Generation and Certification of Stormwater Retention Credits

Presented by:
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District Department of the Environment
Greg Hoffman, P.E.
Center for Watershed Protection
Training Objective

- To provide practical guidance on how property owners and others can generate DDOE-certified Stormwater Retention Credits for their own use or to sell to sites regulated under the District’s proposed stormwater retention standards.

- To request input and feedback.

- Not meant to go into detail on DDOE’s rationale for the program design, including impacts on District waterbodies.
Training Outline

- Basics of new stormwater retention standards.
- Overview of how regulated sites use off-site retention.
- Generation & certification of Stormwater Retention Credits:
  - Eligibility requirements.
  - Maintenance requirements.
  - Overview of SRC certification process.
  - More on existing retention capacity.
  - SRC serial numbers.
  - Process for buying and selling SRCs.
  - Calculating SRCs for example scenarios.
  - Lowering barriers to SRC Trading and DDOE’s role.
- Questions.
New District Stormwater Retention Performance Standards

Major land-disturbing activity
- Retain the first 1.2” of rainfall on site or through a combination of on-site and off-site retention.

Major substantial improvement activity
- Retain the first 0.8” of rainfall on site or through a combination of on-site and off-site retention.
- No additional detention required.
Calculating Required Retention Volume

\[
\text{SWRv} = P \left( R_{vI} \times %I + R_{vC} \times %C + R_{vN} \times %N \right) \times \text{SA} \times 7.48 / 12
\]

- \text{SWRv} = \text{Volume required to be retained (gal)}
- \text{P} = 1.2 \text{ inches (90}^{\text{th}} \text{ percent rainfall event for the District)}
- \text{R}_{vI} = 0.95 (\text{runoff coefficient for impervious cover})
- \text{R}_{vC} = 0.25 (\text{runoff coefficient for compacted cover})
- \text{R}_{vN} = 0.0 (\text{runoff coefficient for natural cover})
- \%I = \% \text{ of site in impervious cover}
- \%C = \% \text{ of site in compacted cover}
- \%N = \% \text{ of site in natural cover}
- \text{SA} = \text{Surface area (square feet)}
Using Runoff Reduction Method in DC: Step 1: Reduce SWRv By Design

- Better site planning & design techniques
  - Preserve natural areas
  - Conservation design
  - Reduce clearing & grading limits
  - Reduce roadway widths
  - Eliminate excessive impervious cover
  - And more…
Step 2: Retain SWRv with BMPs

- Small-scale, distributed Best Management Practices (BMPs)
  - Soil Restoration
  - Downspout Disconnection
  - Rain Gardens/Small Bioretention Areas
  - Rainwater Harvesting
  - Permeable Pavement
  - Green Roofs
  - Natural Drainage Ways
  - Vegetated Channels
  - Site Reforestation
  - Buffers
Step 3: Capture & Treat Remaining On-site Minimum Volume

- Treatment practices
  - Filters
  - Ponds
  - Wetlands

- Each drainage area has minimum requirement.
Next: Iterate or Mitigate

When required retention volume not met on site, either:

- Go back to Step 1 (Iterative site design process).
  - Consider flexible options for on-site retention:
    - Over-control in some drainage areas.
    - Use Shared BMPs (S-BMPs).

- OR

- Mitigate through use off-site retention.
Allowable Use of Off-Site Retention

On-site retention $\geq 50\%$ of SWRv.

- No need to prove that on-site retention is technically infeasible or environmentally harmful.

On-site retention $< 50\%$ of SWRv.

- Must prove that on-site retention is technically infeasible or environmentally harmful.

<table>
<thead>
<tr>
<th>Impervious surface</th>
<th>SWRv = 10,000 gal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>14,000 sf</td>
<td>On-site minimum = 5,000 gal.</td>
</tr>
</tbody>
</table>
Off-Site Retention Volume (OSRv)

SWRv = On-Site Retention Volume + Off-Site Retention Volume

OSRv = SWRv - On-Site Retention Volume
As with On-Site Retention Volume, Off-Site Retention Volume Must:

- Be achieved as of successful post-construction inspection.
- Continue to be achieved on an ongoing basis.
- Recorded on Stormwater Management Plan and in Declaration of Covenants.
Two Ways to Achieve Off-Site Retention Volume (OSRv)

- In-lieu fee.
  - Payable to DDOE.
  - $3.50 in-lieu fee achieves 1 gallon of OSRv for 1 year.
  - To be adjusted for inflation & other cost changes over time.

- Stormwater Retention Credits (SRCs).
  - Privately tradable.
  - 1 SRC achieves 1 gallon of OSRv for 1 year.
  - Possibly about $1 per SRC, based on simplified cost estimate.
Flexibility in Achieving Off-Site Retention Volume (OSRv)

A regulated site may:

- Use a mix of in-lieu fee and SRCs to achieve OSRv.
- May change mix of in-lieu fee vs. SRCs from year to year.
- Reduce/eliminate OSRv by increasing on-site retention.
- Achieve OSRv for multiple years at a time.
  - 1-year lifespan of an SRC or in-lieu fee payment begins when it is used to achieve OSRv for a specific year.
Calculating Cost to Achieve Off-Site Retention Volume (OSRv)

Impervious surface = 14,000 sf

SWRv = 10,000 gal.
On-site minimum = 5,000 gal.
OSRv = 3,000 gal.

<table>
<thead>
<tr>
<th>Calculating Cost to Achieve 3,000 gal OSRv</th>
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</thead>
<tbody>
<tr>
<td><strong>In-Lieu Fee</strong></td>
</tr>
<tr>
<td>Annual</td>
</tr>
<tr>
<td>=$3.50 * 3,000</td>
</tr>
<tr>
<td>=$10,500</td>
</tr>
<tr>
<td>5 years</td>
</tr>
<tr>
<td>=5 * $3.50 * 3,000</td>
</tr>
<tr>
<td>=$52,500</td>
</tr>
</tbody>
</table>
Key Points About SRCs

- 1 SRC achieves 1 gallon of OSRv for one year.

- **DDOE:**
  - Has sole authority to certify SRCs.
  - Will certify up to 3 years’ worth of SRCs every 3 years for eligible retention capacity.

- Clock starts on 1-yr. lifespan when used for OSRv.

- SRCs can be banked indefinitely.

- Use of SRCs to achieve OSRv not limited by watershed, except as specified by District law.

- SRCs can be retired without being used.
Example SRC Transaction

- Grocery parking lot voluntarily retrofits with 4,000 gal BMP to generate 3 years of SRCs or 12,000 SRCs.
- Church parking lot voluntarily retrofits with 2,000 gal BMP to generate 3 years of SRCs or 6,000 SRCs.
- Regulated site has 3,000 gal OSRv and purchases total of 18,000 SRCs to achieve OSRv for 6 years.
- By end of 6-year period, regulated site purchases additional SRCs.
SRCs: Remaining Topics

- Eligibility requirements.
- Maintenance requirements.
- Overview of SRC certification process.
- More on existing retention capacity.
- SRC serial numbers.
- Process for buying and selling SRCs.
- Calculating SRCs for example scenarios.
- Lowering barriers to SRC Trading and DDOE’s role.
Eligibility for SRC Certification

Eligible BMPs & land cover changes must:

1) Achieve retention in excess of regulatory requirements or existing retention.

**Unregulated Retrofit Sites**

- SRC Ceiling
- 1.7" storm
- Stormwater Retention Credit
- Existing Site Retention

**Regulated Sites Exceeding SWRv**

- SRC Ceiling
- 1.7" storm
- Stormwater Retention Credit
- SWRv on Site
- 1.2" storm
- Site without BMPs
Eligibility for SRC Certification

Eligible BMPs & land cover changes must:

1) Achieve retention in excess of regulatory requirements or existing retention.

2) Be designed and installed in accordance with DDOE-approved SWMP.

3) Successfully complete post-construction final inspection and ongoing inspections by DDOE.

4) Have current maintenance agreement or contract.
Maintenance Requirements

➢ Property used for SRC-retrofits not permanently obligated to that use:
  • No maintenance covenant required for SRC-generating retention capacity.
  • Retention capacity must be maintained for time period for which DDOE certifies SRCs.
  • Maintenance obligation can be ended by forfeiting SRCs or purchasing replacement SRCs for DDOE to retire.

➢ Failure to maintain retention capacity for time of SRC certification results in:
  • Original SRC owner must forfeit/replace SRCs or pay fee. Note: Does not invalidate SRCs already sold or used for OSRv.
  • No additional certification of SRCs.
Overview of SRC Certification Process

1) Design and receive DDOE approval of SWMP.
2) Install retention capacity.
3) Pass DDOE post-construction inspection.
4) Apply for DDOE certification of SRCs, including:
   • As-built SWMP
   • Current maintenance agreement or contract for period.
5) Receive up to 3 years’ worth of SRCs.
6) Maintain retention capacity and pass inspections.
7) After 3 years, apply for additional SRCs, including
   • Current maintenance agreement or contract for period.
8) Receive up to 3 years’ worth of SRCs.

-------Repeat 6-8 indefinitely-------
SRC Certification Process Cont’d

- DDOE will begin accepting applications as of finalization of the rule.
- DDOE will typically certify SRCs as of the date that DDOE receives a complete application for SRC certification.
- Existing retention capacity installed in the past, after May 1, 2009, may be eligible.
More on Existing Retention Capacity

- May be eligible if installed after May 1, 2009.
- Eligibility requirements largely the same:
  1. Achieve retention in excess of regulatory requirements or existing retention (must document).

### Unregulated Retrofit Sites
- SRC Ceiling ➔ 1.7” storm
- Stormwater Retention Credit
- Pre-project Retention

### Regulated Sites Exceeding WQTv
- SRC Ceiling ➔ 1.7” storm
- Stormwater Retention Credit
- WQTv on Site ➔ 0.3”–0.5” storm
- Pre-project retention
More on Existing Retention Capacity

- May be eligible if installed after May 1, 2009.
- Eligibility requirements largely the same:
  1) Achieve retention in excess of regulatory requirements or existing retention (must document).
  2) Be designed and installed consistent with DDOE specifications – As-built Stormwater Management Plan.
  3) Successfully complete post-construction final inspection and ongoing inspections by DDOE.
  4) Have current maintenance agreement or contract.
Unique Serial Number for Each SRC

- **Beginning of certification year** (yyyymmdd)
- **Major & Sub drainage** (A,R,P & 2 digits)
- **SWMP number** (5 digits)
- **Individual gallon of capacity** (6 digits)

**Example:** Application submitted Jan. 1, 2014 for 3,000 SRCs for:

- 1,000 gallons of retention capacity installed:
  - In Watts Branch sub-drainage of Anacostia watershed.
  - In accordance with SWMP # 1400.

**DDOE issues:**

- **Year 1**: 1,000 SRCs 20140101-A19-01400-00001-
  - 20140101-A19-01400-001000
- **Year 2**: 1,000 SRCs 20150101-A19-01400-00001-
  - 20150101-A19-01400-001000
- **Year 3**: 1,000 SRCs 20160101-A19-01400-00001-
  - 20160101-A19-01400-001000
Process for Buying and Selling SRCs

1) Negotiate terms of transfer/contract between buyer and seller.

2) Submit application for transfer of SRC ownership.

3) Receive DDOE confirmation of transfer of SRC ownership.

➢ One of purposes of this process is to collect and share price information, without violating confidentiality.
Calculating SRCs for Example Scenarios

- Use DDOE’s SRC calculator spreadsheet.
Lowering Barriers to SRC Trading

- Lowering barriers to SRC trading has potential to increase flexibility and cost savings for regulated sites and improve benefits for District waterbodies.

- DDOE inclined to:
  - Let private market identify opportunities and solve marketplace challenges.
  - Minimize unnecessary restrictions and complexity.
  - Maintain simplicity of program framework.
  - Maximize use of known/existing administrative procedures.
Minimal Role for DDOE

- Ensure off-site retention achieved.
- Create, administer, and enforce framework:
  - Verify eligibility of retention capacity, including inspections.
  - Certify SRCs.
  - Track SRC ownership and use.
- Facilitate trading:
  - Maintain list of SRC owners to provide to buyers.
  - Publicly share information about price of SRCs.
- Encourage SRC creation & minimize transaction cost:
  - Existing retention capacity, to 5/1/2009, eligible for SRCs.
  - SRC retrofits pay much lower fees for SWMP review.
Additional Efforts Needed?

Request input on other needs/roles for DDOE, e.g.:

- Marketplace functions and logistics:
  - Auction or other marketplace.
  - Templates for contracts.
  - Other?

- Creation and maintenance of market:
  - Purchase of SRCs to help provide demand certainty.
  - Portfolio of potential projects on public land.
  - Other?
Questions?
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202-741-2121
Brian.VanWye@dc.gov

To download the proposed rule, guidebook, and related resources, go to:
ddoe.dc.gov/proposedstormwaterrule
Scenario 1
(Existing Conditions)

5,000 square foot parcel

1,000 square foot mowed grass area

4,000 square foot parking lot

Existing
### Step 1: Existing Retention

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Total Existing Retention (gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impervious Area (sf)</td>
<td>4,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,007</td>
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<tr>
<td>Compacted Cover Area (sf)</td>
<td>1,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,007</td>
</tr>
<tr>
<td>Natural Area (sf)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Retention from Existing Land Cover (gal)</td>
<td>1,007</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,007</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Retention from Existing Stormwater Management Practice (BMP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMP 1 (gal)</td>
</tr>
<tr>
<td>BMP 2 (gal)</td>
</tr>
<tr>
<td>BMP 3 (gal)</td>
</tr>
<tr>
<td>Add together BMP 4, 5, 6, etc.(gal)</td>
</tr>
<tr>
<td>Total Existing Retention (gal)</td>
</tr>
</tbody>
</table>
Scenario 1
(Proposed Conditions)

1,000 square foot mowed grass area

1,000 square foot BMP

3,000 square foot parking lot

Proposed
### Step 2: Proposed Retention

<table>
<thead>
<tr>
<th>Area Type</th>
<th>Area (sf)</th>
<th>BMP 1 (gal)</th>
<th>BMP 2 (gal)</th>
<th>BMP 3 (gal)</th>
<th>Total Addtional Retention (gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impervious Area</td>
<td>4,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4,000</td>
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<tr>
<td>Compacted Cover Area</td>
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<td>0</td>
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<td>1,000</td>
</tr>
<tr>
<td>Natural Area</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Retention from Proposed Land Cover (gal)</td>
<td>1,007</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,007</td>
</tr>
</tbody>
</table>

Retention from Proposed BMP - include BMPs retained from existing conditions

<table>
<thead>
<tr>
<th>BMP 1 (gal)</th>
<th>BMP 2 (gal)</th>
<th>BMP 3 (gal)</th>
<th>Add together BMP 4, 5, 6, etc.(gal)</th>
<th>Total Proposed and Existing Retention (gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,500</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2,507</td>
</tr>
<tr>
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<tr>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
</tbody>
</table>

### Step 3: Calculate SRCs (internal calculation)

<table>
<thead>
<tr>
<th>Total Additional Retention Proposed</th>
<th>1,500</th>
</tr>
</thead>
</table>

### Step 4: Verify SRCs (internal calculation)

<table>
<thead>
<tr>
<th>SRC Ceiling</th>
<th>4,292</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum SRCs (based on existing BMP)</td>
<td>4,292</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SRC Eligible Volume (gal)</th>
<th>1,500</th>
</tr>
</thead>
</table>

Site Total SRC Eligible Volume (gal) 1,500
## Scenario 2
(Existing Conditions)

<table>
<thead>
<tr>
<th>400 square foot mowed grass area</th>
<th>Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 square foot BMP</td>
<td></td>
</tr>
<tr>
<td>5,000 square foot parcel</td>
<td></td>
</tr>
<tr>
<td>4,500 square foot parking lot</td>
<td></td>
</tr>
</tbody>
</table>
### Step 1: Existing Retention

<table>
<thead>
<tr>
<th>Drainage Area</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impervious Area (sf)</td>
<td>4,600</td>
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<td>0</td>
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<tr>
<td>Compacted Cover Area (sf)</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Natural Area (sf)</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Retention from Existing Land Cover (gal)</td>
<td>562</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Retention from Existing Stormwater Management Practice (BMP)

<table>
<thead>
<tr>
<th>BMP</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMP 1 (gal)</td>
<td>1,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BMP 2 (gal)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BMP 3 (gal)</td>
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<td>0</td>
</tr>
<tr>
<td>Add together BMP 4, 5, 6, etc.(gal)</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Total Existing Retention (gal)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,562</td>
<td>0</td>
<td>0</td>
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</table>
Scenario 2
(Proposed Conditions)

<table>
<thead>
<tr>
<th>Proposed</th>
<th>400 square foot BMP</th>
<th>1,000 square foot mowed grass area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3,500 square foot parking lot</td>
</tr>
</tbody>
</table>
### Step 2: Proposed Retention

<table>
<thead>
<tr>
<th>Description</th>
<th>4,000</th>
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<th>0</th>
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<tbody>
<tr>
<td>Impervious Area (sf)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compacted Cover Area (sf)</td>
<td>1,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Natural Area (sf)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Retention from Proposed Land Cover (gal)</td>
<td>1,007</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</table>

Retention from Proposed BMP - include BMPs retained from existing conditions

<table>
<thead>
<tr>
<th>Description</th>
<th>1,000</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
</tr>
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<tbody>
<tr>
<td>BMP 1 (gal)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMP 2 (gal)</td>
<td>1,500</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BMP 3 (gal)</td>
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<tr>
<td>Add together BMP 4, 5, 6, etc.(gal)</td>
<td>0</td>
<td>0</td>
<td>0</td>
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**Total Proposed and Existing Retention (gal)** 3,507

### Step 3: Calculate SRCs (internal calculation)

**Total Additional Retention Proposed** 1,945

### Step 4: Verify SRCs (internal calculation)

<table>
<thead>
<tr>
<th>Description</th>
<th>4,737</th>
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<th>0</th>
<th>0</th>
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<tbody>
<tr>
<td>SRC Ceiling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum SRCs (based on existing BMP)</td>
<td>3,737</td>
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<td>0</td>
<td>0</td>
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**SRC Eligible Volume (gal)** 1,945

**Site Total SRC Eligible Volume (gal)** 1,945