerates most conditions, tall accent.
<i>Liatris spicata</i>	Blazing Star	45	1 QT	Plant in groups of 3 - 5	2 - 4'	Jul - Aug	Tolerates most conditions, reliable
<i>Lobelia cardinalis</i>	Cardinal Flower	50	PLUG	Plant in groups of 5 - 7	2 - 4'	Aug - Sept	
<i>Penstemon digitalis</i>	White Beardtongue	50	PLUG		2 - 4'	Jun - Jul	Reliable, tolerates a wide variety of conditions
<i>Physostegia virginiana</i>	Obediant Plant	15	1 QT		2 - 5'	Jul - Oct	Clonal, reliable
<i>Pycnanthemum tenuifolium</i>	Slender Mountain Mint	50	PLUG		2 - 3'	Jun - Sept	Pollinator value, clonal, reliable
<i>Rudbeckia laciniata</i>	Green Head Coneflower	5	1 QT		3 - 6'	July - Oct	Later season color variation
<i>Zizia aurea</i>	Golden Alexander	50	PLUG		1 - 3'	May - Jun	Early season color variation

Warwick Township Seed Mix Template

Steep Slope

Steep slopes are challenging conditions to establish plant material. Typically, the sites are very dry with poor soils and full sun. It is also important to establish plant cover quickly to reduce erosion. It is also important to use erosion control matting that encourages plant growth. We recommend a heavy core matting (spec) or high performance hydro-mulch sprayed over the seed.

Specifications:

Site Conditions: 6.2 -7.2 - Silt Loam to Sandy Loam

Rate: 41 lbs. of seed/acre

Total seeds per sq ft = 200

Plant Ratio:

8 Grasses (graminoides)

17 Wildflowers (forbs)

25 Total species



Carex vulpinoidea



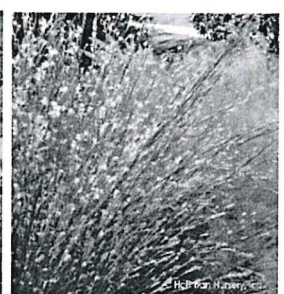
Echinacea purpurea



Eryngium yuccifolium



Helianthus divaricatus



Andropogon ternarius

Grasses – hardy, taller grasses with good cover and that take full sun, dry conditions are prioritized in this mix.

Steep Slope Grass Seed Mix (*graminoides*)

<i>Botanical name</i>	Common Name	Qty (oz)	Height	Season/color	Notes
<i>Andropogon gerardii</i>	Big Blue Stem	10.56	4 – 8'	Warm	
<i>Bouteloua curtipendula</i>	Sideoats Grama	132	1 - 3'	Warm	
<i>Carex bicknellii</i>	Copper Oval Sedge	9.32	2 – 3'	Cool	Grows anywhere
<i>Carex brevior</i>	Plains Oval Sedge	9.1	1 – 3'	Cool	Upland sedge, flops in spring, tall
<i>Carex vulpinoidea</i>	Fox Sedge	7.92	1 – 3'	Cool	Reseeds well
<i>Elymus virginicus</i>	Virginia Rye	125.71	2 - 4'	Cool	
<i>Tridens flavus</i>	Purpletop	18.66	2 - 5'	Warm	
<i>Schizachyrium scoparium</i>	Little Bluestem	140.8	2 – 3'	Warm	Sun

Wildflowers – The selections listed below provide showy flowers during the growing season while tolerating tough, dry and full sun conditions. Wildflowers can be seeded with the grass mix or added after the first few years of management to control pre-existing weed and invasive species.

Wildflowers (Forbs) Seed Mix					
<i>Botanical name</i>	Common Name	Qty (oz)	Height	Season/color	Notes
<i>Asclepias tuberosa</i>	Butterfly Weed	8.19	1- 3'	Summer	Reliable, early summer flowering
<i>Aster laevis</i> (<i>Symphiotrichum</i>)	Smooth Aster	6.4	2 - 5'	Fall	Reliable, fall flowering, tall
<i>Echinacea purpurea</i>	Purple Coneflower	42.67	3 - 5'	Summer	
<i>Echinacea pallida</i> Pale	Purple Coneflower	33.85	2 - 4'	Summer	Reliable, tolerates sunny - mesic to dry conditions
<i>Eryngium yuccifolium</i>	Rattlesnake Master	46.93	4 - 5'	Summer	
<i>Helenium flexuosum</i>	Helen's Flower	0.88	1 - 3'	Fall	Very reliable
<i>Hypericum punctatum</i>	Dotted St. John's Wort	0.61	1 - 2'	Summer	Reliable, early flowering, lower matrix
<i>Lespedeza capitata</i>	Round-headed Bush Clover	8.8	2 - 4'	Summer	Reliable, winter interest
<i>Monarda fistulosa</i>	Wild Bergamot	1.41	2 - 4'	Summer	Extremely reliable
<i>Parthenium integrifolium</i>	Wild Quinine	15.09	2 - 5'	Spring	Tall, summer flowering
<i>Penstemon digitalis</i>	White Beardtongue	4.06	2 - 4'	Spring	Reliable, early season
<i>Ratibida pinnata</i>	Yellow Coneflower	2.35	3 - 6'	Summer	
<i>Rudbeckia hirta</i>	Black Eyed Susan	1.91	1 - 3'	Summer	Early season, provides indication of germination success
<i>Rudbeckia triloba</i>	Thin-leaf Coneflower	3.11	2 - 5'	Fall	Fall flowering, reliable species
<i>Solidago juncea</i>	Early Goldenrod	2.46	1 - 3'	Summer	Early flowering goldenrod
<i>Solidago rigida</i> (<i>Oligoneuron</i>)	Stiff Goldenrod	6.87	1 - 5'	Fall	Tall, very reliable, showy flowers, pollinator value.
<i>Zizia aurea</i> Golden Alexander	Golden Alexander	16	1 - 3'	Spring	Early season, reliable cover.

Nurse Crop Seeding Rates:

- Spring Seeding: Spring Oats (*Avena sativa*): 20 lb/acre
- Early Spring to Later Summer Seeding: Grain Rye (*Secale cereale*): 30 lb/acre
- Fall Seeding: Cereal Rye (*Secale cereale*): 30 lb/acre

Seed Sources:

Prairie Moon Nursery – info@prairiemoon.com, 866-417-8156
 Ernst Conservation Seed - sales@ernstseed.com, (800) 873-3321

Warwick Township Seed Mix Template

Part Shade

Shade and part shade tolerant grass and wildflower mix groundcover with seasonal interest

Use: riparian buffer, understory or tree planting areas

Specifications:

Site Conditions: 6.2 -7.2 - Silt Loam to Sandy Loam

Rate: 29 Total lbs. seed/acre

Total seeds per sq ft = 200

Planting Ratio:

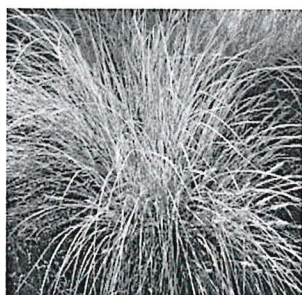
5 Grasses (graminoides)

13 Wildflowers (forb)

18 Total species



Carex brevior



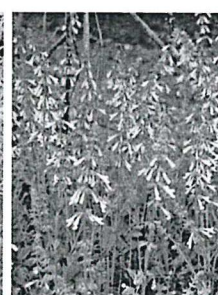
Carex vulpinoidea



Zizia aurea



Rudbeckia hirta



Salvia lyrata

Grass Seed Mix

<i>Botanical name</i>	Common Name	Qty (oz)	Height	Season/color	Notes
<i>Bouteloua curtipendula</i>	Sideoats Grama	256.67	1 - 3'	Warm	Can take partial shade, high germination success, useful in early planting prior to actual shade conditions.
<i>Carex brevior</i>	Plains Oval Sedge	12.14	1 - 3'	Cool	Very reliable, tolerates a wide range of conditions
<i>Carex normalis</i>	Spreading Oval Sedge	7.04	1 - 3'	Cool	Fine textured, reliable
<i>Carex vulpinoidea</i>	Fox Sedge	11	1 - 3'	Cool	
<i>Deschampsia caespitosa</i>	Tufted Hairgrass	13.11	10"	Cool	Cool season graminoid with warm season characteristics

Wildflowers – These selections provide showy flowers during the growing season while tolerating tough, dry and full sun conditions. Wildflowers can be seeded with the grass mix or added after the first few years of management to control pre-existing weed and invasive species.



Aster divaricatus



Coreopsis lanceolata



Penstemon digitalis



Mondarda punctata



Echinacea purpurea

Wildflowers (Forbs) Seed Mix

<i>Botanical name</i>	Common Name	Qty (oz)	Height	Season/color	Notes
<i>Aster divaricatus</i> (<i>Eurybia</i>)	White Wood Aster	10.48	1 - 2'	Fall	
<i>Coreopsis lanceolata</i>	Tickseed	11	2 - 3'	Spring	Reliable short term species, good indicator of germination success
<i>Echinacea purpurea</i>	Purple Coneflower	80	3 - 5'	Summer	
<i>Eupatorium coelestinum</i> (<i>Conoclinium</i>)	Mistflower	1.26	1 - 3'	Fall	
<i>Mondarda punctata</i>	Horsemint	3.91	1 - 2'	Summer	Reliable, biennial
<i>Penstemon digitalis</i>	White Beardtongue	5.08	2 - 4'	Spring	
<i>Penstemon hirsutus</i>	Hairy Beardtongue	1.24	1 - 2'	Spring	
<i>Pycnanthemum pilosum</i>	Hairy Mountain Mint	1.9	2 - 3'	Summer	Shade tolerant, reliable.
<i>Rudbeckia hirta</i>	Black Eyed Susan	2.39	1 - 3'	Summer	Early season, provides indication of germination success
<i>Salvia lyrata</i>	Lyre Leaved Sage	5.87	1'	Spring	Reliable, early flowering, color interest
<i>Solidago caesia</i>	Wreath Goldenrod	5.24	1 - 2'	Fall	Fall flowering
<i>Tradescantia virginiana</i>	Virginia Spiderwort	12.22	1 - 3'	Spring	Spring flowering, reliable
<i>Zizia aurea</i>	Golden Alexander	24	3-Jan	Spring	Reliable

Nurse Crop Seeding Rates:

- Spring Seeding: Spring Oats (*Avena sativa*): 20 lb/acre
- Early Spring to Later Summer Seeding: Grain Rye (*Secale cereale*): 30 lb/acre
- Fall Seeding: Cereal Rye (*Secale cereale*): 30 lb/acre

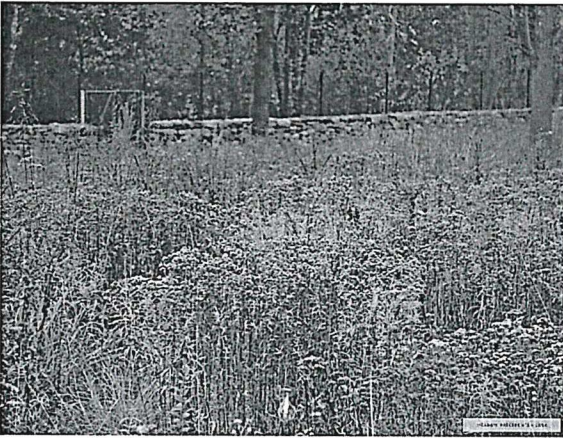
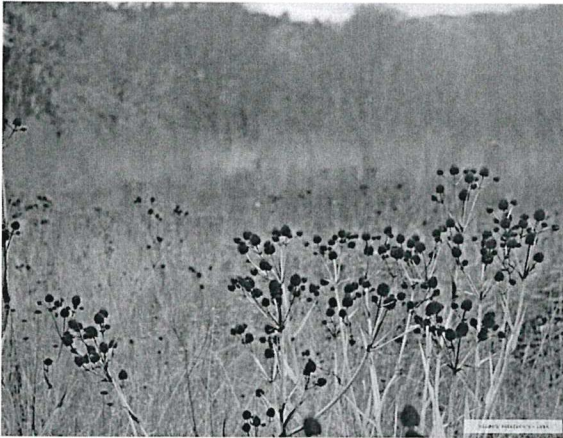
Seed Sources:

Prairie Moon Nursery – info@prairiemoon.com, 866-417-8156
 Ernst Conservation Seed - sales@ernstseed.com, (800) 873-3321

Example Meadow Images







Recommended Seed Mix Alternatives

Alternative seed mix options to the custom seed mixes shown above

Use: These alternative seed mixes can be used in the specified areas. Ernst mixes can simplify the procurement, but soil properties should be verified before mix selection and installation. Ernst seed mix formulations may change, so it is important to review the species in the current mix to verify the desired outcomes. For more information each of the seed mixes listed below refer to ernstseed.com.

Dry Sun:

- Ernst Mix 105: Mesic to Dry Pollinator Mix
- Ernst Mix 153: Showy Northeast Native Wildflower and Grass Mix

Wet Sun:

- Ernst Mix 120: OBL-FACW Perennial Food and Cover Wetland Mix
- Ernst Mix 122: FACW Wetland Meadow Mix
- Ernst Mix 131: OBL Wetland Mix
- Ernst Mix 137: Specialized Wetland Mix for Shaded OBL-FACW Areas

Rain Garden:

- Ernst Mix 180: Rain Garden Mix
- Ernst Mix 183: Native Detention Area Mix (no forbs)

Steep Slope:

- Ernst Mix 181: Native Steep Slope Mix w/ Annual Ryegrass or Oats

Part Shade:

- Ernst Mix 137: Specialized Wetland Mix for Shaded OBL-FACW Areas
- Ernst Mix 140: Partially Shaded Area Roadside Mix

Additional Seeding Information

Erosion Control Blanket:

Erosion control matting is vital to success of seeding, specifically in areas where higher levels of erosion is expected (i.e. swales, steep slopes, flooding areas). A qualified professional should be consulted to identify the correct matting type for the specific site, seed and project. Biodegradable matting provides a multitude of benefits and is recommended.

Soil Testing:

Soil testing should be performed prior to seed mix selection to best determine the survivability of species on a given site. The seed mix should be tailored to meet the existing soil conditions. For soil testing information refer to the Penn State Extension.

Penn State Agricultural Analytical Services Lab: agsci.psu.edu
<https://agsci.psu.edu/aasl/soil-testing/fertility>

Seeding Window:

The seeding window depends on a lot of factors including species type, application method and weather conditions. The seeding window will be determined by a combination of these factors and coordinated with a qualified professional for best results, but generally spring or fall seeding is recommended. There are a number of pros and cons to seeding in different seasons. For more information to help guide the seeding window, refer to Ernst Seed planting guide resource below.

<https://www.ernstseed.com/resources/planting-guides/spring-vs-fall-seeding/>

EXHIBIT B

STORMWATER MANAGEMENT

270 Attachment 12

Township of Warwick
Appendix G

PCSM BMP Title Block Template

INDIVIDUAL PCSM BMP INFORMATION

PCSM BMP Name:		PCSM BMP #:	
PCSM BMP Description/Type:		Size of BMP (acres or LF):	
Location data (dec. degrees):		BMP Life Cycle (years):	
Total Treatment Area:	<i>Total Acres Treated</i>	Cost Share Funding (Y or N):	
Impervious Surface Treatment Area:	<i>Acres Treated</i>	Funding Source:	
Volume of stormwater treated (cf):		Add'l Information:	
Volume Reduction (cf) (if applicable):			