Seeing is Believing: Utilizing Permanent Exhibits to Demonstrate Stormwater Best Management Practices

Kimberly A. Counts, Clemson Extension Water Resources Agent and Ashley Cooper Stormwater Education Consortium Coordinator

Introduction
The Ashley Cooper Stormwater Education Consortium (ACSEC) is a partnership between communities, universities, agencies and non-profits working together to implement a regional, watershed-scale stormwater runoff education strategy in the Charleston urbanized area located within Berkeley, Charleston, and Dorchester Counties of South Carolina. Permanent Exhibits have been identified as a valuable tool to engage the public and increase regional interest in best management practices (BMPs) for protecting water quality. Since 2008, over 15 Permanent Exhibits have been established in the ACSEC region. Permanent Exhibits provide diverse opportunities for community outreach including public involvement opportunities during site development and public education opportunities during organised programs and informal visits.

Educational Methods
The ACSEC was created to coordinate and implement a regional, watershed-scale education strategy to assist communities in addressing US Environmental Protection Agency (EPA) Phase II Small Municipal Separate Storm Sewer System (MS4) general permit mandates for public education and public involvement regarding stormwater runoff.

Permanent Exhibits are an integral strategy for engaging the public through education and involvement opportunities in an effort to reduce non-point source stormwater runoff pollution. The EPA recommends a partnership-based regional education approach, identifying the multiple benefits of collaboration to achieve common goals; partnership is nowhere more evident within the ACSEC than in the establishment and educational programming surrounding the ACSEC permanent exhibits.

Permanent Exhibits provide opportunity for three distinct educational methods:

1. Public Education (Direct Outreach Method)
   - Hands-on Events: Rain Garden Workshops, Rainwater Harvesting System Design, Native Plant/Wildlife Garden Installation

2. Public Education (Indirect Outreach Method)
   - Trainings, Workshops, & Presentations: Programming that Occurs, at least Partially, at a Permanent Exhibit

3. Public Education (Indirect Outreach Method)
   - Permanent Exhibit Visitations: Passive Learning Via: Interpretive Signage, Exhibit Attributes and Supporting Internet Resources

Results
Public education activities are classified into two broad categories, direct and indirect outreach methods, to express mechanisms by which information has been communicated to the public. Direct methods include activities that are implemented via direct personal contact including workshops, presentations and trainings. Indirect methods refer to contacts that do not include personal interaction; for example, information is transferred through an interpretive sign or internet resource. Indirect methods generally reach a much larger number of individuals, yet provide less detail than direct methods.

Figure 1 and Figure 2 provide information on educational impacts portrayed as a combination of direct and indirect contacts. Both methods play an important role in assuring permanent exhibits are continually utilized in providing information on stormwater BMPs.

Figure I: Top 10 Most Impactful ACSEC Permanent Exhibits Based on 2011-2012 Data

<table>
<thead>
<tr>
<th>Site Name</th>
<th>ACSEC Partnering Organizations</th>
<th>Feature Structural BMPs</th>
<th>2011-2012 Educational Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carolina Yard Line Classroom</td>
<td>Clemson Extension Master Gardeners, Clemson Carolina Clear</td>
<td>Perennial Pavers, Rain Barrel, Rain Garden, Native Plants, Composting Station</td>
<td>50,000</td>
</tr>
<tr>
<td>Fort Johnson Community Garden</td>
<td>South Carolina Department of Natural Resources, Clemson Carolina Clear Program</td>
<td>Rain Gardens, Cistern, Native Plants, drip irrigation</td>
<td>1,000</td>
</tr>
<tr>
<td>Charleston Landing Rain Garden Display</td>
<td>Charleston Landing Slotted Park, Clemson Carolina Clear</td>
<td>Rain Garden</td>
<td>1,000</td>
</tr>
<tr>
<td>Clemson Urban Research and Demonstration Area</td>
<td>Clemson Extension Master Gardeners, Clemson Carolina Clear</td>
<td>Rain Garden</td>
<td>1,000</td>
</tr>
<tr>
<td>IC Aquarium Rainwater Harvesting Display</td>
<td>South Carolina Aquarium, Clemson Carolina Clear Program</td>
<td>Rainwater Harvesting System, Drip Irrigation, Native Plants</td>
<td>1,000</td>
</tr>
<tr>
<td>Nelson Middle School</td>
<td>Clemson Extension Service, Clemson Carolina Clear Program</td>
<td>Rain Barrels, Raised Beds, drip irrigation</td>
<td>500</td>
</tr>
<tr>
<td>The Ed Shed</td>
<td>Clemson University Carolina Clear Program, Clemson University Coastal Research and Education Center</td>
<td>Rain Garden, Native Plants, Perennial Pavers, Permeable Concrete, Below-ground and Above-ground Stormwater Harvesting Systems</td>
<td>500</td>
</tr>
<tr>
<td>Green Teaching Garden</td>
<td>College of Charleston, Clemson Carolina Clear Program</td>
<td>Raised Beds, Native Plants, Cisterns, Rain Barrel, drip irrigation, Rain Garden, Composting Station</td>
<td>500</td>
</tr>
<tr>
<td>Political Science Building Sustainability Garden</td>
<td>College of Charleston, Clemson Carolina Clear Program</td>
<td>Cistern, Native Plants</td>
<td>500</td>
</tr>
<tr>
<td>Green Home</td>
<td>Sustainability Institute, Clemson Carolina Clear Program</td>
<td>Permeable Concrete, Drip Irrigation, Rainwater Harvesting System, Raised Beds</td>
<td>275</td>
</tr>
</tbody>
</table>

Figure II: ACSEC Permanent Exhibits Yearly Total Impact

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Visitors</th>
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<tbody>
<tr>
<td>2011-2012</td>
<td>71,465</td>
</tr>
<tr>
<td>2009-2010</td>
<td>52,465</td>
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<tr>
<td>2010-2011</td>
<td>69,382</td>
</tr>
</tbody>
</table>

Conclusion
Permanent exhibits prove a valuable education tool in not only providing information but also experimental opportunities regarding stormwater best management practices. The two permanent exhibits are the same, each with a unique set of conditions and features; making permanent exhibits ideal locations for continued education lasting from site creation to long after site establishment.

Supporting Resources
(www.clemson.edu/public/carolinaclear)
- South Carolina Low Impact Development Road
- Clemson-Carolina Clear Rain Garden Manual
- Carolina Yards and Neighborhoods Program

Lessons Learned
- Be conservative with timelines
- When working with partners, define partner expectations
- Draft a detailed maintenance plan specific to the site
- Communicate with maintenance staff, managers, teachers, students and others who may be asked to care for the area post construction
- Be creative in ways to engage site visitors
- Leave no stone unturned
- Utilize supporting resources to make information learned even more tangible and accessible

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Contact Information
259 Meeting St, Charleston, SC 29401
kcountr@clemson.edu, 843-722-5940 Ext. 128

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