

Comments as per the PA DEP NPDES || Post Construction Stormwater Requirements

General

1. The PCSM Plan must be separate from the E&S Plan and labeled "PCSM" or "Post Construction Stormwater Management Plan" and be the final plan for construction. Please separate the E&S Plan from the PCSM Plan and label the PCSM Plan as required by §102.8(d).
2. The project, as proposed, does not address the National does not address the National Pollutant Discharge Elimination System (NPDES) PCSWM WQ and Volume requirements per Volume Control Guideline (CG) 1 in Chapter 3 section 3.3. The application did not include any information to support that Best Management Practices (BMPs) cannot be utilized on-site to manage the net increase in volume or water quality for the 2-Yr/24- Hr storm. Please revise the plans and incorporate Volume Control/Infiltration and WQ BMPs that will manage the net increase in volume in the 2-Yr/24-Hr storm.
3. A separate Post Construction Stormwater Management Narrative shall be provided with calculations relating the difference between the pre-post of the two year storm as part of the NPDES II permit. BMPs should address:
 - a. Infiltration
 - b. Volume and rate control
 - c. Water quality treatment
4. The municipal or county engineer consistency letter box in the Application Checklist (*insert "Item 9 on page 5" for general permits or "Item 11 on page 9" for individual permits*) of the Application Checklist) was checked but no consistency letter was included with the application. §102.8(g)(2). Correct as necessary.
5. The specified Act 167 plan is pre-January 2005 and does not address the current Chapter 102 requirements. §102.8(g)(2). Make all necessary changes.
6. A copy of the Pennsylvania National Heritage Program (PNHP) search form and receipt has not been supplied with your application. The PNHP search should cover the entire project area. The search system is available online at www.naturalheritage.state.pa.us. Provide a copy of the search receipt with clearance letters from the appropriate agency resolving any potential plant and/animal conflicts. Clearance letters must be dated within one year of the application date. §102.6(a)(2).
7. Pennsylvania National Heritage Program (PNHP) search results are valid for two (2) years from the date shown on the PNHP receipt. The date shown on the submitted receipt has expired. Provide a currently valid search receipt. §102.8(f)(3).

Plan Preparer §102.8(e)

8. Please provide information to show that the PCSM Plan was prepared by a person trained and experienced in PCSM design methods and techniques applicable to the size and scope of the project being designed. Standard E&S Worksheet # 22 (page 393 of the E&SPC Manual) may be modified for this purpose. §102.8(e).
9. The plans and specifications for engineered structural BMPs must be sealed by a qualified licensed professional. Please have a professional licensed in Pennsylvania and qualified in stormwater management, sign and seal the PCSM Plan and Stormwater Management Report.

Topographic features §102.8(f)(1)

10. Provide a topographic map for the proposed site and immediate surrounding area (pages 7 and 21 in Chapter 5 of the Stormwater BMP Manual). §102.11(a)(2).
11. All plan drawings should be legible. Please revise sheet(s) (*indicate sheet numbers*). §102.8(f).
12. The scale of the plan maps should be large enough to clearly depict the topographic features of the site. Please revise (*indicate sheet numbers*). §102.8(f).
13. Existing contours should be shown on the PCSM plan map(s). §102.8(f).
14. Show the existing vegetative cover on the plan map(s) (page 57 in Chapter 5 of the Stormwater BMP manual).
15. Please show the existing riparian forest buffer identified in the PCSM plan on the plan map (s). §102.14(g)(1) and (2).
16. All existing improvements (e.g. roads, buildings, and utilities) should be shown on the plan map(s). §102.8(f)(3). Please revise the plan map(s) accordingly.
17. Sufficient surrounding area should be shown on the plan map(s) to identify tributary drainage areas and receiving watercourses. Where these features are beyond the coverage of the plan maps, they may be identified on the location map(s). §102.8(f)(4).
18. The PCSWM Plans did not clearly identify the proposed drainage areas. Please provide plans with delineated drainage areas clearly identified for all proposed stormwater management Best Management Practices (BMPs). Also include in Tabular format a summary table of all the existing and proposed features of those areas (Total Acreage, as well as Acres of Woods, Lawn, Impervious, etc. – this should correspond with Worksheets 2, 3, and 10).
19. Please provide a (*insert mapping symbols legend, north arrow, graphic scale as appropriate*). §102.8(f).
20. Please provide a location map. §102.8(f).
21. Indicate the USGS quadrangle name(s) for the location map(s). §102.8(f).
22. Show (*insert as appropriate floodplains, riparian areas, wetlands, woodlands, natural flow paths and drainage ways, steep slopes, sensitive resource areas,*

etc.) (pages 7 and 21 in Chapter 5 of the Stormwater BMP Manual).
§102.11(a)(2).

23. Please state the site's wetlands' source hydrology (surface, groundwater, or both). The hydrology to the wetlands should be maintained so that the wetlands continue to function as the wetlands function in the pre-development condition. Wetlands scientists should be consulted to address this comment. As always, the design should account for the pre- vs. post hydrology to the wetlands and watercourse.
24. Provide existing and post-development drainage area maps and a completed Worksheet #4 for each post-development drainage area (Chapter 4 of the Stormwater BMP manual).

Soils and geologic formations §102.8(f)(2)

25. Please provide a legible soils map. §102.8(f).
26. Indicate the use limitations of the soils pertinent to the proposed project. §102.8(f)(2).
27. Describe how the identified soil and geologic limitations have been addressed by the site design and/or PCSM Plan. §102.8(g)(5).
28. Provide soil infiltration testing meeting the standards of Protocol #1 in the Stormwater BMP manual at or near (\leq 25 feet) the location(s) of the proposed infiltration BMP(s). §102.11(a)(2).
29. The infiltration test does not meet the standards of Protocol 1 in Appendix C of the Stormwater BMP Manual (list deficiencies). §102.11(a)(2). Make all necessary corrections.
30. Geologic mapping for the site location shows (*insert fracture trace(s), a geologic fault, etc.*), which should be shown on the plan map(s). §102.8(f)(2).

Characteristics of the project site §102.8(f)(3)

31. Show the proposed NPDES (*or ESCGP*) boundary on the plan map(s). §102.8(f).
32. Show the proposed limits of disturbance on the plan maps. All proposed earthmoving (including structural PCSM BMPs) must be within the limits of construction. §102.8(f).
33. Please provide proposed final contours for all proposed earthmoving. §102.8(f).
34. Land clearing and grading should be minimized to the extent practicable. §102.8(b)(6). Chapter 5, Section 5.6.1 is recommended for guidance regarding this aspect of PCSM planning.
35. Show all proposed improvements (i.e. roads, buildings, utilities etc.) on the plan map(s). §102.8(f)(3).
36. Describe the past, present and proposed land uses of the proposed site. §102.8(f)(3).
37. Describe the proposed alteration to the project site. §102.8(f)(3).

38. Provide a pre-development site characterization and assessment of soil and geology including appropriate infiltration and geotechnical studies that identify location and depths of test sites and methods used. §102.8(g)(1).
39. Natural sensitive resource area(s) to be protected (Worksheet 2) on the plan map(s) should be outside the limits of disturbance (Section 5.4.1 of the Stormwater BMP Manual). §102.11(a)(2).
40. Show all proposed waterways and stormwater management facilities on the plan maps. §102.8(f).
41. The PCSM Plan should maximize the protection of existing drainage features and existing vegetation to the extent practicable. §102.8(b)(5). Revise the plan as necessary (*specify location*) to address this requirement.
42. Show the location of the proposed riparian forest buffer. §102.8(f).
43. Please label all proposed BMPs. §102.8(f)(6).
44. The PCSM Plan should minimize impervious areas to the extent practicable. §102.8(b)(5). Chapter 5 (Sections 5.5 and 5.6) in the Stormwater BMP Manual provides guidance on how this can be accomplished. Revise the PCSM Plan as appropriate.
45. Soil compaction should be minimized (even in areas not proposed for infiltration BMPs) to the extent practicable. §102.8(b)(7). Chapter 5, Section 5.6.2 of the Stormwater BMP Manual is recommended for guidance regarding this aspect of PCSM planning.

Characteristics of the project site §102.8(f)(3)

46. Show the proposed NPDES (*or ESCGP*) boundary on the plan map(s). §102.8(f).
47. Show the proposed limits of disturbance on the plan maps. All proposed earthmoving (including structural PCSM BMPs) must be within the limits of construction. §102.8(f).
48. Please provide proposed final contours for all proposed earthmoving. §102.8(f).
49. Land clearing and grading should be minimized to the extent practicable. §102.8(b)(6). Chapter 5, Section 5.6.1 is recommended for guidance regarding this aspect of PCSM planning.
50. Show all proposed improvements (i.e. roads, buildings, utilities etc.) on the plan map(s). §102.8(f)(3).
51. Describe the past, present and proposed land uses of the proposed site. §102.8(f)(3).
52. Describe the proposed alteration to the project site. §102.8(f)(3).
53. Provide a pre-development site characterization and assessment of soil and geology including appropriate infiltration and geotechnical studies that identify location and depths of test sites and methods used. §102.8(g)(1).
54. Natural sensitive resource area(s) to be protected (Worksheet 2) on the plan map(s) should be outside the limits of disturbance (Section 5.4.1 of the Stormwater BMP Manual). §102.11(a)(2).

55. Show all proposed waterways and stormwater management facilities on the plan maps. §102.8(f).
56. The PCSM Plan should maximize the protection of existing drainage features and existing vegetation to the extent practicable. §102.8(b)(5). Revise the plan as necessary (*specify location*) to address this requirement.
57. Show the location of the proposed riparian forest buffer. §102.8(f).
58. Please label all proposed BMPs. §102.8(f)(6).
59. The PCSM Plan should minimize impervious areas to the extent practicable. §102.8(b)(5). Chapter 5 (Sections 5.5 and 5.6) in the Stormwater BMP Manual provides guidance on how this can be accomplished. Revise the PCSM Plan as appropriate.
60. Soil compaction should be minimized (even in areas not proposed for infiltration BMPs) to the extent practicable. §102.8(b)(7). Chapter 5, Section 5.6.2 of the Stormwater BMP Manual is recommended for guidance regarding this aspect of PCSM planning.

Net change in volume and rate of stormwater §102.8(f)(4)

61. Identify the design storm used for the runoff calculations. §102.8(g)(2).
62. CG-1 calculations should be based upon a 2-year/24-hour frequency storm unless the applicant demonstrates that an alternative approach will be more protective, or will protect and maintain existing and designated uses. If the PCSM plan is not based on a 2-year/24-hour frequency storm, provide evidence that the criteria describe
63. ed in §102.8(g)(2) have been met.
64. Provide the net change in (*insert runoff volume, rate of runoff*) for the post construction conditions compared to pre-construction for each drainage area of the site. §102.8(f)(4).
65. The summary table in Section C of the NOI shows an increase in stormwater runoff (*insert volume and/or rate of discharge*) although CG-1 is claimed in the PCSM plan (Chapter 3, Section 3.3.3 of the Stormwater BMP Manual). §102.11(a)(2). Make all necessary corrections.
66. A separate Section C should be submitted for each watershed within the project boundaries (pages 7 and 8 of the general (PAG-02) or individual NPDES permit instructions). §102.8(f)(4).
67. For each point of interest (POI), please provide hydrology and hydraulic calculations for peak rate discharges. These should include inflow data, time of concentration mapping, outlet structure data, basin volume data, outflow hydrographs, and peak discharge rates for the 2 through 100 year storm events. Please provide a schematic of the model if necessary.

Surface waters §102.8(f)(5)

68. Show all existing surface waters (streams, wetlands, etc.) on the plan map(s) (pages 7 and 21 in Chapter 5 of the Stormwater BMP Manual). §102.11(a)(2).
69. Identify the perennial and intermittent stream names (pages 7 and 21 in Chapter 5 of the Stormwater BMP Manual). §102.11(a)(2).
70. Show the FEMA floodway for (*indicate stream name*) (page 7 in Chapter 5 of the Stormwater BMP Manual). §102.11(a)(2).
71. Indicate the existing/designated uses of the receiving streams. §102.8(f)(5).
72. Because (*specify stream or wetland*) is classified (*specify HQ or EV*), either evaluate and include nondischarge alternatives in the PCSM Plan (§102.8(h)(1)), or include ABACT BMPs in the PCSM Plan. §102.8(h)(2).
73. Show the boundaries of the watershed for (*specify HQ or EV stream channel*) where the ABACT BMPs specified by the plan will be used. (§102.8(h)(2)).
74. The wetlands shown on the plan map(s) do not conform to the (*insert delineation map and/or E&S plan map*). §102.8(g)(5). Make all necessary corrections.

Description of the PCSM BMPs §102.8(f)(6)

75. Check all applicable boxes on page 6 of the NOI. If there is no check box for a planned BMP, check the box for "other" and list the BMP (Item 5 on page 8 of the general (PAG-02) or individual NPDES permit instructions). See Chapters 5 and 6 of the Stormwater BMP Manual for guidance regarding appropriate BMPs. §102.11(a)(2).
76. E&S BMPs should not be listed on page 6 of the NOI (Item 5 on page 8 of the general (PAG-02) or individual NPDES permit instructions). §102.8(d).
77. Check the functions as well as the volume and acres treated provided by the proposed BMPs for each box checked. See Chapters 5 and 6 of the Stormwater BMP Manual for guidance regarding appropriate BMPs. §102.11(a)(2).
78. Because this project is located in (*specify watershed*), which is classified as (*insert HQ or EV*), complete Section D (Antidegradation Analysis Module) of the NOI. §102.8(h).
79. Because this project is located in (*specify watershed*), which is classified as (*insert HQ or EV*), check the boxes of the ABACT PCSM BMPs that have been incorporated into the PCSM plan (Section D, pages 7 and 8 of the NOI. §102.8(h).
80. Check either Yes or No after the question at the bottom of page 8 in the NOI. §102.8(h).
81. Social and economic justification (SEJ) may not be used for projects located in Exceptional Value (EV) watersheds (Section D, Part 3, page 8 of the NOI). §102.8(h)(2).
82. Trenches and swales rather than catch basins and stormwater pipes should be used wherever possible (Section 6.4 of the Stormwater BMP Manual). §102.11(a)(2).

83. The roof leader connection detail does not clearly indicate how overflow from the less frequent storm events will exit or bypass the individual on-lot seepage/infiltration beds. Please provide additional notes and/or modify the detail to provide positive overflow from these systems.
84. All seepage/infiltration bed details should be revised to include the following information:
- a. Detention/seepage beds details should show non-woven geotextile (permeable filter fabric) surrounding the entire stone bed. Note on seepage bed details should state non-woven geotextile. Seepage bed filter fabric and stone should be kept clean of soil/sediment during the installation process. If inspection indicates that soil/sediment has entered any of the infiltration seepage beds, appropriate measure (i.e. cleaning the soil/sediment from the fabric, stone, bed, etc. and/or replacement of the fabric and stone) should be addressed in the construction sequence.
 - b. Detention/seepage bed details should show a minimum of 12-inch overlap of the filter fabric on top of the bed. Note/dimension on seepage bed detail should show this dimension. (The method/filter fabric installation activity should be addressed in the construction sequence to prevent sediment, soil, etc. from entering the stone in the seepage bed.)
 - c. Note on all detention/seepage bed detail(s) should state that "the stone be uniformly graded, clean washed aggregate." (The stone should be checked and approved by the design or site engineer before installation into seepage beds to ensure that it is clean washed stone. This should also be addressed in construction sequence.)
 - d. All seepage bed detail(s) should show and state that "undisturbed or uncompacted subgrade" for the bottom of any bed(s). This should be indicated on plans/details and addressed in the construction sequence.
 - e. A plan or sequence is required to protect the proposed seepage areas from impacts during construction. These areas should be fenced or otherwise protected (with orange construction fencing) and kept off limits to truck traffic, heavy equipment, and material laydown during construction. (Methods and procedures for protection of all infiltration systems should be addressed in the construction sequence.)
 - f. All stormwater management notes should be provided on the PCSM Plan Sheet. Notes should address the construction sequence for all infiltration/water quality Best Management Practice (BMPs) and should include the following items:
 - i. Specific details pertaining to the construction of all proposed stormwater management infiltration/water quality BMPs.
 - ii. Measures for the adequate protection of all proposed infiltration BMP areas from compaction during the construction process.
 - iii. Measures to ensure that all stormwater runoff from unstabilized areas on-site does not enter the infiltration systems during the construction process.

- iv. Specific details pertaining to the amount of stabilization required before any stormwater runoff can enter any infiltration BMP.
 - v. Measures to adequately check and immediately remedy sediment laden stormwater runoff from draining into any infiltration BMPs during and after construction.
 - vi. Short-term and long-term operation and maintenance (O&M) measures should be included in a specific O&M notes section.
 - vii. Any other relevant specific storm water/infiltration BMP notes.
85. The plan provided indicates that storm water reuse through irrigation is being utilized to address controlling the two-year storm difference. Taking into account site grading, soils, and vegetation, please address the following items:
- a. Volume of water used for irrigation.
 - b. Rate of application, duration of spray, storage and pump information.
 - c. The frequency that the storage unit be refilled. Credit can only be taken for how much empty volume within the unit will be available for the next storm.
 - d. Provide dewatering time for use of stored water between storm events in order for the necessary storage volume to be available.
 - e. The irrigation system should be confirmed by an irrigation specialist with experience with these systems utilized for storm water management.
 - f. Spray irrigation area and details of the irrigation system should be illustrated on the PCSM Plan.

Sequence of PCSM BMP implementation or installation §102.8(f)(7)

86. Provide a complete and site-specific sequence of PCSM BMP installation. §102.8(f)(7).
87. The sequence does not address the installation of (*specify PCSM BMP(s) omitted from the sequence*). §102.8(f)(7).
88. The sequence of installation for (*specify BMP*) should meet the standards for that BMP in Chapter 6 of the Stormwater BMP manual. §102.11(a)(2).
89. Describe how soil compaction will be avoided at the location of (*specify infiltration BMP*) (Protocol 2 in the Stormwater BMP manual). §102.11(a)(2).
90. In the sequence, identify the critical stages of implementation of the PCSM plan for which a licensed professional or designee shall be present at the site (e.g. installation of underground treatment or storage BMPs, structurally engineered BMPs - Item 8 on page 8 of the general (PAG-02) or individual NPDES permit instructions). §102.8(k).
91. Describe how (*specify infiltration BMP*) will be protected from sediment until the adjacent disturbed area(s) is/are stabilized (Protocol 2 in the Stormwater BMP manual). §102.11(a)(2).
92. Provide specific details pertaining to the amount of stabilization required before any stormwater runoff can enter any Infiltration BMP.

93. All proposed stormwater Infiltration BMPs should have a minimum of 10 feet distance from any proposed structures with below grade spaces (i.e. basements, crawl spaces, etc). Greater separation distances may be necessary if infiltration beds are located up gradient of any proposed structures).
94. Provide detailed measures that will be implemented to convert the E & S BMPs into permanent SWM BMPs including the following:
 - a. Amount of additional excavation below the bottom of the Sed Trap/Basin
 - b. Limitation for subsoil compaction
 - c. Additional soil percolation testing upon conversion of the Sed Trap/Basin.
95. Show all proposed areas for infiltration BMPs on the SW and E & S plan.

Supporting calculations §102.8(f)(8)

96. Provide Worksheets 1 through 5 and 10 (pages 1 through 41 in Chapter 8 of the Stormwater BMP Manual). §102.11(a)(2).
97. Please use the latest versions (dated 2009) of Worksheets 1 through 5 and 10 (pages 1 through 41 in Chapter 8 of the Stormwater BMP Manual). §102.11(a)(2).
98. Since the plan does not meet the Nitrate requirements of CG-1, provide Worksheets 11 through 13 (page 13 in Chapter 8 of the Stormwater BMP Manual). §102.11(a)(2).
99. Alternative designs to reduce post-development runoff volume (including but not limited to infiltration, capture and reuse, etc.) are to be exhausted.
 - a. Please describe alternative designs that were determined to be not feasible. This may include redesigning the layouts/configuration of the proposed buildings and parking lots to better work with the acceptable infiltration rates measured. Please include the reason with each alternative design for being not feasible.
 - b. Consider using non-structural volume credits, per page 17 of 46 of Chapter 8 of the BMP manual – but “No more than 25 percent of the volume reduction may be met through non-structural BMP credits.”
 - c. Please keep maximum loading ratios (as recommended in Appendix C of the BMP manual page 16 of 21 in mind when designing infiltration BMPs)
 - d. Please revise Worksheet 5 and Section C of the application to reflect any and all revisions to comply with CG1 for volume reduction.
 - e. As a suggestion, the following BMPs may be incorporated into the project design:
 - i. Green roof
 - ii. More depressed parking lot islands
 - iii. Roadside/walkway-side swales
 - iv. Elevated planters adjacent to the buildings
 - v. Storm piping disconnection
 - vi. Porous/pervious pavement/pavers
 - vii. Rain gardens

- viii. Rain cisterns for stormwater runoff re-use
- ix. Incorporate Amended Soils

100. Since exemption from peak rate analysis for small sites is claimed, provide a completed Worksheet 6 (page 35 in Chapter 8 of the Stormwater BMP Manual). §102.11(a)(2).
101. Provide Worksheet 8 for the proposed structural PCSM BMPs (page 38 in Chapter 8 of the Stormwater BMP Manual) §102.11(a)(2).
102. Indicate the (*insert stormwater methodology, design storm frequency, and/or rainfall amount in inches – as appropriate*) at the top of the summary table in Section C of the NOI. §102.8(g)(4).
103. No more than 25% of the volume reduction shown on Worksheet 5 can be met through non-structural BMP credits (page 17 of the Stormwater BMP Manual). §102.11(a)(2). Make all necessary corrections.
104. The numbers contained in Section C of the NOI are not consistent with those in Worksheets 1 through 5. §102.8(f)(4). Make all necessary corrections.
105. Explain how the impervious area post construction (Box 2 in Section C) will decrease from that pre-construction (Box 1). §102.8(g)(6).
106. Box 3 in Section C should be the difference (Box 2 minus Box 1) of the Post Construction and Pre-construction conditions (see Box 3 instructions below the table). §102.8(f)(4).
107. Check off whether the numbers in Boxes 4 through 8 of the table in Section C are in acre-feet or cubic feet. §102.8(g)(4).
108. Boxes 1 through 3 of the table in Section C show an increase in impervious area, but boxes 4 through 6 show a decrease in runoff volume. §102.8(f)(4). Revise as necessary.
109. Box 7 of the summary table in Section C shows an increase in the volume of runoff after the proposed stormwater BMPs are installed compared to Box 5. §102.8(g)(2). Correct as necessary.
110. Boxes 9 through 11 of the summary table in Section C show an increase in the rate of runoff after stormwater BMPs are installed. §102.8(g)(3). Make all necessary corrections.
111. Provide a routing analysis to demonstrate peak control for the 2-, 10-, 50-, and 100-year/24-hour storm events. Provide a summary sheet. This routing should consider the benefits of the proposed BMPs. §102.8(g)(3)(i).
112. Provide calculations to show the volume of water treated by the proposed permanent stormwater BMPs. (Section 8.7 in Chapter 8 of the Stormwater BMP Manual) §102.11(a)(2).
113. Please justify the volume of infiltration for each stormwater BMP. This justification should include a calculation reflecting the bed bottom area (in square feet), the infiltration period (in hours), and the infiltration design rate (in inches per hour) with an appropriate factor of safety. Also, please relate these calculated infiltration volumes to the preconstruction runoff volume as reflected on the submitted NPDES application in Section C.2. See Chart 5B.

114. Indicate the Curve Numbers and/or land use coefficients used in the runoff calculations. (Section 8.2 in Chapter 8 of the Stormwater BMP Manual) §102.11(a)(2).
115. Volume credits may not be claimed for the same protected area twice (Worksheets 2 and 3 in the Stormwater BMP Manual). §102.11(a)(2). Revise Worksheets 2 and 3 accordingly.
116. Worksheet 4 shows "meadow" for the developed condition of a proposed grading area. This area should be designated (*insert lawn, park, golf course, etc.*) and an appropriate CN number used. See Table 2.2a in TR-55. (Section 8.2.1 in the Stormwater BMP Manual). §102.11(a)(2).
117. Chapter 3 section 3.3 of the PA BMP Manual for CG 1 requires that 20% of existing impervious to be disturbed is converted back to meadow condition for existing condition calculations (on Worksheet 4) & existing non-forested pervious areas must be considered meadow or its equivalent. Please demonstrate that these standards were met.
118. The storage volume of detention basin (*insert basin number*) should not be counted as part of the "Total Structural Volume" (i.e. discharge volume removed) at the bottom of Worksheet 5. (Page 173 of the Stormwater BMP Manual) §102.11(a)(2).
119. Since infiltration at this site may not be (*insert possible, desirable, sufficient to meet CG-1 requirements, etc.*) consideration should be given to the possibility of (*insert capture and reuse, bio-retention system(s), vegetated roof, riparian buffer restoration, etc.*). (Sections 6.4 through 6.7 of the Stormwater BMP manual). §102.11(a)(2).
120. A check of the calculations for (*specify drainage area*) found that CG-1 has not been met, because (*specify one or more of the following: no increase to the runoff volume for the 2-year/24-hour storm has not been met, existing non-forested pervious areas were not analyzed as meadow (good condition), 20% of existing impervious area was not analyzed as meadow (good condition)*) (page 6, Chapter 3 of the Stormwater BMP Manual). §102.11(a)(2). Please make the necessary corrections.
121. The developer/designer will need to demonstrate that the proposed construction and/or post-construction stormwater discharge will not cause erosion or damage to the adjoining properties. Designs involving off-site stormwater discharge to non-surface waters should include the following information:
 - a. A written analysis (signed and sealed by a PE) along with any supporting computations, etc.
 - b. The analysis should include a description of land cover, topography, geology, downstream property owners, etc. and also a description of the soils erodibility and absorption characteristics.
 - c. A copy of this written analysis entitled "Adequacy of Discharge" should be included on the plan Drawings.

- d. Where there is a discharge onto or through adjacent properties prior to release to a stream, designers shall demonstrate how downstream properties are to be protected.
- e. Sequential color photos of the entire proposed flow path should be provided.
- f. A plan drawing detailing the flow path from discharge point to confluence with a surface water of the commonwealth and identifying the soil types and erodibility factors. Plan should include the location and orientation of each photo.
- g. A contingency plan and agreement should be prepared to deal with any damages that may occur down slope (including parcels owned by others).
- h. The minimum distance between a proposed discharge point (including the level spreader) and a downstream property boundary shall in no case be less than fifteen (15) feet. A drainage easement may also be required.

Infiltration BMPs

- 122. The infiltration rate for (*specify infiltration BMP*) does not appear to be based upon infiltration testing per Protocol #1 from the Stormwater BMP manual. §102.11(a)(2). Make all necessary corrections.
- 123. (*Specify infiltration BMP*) does not meet the safety factor specified in Protocol 2 of the Stormwater BMP Manual for soils having tested infiltration rates < 0.1 inches per hour. Revise the design of this BMP as necessary. §102.11(a)(2).
- 124. The maximum loading ratio of (*insert 5:1 for impervious drainage area to infiltration area, 8:1 for total drainage area to infiltration area, or 3:1 for impervious area to infiltration area in Karst areas*) has been exceeded for (*specify infiltration BMP*) (Protocol 2 in Appendix C of the Stormwater BMP Manual). §102.11(a)(2). Make all necessary corrections.
- 125. The volume reduction calculations for (*specify BMP*) should follow the guidance on (*indicate page number from Stormwater BMP manual*). §102.11(a)(2).
- 126. A check of (*specify infiltration basin number*) found that it does not provide one foot of freeboard above the maximum water elevation for the routed peak flow for a 100-year/24-hour storm event (Item 8 on page 30 of Chapter 6 in the Stormwater BMP manual). §102.11(a)(2). Correct as necessary.
- 127. A check of (*specify basin number*) found that it has not been designed to hold/infiltrate volume difference for 2-yr or 1.5" storm (Chapter 6 in the Stormwater BMP manual). §102.11(a)(2). Make the necessary corrections.
- 128. A check of (*indicate retention or detention BMP*) would not drain the water quality volume within a 2 to 7 day period (Chapter 3, page 7 of the Stormwater BMP manual). §102.11(a)(2). Please revise.
- 129. The proposed constructed filter (*give filter number or location*) does not provide a drawdown time \leq 72 hours. Revise as necessary. (Chapter 6 in the Stormwater BMP manual). §102.11(a)(2).

130. A check of proposed vegetated swale found that it does not provide sufficient capacity to convey the peak flow from a 10-year storm event with 6" freeboard. (Chapter 6 in the Stormwater BMP manual). §102.11(a)(2). Correct as necessary.
131. A check of proposed vegetated swale found that it has not been provided with a non-erosive protective liner for a 10-year storm event. (Chapter 6 in the Stormwater BMP manual). §102.11(a)(2). Correct as necessary.
132. Provide supporting evidence that proposed vegetative filter strip (*specify number or location*) meets the minimum length requirements from Chapter 6 in the Stormwater BMP manual. §102.11(a)(2).

Volume/Peak Rate Reduction BMPs

133. Provide supporting calculations to show that live and dead load bearing capacity requirements are met for (*specify green roof number or location*). (Chapter 6 in the Stormwater BMP manual) §102.11(a)(2).
134. A check of proposed capture and reuse storage device (*specify number or location*) found that it does not provide (*specify sufficient storage capacity or a suitable water budget*). (page 144 and 145 of Chapter 6 in the Stormwater BMP manual) §102.11(a)(2). Correct as necessary.

Water Quality and Rate Control BMPs

135. The water quality benefit calculations for the proposed wetland should be calculated as shown on page 158 of 257 in Chapter 6 of the Stormwater BMP Manual. §102.11(a)(2). Correct as necessary.
136. A check of (*indicate wet pond/retention basin number*) found that it does not have an area equal to 1% to 3% of the tributary drainage area (Item 4 on page 166 of Chapter 6 in the Stormwater BMP Manual). §102.11(a)(2). Correct as necessary.
137. A check of (*identify wet pond/retention basin or dry extended detention basin*) found that it does not sufficiently manage the net change in peak rate for the 2-, 10-, 50-, and 100-year/24-hour storm events §102.8(g)(3). Make all necessary corrections.
138. A check of the forebay for (*specify wet pond/retention pond number*) found that it does not provide capacity of 10% to 15% of total permanent pool volume (page 167 of Chapter 6 in the Stormwater BMP Manual). §102.11(a)(2). Correct as necessary.

Restoration BMPs

139. The post-construction runoff calculations for the proposed landscape restoration area should use "meadow, good condition" for the post-construction

condition (page 217 of Chapter 6 in the Stormwater BMP Manual).
§102.11(a)(2). Correct as necessary.

Other BMPs and related structural measures

140. Structural level spreaders should be designed for the peak flow from 10-year/24-hour storm (page 248 of Chapter 6 in the Stormwater BMP Manual).
§102.11(a)(2). Correct as necessary.

Plan drawings §102.8(f)(9)

141. Show the location(s) of all proposed PCSM BMPs checked in the table in Section C on page 6 of the NOI on the plan map(s). (*Specify any boxes checked for which no BMP is shown on the plan map(s)*). §102.8(f)(6).
142. Show the location(s) of all proposed PCSM BMPs checked in the table in Section D on pages 7 and 8 of the NOI on the plan map(s). (*Specify any boxes checked for which no BMP is shown on the plan map(s)*) §102.8(f)(6).
143. Show all proposed easements and rights-of-way on the plan map(s).
§102.8(f).
144. Show all existing and proposed discharges & points of interest on the plan map(s). §102.8(f)(5).
145. A check of the PCSM Plan found it to be inconsistent with E&S Plan in relation to (*insert proposed contours, improvements, soils, wetlands, floodways, streams, discharge locations, etc.*). Make all necessary corrections. §102.8(c).

Infiltration BMPs

146. Infiltration BMPs should be sited on uncompacted soils. Please relocate (*specify BMP*) to an undisturbed area (Protocol #2 in the Stormwater BMP manual). §102.11(a)(2).
147. The soil mantle should be preserved to the maximum extent feasible; excessive excavation for construction of infiltration systems should be avoided. Consideration should be given to how (*specify infiltration BMP*) can be redesigned to meet this design consideration (Protocol 2 in Appendix C of the Stormwater BMP Manual). §102.11(a)(2).
148. (*Specify infiltration BMP*) should be located at least (insert 50 feet from (specify individual water supply well) or 100 feet from (specify municipal water supply well)) (Item 1.d) of Protocol 2 in Appendix C of the Stormwater BMP Manual).
§102.11(a)(2).
149. (*Specify infiltration BMP*) should be located at least (*insert distance from (specify municipal water supply well)*) as per the Water Supply Permit from (*specify source of permit*) (Item 1.d) of Protocol 2 in Appendix C of the Stormwater BMP Manual). §102.11(a)(2).

150. Geologic mapping shows a (*insert fracture trace, geologic fault, etc.*) at the location of (specify infiltration BMP). Relocate (specify infiltration BMP) to avoid potential groundwater contamination (Item 1.d) of Protocol 2 in Appendix C of the Stormwater BMP Manual). §102.11(a)(2).
151. Infiltration BMPs should be located so that they present not threat to sub-surface structures. (Specify infiltration BMP) should be located at least (insert 10 feet down gradient or 100 feet upgradient from (specify building), or 50 feet from the existing septic system for (specify location)) (Item 1.e) of Protocol 2 in Appendix C of the Stormwater BMP Manual). §102.11(a)(2).
152. Please provide a note that addresses any unfavorable conditions encountered during the installation of the seepage/infiltration systems (i.e. groundwater and/or bedrock, etc.). In this case, the owner/engineer should be notified and the proposed seepage/infiltration system should be relocated to a more suitable location on the property. This should be addressed in the construction sequence.
153. Show the locations and depths of all test pits and/or infiltration testing sites on the PCSM plan map(s). §102.8(g)(1).
154. Infiltration test results for (*specify infiltration BMP*) do not show an infiltration rate between 0.1 and 10 inches per hour. Remedial measures described in Item 1.c) of Protocol 2 in Appendix C of the Stormwater BMP Manual should be implemented if practicable. §102.11(a)(2). Please make all necessary revisions.
155. A minimum 2-foot clearance above regularly occurring seasonally high water table should be provided for (specify infiltration BMP) (Protocol 2 in Appendix C of the Stormwater BMP Manual). §102.11(a)(2). Make all necessary corrections.
156. A minimum 2-foot depth to bedrock should be provided for (specify infiltration BMP) (Protocol 2 in Appendix C of the Stormwater BMP Manual). §102.11(a)(2). Revise as necessary.
157. The bed bottoms for infiltration BMPs should be at level grade ($\leq 1\%$ slope, Protocol #2 in the Stormwater BMP manual). §102.11(a)(2). Please revise (*specify BMP*) accordingly.
158. A suitable non-woven geotextile should be incorporated into the design of (specify infiltration BMP) at the soil/BMP interface (Protocol 2 in Appendix C of the Stormwater BMP Manual). §102.11(a)(2). Revise as necessary.
159. Infiltration BMPs should not be located in areas of known soil contamination unless it can be shown that it can be done without endangering the environment or public safety. Either show that these concerns have been met for (*specify infiltration BMP*), relocate it, or provide a suitable non-infiltration BMP for this area (Protocol 2 in Appendix C of the Stormwater BMP Manual). §102.8(f).
160. All infiltration BMPs should be designed with positive overflow (Protocol 2 in Appendix C of the Stormwater BMP Manual). §102.11(a)(2). Revise (*specify infiltration BMP*) accordingly.

161. Provide a detail for the proposed pervious pavement (*with infiltration bed*) on the plan drawing(s) which meets the standards of Section 6.4.1 of the Stormwater BMP Manual. §102.11(a)(2).
162. The detail for the proposed pervious pavement (with infiltration bed) on the plan drawing(s) does not meet the standards of Section 6.4.1 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
163. Provide a detail for the proposed infiltration bed on the plan drawing(s) which meets the standards of Section 6.4.2 of the Stormwater BMP Manual. §102.11(a)(2).
164. The detail for the proposed infiltration bed on the plan drawing(s) does not meet the standards of Section 6.4.2 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
165. Provide a detail for the proposed subsurface infiltration bed on the plan drawing(s) which meets the standards of Section 6.4.3 of the Stormwater BMP Manual. §102.11(a)(2).
166. The detail for the proposed subsurface infiltration bed on the plan drawing(s) does not meet the standards of Section 6.4.3 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
167. Provide a detail for the proposed infiltration trench on the plan drawing(s) which meets the standards of Section 6.4.4 of the Stormwater BMP Manual. §102.11(a)(2).
168. The detail for the proposed infiltration trench on the plan drawing(s) does not meet the standards of Section 6.4.4 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
169. Provide a detail for the proposed rain garden (*bioretention bed*) on the plan drawing(s) which meets the standards of Section 6.4.5 of the Stormwater BMP Manual. §102.11(a)(2).
170. The detail for the proposed rain garden (*bioretention bed*) on the plan drawing(s) does not meet the standards of Section 6.4.5 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
171. Bio-retention should be considered for use in the (*insert parking lot islands, roadway median, etc.*) (Section 6.4.5 of the Stormwater BMP Manual). §102.11(a)(2).
172. Clarify how runoff will be directed into the bio-retention area(s) at (*specify location(s)*) (Section 6.4.5 of the Stormwater BMP Manual). §102.11(a)(2).
173. Describe how infiltration will be avoided for the bio-retention area(s) at (*insert location(s)*) (Section 6.4.5 of the Stormwater BMP Manual). §102.11(a)(2).
174. Provide a detail for the proposed dry well (*seepage pit*) on the plan drawing(s) which meets the standards of Section 6.4.6 of the Stormwater BMP Manual. §102.11(a)(2).
175. The detail for the proposed dry well (*seepage pit*) on the plan drawing(s) does not meet the standards of Section 6.4.6 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).

176. Provide a detail for the proposed constructed filter on the plan drawing(s) which meets the standards of Section 6.4.7 of the Stormwater BMP Manual. §102.11(a)(2).
177. The detail for the proposed constructed filter on the plan drawing(s) does not meet the standards of Section 6.4.7 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
178. Provide a detail for the proposed vegetated swale on the plan drawing(s) which meets the standards of Section 6.4.8 of the Stormwater BMP Manual. §102.11(a)(2).
179. The detail for the proposed vegetated swale on the plan drawing(s) does not meet the standards of Section 6.4.8 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
180. Provide a detail for the proposed vegetated filter strip on the plan drawing(s) which meets the standards of Section 6.4.9 of the Stormwater BMP Manual. §102.11(a)(2).
181. The detail for the proposed vegetated filter strip on the plan drawing(s) does not meet the standards of Section 6.4.9 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
182. Provide a detail for the proposed infiltration berm (*and retentive grading*) on the plan drawing(s) which meets the standards of Section 6.4.10 of the Stormwater BMP Manual. §102.11(a)(2).
183. The detail for the proposed infiltration berm (*and retentive grading*) on the plan drawing(s) does not meet the standards of Section 6.4.10 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
184. Provide a (*insert detail or cross-section*) for the proposed vegetated roof on the plan drawing(s) which meets the standards of Section 6.5.1 of the Stormwater BMP Manual. §102.11(a)(2).
185. The detail for the proposed vegetated roof on the plan drawing(s) does not meet the standards of Section 6.5.1 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
186. Provide a detail for the proposed runoff capture and reuse system on the plan drawing(s) which meets the standards of Section 6.5.2 of the Stormwater BMP Manual. §102.11(a)(2).
187. The detail for the proposed runoff capture and reuse system on the plan drawing(s) does not meet the standards of Section 6.5.2 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
188. Provide a detail for the proposed constructed wetland on the plan drawing(s) which meets the standards of Section 6.6.1 of the Stormwater BMP Manual. §102.11(a)(2).
189. The detail for the proposed constructed wetland on the plan drawing(s) does not meet the standards of Section 6.6.1 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).

190. Provide a detail for the proposed wet pond (*retention basin*) on the plan drawing(s) which meets the standards of Section 6.6.2 of the Stormwater BMP Manual. §102.11(a)(2).
191. The detail for the proposed wet pond (*retention basin*) on the plan drawing(s) does not meet the standards of Section 6.6.2 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
192. Provide a detail for the proposed dry extended detention basin on the plan drawing(s) which meets the standards of Section 6.6.3 of the Stormwater BMP Manual. §102.11(a)(2).
193. The detail for the proposed dry extended detention basin on the plan drawing(s) does not meet the standards of Section 6.6.3 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
194. Provide a detail for the proposed water quality filters (*hydrodynamic devices*) on the plan drawing(s) which meets the standards of Section 6.6.4 of the Stormwater BMP Manual. §102.11(a)(2).
195. The detail for the proposed water quality filters (*hydrodynamic devices*) on the plan drawing(s) does not meet the standards of Section 6.6.4 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
196. Provide details for the proposed riparian buffer restoration on the plan drawing(s) which meets the standards of Section 6.7.1 of the Stormwater BMP Manual. §102.11(a)(2).
197. The details for the proposed riparian buffer restoration on the plan drawing(s) do not meet the standards of Section 6.7.1 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
198. Provide details for the proposed landscape restoration on the plan drawing(s) which meets the standards of Section 6.7.2 of the Stormwater BMP Manual. §102.11(a)(2).
199. The details for the proposed landscape restoration on the plan drawing(s) do not meet the standards of Section 6.7.2 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
200. Provide details for the proposed soil amendment and restoration on the plan drawing(s) which meets the standards of Section 6.7.3 of the Stormwater BMP Manual. §102.11(a)(2).
201. The details for the proposed soil amendment and restoration on the plan drawing(s) do not meet the standards of Section 6.7.3 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
202. Provide details for the proposed floodplain restoration on the plan drawing(s) which meets the standards of Section 6.7.4 of the Stormwater BMP Manual. §102.11(a)(2).
203. The details for the proposed floodplain restoration on the plan drawing(s) do not meet the standards of Section 6.7.4 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).

204. Provide a detail for the proposed level spreader on the plan drawing(s) which meets the standards of Section 6.8.1 of the Stormwater BMP Manual. §102.11(a)(2).
205. The detail for the proposed level spreader on the plan drawing(s) does not meet the standards of Section 6.8.1 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
206. Provide a detail for the proposed special detention area(s) on the plan drawing(s) which meets the standards of Section 6.8.2 of the Stormwater BMP Manual. §102.11(a)(2).
207. The detail for the proposed special detention area(s) on the plan drawing(s) does not meet the standards of Section 6.8.2 of the Stormwater BMP Manual. (*Identify deficiencies.*) Make all necessary corrections. §102.11(a)(2).
208. The proposed overflow for (*specify BMP*) should be realigned so that it does not discharge toward (*insert structure or area of concern*). §102.8(f).
209. Consideration should be given to directly connecting roof leaders to the (*specify infiltration BMP or underground storage BMP*) (Chapter 6 of the Stormwater BMP manual). §102.11(a)(2).
210. Consideration should be given to (*specify infiltration BMP or underground storage BMP*) under the (*specify athletic field, open space etc.*) (page 35 in Chapter 6 of the Stormwater BMP manual). §102.11(a)(2).
211. Due to the gradient of proposed infiltration trench (*insert trench number*), consideration should be given to stepping the sections between control structures (page 43 in Chapter 6 of the Stormwater BMP manual). §102.11(a)(2).
212. Show the areas designated as minimal disturbance areas on the plan map(s). Also place a note on the plan drawings that these areas must be clearly marked in the field during construction. (page 59 in Chapter 5 of the Stormwater BMP manual). §102.11(a)(2).
213. The limit of disturbance should not encroach on the drip line of the tree(s) (*specify location*). §102.8(b)(5).

Long-term operation and maintenance schedule §102.8(f)(10)

214. Identify the person(s) responsible for long-term operation and maintenance of the PCSM BMPs. §102.8(f)(10).
215. Provide a long-term operation and maintenance schedule, which provides for inspection of PCSM BMPs, including the repair, replacement, or other routine maintenance of the PCSM BMPs to ensure proper function and operation. §102.8(f)(10).
216. The long-term operation and maintenance program must provide for completion of a written report documenting each inspection and all BMP repair and maintenance activities. §102.8(f)(10). Revise as necessary.

217. Add a note to the plan drawing(s) requiring the PCSM Plan, inspection reports, and monitoring records be available for review and inspection by the Department or conservation district. §102.8(j).
218. Provide specific instructions for long-term operation and maintenance for each of the permanent BMPs contained in the PCSM Plan. §102.8(f)(10).
219. The maintenance instructions for the pervious (*specify parking lot, walkway, playground, etc.*) should disallow use of washing systems or compressed air and specify biannual vacuuming with a commercial unit (Page 19, Chapter 6 of the Stormwater BMP manual). §102.11(a)(2).
220. Catch basins and inlets should be inspected and cleaned at least two times per year and after runoff events (Stormwater BMP manual, Chapter 6). §102.11(a)(2). Add this requirement to the long-term operation and maintenance schedule.
221. Vehicles should not be parked or driven over infiltration BMPs (Stormwater BMP manual, Chapter 6). §102.11(a)(2). Please add this requirement to the long-term operation and maintenance instructions.
222. Structural BMPs should be inspected for accumulation of sediment, damage to outlet structures, signs of contamination or spills, and berm stability (Stormwater BMP manual, Chapter 6). §102.11(a)(2). Please add this requirement to the long-term operation and maintenance instructions.
223. Define "failure" for (*specify PCSM BMP*) and provide guidance for corrective measure(s) to be taken should failure occur (Protocol 2 the Stormwater BMP manual). §102.11(a)(2).
224. Provide instructions for the proposed street sweeping on the plan drawings. This guidance should meet the standards in Section 5.9.1 of the Stormwater BMP manual). §102.11(a)(2).

Recycling or disposal of materials §102.8(f)(11)

225. Identify the anticipated waste materials from the proposed PCSM BMPs. §102.8(f)(11).
226. Provide procedures which ensure that the measures for recycling or disposal of materials associated with or from the PCSM BMPs which are in accordance with Department laws, regulations and requirements. §102.8(f)(11).

Geologic formations or soil conditions §102.8(f)(12)

227. Address whether there are any naturally occurring geologic formations or soil conditions that may have the potential to cause pollution after earth disturbance activities are completed and PCSM BMPs are operational. §102.8(f)(12).
228. Provide a management plan to avoid or minimize potential pollution and its impacts from the naturally occurring geologic formations or soil conditions identified by the PCSM plan. §102.8(f)(12).

229. Provide a typical detail for the proper handling of (*specify material to receive special handling*). §102.8(f)(12).
230. Show the location(s) of the material that is to receive special handling. §102.8(f)(12).
231. In areas underlain by carbonate geology, there should be a minimum of 4 feet of separation (depth) between proposed seepage/infiltration Best Management Practice (BMP) bed bottoms and either the seasonal high water table (SHWT) and/or bedrock. Please provide adequate information for all proposed stormwater management BMPs, such as bed bottom elevation for all underground stormwater systems, as well as the depth to SHWT and rock.
232. Additional information regarding construction activities with Karst areas can be found in the PA SWM BMP Manual (Chapter 7).

Potential thermal impacts §102.8(f)(13)

233. Describe how potential thermal impacts associated with this project were avoided, minimized or mitigated in Item 7 of Section C (page 7) of the NOI. §102.8(f)(13).
234. Consideration should be given to (*insert as appropriate: preserving trees, protecting and/or converting or enhancing a riparian forest buffer, underground storage for stormwater detention, use of pervious pavement with infiltration, disconnecting roof leaders, bioretention/infiltration, minimizing pavement and hard armor, maximizing vegetation, etc.*). §102.8(f)(13).

Riparian forest buffer management plan §102.8(f)(14)

235. Because the project site is located in an (*insert exceptional value or high quality*) watershed where there are waters failing to attain one or more designated uses as listed in Category 4 or 5 on Pennsylvania's Integrated Water Quality Monitoring and Assessment report and as per §102.14(a)(2) and §102.14(b)(4), provide a riparian forest buffer management plan containing the following parts:
- a. A planting plan.
 - b. A maintenance schedule addressing a 5-year period.
 - c. An inspection schedule.
236. The project is located within 150 feet of (*insert an exceptional value (EV) or high quality (HQ)*) surface water. Please delineate the mandatory 150 foot buffer area on the plan map(s). §102.14(a)(1)&(2).
237. Riparian forest buffer areas to be created or enhanced delineated must be delineated into Zone 1 and Zone 2. Revise as necessary. §102.14(b)(1)(i)(ii)&(iii).
238. Describe how stormwater entering the buffer will be sheet flow or shallow concentrated flow for storm events up to and including the 2-year/24-hour storm. § 102.14(c)(1).

239. The plan map(s) show (insert wetland identification) within the riparian buffer area. Describe how this wetland will be protected consistent with Chapter 105. §102.14(c)(2).
240. Riparian buffers must be measured horizontally and perpendicularly to the bank with no more than a 10% variation below the minimum width from the normal pool elevation for lake, pond or reservoir and from top of streambank. Make all necessary corrections. §102.14(c)(3).
241. Since you are applying for a waiver of the riparian forest buffer requirements, provide an alternatives analysis containing the following parts:
- a. An analysis that addresses the 150 foot buffer.
 - b. A demonstration that all existing riparian forest buffers will be impacted to the minimum extent practicable.
 - c. All other aspects of Chapter 102 are met. §102.14(d)(2).
242. Clearly show the area(s) proposed for inclusion in the riparian forest buffer waiver. §102.14(d)(2).
243. Please indicate the impairment and TMDL status of the receiving water(s) for the project. §102.14(d)(1)&(2).

Additional information §102.8(f)(15)

244. Please provide (*Request additional information needed to complete the plan review and approval*). §102.8(g)(6).