



# City of Raleigh Stormwater Management Division

## Stormwater Management Advisory Committee (SMAC)

Fiscal Year 2015 Annual Report

Dear Mayor McFarlane and Members of the City Council,

The Stormwater Management Advisory Commission, which was formed in April 2004, has invested many hours becoming familiar with and discussing the City's stormwater issues. The Commission's work during the period from July 1, 2014 to June 30, 2015 has been focused in these areas:

1. Stormwater Capital Improvement Program
2. Stormwater Drainage Cost-Share Project Petitions
3. Stormwater Quality Cost-Share Project Petitions
4. FEMA Hazard Mitigation Program Acquisition
5. Review of Stormwater Programs and Policies
6. Green Infrastructure (GI)/Low Impact Development (LID)
7. Development of the Stormwater Integrated Project Prioritization Model

### **1 - Stormwater Capital Improvement Program (CIP)**

The Commission reviewed and approved the proposed Stormwater Capital Improvement Program for fiscal years 2016 -2021. Following is a list of CIP projects completed during the past year as well as currently active projects:

<b><u>Projects Completed</u></b>	<b><u>Date Completed</u></b>	<b><u>Type of Project</u></b>	<b><u>Final Project Cost</u></b>
Cambridge Road	12/2014	Culvert Improvement	\$1,000,000
Rush & Hammond	5/2015	Stormwater System Improvement	\$100,000
Ravenwood Drive	5/2015	Culvert Improvement	\$530,000
<b><i>Total Completed</i></b>			<b><i>\$1,630,000</i></b>

<b><u>Projects Under Construction</u></b>	<b><u>Estimated Completion</u></b>	<b><u>Type of Project</u></b>	<b><u>Budgeted Project Cost</u></b>
Five Points Drainage Improvements	9/2015	Stormwater System Improvement	\$556,000
Northshore Lake Dam & Spillway Rehabilitation	11/2015	Lake Preservation	\$3,700,000
Sherman Avenue Culvert Improvement	9/2015	Culvert Improvement	\$172,000
Hillsborough St. & Park Dr. Drainage Rehabilitation	12/2015	Stormwater System Improvement	\$226,000
<b><i>Total Under Construction</i></b>			<b><i>\$4,654,000</i></b>

<b><u>Projects Under Design</u></b>	<b><u>Estimated Completion</u></b>	<b><u>Type of Project</u></b>	<b><u>Budgeted Project Cost</u></b>
Alexander Road & McCarthy Street	3/2016	Design Phase	\$161,000
Beechwood-Cypress Neighborhood Area Improvements	12/2021	Study Phase	\$2,900,000
Brockton Drive Lake Phase 1 & 2 (Upper & Lower Lake)	6/2017	Design Phase	\$4,050,000
Dixon Drive Culvert Improvement	4/2016	Design Phase	\$387,000
E. Martin Street	1/2016	Design Phase	\$155,000
Industrial Drive	3/2016	Design Phase	\$333,000
Laurel Hills Dam & Spillway Rehabilitation	3/2017	Design Phase	\$2,700,000
Laurel Hills Watershed Study	3/2018	Study Phase	\$709,000
Lower Longview Lake Dam & Spillway Rehabilitation	12/2016	Design Phase	\$3,470,000
Lower Longview Lake Limited Dredging	12/2016	Design Phase	\$300,000
Lower Longview Lake Southern Tributary Stream Stabilization	3/2017	Design Phase	\$300,000
North Ridge Phase 4 & 5	12/2018	Design Phase	\$4,110,000
Swann Street Stormwater Improvement (Phase 1)	3/2020	Design Phase	\$2,170,000
Swift Drive/Pineview Drive (Simmons Branch Drainage Phase 2)	1/2017	Design Phase	\$4,200,000
W. Drewry Lane Culvert Replacement	7/2018	Design Phase	\$1,120,000
W. North Ridge (Phase 1 & 2)	7/2021	Design Phase	\$3,093,000
Crabtree Blvd. at Capital Blvd.	3/2016	Design Phase	\$305,000
Blenheim Drive Culvert Rehab	6/2016	Design Phase	\$360,000
<b><i>Total Under Design</i></b>			<b><i>\$30,823,000</i></b>



### Cambridge Road

**Before: Existing culvert failing, severe erosion, undersized.**

### Cambridge Road

**After: Improved culvert and stream channel to safely convey flow.**





**Ravenwood Drive**

**Before: Undersized culvert causing upstream flooding.**

**Ravenwood Drive**

**After: Appropriately sized culvert and stabilized stream banks.**



## 2 - Review of Stormwater Drainage Cost Share Projects

Staff received numerous requests from property owners for assistance under the Drainage Cost Share Program. The Commission reviewed 14 requests and approved ten, totaling \$657,500, four requests were held for future consideration. These projects will help alleviate severe erosion, repair drainage systems and reduce flood damage to structures.

<u>Newly Approved Projects</u>	<u>Date Approved</u>	<u>Type of Project</u>	<u>Total Cost</u>	<u>City Share</u>
500 Brent Road	10/2/14	Severe Erosion	\$65,300	\$60,300
12801 Pegasi Way	10/2/14	Severe Erosion	\$42,000	\$37,000
7317/7321 Laketree Drive	10/2/14	Severe Erosion	\$27,000	\$24,300
609 Northclift Drive	10/2/14	Severe Erosion	\$15,500	\$12,400
6425/6429 Belle Crest Drive & 6500 Valley Estates Drive	10/2/14	Structural Flooding	\$56,800	\$48,300
400 Rosehaven Drive	10/2/14	Severe Erosion	\$56,700	\$51,700
4521/4523 Revere Drive & 4520 Six Forks Road	4/2/15	Structural Flooding	\$74,200	\$68,200
612 Sarver Court	4/2/15	Structural Flooding	\$18,700	\$15,900
6100/6101 Crestdale Circle & 6108 Valleyfield Circle	4/2/15	Severe Erosion	\$250,000	\$235,000
4125 Windsor Place	4/2/15	Severe Erosion	\$51,300	\$46,300
<b>Total Newly Approved</b>			<b>\$657,500</b>	<b>\$599,400</b>

<u>Projects Completed</u>	<u>Date Approved</u>	<u>Completed</u>	<u>Type of Project</u>	<u>Total Cost</u>	<u>City Share</u>
1325 and 1327 Mordecai Drive	12/2012	Jun-15	Structural Flooding	\$130,000	\$130,000
1913 Glenwood Avenue	12/2012	Feb-15	Sinkhole/Failing Infrastructure	\$29,780	\$24,780
206/210/214 Westridge Drive	3/2009	Feb-15	Sinkholes/Failing Infrastructure/Severe Stream Erosion	\$133,900	\$123,900
2515/2519/2523 Stevens Road	9/2009	Mar-15	Sinkholes/Failing Infrastructure	\$92,300	\$88,300
304/308 Marsh Avenue	11/2010	May-15	Structural Flooding	\$52,200	\$47,200
6132 River Landings Drive	4/2011	Jul-15	Severe Stream Erosion	\$21,600	\$17,300
4116 Grandover Drive	4/2011	May-15	Structural Flooding	\$14,000	\$13,000
9313 Miranda Drive	11/2010	Oct-15	Structural Flooding	\$4,000	\$3,200
2205/2209 Dobbin Place	12/2014	Apr-15	Failing Infrastructure	\$15,800	\$8,400
2701/2703 N Mayview Rd	5/2012	Feb-15	Failing Infrastructure	\$27,000	\$19,500

2701/2705 New Bern Avenue	1/2013	Nov-14	Failing Infrastructure	\$145,000	\$128,000
908 Plainview Drive and 3800 Polly Street	12/2012	May-15	Structural Flooding	\$70,000	\$53,000
7012 Tanbark Way	12/2012	Jun-15	Sinkhole/Failing Infrastructure	\$8,850	\$7,080
<b>Total Completed</b>				<b>\$744,430</b>	<b>\$663,660</b>

<b><u>Projects Under Construction</u></b>	<b><u>Date Approved</u></b>	<b><u>Estimated Completion</u></b>	<b><u>Type of Project</u></b>	<b><u>Total Cost</u></b>	<b><u>City Share</u></b>
520/524 Lakestone Drive	9/2009	9/2015	Severe Stream Erosion	\$15,000	\$12,000
1600 Park Drive	4/2011	9/2015	Failing Infrastructure	\$63,800	\$63,800
709/705 Hunting Ridge Road	10/1011	10/2015	Severe Stream Erosion	\$22,460	\$17,968
3902/3904 Western Boulevard	9/2013	10/2015	Structural Flooding	\$85,000	\$75,000
1404/1408/1412/1416 Onslow Road	3/2009 & 4/2010	1/2016	Severe Stream Erosion	\$197,500	\$177,000
7613 Sutcliffe Drive	10/2011	10/2015	Failing Infrastructure	\$25,000	\$20,000
5612 Maram Court	4/2010	11/2015	Severe Stream Erosion	\$12,700	\$9,800
110 Glascock Street	5/2014	9/2015	Failing Infrastructure	\$17,000	\$13,700
612 Sarver Court	5/2015	10/2015	Structural Flooding	\$8,300	\$7,000
<b>Total Under Construction</b>				<b>\$446,760</b>	<b>\$396,268</b>

<b><u>Projects Under Design</u></b>	<b><u>Date Approved</u></b>	<b><u>Estimated Completion</u></b>	<b><u>Type of Project</u></b>	<b><u>Total Cost</u></b>	<b><u>City Share</u></b>
1209/1213 Moultrie Court and 7316/7320 Chicora Court	11/2010	2/2016	Severe Stream Erosion	\$200,000	\$185,000
6213/6215 Chapel Hill Road	11/2011	4/2016	Structural Flooding	\$47,200	\$42,200
805/809 Macon Place and 744 Catawba Street	11/2010	4/2016	Severe Stream Erosion	\$132,600	\$125,100
6613/6617 Mafolie Court	11/2010	7/2016	Severe Stream Erosion	\$142,600	\$132,600
1906 Aurora Drive	10/2011	7/2016	Severe Stream Erosion	\$72,000	\$67,000
5705 Setter Circle	4/2012	12/2015	Severe Stream Erosion	\$126,000	\$113,000
12300/12304 Mabril Mill Street	9/2009	7/2016	Severe Stream Erosion	\$91,000	\$86,000
3716 Baugh Street	12/2012	4/2016	Structural Flooding	\$67,500	\$62,000
2208 Basil Drive	10/2013	6/2016	Structural Flooding	\$27,000	\$23,000
1908 Lodestar Drive	10/2013	1/2016	Structural Flooding	\$90,000	\$85,000
5005, 5009, 5011, 5101 Rembert Drive	10/2013	3/2016	Structural Flooding/Failing	\$100,000	\$85,000

			Infrastructure		
1108/1112 Temple Street	10/2011	3/2016	Failing Infrastructure	\$45,700	\$36,600
1721 Hunting Ridge Road	10/2011	12/2015	Severe Stream Erosion	\$20,000	\$20,000
3612/3700 Swift Drive	12/2012	TBD	Failing Infrastructure	\$159,700	\$154,700
3509 Octavia Street	4/2011	11/2015	Failing Infrastructure	\$162,600	\$148,800
2913 Claremont Road	4/2012	11/2015	Severe Stream Erosion	\$5,000	\$500
4741/4801 Royal Troon	4/2012	12/2015	Failing Infrastructure	\$41,500	\$34,200
<b>Total Under Design</b>				<b>\$1,530,400</b>	<b>\$1,400,700</b>

### 3 - Review of Stormwater Quality Cost Share Projects

Staff received and qualified three requests from property owners for assistance under the Stormwater Quality Cost Share Program in FY2015. The Commission reviewed these requests, totaling \$316,129. These projects reduce pollutant loads to local surface waters, provide valuable examples of on-site stormwater management, increase public awareness of water quality concerns, and in some cases (cisterns) conserve potable water. Following is a list of Stormwater Quality Cost Share projects completed during the past year, as well as projects in progress as of June 30, 2015.

<u>Projects Completed</u>	<u>Date Completed</u>	<u>Type of Project</u>	<u>Total Cost</u>	<u>City Share</u>
562 New Bern Ave Phase I	2/1/15	1200 Gallon Underground Cistern	\$16,545	\$9,058
562 New Bern Ave Phase II	2/1/15	900 SF Permeable Driveway	\$12,937	\$9,704
<b>Total Completed</b>			<b>\$29,482</b>	<b>\$18,762</b>

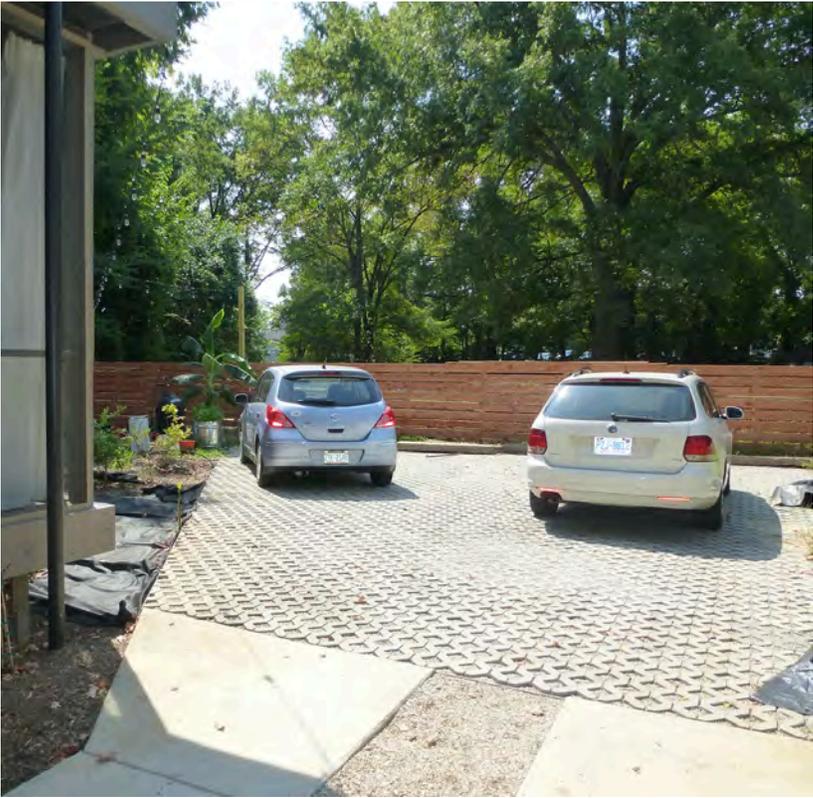
<u>Projects Under Construction</u>	<u>Estimated Completion</u>	<u>Type of Project</u>	<u>Total Cost</u>	<u>City Share</u>
827 E Hargett St	TBD	550 Gallon Above-ground Cistern	\$2,950	\$2,213
2705 Talbot Court West	9/2015	1150 SF Permeable Driveway	\$21,900	\$16,425
<b>Total Under Construction</b>			<b>\$24,850</b>	<b>\$18,638</b>

<u>Projects Under Design</u>	<u>Estimated Completion</u>	<u>Type of Project</u>	<u>Total Cost</u>	<u>City Share</u>
2124 Fallon Oaks Court	TBD	200 Gallon Underground Cistern	\$4,600	\$3,450
510 West Martin Street (Raleigh Union Station)	2017	5000 SF Permeable Parking / Green Roof with Cistern / Bio-retention Cell # 3	\$426,470	\$290,000
<b>Total Under Design</b>			<b>\$431,070</b>	<b>\$293,450</b>



**Raleigh City Farm  
Cistern**

**562 New Bern Avenue  
Pervious Parking Area**



#### **4 - FEMA Hazard Mitigation Program Acquisition**

The Commission continues to support the Stormwater Program's efforts to acquire repetitive loss properties through the use of FEMA Hazard Mitigation Grants. During Fiscal Year 2015, the Program acquired the Milner Inn at a total cost of \$1,075,000. Because this acquisition was funded wholly by State and Federal grant money, the City incurred no cost in the furtherance of our efforts to reduce property damage due to flooding.

#### **5 - Review of Stormwater Programs and Policies**

Over the course of Fiscal Year 2015, the Commission reviewed several stormwater policies and programs. These include:

- Updating the **Stormwater Quality Cost Share Policy** to address concerns raised by Council that resulted in a moratorium on project approvals. Through the work of the Commission, this policy was updated to reflect the City's commitment to improving water quality while stemming unintended uses of the program and targeting certain areas with degraded water quality. **(10/2014)**
- Providing draft language for a text change related to **limiting impervious area exemptions** in order to reduce the impact of infill residential development. This work was completed at the request of City Council and was reported out as part of alternative language related to TC-6-15. This language was an exceptional step forward for two reasons: 1) it allowed for additional exemptions related to the recombination of vacant residential lots while still limiting total allowable impervious area, creating a win-win for common sense development and the environment, and 2) it represents the first formal allowance for volume control as a means of stormwater management on private property in the City of Raleigh, a very important step forward for the use of low impact development in the City. **(2/2015)**
- Providing considerable deliberation on the topic of **increased detention requirements**, including review of several staff-developed case studies, to determine whether the City's current detention requirements should be expanded to include the 25- and/or 100-yr storms. This review was at the request of the Mayor, and was completed recently with the Commission recommending that further deliberation be held until the GI/LID implementation project made further progress. The Commission felt that, given the apparent conflict between encouraging LID and requiring larger infrastructure to detain larger storms, additional insight could be gained and future conflicts could be avoided by allowing time for the development of a more complete GI/LID policy. **(2/2015)**
- Beginning discussion about the current **Drainage Petition Program** level of service and efficiency. This item will be discussed in greater depth during the SMAC's October 2015 meeting in order to develop suggested program changes that will increase level of service and efficiency. **(4/2015)**

#### **6 - Green Infrastructure (GI)/Low Impact Development (LID)**

The Commission continues to strongly support advancing the use of LID/GI for stormwater management, and is closely following progress on the work plan being implemented by staff and the City's consultant, Tetra Tech. SMAC anticipates providing further recommendations to Council as the Work Plan implementation teams develop draft code changes that will provide encouragement and reduce the number of barriers to the use of GI/LID development and redevelopment techniques.

## **7 - Development of the Stormwater Integrated Project Prioritization Model**

The Commission and Stormwater staff worked collaboratively in recent months to develop the Integrated Stormwater Project Prioritization Model. The prioritization model will serve as a key decision support tool for the City beginning with the upcoming Fiscal Year 2017 budgeting process to evaluate and rank potential Stormwater Capital Improvement Projects.

To provide input and guidance for the prioritization model development, a SMAC Sub-Committee and Staff team met for four, two-hour working sessions: May 26, June 3, June 18, and July 30. In addition, SMAC members and Staff committed their collective time and expertise outside of scheduled work sessions in preparing for the meetings and completing exercises to help evaluate and rank prioritization model criteria. The SMAC welcomed and provided time for public input during the meetings. A request for written public input was also extended to the community.

The Commission looks forward to the implementation of this prioritization model, and its use during the upcoming review of the Stormwater Program's proposed FY2017 CIP, as well as the biannual review of Drainage Assistance Program cost-share projects.

Thank you for your continued support of the Commission and the Stormwater Management Program.

Marc Horstman, Chair  
For the Commission



**First Row:** Will Service, Christopher Bostic, Kevin Yates

**Middle Row:** Matthew Starr, JoAnn Burkholder, Marc Horstman

**Top Row:** Vanessa Fleischmann, Francine Durso

**Missing:** Michael Birch, David Webb

### **Stormwater Management Advisory Commission Mission Statement**

The Stormwater Management Advisory Commission will manage resources sufficiently to protect the public infrastructure, quality of life, environment, and property of the citizens of Raleigh through fair and equitable cost effective means. The SMAC recommendations will seek to improve, enhance, and protect the quality of the Neuse River and its tributaries.