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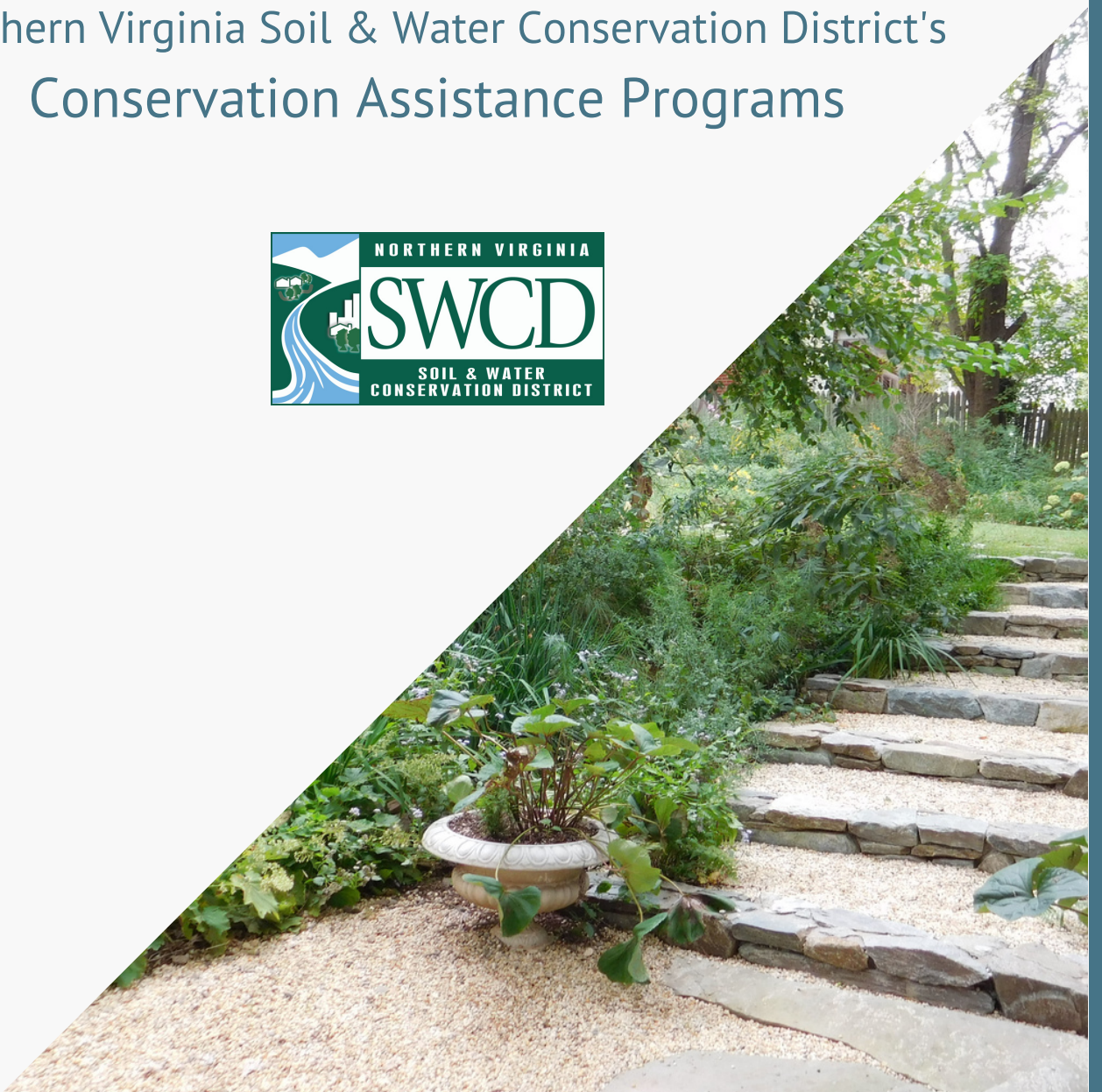
# LANDSCAPE PROFESSIONAL'S GUIDE

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to  
Northern Virginia Soil & Water Conservation District's  
Conservation Assistance Programs



Revised  
8/9/2022



# TABLE OF CONTENTS

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- About This Guide.....2
- What is VCAP?.....3
- Eligibility.....4
- Application.....6
- NVSWCD-specific Policies.....7
- Practice Certification.....8
- Fairfax County Coordination.....9
- Native Plants.....10
- Additional Training.....11
- Common Mistakes.....11
- After Approval.....12
- Knowing Your Soils.....13
- Examining the Site.....13
- Falling Head Infiltration Test.....15
- Infiltration Test Results.....16
- BMP Overview.....17
- Permeable Pavers.....18
- Rainwater Harvesting.....19
- Conservation Landscaping.....20
- Rain Garden.....21
- Dry Well.....22
- Impervious Surface Removal.....23
- BMP Examples.....24
- Resources and Glossary.....27

# ABOUT THIS GUIDE

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The Northern Virginia Soil and Water Conservation District (NVSWCD) administers the state Virginia Conservation Assistance Program (VCAP) and county Conservation Assistance Program (CAP) in Northern Virginia. These programs assist individual property owners with installing small Best Management Practices (BMPs) that address storm water and erosion issues in Northern Virginia, with the goal of improving water quality in the Chesapeake Bay. This guide will provide you with an understanding of how the VCAP/CAP application process works, as well as an overview of the practices that are eligible for these programs.

As a result of viewing the training materials (videos, this guide, or both) and successfully completing the quiz, your company will be included on our Landscape Professionals List. This is provided to landowners who contact us looking to install storm water conservation practices and may be interested in applying to VCAP.





# WHAT IS VCAP?

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VCAP engages local property owners in water quality protection.

It is a Virginia state initiative managed by the Virginia Association of Soil & Water Conservation Districts. Each of the 47 districts across the state administers the program locally. The program provides cost-share funds combined with the technical resources of the districts to provide a water quality benefit to local communities as part of the Chesapeake Bay Act.

VCAP practices have a 10-year maintenance requirement. This results in an ongoing relationship between landowners and NVSWCD. Within those 10 years, random inspections are conducted to ensure the installed practices continue to function as designed.

Since 2015, more than 250 projects have been installed through the NVSWCD VCAP, which translates into over \$800,000 in cost-share funds being disbursed. In addition, NVSWCD staff have visited more than 600 properties to provide technical assistance.

VCAP cost-share rates vary by practice type. Most are based on project cost, but some are based on square footage or volume of rainwater treated. Chart 1 on the next page shows the cost-share applied and the cap for each type of practice.



# ELIGIBILITY

## Resource Concerns

To be eligible for VCAP, a project needs to improve water quality by fixing a resource concern. The program recognizes three types of resource concerns that impact water quality: erosion, poor vegetative cover and excess runoff. Chart 2 below provides indicators to help identify the three resource concerns.

### Chart 1

| Practice                              | Lifespan | Reimbursement Rate                  | Max per application |
|---------------------------------------|----------|-------------------------------------|---------------------|
| Conservation Landscaping (CL)         | 10 years | 80% of actual costs                 | \$7,000.00          |
| Rain Garden (RG)                      | 10 years | 80% of actual costs                 | \$7,000.00          |
| Dry Well (DW)                         | 10 years | 80% of actual costs                 | \$7,000.00          |
| Constructed Wetland (CW)              | 10 years | 80% of actual costs                 | \$20,000.00         |
| Impervious Surface Removal (ISR)      | 10 years | \$5.00 per sq. ft.                  | \$20,000.00         |
| Vegetated Stormwater Conveyance (VSC) | 10 years | 80% of actual costs                 | \$20,000.00         |
| Rainwater Harvesting (RWH)            | 10 years | \$4.00 per gallon of treated volume | \$20,000.00         |
| Permeable Pavement                    | 10 years | \$14.00 per sq ft                   | \$20,000.00         |
| Bioretention (BR)                     | 10 years | 80% of actual costs                 | \$30,000.00         |
| Infiltration (IF)                     | 10 years | 80% of actual costs                 | \$30,000.00         |
| Green Roof (GR)                       | 10 years | \$20.00 per sq ft                   | \$30,000.00         |
| Living Shorelines (LS)                | 10 years | 80% of actual costs                 | \$30,000.00         |

### Chart 2

| Any area on a site with fair or poor indicator qualifies as a resource concern. |                                                                                                                    |                                                                                                                                          |                                                                                                                                                |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Resource Concern                                                                | Poor Condition                                                                                                     | Fair Condition                                                                                                                           | Good Condition                                                                                                                                 |
| Erosion                                                                         | Large gullies over 2 inches; muddy runoff                                                                          | Few rills/gullies up to 2 inches; colored runoff                                                                                         | No rills/gullies; clear runoff                                                                                                                 |
| Vegetative Cover                                                                | Problems with growth and little ground cover (density <75%)                                                        | Fair growth with ground cover problems in some spots (density <90%)                                                                      | Good growth and cover (density >90%)                                                                                                           |
| Excess Runoff                                                                   | Probe/shovel hard to push more than 1 inch; connected to pipe or channel; evidence of erosion in receiving channel | Probe/shovel easy to push 2-4 inches; 40-foot setback from pipe or channel; evidence of standing water or sediments in receiving channel | Probe/shovel easy to push twice the depth of topsoil; 100-foot setback from pipe or channel; no standing water or impacts to receiving channel |

## *VCAP or CAP?*

VCAP and CAP have similar eligibility requirements, but the location of the property can determine which program it is suited for. The application process is the same for both programs.

- VCAP: state program available to all property owners.
  - Applications must be reviewed and approved by the NVSWCD Board of Directors and the VCAP State Steering Committee.
  - Applications accepted on a rolling basis.
  - Includes Fairfax County and Cities of Fairfax and Alexandria.
- CAP: available to property owners in Fairfax County only.
  - CAP for watershed practices follows VCAP guidelines; applications are accepted on a rolling basis.
  - CAP-E energy conservation measures is a separate NVSWCD program not covered in this training.
  - Applications require NVSWCD Board approval but do not need state committee approval.

## *Site visit*

A site visit by NVSWCD staff assesses potential suitability for VCAP or CAP. The first step is for the owner to submit a Site Visit Request (SVR) form online. They are also asked to submit photos.

- SVR for VCAP and CAP can be submitted year-round.
- Request form is available on the NVSWCD website.
- VCAP site evaluations (completed by NVSWCD staff) rely on standard criteria set by the state steering committee.
  - This and similar criteria is used by NVSWCD to determine if the property owner may be eligible for one of the programs.
  - Staff look to determine the most efficient way to address the resource concern.

# APPLICATION

An Application Checklist (chart 3) was created to guide applicants as to what they need to include in their VCAP/CAP application. Items include:

- Site documentation
  - Identify and describe the project.
  - Infiltration test results are needed for certain practices.
- Practice Design
  - Details about the design
  - Permissions or permits needed
  - RPA waiver, if needed
  - Design drawing and cross-section, if needed
  - Sizing computations (for 1” storm capture)
  - Plants (Virginia native only) and other materials list
- Itemized cost estimate
- 10-year Maintenance plan

**Chart 3**

Abbreviations: ISR (Impervious Surface Removal); CL (Conservation Landscaping); RG (Rain Garden); DW (Dry Well); CW (Constructed Wetland); VSC (Vegetated Stormwater Conveyance); RWH (Rain Water Harvesting); BR (Bioretention); IF (Infiltration Trench); PP (Permeable Pavers); GR (Green Roof); LS (Living Shoreline)

|    |                    | Practice →→                                                                                                                                     | ISR | CL | RG | DW | CW | VSC | RWH | BR | IF | PP | GR | LS |
|----|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|----|-----|-----|----|----|----|----|----|
| 1  | Forms              | Form 1                                                                                                                                          |     |    |    |    |    |     |     |    |    |    |    |    |
| 2  |                    | Form 2 (to be completed by District staff)                                                                                                      |     |    |    |    |    |     |     |    |    |    |    |    |
| 3  |                    | Form 5 release or professional seal <sup>1</sup>                                                                                                |     |    |    |    |    |     |     |    |    |    |    |    |
| 4  | Site Documentation | Narrative: describe existing conditions, goals and benefits of proposed practice                                                                |     |    |    |    |    |     |     |    |    |    |    |    |
| 5  |                    | 'Before' photos                                                                                                                                 |     |    |    |    |    |     |     |    |    |    |    |    |
| 6  |                    | Map(s) showing property and location of project on property                                                                                     |     |    |    |    |    |     |     |    |    |    |    |    |
| 7  |                    | Soil map w/ description of soil type at project location <sup>2</sup>                                                                           |     |    |    |    |    |     |     |    |    |    |    |    |
| 8  |                    | Infiltration test result                                                                                                                        |     |    |    |    |    |     |     |    |    |    |    |    |
| 9  |                    | Required permits/permissions obtained? E.g. HOA, easements, county, letters of support <sup>3</sup>                                             |     |    |    |    |    |     |     |    |    |    |    |    |
| 10 |                    | If project is in an RPA, provide waiver <sup>4</sup>                                                                                            |     |    |    |    |    |     |     |    |    |    |    |    |
| 11 | Practice Design    | Design drawing w/ dimensions and area (sq ft)                                                                                                   |     |    |    |    |    |     |     |    |    |    |    |    |
| 12 |                    | Cross section drawing with dimensions                                                                                                           |     |    |    |    |    |     |     |    |    |    |    |    |
| 13 |                    | Construction sequence and timing, including soil stabilization plan                                                                             |     |    |    |    |    |     |     |    |    |    |    |    |
| 14 |                    | Sizing computations for stormwater <sup>5</sup> and contributing drainage area map <sup>6</sup> showing pervious/impervious area square footage |     |    |    |    |    |     |     |    |    |    |    |    |
| 15 |                    | Plants and/or materials list                                                                                                                    |     |    |    |    |    |     |     |    |    |    |    |    |
| 16 |                    | Cost estimate                                                                                                                                   |     |    |    |    |    |     |     |    |    |    |    |    |
| 17 |                    | Maintenance plan                                                                                                                                |     |    |    |    |    |     |     |    |    |    |    |    |



# NVSWCD-SPECIFIC POLICIES

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Some VCAP policies are specific to NVSWCD and differ from state VCAP policies:

County compliance measures required as a result of ordinance violations are not eligible for VCAP

Lifetime practice limits per parcel: 2

- Individual property owners are allowed to apply for 2 grants.
- Through the County CAP, HOAs can apply for additional grants on a sliding scale based on the number of houses/condos in the HOA.

Cost-share amount is set at the time of approval. If the final cost of the practice costs more than estimate, the cost share amount will **not** be increased.

Permeable pavers may only replace existing impermeable surface.

# Release Agreement

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A licensed design professional may be needed to certify some types of designs. A waiver is available for smaller practices. Chart 4 explains the size limitations that the waiver applies to.

- Districts may approve the waiver for Small Scale projects.
- The Steering Committee may approve the waiver for Medium Scale projects
- Large Scale projects cannot waive the requirement for a design plan to be stamped by a licensed professional.

**Chart 4**

| Scale         | Rainwater Harvesting | Vegetated Stormwater Conveyance | Bioretention/Constructed Wetland | Infiltration  | Permeable Pavement | Green Roof    | Living Shoreline |
|---------------|----------------------|---------------------------------|----------------------------------|---------------|--------------------|---------------|------------------|
|               | Treated Volume       | Slope Gradient                  |                                  | Size          |                    |               | Fetch            |
| <b>Small</b>  | < 650 gallons        | < 2%                            | < 300 sq ft                      | < 300 sq ft   | < 1,000 sq ft      | < 400 sq ft   | N/A              |
| <b>Medium</b> | < 3,000 gallons      | < 4%                            | < 1,500 sq ft                    | < 1,500 sq ft | < 5,000 sq ft      | < 1,000 sq ft | < 0.5 miles      |
| <b>Large</b>  | > 3,000 gallons      | > 4%                            | > 1,500 sq ft                    | > 1,500 sq ft | > 5,000 sq ft      | > 1,000 sq ft | > 0.5 miles      |

# FAIRFAX COUNTY COORDINATION

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Any land disturbance over 2500 square feet requires a rough grading plan. The disturbance area includes access areas for construction equipment.

Disturbance in Resource Protection Areas (RPAs) needs to be coordinated with the county. Landscaping within an RPA may require a form submission to the Fairfax County Department of Land Development Services (LDS).

Tree removal - including invasive species - requires coordination with LDS.  
Infiltration practices and rain gardens are generally not allowed in RPAs.



# NATIVE PLANTS

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VCAP and CAP require the use of Virginia native plants for practices where plants are used. While straight species are preferred, cultivars of native plants are also acceptable. There are many resources available to help with the selection of native plants:

- [Digital Atlas of Virginia Flora](#)
- [Plant Nova Natives](#)
- [USFWS Native Plants for Wildlife Habitat and Conservation Landscaping, Chesapeake Bay Watershed](#) (this is a regional guide so not all plants listed are native to VA)

## *Nurseries*

- Verify native status of plants before purchasing. Some may be mislabeled as native or are native to the United States or the region, but not VA.
- Some nurseries only sell native plants. Plant Nova Natives maintains a list of [native plant suppliers](#) in the Northern VA area.

*Technical guidance* – for more help with designing good practices.

- [NVSWCD website](#)
- [Rainscapes](#) (Montgomery County, MD program)
- [Watershed Stewards Academy Rainscaping Manual](#)



# ADDITIONAL TRAINING OPPORTUNITIES

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We highly recommend additional education and training for stormwater best management practices. A deeper understanding of the BMPs will be beneficial when designing and installing them. Certifications, webinars, and other resources are available:

[Chesapeake Bay Landscape Professionals](#)  
[Chesapeake Stormwater Network](#)



## MISTAKES TO AVOID

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- Estimates not itemized. Be detailed!
- Non-reimbursable costs included in the estimate.
  - Only Virginia native plants allowed.
  - Fee for compiling documents or completing the VCAP application on behalf of the client cannot be included for reimbursement.
- Working in an RPA without evaluating county.
- Land disturbance around trees.
  - Delineate tree protection area around existing trees
  - Information for calculating the critical root zone may be found [here](#).
- Poor practice selection. Needs to meet the needs of property and address a resource concern and be a cost effective solution.
- Installing before the application is approved. *Work may not begin before approval.*

# AFTER APPROVAL

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- Begin installation within 90 days.
- Document the installation process with photos!
- Once installed, the applicant should contact NVSWCD for a final inspection and provide photos, a final plant list, and reimbursement request.
- During inspection we:
  - Verify plants – keeping labels is helpful.
  - Verify the installation is complete and areas around project are sufficiently stabilized.
- Applicant receives a check by mail after reimbursement is approved.
- 10-year maintenance agreement begins January 1 *following* the installation.
- 10% of VCAP inventory is inspected every year; maximum of 4 inspections for a VCAP project over the 10-year period.
- *We are here to help!* If there is a problem or concern with the practice, let us know so we can help resolve it.



# KNOWING YOUR SOILS

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Suitable soil is needed for many VCAP practices, in particular, those that are trying to get water back into the ground:

- Rain Garden
- Bioretention
- Dry well
- Infiltration Trench
- Porous Paving

Many soils in this area are not well-suited for these practices due to:

- Density/compacted soil
- High clay content
- Shallow bedrock – need minimum distance from top of soil to bottom for water to properly filter and absorb.
- High ground water – water needs to go through dry soil for a distance before reaching the water table
- Flooding

## EXAMINING THE SITE

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In many cases, VCAP clients contact NVSWCD staff to test their soil before hiring a landscape professional. If that is not the case, you can follow the steps below to determine the soil suitability yourself or you may contact NVSWCD's soil scientist for assistance.

**Use the soil maps** to determine the general suitability of the site. Start with the "Soils Viewer" from the [Fairfax County website](#). Cities of Fairfax and Alexandria should use [USDA Web Soil Survey](#).

- a. Soils Viewer: type in address and click the address in the dropdown.

- b. Confirm correct map layers are selected (add clay, asbestos, etc. if desired).
- c. Soil lines are in red and soil code in red font.
- d. Zoom to and click on the property and an information tab pops up. Click through the arrow at top of the tab to find the soil description, rating table, and link to soil guide.

### **Observe the site in person**

- a. Is there standing water? Could this be due to a high water table?
  - i. How long does it stand?
  - ii. Is the grass or vegetation dead? (Sign of prolonged standing water).
- b. Areas with long-standing water are generally poorly suited for infiltration practices.
- c. Is there somewhere “upstream” from the wet location where water can be captured before reaching the pooling area?

### **Field verification: perform tests!**

- a. Tools: auger, posthole digger, or shovel
  - i. Dig as close as is practical to the depth of the proposed rain garden, trench, etc.
  - ii. Look for bedrock, water table, or other obstructions or signs of poor soil (soil color is a good indicator if a lot of gray with red streaks or splotches is present).
  - iii. Be practical – you probably don’t want to hand dig a 5-foot hole in your client’s yard with a shovel!
- b. Infiltration test: required for all VCAP rain garden, bioretention, dry well, porous paving, and infiltration trench projects (see Chart 5 diagram).
  - i. Measures the capacity of the soil to soak up water.
  - ii. Mandatory minimum test:
    1. Dig a 12 inch or deeper hole
    2. Pre-soak the hole: fill it completely with water and let it drain through.
    3. Refill the hole with water and record how quickly the water drains over a 4-hour period or until the hole runs dry.
    4. VCAP has a standard procedure found on VCAP webpage.

iii. More accurate but not mandatory:

1. Dig a core hole to the proposed bottom of the facility.
2. Put a PVC pipe in the hole and tap it down.
3. Pre-soak hole
4. Refill pipe with two feet of water and record drop over 4-hour period or until pipe runs dry.
5. VCAP standard procedure on VCAP webpage

## Chart 5

1. Dig a hole in the proposed location, approximately 12 inches in depth and four to six inches in diameter. An auger or posthole digger is the typical tool of choice

2. Presoak the hole. Fill with water to saturate the soil and then let stand until all the water has drained into the soil. If presoak drains away within 1 hour, repeat presoak.

3. Once the water has drained, refill the empty hole again with water so that the water level is about one inch from the top of the hole. Use a stick to indicate the location of the starting water level. Record the time using a watch.

4. Measure the distance from the stick to the water surface at least every hour for four hours or until hole is dry. If presoak drains within 1 hour, measure every 10 minutes or less.

5. Record measurements. Drop,  $d$ , is the difference between measurements. Infiltration rate is the drop,  $d$ , divided by the time interval, 1 hour or less. For the final rate, use the lowest steady state infiltration rate or the average of all infiltration rates, whichever is lower.

| Time (hours) | Measurement, $m$ (inches) | Drop, $d$ (inches) | Infiltration rate, $i$ (inches/hour) |
|--------------|---------------------------|--------------------|--------------------------------------|
| 0            | 0.00                      | 0.00               | .....                                |
| 1            |                           |                    |                                      |
| 2            |                           |                    |                                      |
| 3            |                           |                    |                                      |
| 4            |                           |                    |                                      |
| 5            |                           |                    |                                      |
|              |                           | <b>Final rate</b>  |                                      |

### *Falling Head Infiltration Test*

This is the approved infiltration test for the Virginia Conservation Assistance Program. Use this method for Rain Gardens, Dry Wells and any practice without an underdrain. This is a 3-dimensional flow percolation test. Actual vertical infiltration rates may be less. Divide the final rate by 2 if the failure of the practice will exacerbate existing resource concerns or create new ones. Infiltration rates should generally be greater than 0.5 inches per hour.

# RESULTS

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## What Do They Mean?

- For all VCAP infiltration practices, the water table, bed rock, and other obstructions must be at least 2 feet below the bottom of the facility.
- Dry wells and infiltration trenches: the infiltration rate must be at least 0.5 inch/hour.
  - There is some wiggle room if an underdrain is installed in the trench.
- Porous paving and bioretention: underdrain required for less than 0.5 inch/hour
  - Is it really suitable soil if the infiltration is so low?
- Rain garden:
  - >0.5in/hour – only compost amendment required in the soil.
  - 0.5-0.25in/hour – engineered soil media required.
    - Remove existing soil and replace with soil media.
  - <0.25in/hour – engineered soil media AND underdrain required.
    - Perhaps consider a different practice.
- Always rely on your good professional judgment!
- Contact NVSWCD soil scientist with questions on soils.

# BMP OVERVIEW

The most common VCAP practices through NVSWCD that we will be detailing in this guide are permeable pavers, rainwater harvesting, conservation landscaping, rain gardens, dry wells, and impervious surface removal.

Information on other practices that are less commonly requested in Northern Virginia can be found at [vaswcd.org](http://vaswcd.org). The chart below (left) provides guidance on which type of practice is best suited for a site based on the resource concern being addressed.

| Practice        | Resource Concern |            |               |
|-----------------|------------------|------------|---------------|
|                 | Erosion          | Poor Cover | Excess Runoff |
| ISR             | --               | NA         | ✓             |
| CL - 1          | NA               | ✓          | NA            |
| CL - 2          | ✓                | ✓          | NA            |
| CL - 3          | NA               | ✓          | NA            |
| CL - 4          | ✓                | --         | ✓             |
| CL - 5          | ✓                | ✓          | NA            |
| RG              | ✓                | --         | ✓             |
| DW              | ✓                | NA         | ✓             |
| CW              | ✓                | --         | ✓             |
| RWH             | --               | NA         | ✓             |
| VSC - Wet Swale | ✓                | --         | ✓             |
| VSC - Dry Swale | ✓                | --         | ✓             |
| VSC - Step Pool | ✓                | NA         | --            |
| BR              | ✓                | NA         | ✓             |
| IF              | ✓                | NA         | ✓             |
| PP              | --               | NA         | ✓             |
| GR              | NA               | NA         | ✓             |
| LS              | ✓                | NA         | NA            |

✓ indicates the preferred resource concern addressed by the practice.  
 -- indicates that the practice can be used to meet the resource concern but might be the most effective treatment.

ISR: Impervious surface removal  
 CL - 1: Conservation Landscaping Meadow  
 CL - 2: Conservation Landscaping Tree Planting  
 CL - 3: Conservation Landscaping Mulched Bed  
 CL - 4: Conservation Landscaping Filter Strip  
 CL - 5: Conservation Landscaping Riparian Buffer  
 RG: Rain Garden  
 DW: Dry Well

CW: Constructed Wetland  
 RWH: Rainwater Harvesting  
 VSC: Vegetated Stormwater Conveyance  
 BR: Bioretention  
 IF: Infiltration Trench  
 PP: Permeable Pavement  
 GR: Green Roof  
 LS: Living Shoreline

Many practices have pretreatment measures that can be applied to help ensure the practice operates efficiently and functions well. The chart below shows typical pretreatment options based on practice type.

| Practice                                                    | Typical Pretreatment                   |                                                          |                                         |
|-------------------------------------------------------------|----------------------------------------|----------------------------------------------------------|-----------------------------------------|
|                                                             | Dissipating                            | Settling                                                 | Screens/Filters                         |
| Conservation Landscaping                                    | N/A                                    | Grass Filter Strip                                       |                                         |
| Rain Garden                                                 | Gravel Diaphragm                       | Grass Channel                                            | Downspout Devices                       |
| Dry Well                                                    | N/A                                    | Sump Basins                                              | Downspout Devices                       |
| Constructed Wetland                                         | Gravel Diaphragm                       | Sediment forebay; grass channel                          | Downspout Devices                       |
| Rainwater Harvesting                                        | N/A                                    | Downspout Devices                                        |                                         |
| Vegetated Stormwater Conveyance; Bioretention; Infiltration | Gravel Flow Spreader; Gravel Diaphragm | Sediment Forebay; Engineered Level Spreader; Sump Basins | Grass Filter Strip; Proprietary Devices |
| Permeable Pavement                                          | N/A                                    | Gravel Diaphragm                                         | Downspout Devices                       |

# PERMEABLE PAVERS

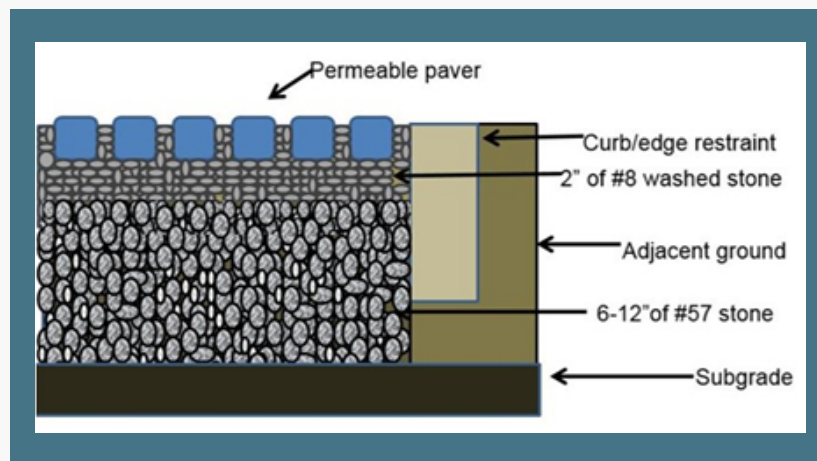
Addresses impervious surface runoff. Pretreatment measures include downspout devices and gravel diaphragm.

## Construction Inspection Checklist

- Preconstruction meeting with the owner has been held with the client.
- All the required permits have been complied.
- Underground utilities have been checked.
- BMP location and dimensions are in accordance with the approved plan.
- Pervious contributing drainage area has been stabilized.
- Impervious surface has been removed, properly disposed and excavation depth and grade is in accordance with the approved plan.
- Downspouts runoff has been temporarily diverted.
- Impervious surface has been removed, properly disposed and excavation of BMP has achieved proper elevation and grade.
- Excavation bottom has been properly sacrificed and raked.
- All aggregates are clean, washed and specs are in accordance with the approved plan.
- Under drain and observation wells material, size, location are in accordance with the approved plan.
- Stone reservoir layer aggregate placement, compaction, and thickness are in accordance with the approved plan.
- Concentrated flow is not directly discharged onto the permeable layer.
- Pavement is even and runoff spread evenly across the pavement.
- Flow control orifice or cap at the end of the under drain are in accordance with the approved plan.
- Permeable pavement edge restraint are installed flushed with the pavement blocks .
- Aggregate layer for under drain installed in accordance with the approved plan.
- Erosion & Sediment control measures have been installed .

## Eligible Reimbursement Costs

Excavation  
Grading  
Installation  
Stone aggregate  
Pavers  
Grids  
Pervious concrete/asphalt  
Geotextile fabric  
Underdrain components  
Pretreatment  
Erosion and sediment controls

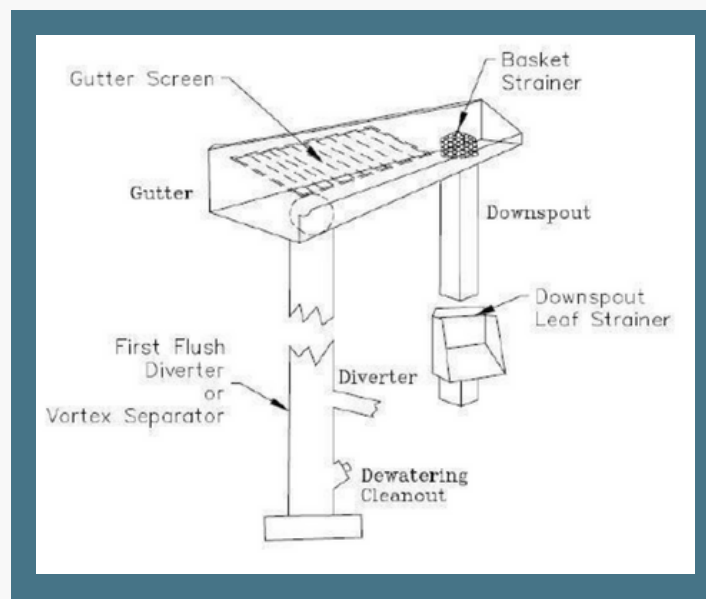




# RAINWATER HARVESTING

Receptacle must be at least 250 gallons in size. These are not small rain barrels! Pretreatment measures may include leaf strainers, gutter screens, basket strainer, first flush diverters for gutters and downspouts.

- Collects runoff from roof into a cistern where it is temporarily stored until it can be reused.
- Water is not potable! But can be used to water gardens, etc.



## Eligible Reimbursement Costs

Excavation  
Grading of pad  
Installation (placement, connection, stabilization)  
Collection system (reasonable downspouts/gutters)  
Pretreatment devices  
Cistern  
Stone/concrete for pad/bedding  
Overflow piping  
Elevated platform

# CONSERVATION LANDSCAPING

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Conservation landscaping practices include meadow, tree planting, mulched bed, filter strip, or riparian buffer. Virginia native plants are required in conservation landscaping and plants should be selected to provide 90% soil coverage in three years or less.

## Construction Inspection Checklist

- Preconstruction meeting with the owner has been held.
- All the required permits have been complied.
- Underground utilities have been checked.
- BMP location and dimensions are in accordance with the approved plan.
- In-situ soil test has been conducted according to DEQ or other approved specifications.
- Vegetation type and density is in accordance with the approved plan.
- Topsoil / organic matter has been added.
- Soil compost amendment has been incorporated (riparian buffer or filter strip).
- Mulch applied according to plan specifications.
- Downspout connections are in accordance with the approved plan.
- Erosion & Sediment control measures have been installed.
- Vegetation type, size and density is according to the approved site plan.

### Eligible Reimbursement Costs

Soil testing  
Site preparation (herbicide, sod removal, harrowing, raking)  
Installation (broadcast, drill, or planting)  
Temporary and permanent seed, plants  
Mulch  
Soil amendments (compost, lime)  
Tree shelter  
Weed barriers  
Erosion and sediment control

# RAIN GARDEN

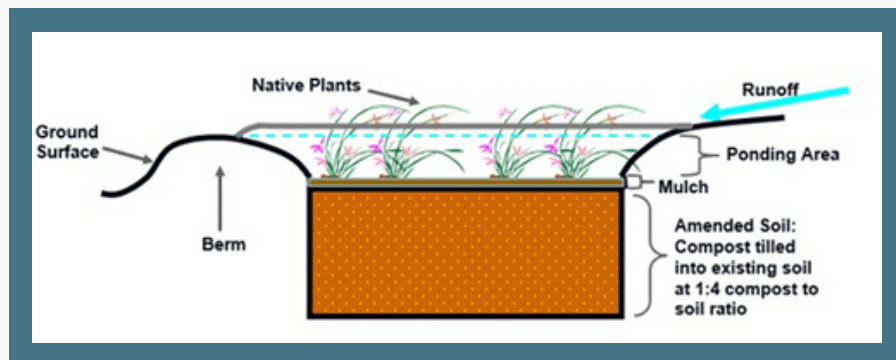
Rain gardens should have a ponding depth of 6-12 inches. The size of the rain garden should be calculated to manage runoff from a 1" storm. A rain garden should have a berm or overflow area built in, in the event there is too much water for it to manage.

## Construction Inspection Checklist

- Preconstruction meeting with the owner has been held.
- All the required permits have been complied.
- Underground utilities have been checked,
- BMP location and dimensions match the approved plan.
- Ponding area subsoil has been amended based on VCAP BMP manual specs for rain garden (BMP Specs. 3.3).
- Ponding area depth and BMP surface area is in accordance with the approved plan.
- Excavation depth is in accordance with the approved plan.
- Imported soil media specs is in accordance with the approved plan.
- Mulch bed mix and depth is in accordance with the approved plan.
- Vegetation type, size and density is according to the approved site plan.
- Erosion & Sediment control measures have been installed.
- The under drain and cleanout pipe elevation and location are in accordance with the approved plan.

## Eligible Reimbursement Costs

Soil testing  
Excavation  
Grading/amending soil  
Plants  
Seed  
Installation costs (planting/seeding)  
Compost  
Mulch  
Pre-treatment cost  
Engineered soil  
Underdrain components (pipe, stone)



# DRY WELL

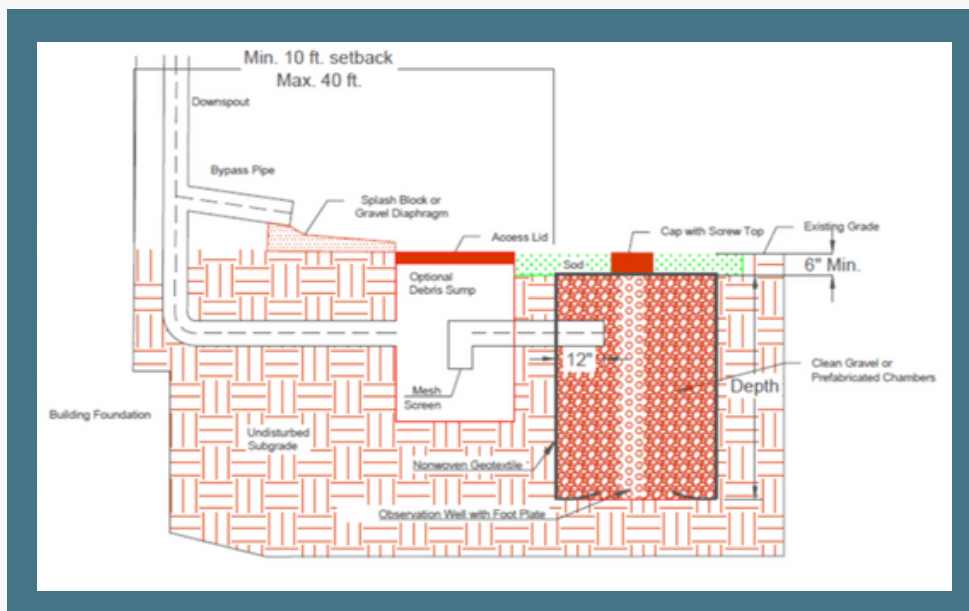
Dry wells are designed to accept roof runoff via a downspout. A dry well consists of gravel or pre-fabricated chambers surrounded by gravel below the surface. You can use a sump located before the dry well to collect debris if other pretreatments are not used on downspouts.

## Construction Inspection Checklist

- Preconstruction meeting with the owner has been held.
- Underground utilities have been checked.
- Dry well location, surface area dimension, and depth are in accordance with the approved plan.
- Inflow pipes are correctly connected to the dry well.
- Gravel has been wrapped with non-woven geotextile fabric.
- Pretreatment device has been installed in accordance with the approved plan.
- Topsoil is placed in accordance to the approved plan.
- The pervious area draining to the dry well is vegetated and in full cover.
- Sod over the dry well is timely placed and is in accordance with the approved plan.
- Observation well/overflow device specs and placement are in accordance with the approved plan.

## Eligible Reimbursement Costs

Excavation  
Grading/reseeding  
Stone  
Storage reservoir  
Piping  
Non-woven geotextile fabric  
Pre-treatment and overflow components  
Delivery of stone  
Seed/sod



# IMPERVIOUS SURFACE REMOVAL

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Impervious surface removal is often used to reduce or remove a driveway or concrete slab. The area removed should be replaced with a plant bed/conservation landscaping or turf.

## **Construction Inspection Checklist**

- Preconstruction meeting with the owner has been held.
- BMP location match the approved plan.
- All the required permits have been complied.
- Downspouts runoff has been temporarily diverted.
- Impervious surface has been removed, properly disposed and excavation of BMP has achieved proper elevation.

## **Removal of Impervious Surface Will Be Followed by Landscaping**

- Excavation bottom has been properly sacrificed and raked.
- In-situ soil test has been conducted according to DEQ or other approved specifications.
- Topsoil / organic matter has been added.
- Soil compost amendment has been incorporated (riparian buffer or filter strip).
- Temporary conservation cover has been established (applies if not planted within 14 days of completion).
- Erosion & Sediment control measures have been installed.

### Eligible Reimbursement Costs

Demolition (removal and disposal of surface material and aggregate)  
Soil testing  
Seedbed preparation (harrowing, raking, amending soil)  
Permanent seed  
Mulch  
Sod  
Erosion and sediment control

# BMP EXAMPLES

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## Conservation Landscaping

Before



After



## Impervious Surface Removal

Before



After





# Dry Well

## During Construction

Barrel Type Chambers



Crate Style Reservoir



# Rain Garden

During



After



## Permeable Pavement

Completed Construction



## Rainwater Harvesting

Completed Project



## Infiltration Trench

During Construction



After



# RESOURCES

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## **VCAP Implementation and Design Manual**

- Contains detailed information about each practice.
- Available on the VASWCD website: <https://vaswcd.org>
- Direct link: [VCAP BMP Manual](#)

[Calculation Spreadsheets, infiltration test, and more.](#)

# GLOSSARY

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BMP: Best Management Practice

BR: Bioretention

CAP: Conservation Assistance Program (for HOAs, civic associations, places of worship in Fairfax County)

CAP-E: Conservation Assistance Program - Energy

CAP-W: Conservation Assistance Program- Watershed

CL: Conservation Landscaping

CW: Constructed Wetland

DW: Dry Well

GR: Green Roof

IF: Infiltration Trench

ISR: Impervious Surface Removal

LS: Living Shoreline

NVSWCD: Northern Virginia Soil and Water Conservation District

PP: Permeable Pavement

Resource Concern: erosion, poor vegetative cover, or excess runoff affecting the watershed

RG: Rain Garden

RPA: Resource Protection Area

RWH: Rainwater Harvesting

Site visit: conducted by NVSWCD technical staff to determine suitability of a site for VCAP

SVR: Site Visit Request

VCAP: Virginia Conservation Assistance Program (for property owners in Fairfax County, City of Fairfax, and City of Alexandria)

VSC: Vegetative Stormwater Conveyance