



Town of Middletown  
19 West Green Street  
Middletown, DE 19709  
(302) 378-2711

### **Step 2/3: Sediment & Stormwater Management Plan Review Checklist**

DATE RECEIVED: \_\_\_\_\_ PROJECT NUMBER: \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_

The items contained on this checklist are necessary to properly evaluate and determine the completeness of any plan submitted for approval under the Delaware Sediment and Stormwater Regulations.

**Complete all items. It is understood not all items will be applicable to all projects and as such marking an item "N/A" is acceptable.**

#### **I. General Information:**

- 1) \_\_\_\_\_ Completed application signed by the owner, review fee, one set of plans and reports, and a completed checklist. Submit electronic plan and report program files as applicable upon request:
  - a) \_\_\_\_\_ AutoCAD / Microstation
  - b) \_\_\_\_\_ DURMM Excel files from the latest version available on DNREC website
  - c) \_\_\_\_\_ Hydrologic and hydraulic modeling files (i.e. HydroCAD or similar)
- 2) \_\_\_\_\_ Copy of the notice to DelDOT, a municipality, or a private entity (i.e., neighboring Homeowner's Association) for the intent to discharge or connect to their stormwater system. The notice should indicate the proposed condition and that any comments regarding the discharge should be returned within 60 calendar days. If no comments are received, then consent to discharge is assumed. If directly copied on the notice, indicate the date of the notice and the reviewer copied:  
\_\_\_\_\_.
- 3) \_\_\_\_\_ Hydraulic and hydrology computations, reflecting the proposed site conditions.
- 4) \_\_\_\_\_ All plans scaled to 24" x 36" (minimum) sheets unless otherwise approved.
- 5) \_\_\_\_\_ Index sheet illustrating the entire project on one 24" x 36" (minimum) sheet when two or more sheets are used to illustrate the plan view.
- 6) \_\_\_\_\_ North arrow.
- 7) \_\_\_\_\_ All plan views to a defined scale with a scale bar.
- 8) \_\_\_\_\_ Names of adjacent property owners.
- 9) \_\_\_\_\_ Existing and proposed contours (if provided) based on NAVD 88 vertical datum at 1-foot intervals (2-foot intervals can be provided for offsite drainage information based on the latest Lidar information).
- 10) \_\_\_\_\_ Existing and proposed spot elevations for small projects less than ½ acre of disturbance, based on NAVD 88 vertical datum on a 50-foot grid system. Include high and low points.
- 11) \_\_\_\_\_ Location of site in NAD 83 horizontal datum

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- 12) \_\_\_\_ Copy of the Site Plan(s) and Grading Plan(s) as prepared for the local approval agencies for review and informational purposes.
- 13) \_\_\_\_ Copy of the preliminary Record Plan as prepared for the local land use approval agency for review and informational purposes.
- 14) \_\_\_\_ Plan signed, dated, and sealed by a Licensed Professional in the State of Delaware.
- 15) \_\_\_\_ Sediment and Stormwater Management plans in the following order and title. The sheet list should appear on the coversheet, and each plan sheet should be respectively titled (include the title of the plan within the title block or lower right-hand corner of the sheet):
  - a) \_\_\_\_ Coversheet and General Notes
  - b) \_\_\_\_ Overall Construction Site Phasing Plan (if applicable)
  - c) \_\_\_\_ Overall Pre-Construction Site Stormwater Management Plan (if applicable)
  - d) \_\_\_\_ Pre-Construction Site Stormwater Management Plan #X
  - e) \_\_\_\_ Overall Construction Site Stormwater Management Plan (if applicable)
  - f) \_\_\_\_ Construction Site Stormwater Management Plan #X
  - g) \_\_\_\_ Construction Site Details and Notes (including the Sequence of Construction)
  - h) \_\_\_\_ Overall Post Construction Stormwater Management Plan
  - i) \_\_\_\_ Post Construction Stormwater Management Plan, Facility #X
  - j) \_\_\_\_ Overall BMP Contributing Drainage Area Plan (to be included in the final Stormwater Report)
  - k) \_\_\_\_ BMP Contributing Drainage Area Plan (to be included in the final Stormwater Report)
  - l) \_\_\_\_ Pre-Developed Subarea Limit of Disturbance Drainage Area Plan (to be included in the final Stormwater Report)
- 16) \_\_\_\_ For final approval, the following items should be submitted:
  - a) \_\_\_\_ Completed Notice of Intent (NOI) and associated fee should be submitted to DNREC.
  - b) \_\_\_\_ Copy of the recorded permanent easement when a stormwater facility or outfall is located outside of the property boundary.
  - c) \_\_\_\_ Wetland permit when construction of a stormwater facility will impact State and/or Federal wetlands.
  - d) \_\_\_\_ Approval letter from the DNREC Drainage Section for any encroachment or change in runoff discharge to an existing tax ditch or adjacent right-of-way.

#### **II. Coversheet:**

- 17) \_\_\_\_ Project Header:

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- a) \_\_\_\_ Project Name (and Phase, if applicable; to duplicate in the title block on each sheet).
- b) \_\_\_\_ Title of Plan Set: Sediment and Stormwater Management Plans (to duplicate in the title block on each sheet)
- c) \_\_\_\_ Project Location (including watershed, hundred, town, county, etc., as applicable).
- d) \_\_\_\_ Project tax map identification number(s).
- 18) \_\_\_\_ Legend indicating plan symbols and lines, including but not limited to, soils, drainage area information, grading, and site information.
- 19) \_\_\_\_ Vicinity map with a scale appropriate to project size and the site boundary within the map. The map should be no smaller than 4"x4" and clearly indicate at least one intersecting road.
- 20) \_\_\_\_ Project Notes:
  - a) \_\_\_\_ Parcel Data:
    - i) \_\_\_\_ Project tax map identification number(s)
    - ii) \_\_\_\_ PLUS Number (if applicable)
    - iii) \_\_\_\_ DNREC Sediment and Stormwater Program (or relevant Delegated Agency) Number
    - iv) \_\_\_\_ Site Address (or Nearest Intersecting Street and Distance between)
    - v) \_\_\_\_ Latitude and Longitude State Plane coordinates, with approximate geographical location (i.e., Benchmark #1, Northeast Site Corner, etc.) and in degree decimal format. (xx.xxxxxx, -xx.xxxxxx)
    - vi) \_\_\_\_ Existing Site Area
    - vii) \_\_\_\_ Proposed Site Area
    - viii) \_\_\_\_ Existing Wetland Area
    - ix) \_\_\_\_ Proposed Condition (i.e., number of lots, total building square footage, etc.)
    - x) \_\_\_\_ Proposed Discharge Location(s)
    - xi) \_\_\_\_ Proposed Total Limit of Disturbance per Discharge Location
  - b) \_\_\_\_ Contact Data: (Name, Company, Full Street Address, Phone Number, e-mail Address)
    - i) \_\_\_\_ Owner
    - ii) \_\_\_\_ Developer
    - iii) \_\_\_\_ Designer

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- 21) \_\_\_\_ Signed Owner's Certification that states "I, the undersigned, certify that all land clearing, construction and development should be done pursuant to the approved plan and that responsible personnel (i.e., Blue Card Holder) involved in the land disturbance will have a Certification of Training prior to initiation of the project, at a DNREC sponsored or approved training course for the control of erosion and sediment during construction. In addition, I grant the DNREC Sediment and Stormwater Program and/or the relevant Delegated Agency the right to conduct onsite reviews, and I understand my responsibilities under the NPDES Construction General Permit, as referenced on this Coversheet." Signed in ink on each plan submitted or on an original reproducible. Include the owner's name and title printed under the signature line.
- 22) \_\_\_\_ If during the SAS review meeting, it is determined that a wetland delineation is required onsite, include a Wetland Certification, signed in ink, stating the site has been examined to both State and Federal requirements. The following should be used unless an alternate has been approved: "This property, tax map #XXX, has been examined by [company name] for the presence of Waters of the United States, including wetlands (Section 404 and Section 10), State subaqueous lands and State regulated wetlands as established by the reviewing agencies in the form of manuals, policies and procedures in place at the time that the investigation was conducted. The wetland information contained in this plan set is in accordance with this criteria [or, There were no wetlands found within the subject property], per State JD #XXX and/or Army Corps JD #XXX [as applicable].
- 23) \_\_\_\_ Signed Licensed Professional Certification that states "I hereby certify that this plan has been prepared under my supervision and to the best of my knowledge complies with the applicable state and local regulations and ordinances." Signed in ink or an original reproducible. Include the Licensed Professional's name and title printed under the signature line.
- 24) \_\_\_\_ Include the following Standard Sediment and Stormwater Construction Notes:
- a) \_\_\_\_ The DNREC Sediment and Stormwater Program *[or the relevant Delegated Agency]* shall be notified in writing 5 days prior to commencing with construction. Failure to do so constitutes a violation of the approved Sediment and Stormwater Management Plan.
  - b) \_\_\_\_ Review and/or approval of the Sediment and Stormwater Management Plan shall not relieve the contractor from his or her responsibilities for compliance with the requirements of the Delaware Sediment and Stormwater Regulations, nor shall it relieve the contractor from errors or omissions in the approved plan.
  - c) \_\_\_\_ If the approved plan needs to be modified, additional sediment and stormwater control measures may be required as deemed necessary by DNREC or the Delegated Agency.
  - d) \_\_\_\_ Following soil disturbance or redisturbance, permanent or temporary stabilization shall be completed for all perimeter sediment controls, soil stockpiles, and all other disturbed or graded areas on the project site within 14 calendar days unless more restrictive Federal requirements apply.
  - e) \_\_\_\_ All erosion and sediment control practices shall comply with the Delaware Erosion and Sediment Control Handbook, latest edition.

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- f) \_\_\_\_ At any time a dewatering operation is used, it shall be previously approved by the Agency Construction Site Reviewer for a non-erosive point of discharge, and a dewatering permit should be approved by the DNREC Well Permitting Branch.
- g) \_\_\_\_ Approved plans remain valid for 5 years from the date of approval.
- h) \_\_\_\_ Post construction verification documents shall be submitted to the Department *[or the relevant Delegated Agency]* within 60-days of stormwater management facility completion.
- i) \_\_\_\_ Approval of a Sediment and Stormwater Management Plan does not grant or imply a right to discharge stormwater runoff. The owner/developer is responsible for acquiring any and all agreements, easements, etc., necessary to comply with State drainage and other applicable laws.
- j) \_\_\_\_ The Notice of Intent for Storm Water Discharges Associated with Construction Activity under a NPDES General Permit for this project is # (to be filled in once received). The permittee of record shall not be relieved of their responsibilities until a Notice of Termination has been processed by the Department.
- k) \_\_\_\_ The owner shall be familiar with and comply with all aspects of the NPDES Construction General Permit.
- l) \_\_\_\_ The contractor shall at all times protect against sediment or debris laden runoff or wind from leaving the site. Perimeter controls shall be checked daily and adjusted or repaired to fully contain and control sediment from leaving the site. Accumulated sediment shall be removed when it has reached half of the effective capacity of the control. In addition, the contractor may need to adjust or alter measures in times of adverse weather conditions, or as directed by the Agency Construction Site Reviewer.
- m) \_\_\_\_ Before any earthwork or excavation takes place, the contractor should call Miss Utility at 811 or 1-800-282-8555 at least 48 hours prior to construction, to have all existing utilities marked onsite.
- n) \_\_\_\_ Best available technology (BAT) shall be employed to manage turbid discharges in accordance with requirements of 7 Del.C. Ch. 60 and the current Delaware Construction General Permit (CGP).
- o) \_\_\_\_ Documentation of soil testing and materials used for temporary or permanent stabilization including but not limited to soil test results, seed tags, soil amendment tags, etc. shall be provided to the Department *[or the relevant Delegated Agency]* to verify that the permanent or temporary stabilization has been completed in accordance with the approved plan.
- p) \_\_\_\_ The Department *[or the relevant Delegated Agency]* may require additional soil testing and reapplication of permanent or temporary stabilization in accordance with the specifications in the Delaware Erosion and Sediment Control Handbook, or alternative measures that provide functional equivalency.
- q) \_\_\_\_ When directed by the Department *[or the relevant Delegated Agency]*, the Owner shall acquire the services of a third party Certified Construction Reviewer (CCR) to perform weekly

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construction reviews. Sediment and Stormwater management Plans approved by the Department shall have a third party CCR.

- 25) \_\_\_\_ List of all sheets and their corresponding sheet number for all Sediment and Stormwater Management Plans.
- 26) \_\_\_\_ Minimum 3"x5" clear area for an approval stamp on the right third of the coversheet.

#### **III. Drainage Area Plans:**

The drainage area plans should provide a graphic portrayal of the information that is contained within the DURMM worksheets.

- 27) \_\_\_\_ Overall BMP Contributing Drainage Area Plan
- a) \_\_\_\_ For sites that cannot be shown in their entirety at the maximum scale of 1"=100'.
  - b) \_\_\_\_ Type and location of stormwater BMP(s) including the BMP drainage area boundary.
  - c) \_\_\_\_ Total area of each sub-drainage area.
  - d) \_\_\_\_ Summary table indicating the sub-areas and their respective point of analysis, total area, and RCN.
  - e) \_\_\_\_ Limit of Disturbance Line
- 28) \_\_\_\_ Subsequent BMP Contributing Drainage Area Plans and Pre-Developed Subarea Limit of Disturbance Drainage Area Plans including the following:
- a) \_\_\_\_ Soils mapping on the plan, using the latest NRCS soil information, with a general description of each soil. Include the Hydrologic Soils Group (HSG), i.e., A, B, C or D.
  - b) \_\_\_\_ Legend indicating the various land covers per soil type classification (a hatch should be provided for each type of land cover; i.e., grass-B soils, impervious-D soils).
  - c) \_\_\_\_ Summary table indicating the sub-areas and their respective point of analysis, total area, and RCN.
  - d) \_\_\_\_ Limit of Disturbance Line
- 29) \_\_\_\_ BMP Contributing Drainage Area Plan
- a) \_\_\_\_ Plan correlating to the DURMM Contributing Area RCN worksheet (post development model for the entire drainage area) for each subarea (subareas may be combined onto the same sheet, so long as they are clearly distinguishable).
  - b) \_\_\_\_ LOD and the OLOD contributing areas, separated per their respective land cover and soil type classification and the area of each designation.
  - c) \_\_\_\_ Location, type, and sizing information for each BMP including a representative cross section.
  - d) \_\_\_\_ Tc path for the area outside the LOD as used in the OLOD worksheet.

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- e) \_\_\_\_ Tc path for any other areas that require further analysis using other H&H software.
- 30) \_\_\_\_ Pre-Developed Subarea Limit of Disturbance Drainage Area Plan
  - a) \_\_\_\_ Plan correlating to the Pre-Developed LOD information requested in the DURMM LOD worksheet (location of woods/meadow and impervious conditions within the LOD per sub-area prior to disturbance) for each subarea (subareas may be combined onto the same sheet, so long as they are clearly distinguishable).
  - b) \_\_\_\_ Areas of woods/meadow and impervious condition per soil type classification and the area of each designation.
- 31) \_\_\_\_ Any additional hydraulic, hydrologic computations, drainage area maps or watershed plans to show compliance with the *Delaware Sediment and Stormwater Regulations* (i.e., to satisfy the Cv and Fv requirements). These plans are not prescribed but should follow similar guidelines, clearly indicate the parameters used within the calculations, and be contained within the Preliminary Sediment and Stormwater Management Plan set.

#### **IV. Stormwater Management Report:**

- 32) \_\_\_\_ Information in the report should be in the following order:
  - a) \_\_\_\_ Coverpage
  - b) \_\_\_\_ Table of Contents
  - c) \_\_\_\_ Site Narrative:
    - i) \_\_\_\_ Introduction
    - ii) \_\_\_\_ Existing Conditions describing the drainage patterns, land use(s), and existing features. Include 2017 site aerial and photos of the site conditions and at all discharge locations.
    - iii) \_\_\_\_ Existing Soils description per the current NRCS mapping data including the hydrologic soil group.
    - iv) \_\_\_\_ Post Development Conditions, including summary of the proposed development, the proposed drainage system, indication of why the standards or performance approach was used, methods for RPv, Cv, and Fv compliance, requests for variances and/or offsets, etc.
    - v) \_\_\_\_ Include DURMM RPv Summary Table
    - vi) \_\_\_\_ Indicate RPv Method of Compliance Analysis: Drainage Area Method or Project Limit of Disturbance Method
    - vii) \_\_\_\_ Construction Site Conditions, describing methods to prevent sediment and pollution discharge and illicit transportation.

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- viii) \_\_\_\_ Conclusion (Note: The intent of the construction and post construction practices should be described, indicating how the site will be handled with any potential concerns documented.)
- d) \_\_\_\_ DURMM computations and a schematic of the drainage subareas and stormwater practices.
- e) \_\_\_\_ Additional hydraulic and hydrologic (H&H) computations for unmanaged areas require submittal of pre and post development R<sub>Pv</sub>, C<sub>v</sub> and F<sub>v</sub>.
- f) \_\_\_\_ Supplementary construction site computations (i.e., temporary sediment basin sizing, anti-seep collar sizing, forebay sizing, etc.).
- g) \_\_\_\_ Soil report(s) including boring locations, log reports, and infiltration testing results as applicable in accordance with Appendix A-1 Soil Investigation Procedures.
- h) \_\_\_\_ Appendix containing any supplemental information.
- 33) \_\_\_\_ Drainage calculations for the R<sub>Pv</sub>, C<sub>v</sub>, and F<sub>v</sub> events using the latest DURMM model and other approved H&H software as appropriate.
- 34) \_\_\_\_ All inputted data supported by surveys, Lidar information, photos, aerials, maps, etc. and referenced in the report and/or drainage area plans. Information previously included within the Stormwater Assessment Study submittal is acceptable and does not need to be duplicated although it should be referenced accordingly.
- 35) \_\_\_\_ Computations based on the NRCS 24-hour rainfall event, using either NRCS Type II or appropriate NOAA Rainfall Distribution Curve for both pre and post development conditions. For projects south of the Chesapeake and Delaware (C&D) Canal, the Delmarva Unit Hydrograph should be used for computing peak discharges.
- 36) \_\_\_\_ Pre-development condition based off of the 2017 aerial photography provided by the State of Delaware, through Stormwater Assessment Study GIS Web Application. This may not directly correlate to current site conditions if the land use has changed; however, the 2017 land use should be used even if more or less conservative than the current land use.
- 37) \_\_\_\_ Pre-development condition computed assuming that all existing land uses in the site are in good hydrologic condition.
- 38) \_\_\_\_ Sizing information for the BMP(s) meeting sizing guidelines according to Post Construction Stormwater BMP Standards and Specifications.
- 39) \_\_\_\_ BMP capacity information for any detention practices to be used.

#### **V. Construction Site Stormwater Management Plans**

- 40) \_\_\_\_ Overall Construction Site Phasing Plan:
  - a) \_\_\_\_ Only when the site has more than one limit of disturbance. Projects should be phased so that no more than 20 acres are disturbed at any one time. Grading of the next phase cannot proceed until temporary or permanent stabilization of the first 20-acre section is accomplished.



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- b) \_\_\_\_ Extents of each phase clearly indicated in relation to the site plan (no existing or proposed grading).
  - c) \_\_\_\_ Indicate the location of the detailed sheets by match line and page number reference.
  - d) \_\_\_\_ Summary/legend for the limit of disturbance areas, indicating their total disturbed acreage and the lots, buildings and/or stormwater facilities that are included within the limit of disturbance.
- 41) \_\_\_\_ For subsequent Pre-Construction and Construction Site Stormwater Management Plans:
- a) \_\_\_\_ "Limit of disturbance" line(s).
  - b) \_\_\_\_ Total disturbed acreage on the plan if an Overall Phasing Plan has not been included.
  - c) \_\_\_\_ Existing contours a minimum of 100 feet beyond the limit of disturbance. LiDAR 2' contours are acceptable for offsite areas.
  - d) \_\_\_\_ State and Federal wetlands delineated.
  - e) \_\_\_\_ All streams and drainage ways delineated.
  - f) \_\_\_\_ The National Flood Insurance Program 100 Year Flood Zone delineated.
  - g) \_\_\_\_ Project benchmark with the elevation in NAVD 88 vertical datum and NAD 83 horizontal datum.
- 42) \_\_\_\_ Overall Pre-Construction Site Stormwater Management Plan (as determined at the SAS review meeting):
- a) \_\_\_\_ Only for sites that cannot be shown in their entirety at the maximum scale of 1"=100'.
  - b) \_\_\_\_ Entire site boundary in existing conditions plan view (i.e., site boundary, existing contours, wetlands, tree lines, existing structures/utilities to remain or to be removed, etc.).
  - c) \_\_\_\_ Location of all perimeter controls, stockpile locations, sediment trapping facilities, and other construction stormwater management controls needed for demolition and bulk grading (i.e., silt fence, stabilized construction entrances, temporary swales, inlet protection for existing inlets, sediment basins, etc.).
  - d) \_\_\_\_ Location of the detailed sheets by match line and page number reference.
  - e) \_\_\_\_ Legend for all of the construction site lines and symbols used within the Pre-Construction Plan (i.e., silt fence, limit of disturbance, temporary berm, etc.). The lines and symbols shall be as specified in the Delaware Erosion and Sediment Control Handbook, latest edition. If an Overall plan is not needed, provide the legend on the singular Pre-Construction Site Stormwater Management Plan.
- 43) \_\_\_\_ Pre-Construction Site Stormwater Management Plan (as determined at the SAS review meeting):
- a) \_\_\_\_ For all sites at a maximum scale of 1" = 100'.

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- b) \_\_\_\_ Entire site boundary in an existing conditions plan view (i.e., site boundary, existing contours, wetlands, tree lines, existing structures/utilities to remain or to be removed, etc.).
  - c) \_\_\_\_ Location of all perimeter controls, stockpile locations, sediment trapping facilities, and other construction stormwater management controls needed for demolition and bulk grading (i.e., silt fence, stabilized construction entrances, temporary swales, sediment basins, etc.).
  - d) \_\_\_\_ Detailed labels and specifications for the controls used (i.e. "Data to be Provided" or "Data" blocks from the Delaware Erosion & Sediment Control Handbook, latest edition, details).
- 44) \_\_\_\_ Overall Construction Site Stormwater Management Plan:
- a) \_\_\_\_ Only for sites that cannot be shown in their entirety at the maximum scale of 1"=50'.
  - b) \_\_\_\_ All construction stormwater management controls for the site in relation to the site's grading and stormwater facilities.
  - c) \_\_\_\_ Indicate the location of the detailed sheets by match line and page number reference.
  - d) \_\_\_\_ Legend for all of the construction site lines and symbols used within the plan set (i.e., silt fence, limit of disturbance, inlet protection, etc.). The lines and symbols should be as specified in the *Delaware Erosion and Sediment Control Handbook*, latest edition. If an Overall plan is not needed, provide the legend on the singular Construction Site Stormwater Management Plan.
- 45) \_\_\_\_ Construction Site Stormwater Management Plan(s):
- a) \_\_\_\_ For all sites at a maximum scale of 1" = 50'.
  - b) \_\_\_\_ All construction stormwater management controls for the site in relation to the site's grading and stormwater facilities.
  - c) \_\_\_\_ Detailed labels and specifications for the controls used (i.e. "Data to be Provided" or "Data" blocks from the Delaware Erosion & Sediment Control Handbook, latest edition, details).
  - d) \_\_\_\_ Location of all utilities, construction staging areas, geothermal well-fields, and any/all other areas that construction equipment will traverse or disturb. These areas should be within the limit of disturbance and be provided with appropriate construction site controls.
- 46) \_\_\_\_ For Pre-Construction and Construction Site Stormwater Management Plans, locate and label all construction site stormwater control practices on the plans as previously mentioned. The following should be included, unless supporting evidence of why they are not necessary is addressed in the revised Stormwater Management Report. The list is not exhaustive and the construction site design should include any/all control practices contained within the *Delaware Erosion and Sediment Control Handbook*, or others as approved by DNREC, that are necessary to prevent sediment and pollution discharge from the site.
- a) \_\_\_\_ An approved perimeter control placed downslope of all disturbed areas (or surrounding "flat areas") to protect against sediment laden runoff from leaving the site or entering non-disturbed areas. It should be placed parallel to the contours and keyed perpendicular to the contours at the

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limits to prevent sediment from washing around the ends. Locate and denote the type with any specifications.

- b) \_\_\_\_ Reinforced and/or super silt fence in areas of steep slopes and/or adjacent to sensitive areas such as wetlands, streams, and drainage ways.
- c) \_\_\_\_ Silt fence behind the curb lines if site conditions warrant.
- d) \_\_\_\_ Orange safety fencing provided around all infiltration areas and noted that no heavy construction equipment should traverse the future infiltration area.
- e) \_\_\_\_ Orange safety fencing is recommended to be placed around the drip line of all preserved trees.
- f) \_\_\_\_ Soil stockpile areas delineated for each phase of construction. Locate stockpiles on areas with little or no slope. Stockpiles surrounded with an approved perimeter control.
- g) \_\_\_\_ Stabilized construction entrance(s) for each phase of construction and appropriate measures to ensure traffic uses the entrance (i.e., keying silt fence up to the entrance).
- h) \_\_\_\_ Sediment traps and basins as appropriate and sized to accommodate 3,600 cubic feet of storage per acre of contributing drainage area until project stabilization is complete. These structures should be located at the base of the drainage area and include the top of slope elevation, bottom elevation, outlet elevation, dimensions, proposed volume, required volume, type of trap or basin, a minimum 2:1 length to width ratio and contributing drainage area. Include details, cross-sections, and specifications. This information can be combined with the facility's Post Construction Stormwater Management Plan as appropriate.
- i) \_\_\_\_ Specify the location, DNREC denoted type, and an example product for all stabilization practices, including any treatments, seeding, mulching and/or matting, both temporary and permanent.
- j) \_\_\_\_ Erosion control matting on slopes of 3:1 or greater and in areas of concentrated flow. Specify the DNREC denoted type, with an example product, and the location of the matting.
- k) \_\_\_\_ Channel interruptions in all swales, ditches and channels, with velocities greater than 2 feet/sec. Locate and denote the type with any specifications.
- l) \_\_\_\_ Steep slope interruption by use of straw wattles, coir logs, etc. Locate and denote the type with any specifications.
- m) \_\_\_\_ Appropriate inlet protection for all catch basins and culvert inlets. Locate and denote the type with any specifications.
- n) \_\_\_\_ Diversions should be used to direct run-off into traps. When sediment laden stormwater is directed to traps and basins by closed pipe systems, temporary diversions should be used to direct stormwater to traps and basins until closed pipe systems are operational. Locate and denote the type with any specifications.

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- o) \_\_\_\_ Outlet protection at all points of discharge from pipes, channels and spillways. Locate and provide details, cross-sections and specifications, including d50 stone size, stone depth, outlet dimensions, and type of geotextile fabric.
- p) \_\_\_\_ All stone, with the exception of check dams, underlain with a geotextile fabric, or approved equivalent practice. Geotextile fabric specifications should be provided for various applications with the DNREC denoted type and an example product.
- q) \_\_\_\_ Location of a concrete washout station and construction staging areas, including dumpster(s). Note that if the locations are to be moved, it should be approved in writing by the Agency Construction Site Reviewer.

#### **VI. Construction Site Details and Notes:**

- 47) \_\_\_\_ Specify whose responsibility it will be to maintain and repair all erosion and sediment control and stormwater management practices during construction and utility installation.
- 48) \_\_\_\_ Stabilization measures to be initiated if dust control becomes a problem.
- 49) \_\_\_\_ Volume of any spoil or borrow material.
- 50) \_\_\_\_ Detailed, site specific sequence of construction. The sequence of construction should include the following activities as applicable, with Notes included as provided:
  - a) \_\_\_\_ Notification. Note: Notify the DNREC Sediment and Stormwater Program [or relevant Delegated Agency] in writing at least five (5) days prior to the start of construction. Failure to do so constitutes a violation of the approved Sediment and Stormwater Management Plan.
  - b) \_\_\_\_ Pre-construction meeting. Note: Prior to any clearing, installation of sediment control measures or grading, a pre-construction meeting shall be scheduled and conducted with the Agency Construction Site Reviewer. The landowner/developer, contractor, and third party Certified Construction Reviewer (CCR) are required to be in attendance at the pre-construction meeting; the designer is recommended to attend.
  - c) \_\_\_\_ Clearing and grubbing for those areas necessary for installation of perimeter controls.
  - d) \_\_\_\_ Construction of perimeter controls, including sediment traps.
  - e) \_\_\_\_ Perimeter control review. Note: All perimeter controls are to be reviewed by the Agency Construction Site Reviewer and approved prior to proceeding with further site disturbance or construction.
  - f) \_\_\_\_ Remaining clearing and grubbing.
  - g) \_\_\_\_ Utility installation.
  - h) \_\_\_\_ Road grading.
  - i) \_\_\_\_ Grading for the remainder of the site.

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- j) \_\_\_\_ Maintenance of construction site stormwater management BMPs. Note: The contractor should at all times protect against sediment or debris laden runoff or wind from leaving the site. Perimeter controls should be checked daily and adjusted and/or repaired to fully contain and control sedimentation on the site. Accumulated sediment should be removed when it has reached half of the effective capacity of the control. In addition, the contractor may need to adjust or repair measures in times of adverse weather conditions, or as directed by the Agency Construction Site Reviewer.
- k) \_\_\_\_ Sediment trap conversion.
- l) \_\_\_\_ Stormwater facility construction. Note: Notify the person responsible for stormwater system construction review at least 3 days prior to the start of the stormwater system construction; stormwater facilities must be reviewed throughout their construction.
- m) \_\_\_\_ Final grading, landscaping or stabilization
- n) \_\_\_\_ Removal of sediment control practices. Note: Erosion and sediment control devices to be removed only after work in an area has been completed and stabilized, with written approval from the Agency Construction Site Reviewer.
- o) \_\_\_\_ Project closeout. Note: The termination of the Construction General Permit will require submission and acceptance of the Post Construction Verification Documents, including final stabilization throughout the site, all elements of the Sediment and Stormwater Management Plan implemented, and acceptance of the final Operation and Maintenance Plan.
- 51) \_\_\_\_ When site disturbance will exceed 20 acres, a phased sequence of construction is required. Note: Prior to commencing a new phase of construction, the contractor shall receive approval from the Agency Construction Site Reviewer that the previous phase has been sufficiently stabilized.
- 52) \_\_\_\_ Details and specifications for all erosion and sediment control management practices used from the *Delaware Erosion and Sediment Handbook* (or unusual practices approved for use by DNREC) and reproduced as close to their native 8.5" x 11" size as practicable. Most projects typically include the following details:
  - a) \_\_\_\_ Stabilized Construction Entrance
  - b) \_\_\_\_ Perimeter Control (i.e., Silt Fence, Temporary Berm, etc.)
  - c) \_\_\_\_ Temporary and Permanent Seeding and Stabilization
  - d) \_\_\_\_ Sediment Trapping (i.e., Inlet Protection, Sediment Basins, etc.)
  - e) \_\_\_\_ Stormwater Pollution Prevention Plan (SWPPP) elements
    - i) \_\_\_\_ Construction Site Waste Management & Spill Control
    - ii) \_\_\_\_ Concrete Washout
    - iii) \_\_\_\_ Concrete Mixing Operation

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- f) \_\_\_\_ Dewatering Practice(s)
  - g) \_\_\_\_ Individual Lot Control (for residential use only)
  - h) \_\_\_\_ All other applicable details to the site
- 53) \_\_\_\_ “Data” for all Erosion and Sediment Control practices having design data criteria. The data should be provided in the corresponding detail, or a note should be provided to refer to the relevant chart for the information.

#### **VII. Post Construction Stormwater Management Plan:**

- 54) \_\_\_\_ Overall Post Construction Stormwater Management Plan indicating the location and identification of all stormwater facilities in relation to the proposed site and the existing and proposed grading.
- a) \_\_\_\_ The National Flood Insurance Program 100 Year Flood Zone delineated.
  - b) \_\_\_\_ Project benchmark with elevation in NAVD 88 vertical and NAD 83 horizontal datum identified.
  - c) \_\_\_\_ Easements, rights-of-way, and/or demarcation of where public maintenance responsibility ends and private maintenance begins throughout the stormwater and drainage system, with responsible entity for the maintenance in each area.
- 55) \_\_\_\_ Detailed Post Construction Stormwater Management Plan per facility clearly showing the proposed construction and specifications, including:
- a) \_\_\_\_ Plan view of the facility indicating any/all benches, inlets, outlets and their associated elevation; seed and stabilization type and locations; cross-section locations; grading of the facility; forebays; subsurface testing boring locations; etc. The maximum scale of facility should be 1" = 30'.
  - b) \_\_\_\_ Cross-section view of the facility to a defined scale, indicating any/all benches; water surface elevations; depth of construction; location of liners or underdrains; slopes; structures and/or pipes; seed and stabilization type and locations; embankment specifications; existing and proposed grade; fill locations; etc.
  - c) \_\_\_\_ Cross-section view of the principal spillway to a defined scale, including the entire length of the discharge pipe, indicating any/all water surface elevations; location of liners; slopes; phreatic lines; structure details; embankment specifications; anti-seep collar location(s); crossings; outfall details; existing and proposed grade; etc. Extend the view to include the opposite side of any outfall ditch, and location of any wetlands, as applicable.
  - d) \_\_\_\_ Cross-section views of the emergency spillway(s) to a defined scale, both through the width and length of the spillway, indicating any/all water surface elevations; location of liners; slopes; embankment specifications; stabilization specifications; outfall details; existing and proposed grade; etc. Extend the view to include the opposite side of any outfall ditch, and location of any wetlands, as applicable.
  - e) \_\_\_\_ Plan and section views to a defined scale for any structures within the facility including any/all construction specifications, inverts, water surface elevations, etc.

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- f) \_\_\_\_ Notes and specifications for the facility, including, but not limited to, seed and stabilization type and locations, de-watering specifications, groundwater/subsurface information, construction information and facility specific information (i.e., type of liner, biosoil, stone, etc.).
- g) \_\_\_\_ Landscape Plan indicating the species type, number and planting locations, and be signed by a licensed Landscape Architect in the State of Delaware.
- h) \_\_\_\_ Easements, rights-of-way, and/or demarcation of where public maintenance responsibility ends and private maintenance begins within or around the facility, with responsible entity for the maintenance in each area.
- i) \_\_\_\_ Directional stormwater flow arrows for all existing and proposed channels, pipes, etc.
- j) \_\_\_\_ Details, cross-sections and specifications (including appropriate channel lining, type of vegetation, or type of stabilization) for any diversions, ditches, swales, etc., not classified as a facility but are being proposed or accepting discharge.
- k) \_\_\_\_ Stormwater design in accordance with standards developed and/or approved by the DNREC Sediment and Stormwater Program.
- l) \_\_\_\_ Maintenance set aside areas for disposal of sediments removed from stormwater management facilities that provide a forebay. Set aside areas should accommodate the volume of 50% of the collective forebay volume, maximum depth of the set aside area should be one foot, and the slope of the set aside area should not exceed 5%.
- m) \_\_\_\_ Design checklists for the specific type of facility as provided by DNREC.
- n) \_\_\_\_ Sequence of Construction specific to the facility, indicating the methods for excavation, construction of structures or other controls, stabilization, dewatering, temporary or permanent sediment controls, etc.
- o) \_\_\_\_ Operation and Maintenance (O&M) notes and/or details (if more than one sheet is required per facility, then the O&M requirements should all be combined on the same sheet). Inclusion of applicable items i through xi below satisfy the O&M Plan requirements for this stage of plan review. Once the facility is constructed, a full O&M Plan will be prepared for approval prior to project closeout, including the post construction verification documentation and any additional O&M notes deemed necessary.
  - i) \_\_\_\_ Specify whose responsibility it will be to operate and maintain each Post Construction Stormwater Management facility.
  - ii) \_\_\_\_ “The DNREC Sediment and Stormwater Program and/or the relevant Delegated Agency reserves the right to enter private property for purposes of periodic site reviews.”
  - iii) \_\_\_\_ “The DNREC Sediment and Stormwater Program [or the relevant Delegated Agency] should be notified within 30 business days if the property ownership is transferred to a new person or entity.”

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- iv) \_\_\_\_ “The DNREC Sediment and Stormwater Program and/or the relevant Delegated Agency may seek enforcement action against any owner deemed negligent in fulfilling the Operation and Maintenance requirements of the Delaware Sediment and Stormwater Regulations.”
  - v) \_\_\_\_ “The DNREC Sediment and Stormwater Program [or, the relevant Delegated Agency] should be contacted if a concern arises regarding a stormwater management facility, before any non-routine maintenance, or if modifications to the facility are desired.”
  - vi) \_\_\_\_ “Any design modifications made to the stormwater system shall require the creation of a new Post Construction Stormwater Management Plan and/or Operations and Maintenance Plan, with approval of the plan(s) by the DNREC Sediment and Stormwater Program [or the relevant Delegated Agency].”
  - vii) \_\_\_\_ “For all stormwater easement areas (i.e., access, maintenance, or offsite) and the minimum 15-foot wide accessways to all stormwater facilities and their structural components, regular mowing should be performed to keep the grass 6 inches or less; no trees or shrubs should be planted, and any found growing should be removed; and no permanent structures, such as fences or sheds, should be located within the easement or accessway.”
  - viii) \_\_\_\_ “Trees should not be planted, and should be removed if found growing, on and within 15 feet of all pond embankments, on pond slopes or safety benches, and within 10 feet of structural components, such as pipe inlets.”
  - ix) \_\_\_\_ “When the facility is excavated to remove accumulated sediment, the disposal area shall be permanently stabilized so that it does not recreate an erosion problem. Any material taken offsite shall still be used or disposed of in an approved DNREC manner.”
  - x) \_\_\_\_ “Before any earthwork or excavation takes place, the contractor should call Miss Utility at 811 or 1-800-282-8555 at least 48 hours prior to construction, to have all existing utilities marked onsite.”
  - xi) \_\_\_\_ Any facility specific routine or non-routine maintenance, and/or operational requirements not listed in the above-mentioned standard requirements for the type of facility. May include, but is not limited to any mowing, sediment removal, pipe inspections, watering, re-seeding/planting, trash removal, etc.
    - (1) \_\_\_\_ Notes indicating the frequency of the maintenance inspections.
    - (2) \_\_\_\_ Any O&M specifications for proprietary systems included on the plans.
    - (3) \_\_\_\_ Any details necessary to complete the O&M procedures.
- 56) \_\_\_\_ For stormwater management practices incorporating infiltration, the following apply:
- a) \_\_\_\_ Infiltration practices meet all recommended setbacks in accordance with Appendix A-8 Setbacks.
  - b) \_\_\_\_ Areas draining to these practices should be stabilized and vegetative filters established prior to runoff entering the system. If individual lot construction is to drain towards an already



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established infiltration area, the facility should be protected with perimeter controls around the top of bank.

- c) \_\_\_\_ Infiltration practices shall be designed so that the RPv infiltrates within 48 hours.
- d) \_\_\_\_ Infiltration practices shall be designed so that they will:
  - i) \_\_\_\_ Infiltrate the Fv within 72 hours, or
  - ii) \_\_\_\_ Dewater the Fv within 72 hours, or
  - iii) \_\_\_\_ Manage the Fv on site with no adverse impact.
- e) \_\_\_\_ The bottom of the infiltration practice at least 2 feet above the seasonal high water table unless a BMP specification indicates otherwise and/or higher level site investigation is performed as defined in Appendix A-1 Soil Investigation Procedures.
- f) \_\_\_\_ Infiltration practices are limited to soils having a field tested infiltration rate of at least 1 inch per hour with a design infiltration rate half of the field tested infiltration rate. Onsite soil borings and textural classification to verify site conditions and seasonal high water table submitted with the plan.
- g) \_\_\_\_ Infiltration practices not installed in fill material.

*Note: For any language that contains "[for the relevant Delegated Agency]", the preparer should substitute the name of the appropriate Delegated Agency in place of the DNREC Sediment and Stormwater Program. For example, if the Sussex Conservation District is the Delegated Agency for the project, the checklist item "I am to notify the DNREC Sediment and Stormwater Program [for the relevant Delegated Agency]" would be prepared as "I am to notify the Sussex Conservation District". Any "and/or" statements should remain as prescribed. For example, "I grant the DNREC Sediment and Stormwater Program and/or the relevant Delegated Agency" can be copied verbatim, and grants either agency the right to enter the property as may become necessary throughout the duration of the project.*