New Jersey Stormwater Best Management Practices Manual

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http://www.state.nj.us/dep/watershedmgt/bmpmanualfeb2004.htm

A P P E N D I X A

Low Impact Development Checklist

A checklist for identifying nonstructural stormwater management strategies incorporated into proposed land development

According to the NJDEP Stormwater Management Rules at N.J.A.C. 7:8, the groundwater recharge, stormwater quality, and stormwater quantity standards established by the Rules for major land development projects must be met by incorporating nine specific nonstructural stormwater management strategies into the project's design to the maximum extent practicable.

To accomplish this, the Rules require an applicant seeking land development approval from a regulatory board or agency to identify those nonstructural strategies that have been incorporated into the project's design. In addition, if an applicant contends that it is not feasible to incorporate any of the specific strategies into the project's design, particularly for engineering, environmental, or safety reasons, the Rules further require that the applicant provide a basis for that contention.

This checklist has been prepared to assist applicants, site designers, and regulatory boards and agencies in ensuring that the nonstructural stormwater management requirements of the Rules are met. It provides an applicant with a means to identify both the nonstructural strategies incorporated into the development's design and the specific low impact development BMPs (LID-BMPs) that have been used to do so. It can also help an applicant explain the engineering, environmental, and/or safety reasons that a specific nonstructural strategy could not be incorporated into the development's design.

The checklist can also assist municipalities and other land development review agencies in the development of specific requirements for both nonstructural strategies and LID-BMPs in zoning and/or land use ordinances and regulations. As such, where requirements consistent with the Rules have been adopted, they may supersede this checklist.

Finally, the checklist can be used during a pre-design meeting between an applicant and pertinent review personnel to discuss local nonstructural strategies and LID-BMPs requirements in order to optimize the development's nonstructural stormwater management design.

Since this checklist is intended to promote the use of nonstructural stormwater management strategies and provide guidance in their incorporation in land development projects, municipalities are permitted to revise it as necessary to meet the goals and objectives of their specific stormwater management program and plan within the limits of N.J.A.C. 7:8.

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Municipality: *Borough of Red Bank*

County: *Monmouth* Date: *5/15/20*

Review board or agency: *Borough of Red Bank Planning Board*

Proposed land development name: *Shrewsbury Manor, Inc.*

Lot(s): *5, 6.01, 8, & 9.02* Block: *5*

Project or application number: _____

Applicant's name: *Shrewsbury Manor, Inc.*

Applicant's address: *P.O. Box 757, Red Bank, NJ 07701*

Telephone: *732-741-7200*

Email address: _____

Designer's name: *Abbington Engineering, LLC*

Designer's address: *922 NJ-33, Suite #3, Freehold, NJ 07728*

Telephone:*732-431-1440*

Email address: *stephenk@abbingtonengineering.com*

Part 1: Description of Nonstructural Approach to Site Design

In narrative form, provide an overall description of the nonstructural stormwater management approach and strategies incorporated into the proposed site's design. Attach additional pages as necessary. Details of each nonstructural strategy are provided in Part 3 below.

The proposed development design incorporates nonstructural stormwater management strategies to the greatest extent feasible. The site has been designed to minimize land disturbance, clearing, and grading. To the greatest extent practical, existing drainage features and patterns have been retained to limit any decrease, if at all, in the time of concentration. This was done mainly through the decrease in the site of overall impervious coverage. To the greatest extent possible, impact on grass species and native plants has been minimized. Soil compaction will be minimized by the use of light weight grading equipment wherever possible and by following soil compaction remedies and testing regulations set forth by Freehold Soils. Pollutant discharge and water quality are addressed by the decrease in the site's overall impervious coverage. Further, the currently proposed site improvements adhere to the requirements and achieve the required points set forth in the NJDEP Nonstructural Stormwater Strategies as depicted in the attached sheets.

Part 2: Review of Local Stormwater Management Regulations

Title and date of stormwater management regulations used in development design:

Borough of Red Bank, NJ BMP and TR-55

Do regulations include nonstructural requirements?
Yes: *x* No: _____

If yes, briefly describe: *The nonstructural requirements as described in the previous writeup, page 4.*

List LID-BMPs prohibited by local regulations: *N/A*

Pre-design meeting held? Yes: _____ Date: _____ No: *x*

Meeting held with: _____

Pre-design site walk held? Yes: _____ Date: _____ No: *x*

Site walk held with: _____

Other agencies with stormwater review jurisdiction:

Name: *Freehold Soils*

Required approval: *yes*

Name: *Monmouth County Planning Board*

Required approval: *yes*

Name: _____

Required approval: _____

Part 3: Nonstructural Strategies and LID-BMPs in Design

3.1 Vegetation and Landscaping

Effective management of both existing and proposed site vegetation can reduce a development's adverse impacts on groundwater recharges and runoff quality and quantity. This section of the checklist helps identify the vegetation and landscaping strategies and nonstructural LID-BMPs that have been incorporated into the proposed development's design to help maintain existing recharge rates and/or minimize or prevent increases in runoff quantity and pollutant loading.

A. Has an inventory of existing site vegetation been performed? Yes: _____ No: *x Existing site currently a parking lot and commercial usage.*

If yes, was this inventory a factor in the site's layout and design? Yes: _____ No: _____

B. Does the site design utilize any of the following nonstructural LID-BMPs?

Preservation of natural areas? Yes: _____ No: x
If yes, specify % of site: *N/A*

Native ground cover? Yes: _____ No: x
If yes, specify % of site: *N/A*

Vegetated buffers? Yes: x No: _____
If yes, specify % of site: *24%*

C. Do the land development regulations require these nonstructural LID-BMPs?

Preservation of natural areas? Yes: _____ No: x
If yes, specify % of site: _____

Native ground cover? Yes: _____ No: x
If yes, specify % of site: _____

Vegetated buffers? Yes: _____ No: x
If yes, specify % of site: _____

D. If vegetated filter strips or buffers are utilized, specify their functions:

Reduce runoff volume increases through lower runoff coefficient:
Yes: x No: _____

Reduce runoff pollutant loads through runoff treatment:
Yes: x No: _____

Maintain groundwater recharge by preserving natural areas:
Yes: x No: _____

3.2 Minimize Land Disturbance

Minimizing land disturbance is a nonstructural LID-BMP that can be applied during both the development's construction and post-construction phases. This section of the checklist helps identify those land disturbance strategies and nonstructural LID-BMPs that have been incorporated into the proposed development's design to minimize land disturbance and the resultant change in the site's hydrologic character.

A. Have inventories of existing site soils and slopes been performed?
Yes: x No: _____

If yes, were these inventories factors in the site's layout and design? Yes: _____ No: x

B. Does the development's design utilize any of the following nonstructural LID-BMPs?

Restrict permanent site disturbance by land owners?
Yes: x No: _____

If yes, how: *Site is fully developed and will not be able to be further disturbed.*

Restrict temporary site disturbance during construction?
Yes: x No: _____

If yes, how: *We have specified soil erosion and sediment control measures.*

Consider soils and slopes in selecting disturbance limits?
Yes: x No: _____

If yes, how: *Location of roof drain recharge pits.*

C. Specify percentage of site to be cleared: *75%* Regraded: *75%*

D. Specify percentage of cleared areas done so for buildings: *14.4%*

For driveways and parking: *44.2%* For roadways: *N/A*

E. What design criteria and/or site changes would be required to reduce the percentages in C and D above? *None, this is a predeveloped site.*

F. Specify site's hydrologic soil group (HSG) percentages:

HSG A: _____ HSG B: _____ HSG C: _____ HSG D: *100%*

G. Specify percentage of each HSG that will be permanently disturbed:

HSG A: _____ HSG B: _____ HSG C: _____ HSG D: *100%*

H. Locating site disturbance within areas with less permeable soils (HSG C and D) and minimizing disturbance within areas with greater permeable soils (HSG A and B) can help maintain groundwater recharge rates and reduce runoff volume increases. In light of the HSG percentages in F and G above, what other practical measures if any can be taken to achieve this?

Reduction in impervious area and replacement with permeable soils.

I. Does the site include Karst topography? Yes: _____ No: *x*

If yes, discuss measures taken to limit Karst impacts:

_____

3.3 Impervious Area Management

New impervious surfaces at a development site can have the greatest adverse effect on groundwater recharge and stormwater quality and quantity. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into a proposed development's design to comprehensively manage the extent and impacts of new impervious surfaces.

A. Specify impervious cover at site: Existing: *76.9%* Proposed: *66.0%*

B. Specify maximum site impervious coverage allowed by regulations: *75%*

C. Compare proposed street cartway widths with those required by regulations: *N/A*

Type of Street	Proposed Cartway Width (feet)	Required Cartway Width (feet)
Residential access – low intensity		
Residential access – medium intensity		
Residential access – high intensity with parking		
Residential access – high intensity without parking		
Neighborhood		
Minor collector – low intensity without parking		
Minor collector – with one parking lane		
Minor collector – with two parking lanes		
Minor collector – without parking		
Major collector		

D. Compare proposed parking space dimensions with those required by regulations:

Proposed: *9x18* Regulations: *9x18*

E. Compare proposed number of parking spaces with those required by regulations:

Proposed: *50* Regulations: *20*

Additional parking to be shared with adjoining apartment complex.

F. Specify percentage of total site impervious cover created by buildings: *14.4%*

By driveways and parking: *44.2%* By roadways: *0%*

G. What design criteria and/or site changes would be required to reduce the percentages in F above?

None

H. Specify percentage of total impervious area that will be unconnected:

Total site: 4*0%* Buildings: _____ Driveways and parking: *40%* Roads: _____

I. Specify percentage of total impervious area that will be porous:

Total site: *0%* Buildings: _____ Driveways and parking: _____Roads: _____

J. Specify percentage of total building roof area that will be vegetated: *0%*

K. Specify percentage of total parking area located beneath buildings: *0%*

L. Specify percentage of total parking located within multi-level parking deck: *0%*

3.4 Time of Concentration Modifications

Decreasing a site's time of concentration (Tc) can lead directly to increased site runoff rates which, in turn, can create new and/or aggravate existing erosion and flooding problems downstream. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into the proposed development's design to effectively minimize such Tc decreases.

When reviewing Tc modification strategies, it is important to remember that a drainage area's Tc should reflect the general conditions throughout the area. As a result, Tc modifications must generally be applied throughout a drainage area, not just along a specific Tc route.

A. Specify percentage of site's total stormwater conveyance system length that will be:

Storm sewer: *100%-Drywells* Storm sewer from the site will be serviced by an existing storm drainage system. Our design is reducing the impact on the existing storm sewer system.

Vegetated swale: _____ Natural channel: _____

Stormwater management facility: _____ Other: _____

Note: the total length of the stormwater conveyance system should be measured from the site's downstream property line to the downstream limit of sheet flow at the system's headwaters.

B. What design criteria and/or site changes would be required to reduce the storm sewer percentages and increase the vegetated swale and natural channel percentages in A above?

None, site impervious is already being reduced.

C. In conveyance system subareas that have overland or sheet flow over impervious surfaces or turf grass, what practical and effective site changes can be made to:

Decrease overland flow slope: *Overland flow slope decreased by the large lawn areas proposed in front of the proposed building.*

Increase overland flow roughness: *Overland flow slope decreased by the large lawn areas proposed in front of the proposed building and reduced lot coverage.*

3.5 Preventative Source Controls

The most effective way to address water quality concerns is by pollution prevention. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into the proposed development's design to reduce the exposure of pollutants to prevent their release into the stormwater runoff.

A. Trash Receptacles

Specify the number of trash receptacles provided: *1*

Specify the spacing between the trash receptacles: *N/A*

Compare trash receptacles proposed with those required by regulations:

Proposed: *1* Regulations: *1*

B. Pet Waste Stations

Specify the number of pet waste stations provided: *None*

Specify the spacing between the pet waste stations: *N/A*

Compare pet waste stations proposed with those required by regulations:

Proposed: *0* Regulations: *0*

C. Inlets, Trash Racks, and Other Devices that Prevent Discharge of Large Trash and Debris

Specify percentage of total inlets that comply with the NJPDES storm drain inlet criteria: *100%*

D. Maintenance

Specify the frequency of the following maintenance activities:

Street sweeping: Proposed: *Bi-monthly* Regulations: *Bi-monthly*

Litter collection: Proposed: *Bi-weekly* Regulations: *Bi-weekly*

Identify other stormwater management measures on the site that prevent discharge of large trash and debris:

Site impervious coverage is being reduced. Roof drains are being directed to recharge pits. The inlets will also comply with NJDEP regulations.

E. Prevention and Containment of Spills

Identify locations where pollutants are located on the site, and the features that prevent these pollutants from being exposed to stormwater runoff:

Pollutant: *N/A* Location: *N/A*

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: *N/A* Location: *N/A*

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: *N/A* Location: *N/A*

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: *N/A* Location: *N/A*

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: *N/A* Location: *N/A*

Part 4: Compliance with Nonstructural Requirements of NJDEP Stormwater Management Rules

1. Based upon the checklist responses above, indicate which nonstructural strategies have been incorporated into the proposed development's design in accordance with N.J.A.C. 7:8-5.3(b):

No.	Nonstructural Strategy	Yes	No
1.	Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.	*x*	
2.	Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.	*x*	
3.	Maximize the protection of natural drainage features and vegetation.	*x*	
4.	Minimize the decrease in the pre-construction time of concentration.	*x*	
5.	Minimize land disturbance including clearing and grading.	*x*	
6.	Minimize soil compaction.	*x*	
7.	Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides.	*x*	
8.	Provide vegetated open-channel conveyance systems discharge into and through stable vegetated areas.	*x*	
9.	Provide preventative source controls.	*x*	

2. For those strategies that have not been incorporated into the proposed development's design, provide engineering, environmental, and/or safety reasons. Attached additional pages as necessary.

____