Examples of Sites Designed to Meet the Watershed Protection Standard (WPS)

The site examples on the following pages each show a three-dimensional model of a site design. Together, these designs showcase a range of real-world scenarios in which the Watershed Protection Standard (WPS) is achieved. Each example is annotated to illustrate how the site meets the WPS.

What is the WPS?

The WPS is a stormwater design standard that was developed by the U.S. Environmental Protection Agency (EPA) to protect and restore water resources. The WPS helps mitigate impacts of development at the site-level and consequently downstream by requiring site design that achieves pre-development levels of recharge and nutrient load export on an average annual basis.

WPS compliance is determined by meeting a required runoff reduction volume, which is set according to the site's pre-development hydrologic soil conditions. The WPS also requires an approach to site layout and design that helps achieve compliance and incorporates the following key strategies:

- Minimize impervious cover
- Disconnect impervious cover
- Preserve natural areas
- Maximize infiltration
- Manage runoff near its source
- Locate stormwater controls in soils with high infiltration capacity and impervious surfaces in soils with poor infiltration capacity

To understand the details of the WPS, refer to the WPS Toolkit's resource, *Regulatory Language for Adopting the Watershed Protection Standard*.

Using the latest science

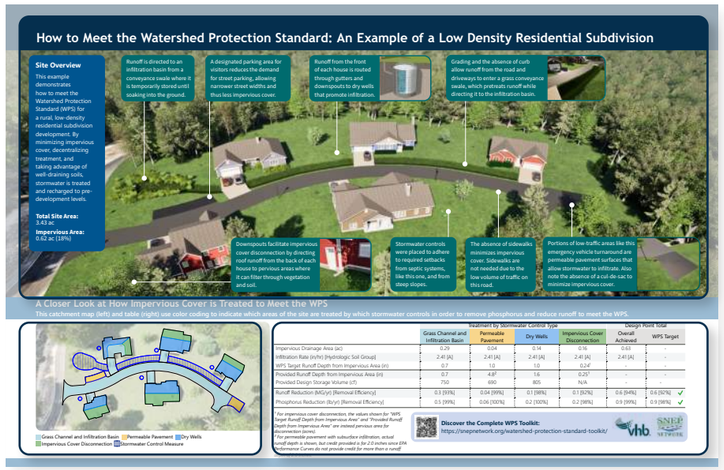
The stormwater control measures (SCMs) in these site examples were designed using the EPA's SCM Performance Curves, which quantify annual average reduction of SCM runoff and pollutant load based on catchment and SCM design information. These curves were developed using long-term continuous simulation modeling. Using these curves instead of a single design storm to size SCMs helps sites efficiently meet the WPS and avoid oversizing.

What resources are available to designers working to meet the WPS?

The University of New Hampshire Stormwater Center's (UNHSC) WPS Calculator
Outputs WPS target based on catchment and SCM treatment information

UNHSC Performance Curve Calculator
Quantifies SCM performance using the EPA SCM performance curves

New England Stormwater Retrofit Manual
Provides guidance on siting and designing SCMs and explains how to use the EPA's SCM Performance Curves to optimize design



What is on each sheet?

The top of the page shows a 3D model of a site design. A "Site Overview" text box provides an orientation to the site. Site features and approaches used to meet the WPS are labeled with callouts.

The bottom left of the page shows a map of the site's drainage catchments. The map uses colored shading that pairs with the table to the right to indicate where impervious cover is directed for treatment.

The bottom right of the page shows a table summarizing the treatment targets and reductions achieved for each type of stormwater control used on the site. These values are based on the catchment areas and soils from each site design, with SCMs designed to meet the WPS. Each column represents a different type of stormwater control and corresponds to a catchment in the map to the left.

How can I use these examples?

These site examples are intended to illustrate how meeting the WPS is feasible across a range of real-world conditions. Each site features an array of SCMs and low impact development practices to provide designers strategies for meeting the WPS. Callouts, a catchment map, and calculations walk the user through how stormwater on each part of the site is managed. Note that because one of the goals of creating these examples was to showcase strategies for meeting the WPS, some sites may include a wider variety of SCM types than is typical.

What site examples are included?

The following pages include six example site designs showcasing a range of new development and redevelopment scenarios that meet the WPS:

1. Low-density, residential subdivision
2. Large, commercial property
3. Large, industrial property
4. Urban, institutional property
5. Townhouse community: Meets WPS using low impact development (LID)
6. Townhouse community: Meets WPS using conventional site design strategies*

**Example #6 is intended to be compared to Example #5 to highlight how LID practices make meeting the WPS easier and less costly. Practices used in Example #6 are not recommended.*

Where do the numbers come from in the treatment summary table?

Inputs based on site layout and soil information

	Treatment by Stormwater Control Type				Design Point Total	
	Grass Channel and Infiltration Basin	Permeable Pavement	Dry Wells	Impervious Cover Disconnection	Overall Achieved	WPS Target
Impervious Drainage Area (ac)	0.29	0.04	0.14	0.16	0.63	-
Infiltration Rate (in/hr) [Hydrologic Soil Group]	2.41 [A]	2.41 [A]	2.41 [A]	2.41 [A]	2.41 [A]	-
WPS Target Runoff Depth from Impervious Area (in)	0.7	1.0	1.0	0.24[1]	-	-
Provided Runoff Depth from Impervious Area (in)	0.7	4.8[2]	1.6	0.25[1]	-	-
Provided Design Storage Volume (cf)	750	690	805	N/A	-	-
Runoff Reduction (MG/yr) [Removal Efficiency]	0.3 [93%]	0.04 [99%]	0.1 [98%]	0.1 [92%]	0.6 [94%]	0.6 [92%] ✓
Phosphorus Reduction (lb/yr) [Removal Efficiency]	0.5 [99%]	0.06 [100%]	0.2 [100%]	0.2 [98%]	0.9 [99%]	0.9 [98%] ✓

Runoff removal efficiency targets found in WPS regulation (Table 1). Runoff reduction calculated by applying removal efficiency to site's runoff volume. The corresponding phosphorus removal efficiency and load reduction is shown for additional context.

Output from the UNHSC WPS Calculator

Output from the UNHSC Performance Curve Calculator based on designer inputs for each catchment and SCM

Calculated by using outputs of UNHSC Performance Curve Calculator for individual catchments and aggregating to get design point values.

Discover the Complete WPS Toolkit:
The Watershed Protection Standard Toolkit is a set of materials consisting of design guidance, sample regulatory language, compliance checklists and more to help municipal staff implement the Watershed Protection Standard and help designers comply with this new standard. The Toolkit can be found at: https://snepnetwork.org/watershed-protection-standard-toolkit/

DEVELOPED BY VHB and The SNEP Network

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How to Meet the Watershed Protection Standard: An Example of a Low Density Residential Subdivision

Site Overview

This example demonstrates how to meet the Watershed Protection Standard (WPS) for a rural, low-density residential subdivision development. By minimizing impervious cover, decentralizing treatment, and taking advantage of well-draining soils, stormwater is treated and recharged to pre-development levels.

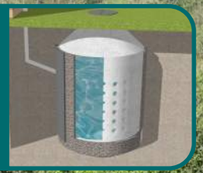
Total Site Area:
3.43 ac

Impervious Area:
0.62 ac (18%)

Runoff is directed to an infiltration basin from a conveyance swale where it is temporarily stored until soaking into the ground.

A designated parking area for visitors reduces the demand for street parking, allowing narrower street widths and thus less impervious cover.

Runoff from the front of each house is routed through gutters and downspouts to dry wells that promote infiltration.



Grading and the absence of curb allow runoff from the road and driveways to enter a grass conveyance swale, which pretreats runoff while directing it to the infiltration basin.



Downspouts facilitate impervious cover disconnection by directing roof runoff from the back of each house to pervious areas where it can filter through vegetation and soil.



Stormwater controls were placed to adhere to required setbacks from septic systems, like this one, and from steep slopes.

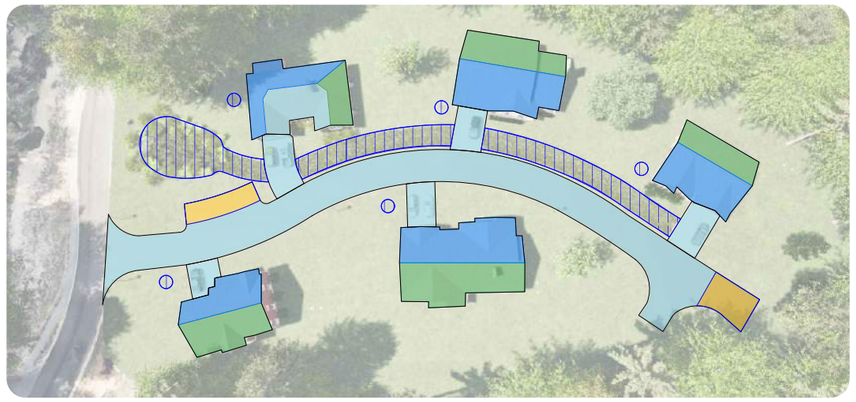
The absence of sidewalks minimizes impervious cover. Sidewalks are not needed due to the low volume of traffic on this road.

Portions of low-traffic areas like this emergency vehicle turnaround are permeable pavement surfaces that allow stormwater to infiltrate. Also note the absence of a cul-de-sac to minimize impervious cover.



A Closer Look at How Impervious Cover is Treated to Meet the WPS

This catchment map (left) and table (right) use color coding to indicate which areas of the site are treated by which stormwater controls in order to remove phosphorus and reduce runoff to meet the WPS.



Grass Channel and Infiltration Basin | Permeable Pavement | Dry Wells
Impervious Cover Disconnection | Stormwater Control Measure

	Treatment by Stormwater Control Type				Design Point Total		
	Grass Channel and Infiltration Basin	Permeable Pavement	Dry Wells	Impervious Cover Disconnection	Overall Achieved	WPS Target	
Impervious Drainage Area (ac)	0.29	0.04	0.14	0.16	0.63	-	
Infiltration Rate (in/hr) [Hydrologic Soil Group]	2.41 [A]	2.41 [A]	2.41 [A]	2.41 [A]	2.41 [A]	-	
WPS Target Runoff Depth from Impervious Area (in)	0.7	1.0	1.0	0.24[1]	-	-	
Provided Runoff Depth from Impervious Area (in)	0.7	4.8[2]	1.6	0.25[1]	-	-	
Provided Design Storage Volume (cf)	750	690	805	N/A	-	-	
Runoff Reduction (MG/yr) [Removal Efficiency]	0.3 [93%]	0.04 [99%]	0.1 [98%]	0.1 [92%]	0.6 [94%]	0.6 [92%]	✓
Phosphorus Reduction (lb/yr) [Removal Efficiency]	0.5 [99%]	0.06 [100%]	0.2 [100%]	0.2 [98%]	0.9 [99%]	0.9 [98%]	✓

[1] For impervious cover disconnection, the values shown for "WPS Target Runoff Depth from Impervious Area" and "Provided Runoff Depth from Impervious Area" are instead pervious area for disconnection (acres).
[2] For permeable pavement with subsurface infiltration, actual runoff depth is shown, but credit provided is for 2.0 inches since EPA Performance Curves do not provide credit for more than a runoff depth of 2.0 inches.

Discover the Complete WPS Toolkit:
https://snepnetwork.org/watershed-protection-standard-toolkit/

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How to Meet the Watershed Protection Standard: An Example of a Large, Commercial Property

Site Overview

This big-box store redevelopment demonstrates that even on a site with a lot of impervious cover and poorly infiltrating soils, meeting the Watershed Protection Standard (WPS) is feasible. This site necessitates a large, one-story building and substantial space for parking. However, by taking steps to minimize impervious cover, distributing stormwater controls, and infiltrating wherever possible, even in challenging soils, stormwater is treated and recharged to pre-development levels on most of the site. Where infiltration is not possible due to high groundwater, stormwater is treated to 50% phosphorus removal based on requirements for redevelopment projects.

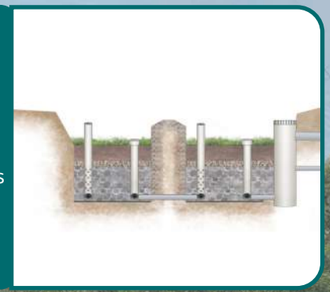
Total Site Area:
15.00 ac

Impervious Area:
9.93 ac (66%)

Roof runoff is routed to two subsurface chambers, one in Hydrologic Soil Group (HSG) C soils and the other in HSG D soils. Despite slower infiltration rates, they are able to provide significant annual recharge and pollutant reduction and draw down between storm events.



In the part of the site where infiltration is not possible due to high groundwater, a gravel wetland is employed to treat runoff. This system takes advantage of microbial processes to remove nitrogen and also removes other pollutants via filtration and plant uptake.



Impervious cover closest to the adjacent lake was removed during the redevelopment process to enhance the buffer to the resource area.

This parking lot was designed to offer only the necessary number of spaces to meet peak demand, and with smaller stalls, avoiding excess impervious cover.

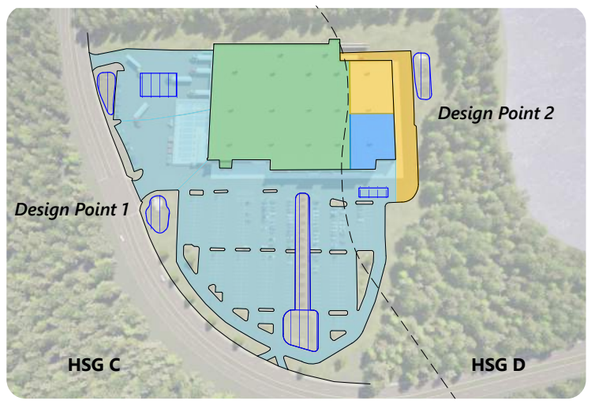
Two infiltration basins treat parking lot runoff. Deep sump catch basins and sediment forebays provide pretreatment in order to protect the infiltration capacity of the basin.

Runoff from most of the parking lot sheet flows into a lined bioretention pretreatment swale and is then treated by an infiltration basin. On sites not considered to have higher pollutant load, the swale itself could provide infiltration.



A Closer Look at How Impervious Cover is Treated to Meet the WPS

This catchment map (left) and table (right) use color coding to indicate which areas of the site are treated by which stormwater controls in order to remove phosphorus and reduce runoff to meet the WPS.



Infiltration Basins | Gravel Wetland | Subsurface Infiltration (HSG D)
Subsurface Infiltration (HSD C) | Stormwater Control Measure
Hydrologic Soil Group Boundary

	Treatment by Stormwater Control Type		Design Point 1 Total		Treatment by Stormwater Control Type		Design Point 2 Total	
	Surface Infiltration Basins	Subsurface Infiltration	Overall Achieved	WPS Target	Subsurface Infiltration	Gravel Wetland	Overall Achieved	WPS Target
Impervious Drainage Area (ac)	6.16	2.39	8.55	-	0.40	0.99	1.39	-
Infiltration Rate (in/hr) [Hydrologic Soil Group]	0.27 [C]	0.27 [C]	0.27 [C]	-	0.10 [D]	-	-	-
WPS Target Runoff Depth from Impervious Area (in)	0.6	0.8	-	-	0.8	50% TP Removal[1]	-	-
Provided Runoff Depth from Impervious Area (in)	0.7	0.8	-	-	0.8	1.3	-	-
Provided Design Storage Volume (cf)	14,590	7,000	-	-	1,200	4,550	-	-
Runoff Reduction (MG/yr) [Removal Efficiency]	4.5 [69%]	1.7 [67%]	6.1 [68%]	5.9 [66%] ✓	0.2 [46%]	0.00 [0%]	0.2 [13%]	-
Phosphorus Reduction (lb/yr) [Removal Efficiency]	9.6 [88%]	3.7 [86%]	13.3 [87%]	13.1 [86%] ✓	0.6 [79%]	1.2 [67%]	1.7 [70%]	1.9 [50%] ✓

[1] For non-infiltrating stormwater controls, the value shown in the row "WPS" Target Runoff Depth from Impervious Area" is instead the total phosphorus (TP) removal efficiency required. The WPS requires phosphorus removal of 60% for new development and 50% for redevelopment for design points where infiltration is not feasible.

Discover the Complete WPS Toolkit:
https://snepnetwork.org/watershed-protection-standard-toolkit/

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How to Meet the Watershed Protection Standard: An Example of a Large, Industrial Property

Site Overview

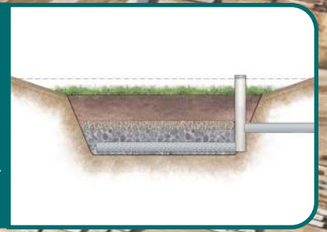
This example demonstrates that even on a largely impervious, industrial site where infiltration is not permitted due to site constraints, meeting the Watershed Protection Standard (WPS) is feasible. The WPS target requires 60% total phosphorus removal for new development. Here runoff is directed to three underdrained stormwater controls that are able to achieve 60% total phosphorus removal.

Total Site Area:
13.36 ac

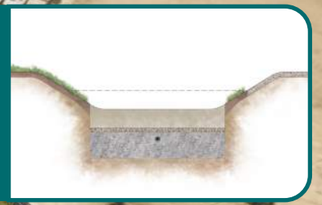
Impervious Area:
9.03 ac (68%)

Stormwater is distributed to three stormwater control measures spread across the site rather than getting directed to one or two centralized systems. This approach helps the site better replicate pre-development hydrology, which is especially important on sites with sensitive downstream waterbodies.

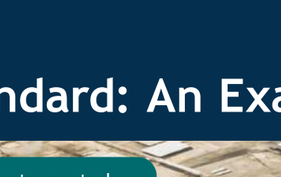
This landscaped area at the building's office entrance doubles as a biofiltration basin. Runoff enters through a curb cut, filters through soil, then moves into an underground internal storage reservoir. This reservoir remains saturated, creating an anoxic zone for nitrogen removal via denitrification.



Roof and parking lot areas drain to two surface sand filters on opposite sides of the site. These systems treat stormwater through settling followed by filtration. To enhance aesthetics, filters on this site are topped with loam and grass.

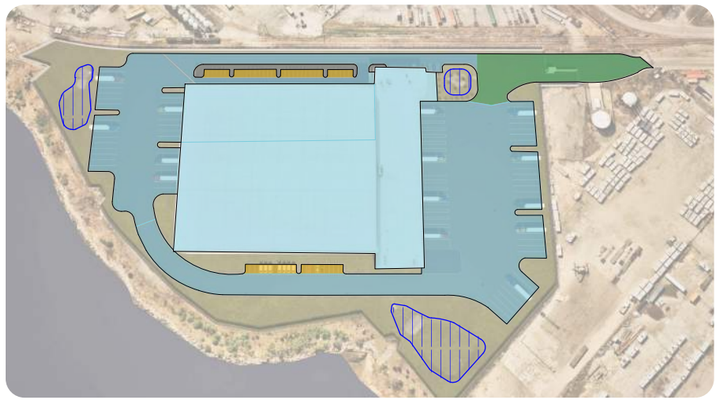


Portions of low-traffic areas such as overflow parking spaces were designed with permeable pavement. Because infiltration is not feasible on this site, this permeable pavement is underdrained.



A Closer Look at How Impervious Cover is Treated to Meet the WPS

This catchment map (left) and table (right) use color coding to indicate which areas of the site are treated by which stormwater controls in order to remove phosphorus and reduce runoff to meet the WPS.



Sand Filters Biofiltration with Internal Storage Reservoir
Permeable Pavement Stormwater Control Measure

	Treatment by Stormwater Control Type			Design Point Total	
	Sand Filter with Underdrain	Enhanced Biofiltration with Internal Storage Reservoir	Permeable Pavement with Underdrain	Overall Achieved	WPS Target
Impervious Drainage Area (ac)	8.03	0.70	0.31	9.03	-
Infiltration Rate (in/hr) [Hydrologic Soil Group]	-	-	-	-	-
WPS Target Runoff Depth from Impervious Area (in)	60% TP Removal[1]	60% TP Removal[1]	60% TP Removal[1]	-	-
Provided Runoff Depth from Impervious Area (in)	1.6	2.0	18[2]	-	-
Provided Design Storage Volume (cf)	33,130	4,500	8,100	-	-
Runoff Reduction (MG/yr) [Removal Efficiency]	0.0 [0%]	0.0 [0%]	0.0 [0%]	0.00 [0%]	-
Phosphorus Reduction (lb/yr) [Removal Efficiency]	8.7 [61%]	1.0 [78%]	0.4 [70%]	10.0 [62%]	9.6 [60%] ✓

[1] For non-infiltrating stormwater controls, the value shown in the row "WPS" Target Runoff Depth from Impervious Area" is instead the total phosphorus (TP) removal efficiency required. The WPS requires phosphorus removal of 60% for new development and 50% for redevelopment for design points where infiltration is not feasible.

[2] For permeable pavement with underdrain, the value shown for "Provided Runoff Depth from Impervious Area" is instead depth of filter course (inches).

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How to Meet the Watershed Protection Standard: An Example of an Urban, Institutional Property

Site Overview

This example of an urban, institutional redevelopment shows how to meet the Watershed Protection Standard (WPS) where space is limited. Impervious cover is minimized by building vertically, using permeable pavement, and integrating a green roof. The site design also capitalizes on moderately well-draining soils and incorporates stormwater control into innovative landscaping features. Through these measures, stormwater is treated and recharged to pre-development levels.

Total Site Area:
2.61 ac

Impervious Area:
1.80 ac (83%)

Some runoff from the roof is directed to a cistern, which stores water that can later be used for irrigation.



A green roof covers part of the building, decreasing impervious cover and providing a scenic view for those using the adjacent courtyard.

Runoff from the majority of the roof and adjacent driveway is directed through closed drainage into a subsurface infiltration system beneath this park.



Roof runoff is directed to an exfiltrating bioretention basin that facilitates treatment and infiltration.

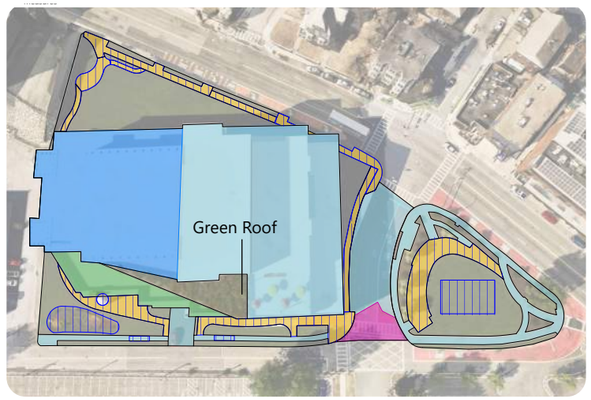
Parking is provided in an underground garage, which reduces the impervious footprint of the site and creates space for landscaped gardens.

Runoff from the garage entrance and front sidewalks is directed to subsurface infiltration chambers beneath impervious sidewalks, positioned in areas clear of underground utilities.

Throughout the site, there are patios and sidewalks made of permeable pavement, which minimizes impervious surface and treats stormwater.

A Closer Look at How Impervious Cover is Treated to Meet the WPS

This catchment map (left) and table (right) use color coding to indicate which areas of the site are treated by which stormwater controls in order to remove phosphorus and reduce runoff to meet the WPS.



Subsurface Infiltration | Rainwater Cistern | Exfiltrating Bioretention | Permeable Pavement | Untreated | Stormwater Control Measure

	Treatment by Stormwater Control Type					Design Point Total	
	Subsurface Infiltration	Rainwater Cistern	Exfiltrating Bioretention	Permeable Pavement	Untreated	Overall Achieved	WPS Target
Impervious Drainage Area (ac)	0.92	0.07	0.47	0.29	0.05	1.80	-
Infiltration Rate (in/hr) [Hydrologic Soil Group]	0.52 [B]	0.52 [B]	0.52 [B]	0.52 [B]	-	0.52 [B]	-
WPS Target Runoff Depth from Impervious Area (in)	1.0	2.0[1]	0.7	1.0	-	-	-
Provided Runoff Depth from Impervious Area (in)	1.1	1.5[1]	0.9	4.6[2]	-	-	-
Provided Design Storage Volume (cf)	3,840	1,020	1,520	4,870	-	-	-
Runoff Reduction (MG/yr) [Removal Efficiency]	0.8 [84%]	0.1 [89%]	0.4 [86%]	0.3 [96%]	0.00 [0%]	1.6 [84%]	1.5 [79%] ✓
Phosphorus Reduction (lb/yr) [Removal Efficiency]	1.6 [95%]	0.1 [89%]	0.8 [96%]	0.5 [99%]	0.00 [0%]	3.0 [93%]	3.0 [93%] ✓

[1] For the rainwater cistern, values shown for "WPS Target Runoff Depth from Impervious Area (in)" and "Provided Runoff Depth from Impervious Area (in)" are actually the ratios of storage volume to impervious area (in).
[2] For permeable pavement with subsurface infiltration, actual runoff depth is shown, but credit provided is for 2.0 inches since EPA Performance Curves do not provide credit for more than a runoff depth of 2.0 inches.

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How to Meet the Watershed Protection Standard: Townhouses with Low Impact Development Design

Site Overview

This example of a townhouse community shows how to meet the Watershed Protection Standard (WPS) in a suburban, high-density residential townhouse development. By clustering development to preserve natural areas, taking measures to minimize impervious cover, distributing stormwater controls across the site, and capitalizing on well-draining soils, stormwater is treated and recharged to pre-development levels.

Total Site Area:
10.23 ac

Impervious Area:
2.16 ac (22%)

Road runoff drains to two infiltration swales on site, which contain impervious check dams that force storage and infiltration. Some runoff is conveyed to the swales via closed drainage, while some enters via sheet flow due to the absence of curb adjacent to the swale.

Designated parking areas for visitors reduce the demand for street parking, allowing narrower streets and less impervious cover.

The site was designed to cluster housing and preserve surrounding natural areas. This approach not only reduces impacts to the environment, but enhances site aesthetics, recreational opportunities, and property values.

A portion of the road is treated through impervious cover disconnection. Grading of the road and the absence of curb allow runoff to sheet flow onto a vegetated area, where it is treated and removed through filtering, infiltration, and evapotranspiration. A strip of pea gravel between the pervious treatment area and the road acts as a level spreader.



Downspouts provide impervious cover disconnection, directing roof runoff from the back of each house to grassed and forested areas, where it is treated and retained.



This parking area and other low-traffic areas such as driveways and vehicle turnarounds have permeable pavement, which serves as a stormwater control and reduces effective impervious cover. Permeable pavement is typically designed to treat the rainwater that falls directly on it, but with proper design considerations and maintenance, can treat run-on from adjacent areas, as seen here.

This dead-end street design provides emergency vehicle turnaround space, but requires much less impervious cover than a more conventional cul-de-sac.

A Closer Look at How Impervious Cover is Treated to Meet the WPS

This catchment map (left) and table (right) use color coding to indicate which areas of the site are treated by which stormwater controls in order to remove phosphorus and reduce runoff to meet the WPS.



Infiltration Swales | Permeable Pavement | Dry Wells
Impervious Cover Disconnection | Stormwater Control Measure
Hydrologic Soil Group Boundary

	Treatment by Stormwater Control Type				Design Point Total	
	Infiltration Swales	Permeable Pavement	Dry Wells	Impervious Cover Disconnection	Overall Achieved	WPS Target
Impervious Drainage Area (ac)	0.48	0.43	0.64	0.61	2.16	-
Infiltration Rate (in/hr) [Hydrologic Soil Group]	Varies (0.27 - 2.41) [A/C]	Varies (0.27 - 2.41) [A/C]	Varies (0.27 - 2.41) [A/C]	Varies (0.27 - 2.41) [A/C]	Varies (0.27 - 2.41) [A/C]	-
WPS Target Runoff Depth from Impervious Area (in)	0.67	0.92	0.93	0.20[1]	-	-
Provided Runoff Depth from Impervious Area (in)	1.3	2.9[2]	1.5	0.63[1]	-	-
Provided Design Storage Volume (cf)	2,240	4,420	3,390	-	-	-
Runoff Reduction (MG/yr) [Removal Efficiency]	0.5 [96%]	0.4 [100%]	0.6 [90%]	0.4 [59%]	1.9 [83%]	1.7 [75%] ✔
Phosphorus Reduction (lb/yr) [Removal Efficiency]	1.1 [99%]	1.0 [99%]	1.5 [97%]	1.1 [80%]	4.7 [93%]	4.5 [90%] ✔

[1]For impervious cover disconnection, the values shown for "WPS Target Runoff Depth from Impervious Area" and "Provided Runoff Depth from Impervious Area" are instead pervious area for disconnection (acres).
[2] For permeable pavement with subsurface infiltration, actual runoff depth is shown, but credit provided is for 2.0 inches since EPA Performance Curves do not provide credit for more than a runoff depth of 2.0 inches.

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How *Not* to Meet the Watershed Protection Standard: Townhouses with Conventional Site Design

Site Overview

This example of a townhouse community meets the Watershed Protection Standard's (WPS) required runoff reduction volume using conventional site design practices rather than the WPS's required site layout strategies. It is intended to be compared to the previous example, which presents the same site laid out using a low impact development approach. The comparison shows how conventional practices require large, unattractive, and costly stormwater controls to meet the WPS: the wide road, large cul-de-sac, and impermeable pavement result in more impervious cover and therefore more required treatment. Further, almost all drainage is piped to one system for treatment, resulting in site hydrology that is disparate from pre-development conditions. The large basin also occupies what would be a townhouse lot.

Total Site Area:
10.23 ac

Impervious Area:
2.45 ac (24%)

Curbing along the road prevents any road runoff from flowing onto the surrounding pervious areas, instead directing runoff to catch basins.

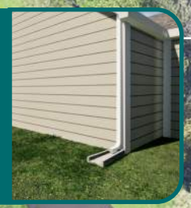
Most runoff from roofs and driveways is directed to roadway closed drainage and ultimately discharged to the infiltration basin.

Streets are wide to allow for street parking, resulting in more impervious cover and higher overall stormwater treatment costs.

This basin was not sited strategically and is located in the part of the site that has soils with slower infiltration rates, requiring a larger basin footprint.

A cul-de-sac design for this dead-end road provides ample emergency vehicle turnaround space, but contributes substantial additional runoff that must be treated.

Downspouts direct a portion of runoff from each roof to pervious areas where it can filter and infiltrate through vegetation and soil.

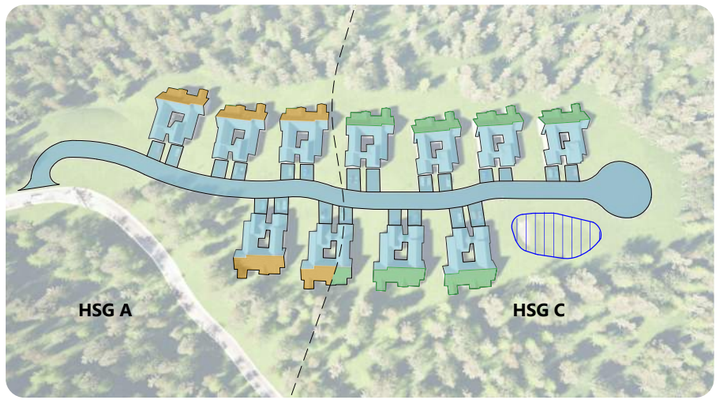


Townhouse pairs are spaced rather than clustered, reducing the amount of natural land that could be preserved.

The closed drainage system conveys road, driveway and roof runoff from the entire site into a large infiltration basin with a sediment forebay. Note that this basin occupies a potential lot, bringing the development's total housing units down from what would be 24 to 22.

A Closer Look at How Impervious Cover is Treated to Meet the WPS

This catchment map (left) and table (right) use color coding to indicate which areas of the site are treated by which stormwater controls in order to remove phosphorus and reduce runoff to meet the WPS.



Infiltration Basin | Impervious Cover Disconnection - HSG A
Impervious Cover Disconnection - HSG C | Stormwater Control Measure
Hydrologic Soil Group Boundary

	Treatment by Stormwater Control Type			Design Point Total	
	Infiltration Basin	Impervious Cover Disconnection - HSG A	Impervious Cover Disconnection - HSG C	Overall Achieved	WPS Target
Impervious Drainage Area (ac)	1.94	0.17	0.34	2.45	-
Infiltration Rate (in/hr) [Hydrologic Soil Group]	0.27 [C]	2.41 [A]	0.27 [C]	Varies (0.27-2.41) [A/C]	-
WPS Target Runoff Depth from Impervious Area (in)	0.6	0.13[1]	0.07[1]	-	-
Provided Runoff Depth from Impervious Area (in)	1.1	0.28[1]	0.48[1]	-	-
Provided Design Storage Volume (cf)	7,460	-	-	-	-
Runoff Reduction (MG/yr) [Removal Efficiency]	1.7 [85%]	0.2 [92%]	0.2 [53%]	2.1 [81%]	2.0 [77%] ✓
Phosphorus Reduction (lb/yr) [Removal Efficiency]	4.3 [96%]	0.4 [98%]	0.6 [78%]	5.3 [94%]	5.2 [91%] ✓

[1] For impervious cover disconnection, the values shown for "WPS Target Runoff Depth from Impervious Area" and "Provided Runoff Depth from Impervious Area" are instead pervious area for disconnection (acres).

Discover the Complete WPS Toolkit:
https://snepnetwork.org/watershed-protection-standard-toolkit/