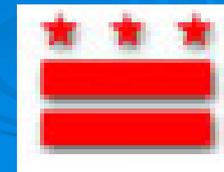


Generation and Certification of Stormwater Retention Credits



Presented by:
Brian Van Wye
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

$$\text{SWR}_v = P (Rv_I * \%I + Rv_C * \%C + Rv_N * \%N) * SA * 7.48 / 12$$

- SWR_v = Volume required to be retained (gal)
- P = 1.2 inches (90th percent rainfall event for the District)
- Rv_I = 0.95 (runoff coefficient for impervious cover)
- Rv_C = 0.25 (runoff coefficient for compacted cover)
- Rv_N = 0.0 (runoff coefficient for natural cover)
- $\%I$ = % of site in impervious cover
- $\%C$ = % of site in compacted cover
- $\%N$ = % of site in natural cover
- SA = 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



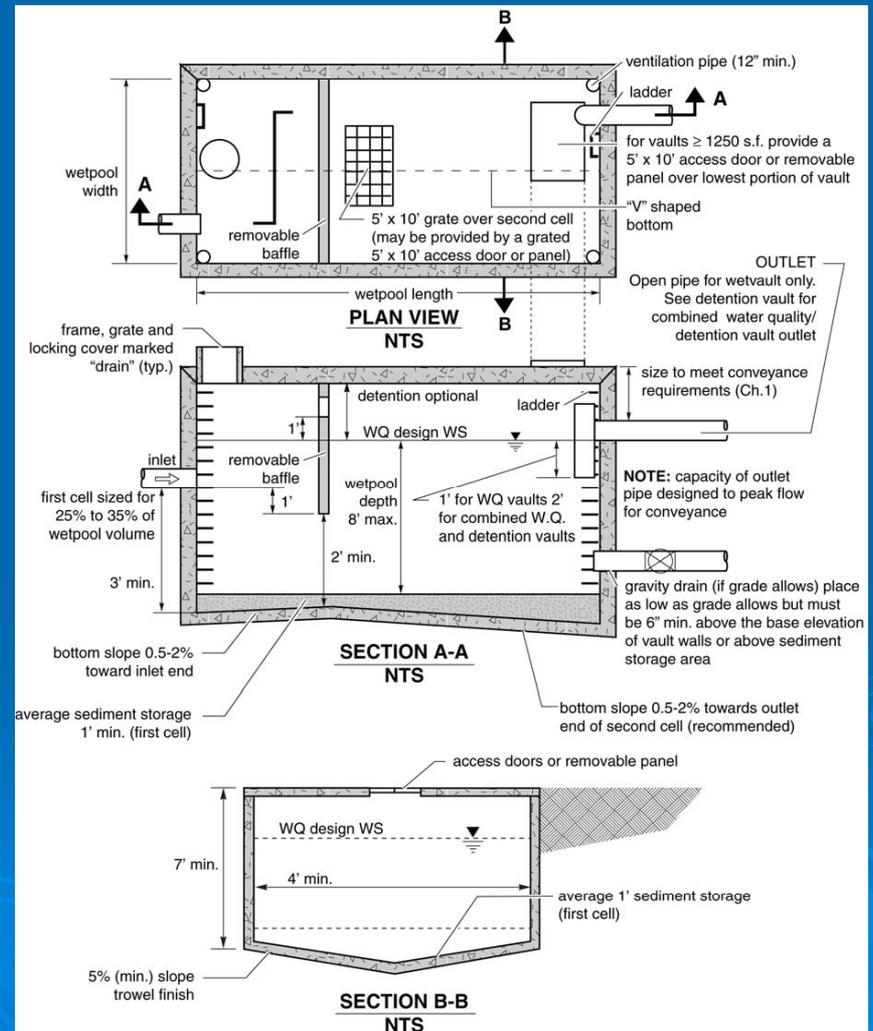
Step 3: Capture & Treat Remaining

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 SWR_v.

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



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

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



Impervious surface =
14,000 sf

SWR_v = 10,000 gal.

On-site minimum = 5,000 gal.

Off-Site Retention Volume (OSRv)

$$\mathbf{SWRv} = \frac{\mathbf{On-Site}}{\mathbf{Retention}} \mathbf{Volume} + \frac{\mathbf{Off-Site}}{\mathbf{Retention}} \mathbf{Volume}$$

$$\mathbf{OSRv} = \mathbf{SWRv} - \frac{\mathbf{On-Site}}{\mathbf{Retention}} \mathbf{Volume}$$

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.

Calculating Cost to Achieve 3,000 gal OSRv

	In-Lieu Fee	SRCs
Annual	$= \$3.50 * 3,000$ $= \$10,500$	$= \text{SRC Market Cost} * 3,000$ $= \$3,000 (?)$
5 years	$= 5 * \$3.50 * 3,000$ $= \$52,500$	$= 5 * \text{SRC Market Cost} * 3,000$ $= \$15,000 (?)$

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 w/4,000 gal BMP to generate 3 years of SRCs or 12,000 SRCs.
- Church parking lot voluntarily retrofits w/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

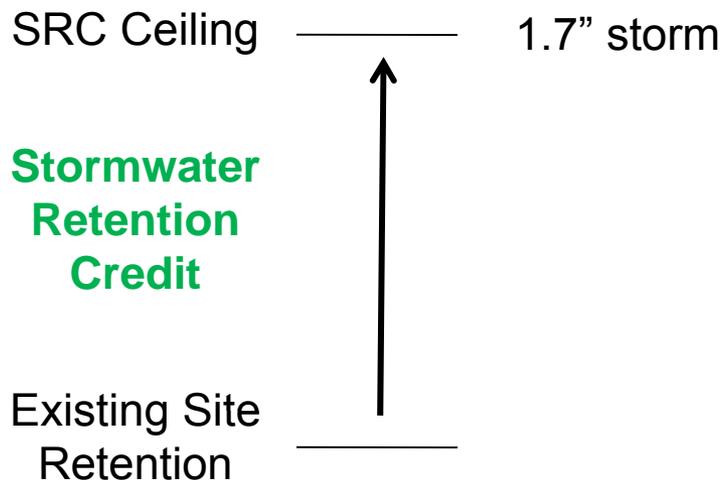
- Eligibility requirements.
- Maintenance requirements.
- Overview of SRC certification process.
- More on existing retention capacity.
- SRC serial numbers.
- Process for buying and selling SRCs.
- Calculating SRCs for example scenarios.
- Lowering barriers to SRC Trading and DDOE's role.

Eligibility for SRC Certification

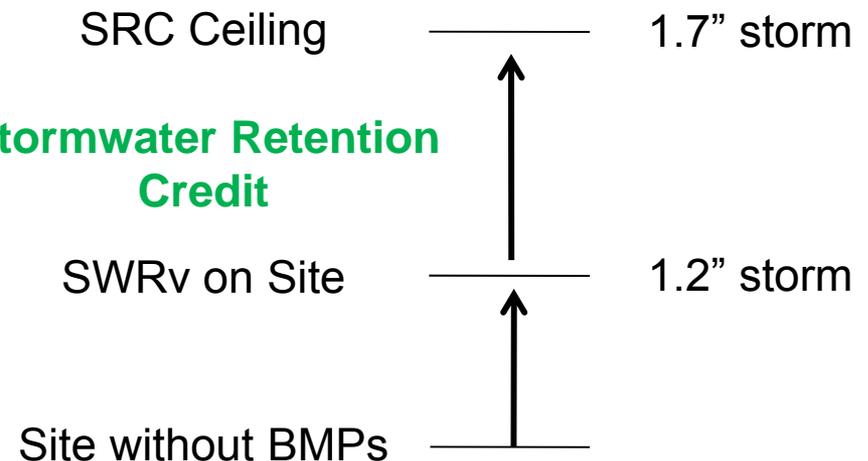
Eligible BMPs & land cover changes must:

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

Unregulated Retrofit Sites



Regulated Sites Exceeding SWRv



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-----

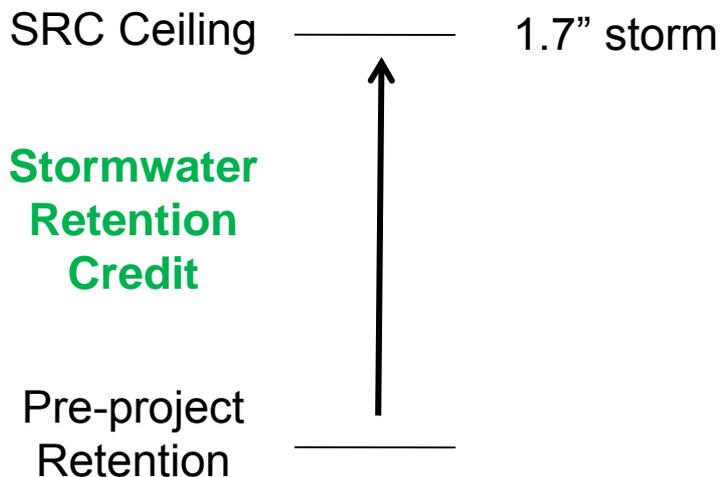
SRC Certification Process Cont'd

- 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.

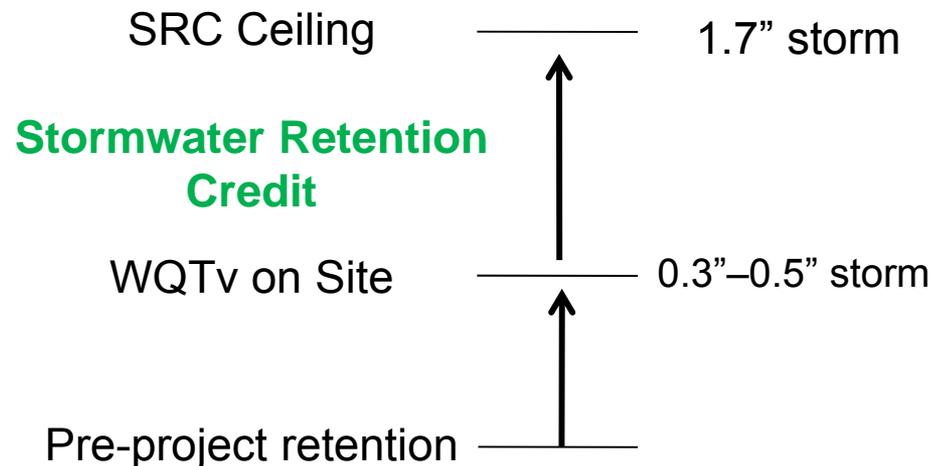
More on Existing Retention Capacity

- 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



Regulated Sites Exceeding WQTV



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-A19-01400-000001- 20140101-A19-01400-001000
Year 2	1,000 SRCs	20150101-A19-01400-000001- 20150101-A19-01400-001000
Year 3	1,000 SRCs	20160101-A19-01400-000001- 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?

Brian Van Wye

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

Existing

1,000
square
foot
mowed
grass
area

4,000
square
foot
parking
lot

Drainage Area

Step 1: Existing Retention

	A	B	C	D	E
Impervious Area (sf)	4,000	0	0	0	0
Compacted Cover Area (sf)	1,000	0	0	0	0
Natural Area (sf)	0	0	0	0	0
Retention from Existing Land Cover (gal)	1,007	0	0	0	0
Retention from Existing Stormwater Management Practice (BMP)					
BMP 1 (gal)	0	0	0	0	0
BMP 2 (gal)	0	0	0	0	0
BMP 3 (gal)	0	0	0	0	0
Add together BMP 4, 5, 6, etc.(gal)	0	0	0	0	0

Total Existing Retention (gal)	1,007	0	0	0	0
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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

Impervious Area (sf)	4,000	0	0	0	0
Compacted Cover Area (sf)	1,000	0	0	0	0
Natural Area (sf)	0	0	0	0	0
Retention from Proposed Land Cover (gal)	1,007	0	0	0	0

Retention from Proposed BMP - include BMPs retained from existing conditions

BMP 1 (gal)	1,500	0	0	0	0
BMP 2 (gal)	0	0	0	0	0
BMP 3 (gal)	0	0	0	0	0
Add together BMP 4, 5, 6, etc.(gal)	0	0	0	0	0

Total Proposed and Existing Retention (gal)	2,507	0	0	0	0
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Step 3: Calculate SRCs (internal calculation)

Total Additional Retention Proposed	1,500	0	0	0	0
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Step 4: Verify SRCs (internal calculation)

SRC Ceiling	4,292	0	0	0	0
Maximum SRCs (based on existing BMP)	4,292	0	0	0	0

SRC Eligible Volume (gal)	1,500	0	0	0	0
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Site Total SRC Eligible Volume (gal)	1,500
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Scenario 2

(Existing Conditions)

5,000 square
foot parcel

400 square foot mowed grass area	Existing
100 square foot BMP	

4,500
square
foot
parking
lot

Drainage Area

Step 1: Existing Retention

	A	B	C	D	E
Impervious Area (sf)	4,600	0	0	0	0
Compacted Cover Area (sf)	400	0	0	0	0
Natural Area (sf)	0	0	0	0	0
Retention from Existing Land Cover (gal)	562	0	0	0	0
Retention from Existing Stormwater Management Practice (BMP)					
BMP 1 (gal)	1,000	0	0	0	0
BMP 2 (gal)	0	0	0	0	0
BMP 3 (gal)	0	0	0	0	0
Add together BMP 4, 5, 6, etc.(gal)	0	0	0	0	0

Total Existing Retention (gal)	1,562	0	0	0	0
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Scenario 2

(Proposed Conditions)

400 square foot BMP	1,000 square foot mowed grass area	3,500 square foot parking lot	Proposed
100 square foot BMP			

Step 2: Proposed Retention

Impervious Area (sf)	4,000	0	0	0	0
Compacted Cover Area (sf)	1,000	0	0	0	0
Natural Area (sf)	0	0	0	0	0
Retention from Proposed Land Cover (gal)	1,007	0	0	0	0

Retention from Proposed BMP - include BMPs retained from existing conditions

BMP 1 (gal)	1,000	0	0	0	0
BMP 2 (gal)	1,500	0	0	0	0
BMP 3 (gal)	0	0	0	0	0
Add together BMP 4, 5, 6, etc.(gal)	0	0	0	0	0

Total Proposed and Existing Retention (gal)	3,507	0	0	0	0
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Step 3: Calculate SRCs (internal calculation)

Total Additional Retention Proposed	1,945	0	0	0	0
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Step 4: Verify SRCs (internal calculation)

SRC Ceiling	4,737	0	0	0	0
Maximum SRCs (based on existing BMP)	3,737	0	0	0	0

SRC Eligible Volume (gal)	1,945	0	0	0	0
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Site Total SRC Eligible Volume (gal)	1,945
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