



BEAUFORT COUNTY  
STORMWATER MANAGEMENT UTILITY BOARD

Wednesday, November 7, 2012

2:00 p.m.

Conference Room, Building 2, Beaufort Industrial Village  
102 Industrial Village Road, Beaufort  
843.255.2801

In accordance with South Carolina Code of Laws, 1976, as amended, Section 30-4-80(d), all local media was duly notified of the time, date, place and agenda of this meeting.

1. CALL TO ORDER – 2:00 p.m.
  - A. Approval of Agenda
  - B. Approval of Minutes – October 3, 2012 ([backup](#))
2. INTRODUCTIONS
3. PUBLIC COMMENT
4. REPORTS
  - A. Monitoring Update–Bob Klink
  - B. Financial Update – Alan Eisenman ([backup](#))
  - C. Financial Report – Alan Eisenman ([backup](#))
  - D. Upcoming Professional Contracts Report – Dan Ahern ([backup](#))
  - E. Utility Update – Top Five Achievements–Dan Ahern ([backup](#))
  - F. Utility Update – Chechessee Creek Shellfish FC TMDL – Dan Ahern ([backup](#))
  - G. Historic Shellfish Monitoring Data Headwaters Station – Dan Ahern ([backup](#))
  - H. Maintenance Project Report – Eddie Bellamy ([backup](#))
5. UNFINISHED BUSINESS
  - A. Regional Coordination – Dan Ahern
  - B. Balance Utilization Plan – Alan Eisenman and Dan Ahern
6. NEW BUSINESS
  - A. FY 2012 Budget Comparison – Carolyn Wallace
7. PUBLIC COMMENT
8. NEXT MEETING AGENDA
  - A. November 7, 2012
9. ADJOURNMENT



**Beaufort County Stormwater Management Utility Board (SWMU Board)**  
***Meeting Minutes***

October 4, 2012 at 2:00 p.m. in Beaufort County Council Chambers  
Draft October 5, 2012 pm

**Board Members**

**Present**

John Youmans  
James Fargher  
Donald Cammerata  
Patrick Mitchell  
William Bruggeman  
Don Smith

**Absent**

Allyn Schneider

**Ex-Officio Members**

**Present**

Andy Kinghorn  
Ron Bullman  
Scott Liggett

**Absent**

Tony Maglione

**Beaufort County Staff**

Dan Ahern  
Lori Sexton  
Eddie Bellamy  
Bob Klink

**Visitors**

Laura Lee Rose

**County Council**

**1. Meeting called to order – Don Smith**

A. Agenda approved

B. September 5, 2012 Minutes were approved as posted

**2. Introductions – Completed**

**3. Public Comment – None**

**4. Reports –**

**A. Stormwater (SW)/Form based code – Subcommittee Report**

- No actions since last meeting. Bob Klink reported that he thinks it may be a year before it will be finalized. Decided drop item this till action is nearer.

**B. Monitoring Annual Report –Bob Klink**

Monitoring meeting occurred September 25, 2012.

- Shared monitoring and restoration activities among ToB, GEL, USCB and DHEC
- Decided to do preliminary copper monitoring before trying on getting DHEC quality assurance sampling approvals to see it would be worth the effort on the open water sites.
- Decided to have GEL submit two proposals – one for one month and another for a year. Need month approval to give time to get larger approval. GEL understands that if USCB can take over the monitoring we will terminate the GEL contract. USCB must get equipment and personnel to take over. This is going slower than expected. In response to board question we will not be doing split sampling. USCB will need to certified and then their procedures should lead to similar results.
- Discussed Chechessee Creek FC TMDL –will be presenting something on this later in the meeting

- Also updated group on Rich Wagner's monitoring evaluation of 6 years of data. His review is expected sometime in October. His review may change the type of monitoring that will be done. Next GEL Monitoring Meeting is November 27, 2012 at 1:30 at PW Conference Room

#### **C. Upcoming Professional Contracts Report – Dan Ahern**

The October report has one addition and that is a request for two proposals from GEL to continue monitoring support for the Utility. We are asking for two proposals because the existing contract ends in October. We plan to have Bob Klink approve the one month extension while we take the annual contract through the approval process. As Bob reported we have also decided to approach the Copper testing in a different way and therefore we do not expect any action on the development of Quality Assurance Project Plan QAPP proposal till we get preliminary data.

No new contracts were approved since last report.

#### **D. Utility Updates – Dan Ahern** - passed out to board an article on Gwinnett County rehab project that we had discussed with board on previous meeting

**Webcasts:** Utility did host a Webcast on September 19, 2012 “Get the Dirt on Stormwater”. Had 10 attendees and learned a new thing that has been around for over ten years – Structural soil that is an unlikely looking soil mixture that is 80 percent stone but ideal for use in urban environments where you want to plant trees. The Stone provides structural support and you do not need to compact soil to pour sidewalks. The next webcast is scheduled for October 24, 2012 on – Design and implementation of monitoring projects. We checked on interest on this and it may have a more limited audience because as someone wrote back, we are already doing this. Since some of our stakeholders asked us to do it we will sponsor here at BIV#2.

**Financial Reports:** Were attached with the agenda along with a proposed annual budget and financial reporting schedule we worked up with our financial reports. As listed in this schedule there will be a presentation next month on the first quarter financials and our balance utilization plan by Alan and me. If the final audit is completed on time we will also have Carolyn presenting the FY2012 budget versus actual comparison.

#### **Succession Plan**

The administration has advertised and interviewed candidates and is in the process of selecting a new manager

**Military SW Fee Issue** – Did get a call this Monday from the Navy's SE Legal office in Jacksonville. The packet is being reviewed at the Naval Installation Command (CNIC) in Washington. Discussed a little of the history of this issue. Marine position has been that it was a tax and not a fee. The Navy asked for documentation that it was a fee. The 2011 amendments to Clean Water Act said that federal facilities must pay for stormwater services regardless of whether it is a fee or tax. The discussion should be what are the stormwater services being provided not whether it is a fee or tax.

**Chechessee Creek FC TMDL** – As mentioned earlier, we had a surprise since the last meeting in that a draft FC TMDL (total maximum daily load) has been developed for this creek. We were not expecting this especially since the 303d list said that a TMDL would not be done till 2014. We passed out a copy of the draft 2012 303d list that had these violations.

We have not decided on our next steps. A short powerpoint presentation was given showing previous Okatie River and Chechessee Creek issues and well as background on the TMDL. The board had a number questions including was Callawassee sewered (after meeting found out from BJWSA that both Callawassee and Spring Island are sewered and have no discharge systems utilizing treated discharge for golf course irrigation). There were other questions on whether septic tanks are a factor. We have not been able to identify water quality problems from septic tanks and Mr. Bellamy related drainage work in areas of septic tanks that did not create a problem with bacteria in the drainage system. Also had a discussion on source of fecal coliform and source tracking had been tried in past. There may better indicators being developed to identify manmade influence like caffeine and optical brighteners. The shellfish program is controlled by the National Shellfish Sanitation Program and they have no plans to change from a fecal coliform indicator.

#### **E. Maintenance Project Reports – Eddie Bellamy**

Mr Bellamy reported on three major and 19 minor or routine maintenance projects

The first major project was **Coursen-Tate Memorial Park**, completed in August on Lady's Island. Which piped in an open swale at the end of one of the ball fields. Total cost of the project was **\$21,654**.

The second major project was the **DSS Parking Lot**, completed in August in the City of Beaufort. County experienced two sink holes in that County owned parking lot that appeared to be caused by leaking joints in the drainage system. It turned out that there were two leaking catch basins and two separated joints in the drainage pipes under the parking lot. The project removed the asphalt, repaired the leaks, added dirt, re-compacted the sinkholes, cleaned out 92 feet of outfall pipe, and resurfaced the disturbed areas. Total cost of the project was **\$25,306**.

The last major project was **Southern Magnolia Drive**. project grubbed and cleared 79 feet of outfall ditch, cleaned out 30 feet of roadside ditch, Replaced 8 feet of driveway pipe, installed 152 feet of dual outfall pipe, cleaned all the affected pipes, repaired a driveway that was damaged during the project, and installed rip-rap and seeded for erosion control. All of that was necessary to pipe in 152 feet of outfall ditch that provides one of the major outfall paths for the subdivision. Total cost of the project was **\$29,730**.

Reported 19 projects in the shortened format including:

**Shanklin Road Water Quality Retrofit** – Completed in August; this project was a water quality pilot. We cleaned out 330 feet of outfall ditch and installed a check dam and small bleeder pipe to slow down the water coming down a large ditch from a watershed of about 480 acres. It is hoped that this will increase infiltration and both reduce volume and runoff rate from the watershed.

Board commented that all the projects reported are recent. Mr. Bellamy said we are now caught up.

#### **5. Unfinished Business –**

##### **A. Regional Coordination – Dan Ahern**

The SWIC met on September 19, 2012 to primarily discuss LIDAR and Dan Morgan reported the options for this being done under a state contract. It appears that the cost will be as budgeted (\$300,000) and he will be taking actions to obtain a final proposal for this action to be done in February 2013 timeframe. The SWIC will be developing a cost sharing amendment to the IGAs so that approval can be obtained. The cost is already in municipal budgets for all but ToPR. The costs are not being shared with other county departments.

#### **6. New Business –**

##### **USCB Lab Funding –**

There is a proposal that is going to be taken to the County Council to fund equipment at the USCB Lab so that they would be able to take over monitoring duties. This is being done in response to the County Council objective to develop a water quality office in the county. It is proposed by the county administration that funds for this equipment purchase (\$250,000) be funded by the SW Utility. The amount might change based on the ongoing monitoring study that is due in October from CDM. Copy of memo on this issue was passed out at meeting. This will be decided at the Natural Resources Committee at their November meeting. When it is decided we will incorporate into our previously approved balance utilization plan. Hopefully we will have this finalized to present to you in November.

**7. Public Comment – None**

**8. Next meeting agenda – November 7, 2012 Agenda approved, Board meeting will again be held in BIV #2. Agreed to drop form-based code item.**

**9. Meeting adjourned.**

**UNAUDITED AND PRELIMINARY**  
**BEAUFORT COUNTY, SOUTH CAROLINA**  
**STATEMENT OF NET ASSETS**  
Stormwater Utility  
September 30, 2012 & September 30, 2011

	<u>September 30, 2012</u>	<u>September 30, 2011</u>
<b><u>ASSETS</u></b>		
Current Assets		
Cash and Investments with Trustee	\$ 1,836,084	\$ 1,241,404
Receivables, Net	5,590	78,894
Inventories	102,941	119,640
Total Current Assets	<u>1,944,615</u>	<u>1,439,938</u>
Capital Assets	2,798,912	2,896,543
Accumulated Depreciation	<u>(1,866,318)</u>	<u>(1,744,913)</u>
	932,594	1,151,630
Total Assets	\$ 2,877,209	\$ 2,591,568
<b><u>LIABILITIES</u></b>		
Liabilities		
Account Payable	51,709	32,505
Accrued Payroll	49,112	31,734
Accrued Compensated Absences	4,470	4,470
Total Current Liabilities	<u>105,291</u>	<u>68,709</u>
Long Term Liabilities		
Accrued Compensated Absences	64,937	70,038
Net Other Postemployment Benefits Obligation	628,506	494,398
Total Long Term Liabilities	<u>693,443</u>	<u>564,436</u>
Total Liabilities	798,734	633,145
<b><u>NET ASSETS</u></b>		
Invested in Capital Assets, Net of Related Debt	932,594	1,151,630
Unrestricted	<u>1,145,881</u>	<u>806,793</u>
Total Net Assets	<u>\$ 2,078,475</u>	<u>\$ 1,958,423</u>

**Unaudited and Preliminary**  
**BEAUFORT COUNTY, SOUTH CAROLINA**  
**STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS**  
**Stormwater Utility**  
**For the Period Ended September 30, 2012**

	Budget FY 2013	September 30, 2012	Budget to Actual	Percent of Budget
Operating Revenues				
Stormwater Utility Fees	\$ 3,469,180	\$ 52,896	(3,416,284)	2%
Stormwater Utility Project Billings	370,664	-	(370,664)	0%
Total Operating Revenues	<u>3,839,844</u>	<u>52,896</u>	<u>(3,786,948)</u>	1%
Operating Expenses				
Personnel	2,014,323	458,859	(1,555,464)	23%
Purchased Services	1,297,125	109,602	(1,187,523)	8%
Supplies	425,660	71,218	(354,442)	17%
Depreciation	273,545	68,388	(205,157)	25%
Total Operating Expenses	<u>4,010,653</u>	<u>708,067</u>	<u>(3,302,586)</u>	18%
Operating Income (Loss)	(170,809)	(655,171)	(484,362)	384%
Non-Operating Revenues (Expenses)				
Gain (Loss) on Sale of Capital Assets	-	-	-	0%
Interest Earned	11,389	-	(11,389)	0%
Total Non-Operating Revenues (Expenses)	<u>11,389</u>	<u>-</u>	<u>(11,389)</u>	0%
Change in Net Assets	(159,420)	(655,171)	(495,751)	
Net Assets, Beginning	<u>2,733,646</u>	<u>2,733,646</u>		
Net Assets, Ending	<u>\$ 2,574,226</u>	<u>\$ 2,078,475</u>	(495,751)	81%

**Unaudited and Preliminary**  
**BEAUFORT COUNTY, SOUTH CAROLINA**  
**STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS**  
**Stormwater Utility**  
**For the Period Ended September 30, 2011**

	Budget FY 2012	September 30, 2011	Budget to Actual	Percent of Budget
Operating Revenues				
Stormwater Utility Fees	\$ 3,344,133	\$ 71,440	(3,272,693)	2%
Stormwater Utility Project Billings	64,278	-	(64,278)	0%
Total Operating Revenues	<u>3,408,411</u>	<u>71,440</u>	<u>(3,336,971)</u>	<u>2%</u>
Operating Expenses				
Personnel	1,986,780	462,098	(1,524,682)	23%
Purchased Services	720,938	140,447	(580,491)	19%
Supplies	426,223	82,956	(343,267)	19%
Depreciation	285,859	71,445	(214,414)	25%
Total Operating Expenses	<u>3,419,800</u>	<u>756,946</u>	<u>(2,662,854)</u>	<u>22%</u>
Operating Income (Loss)	(11,389)	(685,506)	(674,117)	6019%
Non-Operating Revenues (Expenses)				
Gain (Loss) on Sale of Capital Assets	-	50,000	50,000	100%
Interest Earned	11,389	-	(11,389)	0%
Total Non-Operating Revenues (Expenses)	<u>11,389</u>	<u>50,000</u>	<u>38,611</u>	<u>100%</u>
Change in Net Assets	-	(635,506)	(635,506)	-100%
Net Assets, Beginning	<u>2,593,929</u>	<u>2,593,929</u>		
Net Assets, Ending	<u>\$ 2,593,929</u>	<u>\$ 1,958,423</u>	(635,506)	76%

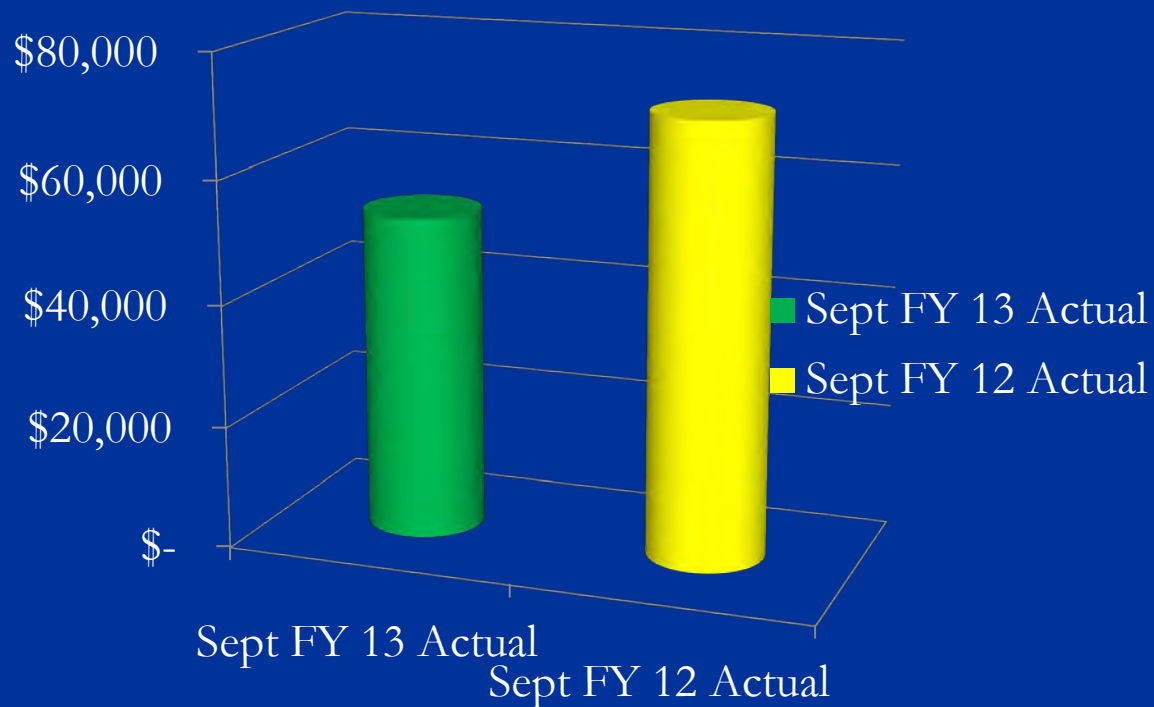




# Stormwater Management Utility Board

# September Unaudited Financials

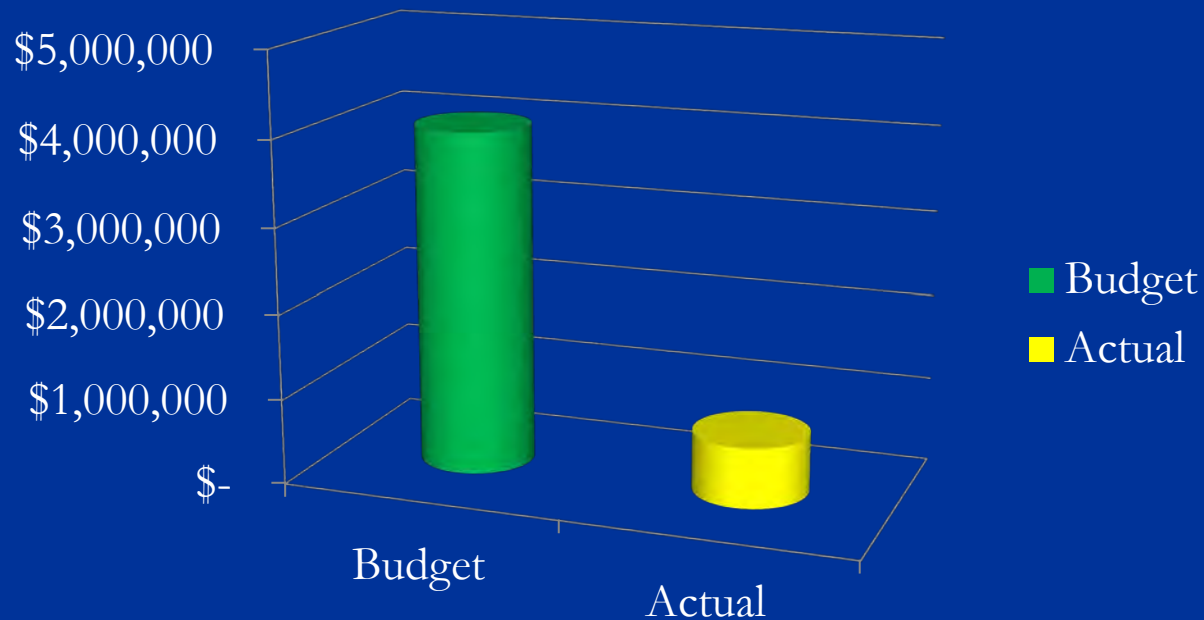
Sept FY 13 Rev vs. Sept FY 12 Rev



Actual FY13 revenues are \$18,500 less than Actual FY 12 revenues

# September Unaudited Financials

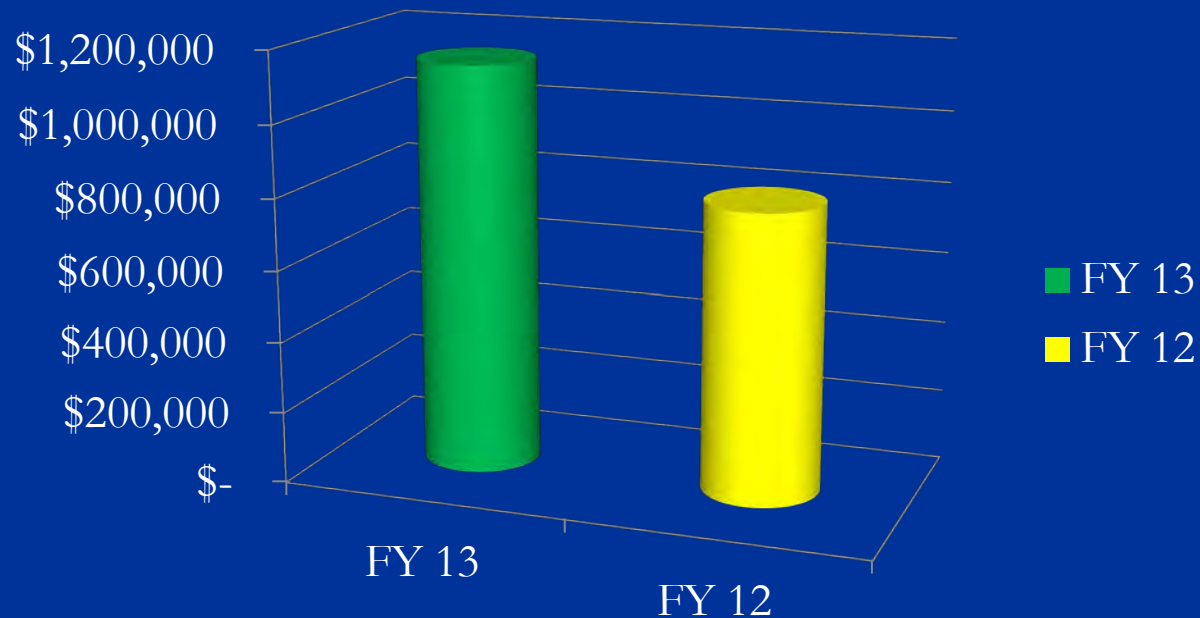
## September FY 13 Expenses vs. FY 13 Budget



Actual September FY13 expenses are at 18% of budget after three months of FY 13

# September Unaudited Financials

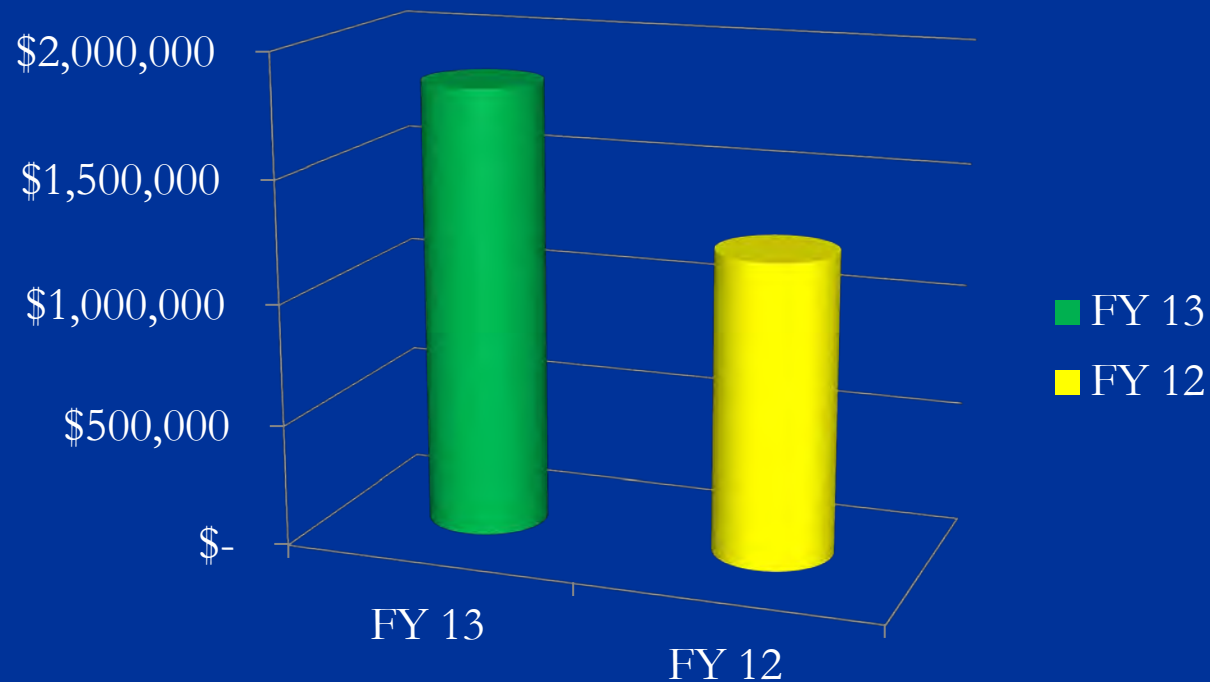
## Unrestricted Fund Balance from Balance Sheet



Increased by \$339,000 or 42%

# September Unaudited Financials

## Cash from Balance Sheet



Increased by \$594,000 or 48%

# Questions or Comments



Covers all contracts on track to get approved

Format will be

1. Contact Name; Contractor; Amount; Purpose and Description; Status
2. Projects funded from last report

**Administrative Parking Lot – Additional Consultant Services;** Andrews and Burgess; \$5,000; additional engineering associated with pervious pavement and contractor demo assistance and paving contract supervision. Presently on hold till funding is decided.

**Upgrade of On-lot Web Program** – Create and Solve; estimated \$2,000; Will be a program upgrade to include more bioretention options than rain gardens. We will start when we have time to meet with contractor.

**Development of Copper QAPP** – GEL; estimated \$10,000; Presently we have four copper violations in Port Royal and St Helena Sounds. These violations are based on limited and old sampling. We want to take samples to verify whether these violations still exist. For data to be accepted by DHEC we must develop and get approved a quality assurance project plan (QAPP) on how samples will be taken and analyzed. We are asking GEL to develop this and then the SW Utility will take samples according to this plan. **(now on hold until monitoring is done at sites)**

**Monitoring Contract Extensions-** GEL – Proposal for \$91,515 is being taken to Natural Resources Committee at their November meeting; Contract for GEL will be terminated when USCB is capable of performing monitoring. GEL is currently having their bacteria analysis done by USCB.

## **Projects Funded since Last Report**

**Monitoring Contract Extension** – GEL – one month extension for \$7,625 was approved by Engineering office.

**BEAUFORT COUNTY GOVERNMENT**  
**Department "Top 5" Achievement Report 2002-2012**

**Stormwater Utility**  
**Dan Ahern, Stormwater Manager**  
**SWU – 35 Employees**  
**SWU Achievement #1 - SW Ordinance and Rate Study**

**Section 1: Department Overview**

*Please provide a short overview (1-2 paragraphs) of programs and services.*

**Vision Statement**

Efficient Utility Addressing the Stormwater Needs of the County, while Protecting its Water Resources.

**Mission Statement**

Dedicated to the management, construction, maintenance, protections, control, regulation, use, and enhancement of stormwater systems and programs in Beaufort County in concert with other water resource management programs.

**Section 2: Summary of Activities and Progress**

*Describe awards and/or achievements, including project name and location, funding source, end cost, and reinvestment back into the community.*

**Top 5 – Achievement 1**

**Development of 2005 SW Ordinance and Rate Study**

The stormwater utility was formed in 2001 and worked to develop the ordinance and rate study that would allow the county and municipalities to address drainage and water quality issues. The rate study allowed for a sustaining income that has allowed the Utility to operate successfully as an enterprise fund to serve the fee payers of the county. Both these documents were approved and adopted by County Council in 2005.

The extent of service (EOS) and level of service (LOS) documents that were developed in 2010 described what could be maintained with the fees set in the ordinance thus allowing the fee payers to better understand what could and could not be done.

**Section 3: Outcomes**

*Outline any emerging outcomes or lessons that could be passed on to other departments.*

1. Long term revenue estimates allowed for linking goals to resources
2. Ordinance allowed for municipal flexibility in stormwater fee rates
3. Ordinance has not needed to be revised since 2005 and there is a link between stormwater fee rates and EOS and LOS that can be maintained with this rate



#### **Section 4: Risks, Issues and Challenges**

*Provide brief details of progress in terms of the development and implementation of the project evaluation plan. Detail any interesting findings or emerging evaluation issues of interest.*

- No significant issues for this achievement
- Minor impact from state law that restricts future agricultural fee increases in the county
- Military Fee collection

#### **Section 5: Evaluation and Next Steps**

*Report on any issues or problems that have impacted on the development and implementation of the project. Detail what impact any issues may have on the achievement of project targets, and set out how you plan to tackle these issues. Report on any unexpected project achievements.*

- Will continue to follow up with Navy on fees for Beaufort Naval Hospital and if this resolved tackle the other military service fee issues.



**BEAUFORT COUNTY GOVERNMENT**  
**Department "Top 5" Achievement Report 2002-2012**

**Stormwater Utility**  
**Dan Ahern, Stormwater Manager**  
**SWU - 35 Employees**  
**Achievement # 2 – SW Management Plan**

**Section 1: Department Overview**

*Please provide a short overview (1-2 paragraphs) of programs and services.*

**Vision Statement**

Efficient Utility Addressing the Stormwater Needs of the County, while Protecting its Water Resources.

**Mission Statement**

Dedicated to the management, construction, maintenance, protections, control, regulation, use, and enhancement of stormwater systems and programs in Beaufort County in concert with other water resource management programs.

**Section 2: Summary of Activities and Progress**

*Describe awards and/or achievements, including project name and location, funding source, end cost, and reinvestment back into the community.*

**Top 5 – Achievement 2**

**Development of the 2006 SW Management Plan**

The stormwater utility was formed in 2001 and approximately a quarter of the fees collected in the first few years went to develop a comprehensive Stormwater Management Plan that developed a recommended 10 year plan to guide county and municipal governments in addressing the following plan elements:

- Stormwater regulations
- Primary stormwater management system enhancements
- Water quality controls for existing development
- Water quality monitoring
- Operations and maintenance
- Inventory of the secondary stormwater management system
- Additional and on-going study and analysis
- Public information

Since 2007 this plan has been the guide in developing Utility Budgets and method of developing budget has compared actual budgeted efforts to the recommended element allocation in this plan. A committee of county and municipal staff presented a 5 year review in 2012 and concluded that it was still viable with minor recommendations.

### Section 3: Outcomes

*Outline any emerging outcomes or lessons that could be passed on to other departments.*

1. Having a long term plan with recommended target funding allocation is helpful in budget planning
2. Having a joint document has helped in coordinating efforts between the county and municipalities in the stormwater arena.

### Section 4: Risks, Issues and Challenges

*Provide brief details of progress in terms of the development and implementation of the project evaluation plan. Detail any interesting findings or emerging evaluation issues of interest.*

- Plan has been impacted by the recent knowledge on stormwater volume controls but is still useful for budget planning.
- Need to revisit monitoring effort distribution in light of importance of volume versus pollutant constituents

### Section 5: Evaluation and Next Steps

*Report on any issues or problems that have impacted on the development and implementation of the project. Detail what impact any issues may have on the achievement of project targets, and set out how you plan to tackle these issues. Report on any unexpected project achievements.*

- Stormwater Implementation Committee (County and municipal staff) conducted a 5 year evaluation of plan and had only minor modification recommendation.
- This was a 10 year plan and an updated plan needs to be developed by 2016 both to guide the next 10 years and meet expected requirements of new state stormwater permits. This will require efforts to start this update in next year or two. It should be linked to expected stormwater permits to be issued to county from state DHEC.





**BEAUFORT COUNTY GOVERNMENT**  
**Department "Top 5" Achievement Report 2002-2012**

**Stormwater Utility**  
**Dan Ahern, Stormwater Manager**  
**SWU - 35 Employees**  
**Achievement # 3 – Protection of Designated Water Uses**

**Section 1: Department Overview**

*Please provide a short overview (1-2 paragraphs) of programs and services.*

**Vision Statement**

**Efficient Utility Addressing the Stormwater Needs of the County, while Protecting its Water Resources.**

**Mission Statement**

Dedicated to the management, construction, maintenance, protections, control, regulation, use, and enhancement of stormwater systems and programs in Beaufort County in concert with other water resource management programs.

**Section 2: Summary of Activities and Progress**

*Describe awards and/or achievements, including project name and location, funding source, end cost, and reinvestment back into the community.*

**Top 5 – Achievement 3**

***Development of stormwater runoff water quality and volume controls***

The Stormwater Utility was formed due to concerns about protecting our water resources. All Beaufort County waters have designated water uses like recreation and aquatic life uses. Each of these uses have a set of water quality standards to be met to maintain these uses. Beaufort County also has considerable amount of waters designated for Shellfish Harvesting and this use has the most stringent bacteria requirements to meet of any uses. The Utility had been continuing to improve our water quality requirements to protect designated water uses and then in 2009 decided to focus on controlling the actual volume of runoff rather than the historic improving of the runoff quality. This lead to a better way of protecting our water resources and this effort has received national attention and the County being awarded the 2012 National Association of Counties (NAC0) Achievement Award for this effort.

As part of developing these controls the Utility developed a web-based program benefiting property owners with a low cost solution to meeting their on-lot volume control requirements.

### Section 3: Outcomes

*Outline any emerging outcomes or lessons that could be passed on to other departments.*

1. Incorporating stakeholders in development of rules.
2. Using small contracts to get many stakeholders to produce needed products for an effort and in the process getting them knowledgeable of the requirements. Contracts also allowed stakeholders better understanding of requirements and some sceptics became advocates when they better understood the process.

### Section 4: Risks, Issues and Challenges

*Provide brief details of progress in terms of the development and implementation of the project evaluation plan. Detail any interesting findings or emerging evaluation issues of interest.*

- Presently no issues or challenges other than concern on our antidegradation goal of equivalent impervious cover (EIC) of 10% (5% for bacteria).
- There is concern that this goal may not be protective enough to maintain designated water uses in the upper reaches of our tidal creeks.
- The county is partnering on two studies that will help in determining if the current goal is adequate. One is with Clemson University on a water budget study and another with USC Beaufort and Waddell Mariculture Center to study salinity changes in our watersheds targeted for restoration.

### Section 5: Evaluation and Next Steps

*Report on any issues or problems that have impacted on the development and implementation of the project. Detail what impact any issues may have on the achievement of project targets, and set out how you plan to tackle these issues. Report on any unexpected project achievements.*

- Since the 1990's Beaufort County has set a county wide goal of 10% equivalent impervious cover (EIC). This was based on scientific information at the time.
- There is concern that this goal may not be protective enough to maintain designated water uses in the upper reaches of our tidal creeks.
- The county is partnering on two studies that will help in determining if the current goal is adequate. One is with Clemson University on a water budget study and another with USC Beaufort and Waddell Mariculture Center to study salinity changes in our watersheds targeted for restoration.
- County might improve the on-lot volume control program to allow for more practice choices.





**BEAUFORT COUNTY GOVERNMENT**  
**Department "Top 5" Achievement Report 2002-2012**

**Stormwater Utility**  
**Dan Ahern, Stormwater Manager**  
**SWU - 35 Employees**  
**Achievement # 4 –Restoration Plan for Water Quality Impairments**

**Section 1: Department Overview**

*Please provide a short overview (1-2 paragraphs) of programs and services.*

**Vision Statement**

Efficient Utility Addressing the Stormwater Needs of the County, while Protecting its Water Resources.

**Mission Statement**

Dedicated to the management, construction, maintenance, protections, control, regulation, use, and enhancement of stormwater systems and programs in Beaufort County in concert with other water resource management programs.

**Section 2: Summary of Activities and Progress**

*Describe awards and/or achievements, including project name and location, funding source, end cost, and reinvestment back into the community.*

**Top 5 – Achievement 4**

***Development of Watershed Restoration Action Plan to address Existing Water Quality Impairments***

The Stormwater Utility was formed due to concerns about protecting our water resources. The initial efforts were directed at prevention of further impairments and were completed in the adoption of controls on stormwater runoff. This left a large backlog of existing impairments primarily caused by development completed before the adoption of our current prevention controls. The Utility developed a watershed restoration plan and received county council approval in January 2012. This plan called for 5 year efforts in designated watersheds so that efforts could be focused and results better determined. The first watersheds selected were Battery Creek and Okatie River. These are being added to the already ongoing efforts in the May River. Retrofit projects have been identified and design is ongoing.

The Utility also identified the need to develop retrofit construction capability and looked for water quality enhancements that could be incorporated with existing drainage projects. An opportunity presented itself on a drainage improvement project discharging to impaired waters in Huspah Creek. Backache Acres Pond was constructed at the end of drainage project to improve water quality in a watershed that previously was uncontrolled. This project was the first new water quality pond constructed by the Utility and improved waters while training staff in this construction process.

**Section 3: Outcomes**

*Outline any emerging outcomes or lessons that could be passed on to other departments.*

1. Focusing efforts can lead to better results and support for actions
2. Level of effort can be balanced between resources needed and time of completion.

#### **Section 4: Risks, Issues and Challenges**

*Provide brief details of progress in terms of the development and implementation of the project evaluation plan. Detail any interesting findings or emerging evaluation issues of interest.*

- This retrofit effort is new and is leading to a partial restructuring of the existing Utility
- This is a new and developing field and results are not known with certainty.
- More monitoring and technical support is needed than in previous drainage projects
- Need to balance incentives for private restoration with need for revenue to continue maintenance and public restoration.
- 

#### **Section 5: Evaluation and Next Steps**

*Report on any issues or problems that have impacted on the development and implementation of the project. Detail what impact any issues may have on the achievement of project targets, and set out how you plan to tackle these issues. Report on any unexpected project achievements.*

- Utility will need to continue to develop expertise in water quality retrofits construction.
- Utility will need to monitor retrofit development practice in this evolving area.
- 



**BEAUFORT COUNTY GOVERNMENT**  
**Department "Top 5" Achievement Report 2002-2012**

**Stormwater Utility**  
**Dan Ahern, Stormwater Manager**  
**SWU - 35 Employees**  
**Achievement # 5 – Assistance in Community Rating System Increase**

**Section 1: Department Overview**

*Please provide a short overview (1-2 paragraphs) of programs and services.*

**Vision Statement**

Efficient Utility Addressing the Stormwater Needs of the County, while Protecting its Water Resources.

**Mission Statement**

Dedicated to the management, construction, maintenance, protections, control, regulation, use, and enhancement of stormwater systems and programs in Beaufort County in concert with other water resource management programs.

**Section 2: Summary of Activities and Progress**

*Describe awards and/or achievements, including project name and location, funding source, end cost, and reinvestment back into the community.*

**Top 5 – Achievement 5**

***Assistance in Community Rating System Increase***

The Stormwater Utility was also formed to inspect, maintain and repair stormwater management systems. Most of this effort by the Utility was performed by Utility personnel in coordination and direction from the public works department. This effort will be described in the public works achievement report.

A major achievement on a portion of this effort was the development of an inspection program that also benefited the County Community Rating System. The Utility has been preparing for requirements under the State Stormwater Permit and developed over a two year period an inspection program that was a part of the county's request to increase to a Class 6 rating. This inspection program as well as other stormwater utility activities (Stormwater Management plan; regulatory controls and maintenance procedures) lead to an additional 639 points for the two stormwater categories in the rating system. Only 500 points are required to change a class. This rating increase will lead to addition reductions of over \$40 for policy holder in hazardous areas. Considering the average homeowner stormwater fee is \$50 this is a major reinvestment back to the community from the Utility.

**Section 3: Outcomes**



*Outline any emerging outcomes or lessons that could be passed on to other departments.*

1. Coordination between two programs can lead to major successes

#### **Section 4: Risks, Issues and Challenges**

*Provide brief details of progress in terms of the development and implementation of the project evaluation plan. Detail any interesting findings or emerging evaluation issues of interest.*

- None at this time

#### **Section 5: Evaluation and Next Steps**

*Report on any issues or problems that have impacted on the development and implementation of the project. Detail what impact any issues may have on the achievement of project targets, and set out how you plan to tackle these issues. Report on any unexpected project achievements.*

- None envisioned at this time
- We most likely got more Stormwater points than most communities and with other communities developing separate ordinances we may never get more points in the future.



# **BEAUFORT COUNTY GOVERNMENT**

## **Department "Top 5" Achievement Report 2002-2012**

**Beaufort County Public Works**  
**Eddie Bellamy, Public Works Director**  
**94 Full-time and 42 Part-time Positions**  
**30 Positions in the Stormwater Infrastructure Section**

### **#3 – Improved Drainage Network Maintenance**

#### **Section 1: Department Overview**

*Please provide a short overview (1-2 paragraphs) of programs and services.*

##### Mission Statement

Enhance the health, safety, and welfare of the citizens of Beaufort County by the following:

- To enhance the public safety, public health and the efficiency of Beaufort County,
- To maintain and improve the infrastructure of Beaufort County Government to include road, drainage networks, and boat landings,
- To assist other departments, as needed, to maintain and improve the real property of Beaufort County Government to include facilities, grounds, parks and boat landings,
- To manage the Solid Waste stream within the County and promote cost-effective recycling,
- To manage and support beautification efforts, and

To oversee and coordinate contractors operating central garage and fueling sites to support Beaufort County and other subscriber vehicle fleets.

#### **Section 2: Summary of Activities and Progress**

*Describe awards and/or achievements, including project name and location, funding source, end cost, and reinvestment back into the community.*

1. With the advent of the Stormwater Management Utility, we have made considerable progress in the restoration, enhancement, and maintenance of our drainage networks over the past 10 years. We have completed over 1015 drainage projects varying in size from the \$721,000 Depot Road project in the City of Beaufort to numerous small maintenance projects (\$2-3,000 range) to remove blockages and clean out roadside and outfall ditches.
2. Where we have reconstructed ditches, we have removed all excess spoil and debris generated by our actions and constructed a workshelf so that we can easily access the ditches for routine maintenance such as bush hogging and small blockage removal. In those cases where owners are concerned about easy, unauthorized access to their property, we have installed locked gates to reduce trespassing.
3. We have almost doubled the mileage of drainage system that we maintain to over 97 miles.
4. We have gone from almost no properly recorded drainage easements to over 24 miles of easements recorded properly in County deed books. We now have a system to track easements and have set priorities for obtaining them.
5. We have established a routine drainage system inspection program emphasizing choke points and blockages.
6. We developed Level of Service (LOS) and Extent of Service (EOS) documents, approved by County Council, that clarify what services the citizenry receive for their stormwater fees and sets priorities for drainage network improvements and maintenance.
7. The drainage network improvements and increased maintenance have been funded by the Stormwater Management Utility through stormwater fees.



### Section 3: Outcomes

*Outline any emerging outcomes or lessons that could be passed on to other departments.*

1. The improvements to the drainage system have led to much improved dirt road performance. During the last El Nino winter, we had no paved roads that were over topped with stormwater and only two County maintained dirt roads that failed. Both were repaired in less than a day.
2. We have had no houses flood because of a failure of the County maintained drainage systems. There have been two houses that flooded in the past ten years. One was caused by clogged crossline pipe under a SCDOT maintained road. The BC PW Department cleared the pipe and relieved the flooding in less than two hours after receiving the report of the problem. The other was a newly constructed house that was built at an elevation that was several feet below the adjacent houses. The system that drained that property was privately owned and had not been maintained properly. We obtained easements for the problematic portion of the system and relieved the flooding within a few weeks.
3. The drainage system inspection program is now proactive and often identifies potential problems before they occur.
4. Our program of establishing well-maintained, easily accessible workshelves during restoration work has resulted in more efficient routine maintenance and inspection of the drainage system.

### Section 4: Risks, Issues and Challenges

*Provide brief details of progress in terms of the development and implementation of the project evaluation plan. Detail any interesting findings or emerging evaluation issues of interest.*

1. Our first priority under the EOS is restoring and maintaining the drainage from County-owned property, including County maintained roads. At issue is the drainage from other public property, including SCDOT maintained roads and School Districts properties and the cost to assume the additional responsibilities.
2. An important EOS issue for many of our citizens is drainage from private property. Many think that, because they pay stormwater fees, the County should ensure that their private property drains properly.
3. Our biggest challenge is obtaining easements to restore and maintain existing drainage systems, many of which were constructed long ago by Beaufort County Public Works. Some citizens seem to think that they are "giving" the County something for free that does not benefit them.
4. A major challenge is to characterize the component parts of the drainage system and quantify the costs involved in assuming the responsibility for additional parts of the system so that the policy makers can make an informed decision.
5. The last challenge is the inclusion of additional water quality improvements into restoration projects and determining the right mix of water quality and water quantity restoration efforts.

### Section 5: Evaluation and Next Steps

*Report on any issues or problems that have impacted on the development and implementation of the project. Detail what impact any issues may have on the achievement of project targets, and set out how you plan to tackle these issues. Report on any unexpected project achievements.*

1. We have made significant improvements, but the majority of the existing drainage system in the County still is receiving inadequate maintenance.
2. Next steps:
  - a. Continue to analyze and evaluate our drainage systems and look for water quality restoration opportunities;
  - b. Classify the drainage system into categories by ownership of properties drained;
  - c. Estimate costs to restore and assume the maintenance of different categories; and
  - d. Recommend priorities to our elected officials.



**BEAUFORT COUNTY GOVERNMENT**  
**Department "Top 5" Achievement Report 2002-2012**

**Beaufort County Engineering Division**  
**Bob Klink**  
**7 Full Time Employees**

4 of 5 achievements

**Section 1: Department Overview**

*Please provide a short overview (1-2 paragraphs) of programs and services.*

Provide effective, efficient, and quality management, engineering, and construction management of all public utility and other capital improvement projects. To provide engineering inspection of all roadway, drainage and site improvements associated with residential, commercial and industrial development within the County. To serve and assist citizens through public service.

**Section 2: Summary of Activities and Progress**

*Describe awards and/or achievements, including project name and location, funding source, end cost, and reinvestment back into the community.*

Development of the County's Best Management Practices Manual for Stormwater to implement protection standards for the waters of Beaufort County and create uniformity throughout the County

**Section 3: Outcomes**

*Outline any emerging outcomes or lessons that could be passed on to other departments.*

The first BMP Manual was completed in 1998 for the County to start its water quality standards. Thru a continual review process, the BMP Manual has been successfully updated.

The Beaufort County BMP Manual has received recognition as the leading program manual in the country.

**Section 4: Risks, Issues and Challenges**

*Provide brief details of progress in terms of the development and implementation of the project evaluation plan. Detail any interesting findings or emerging evaluation issues of interest.*

None at this time

**Section 5: Evaluation and Next Steps**

*Report on any issues or problems that have impacted on the development and implementation of the project. Detail what impact any issues may have on the achievement of project targets, and set out how you plan to tackle these issues. Report on any unexpected project achievements.*

None envisioned at this time





**BEAUFORT COUNTY STORMWATER UTILITY**  
120 Shanklin Road  
Beaufort, South Carolina 29906  
Voice (843) 255-2801 Facsimile (843) 255-9478



**October 10, 2012**

SC DHEC  
Bureau of Water  
2600 Bull St  
Columbia, SC 29201  
Attn: Matt Carswell

Subject: Chechessee Creek Shellfish FC TMDL

Dear Mr. Carswell

I am submitting comments on the draft TMDL and requesting that it not be issued without significant revisions and consideration of additional monitoring to better determine natural background and other sources. There are also concerns about the conflicts with schedules in draft 2012 303d list and local notification procedures that will be address separately. We want to utilize TMDLs to assist in the County's watershed restoration efforts to return waters to their designated water uses but feel that local watershed priority should be taken into consideration when conducting TMDLs.

I apologize for disjointed nature of comments but we did not have much time to review the draft document due to the late notification on its availability.

### **Comments**

#### **Data**

1. DHEC shellfish monitoring data appears to indicate that station 18-10 should be meeting standards and not require reduction and station 18-11 is not meeting standards and should have a reduction. This is opposite of what is said in the TMDL.
2. Not sure why area below station (either 18-10 or 18-11 –see comment above) is restricted as it is meeting the standards.
3. Consideration should be given to site or sampling below confluence of 18-10 and 18-11 to determine if it meets standards which could remove use restrictions.
4. Additional data should be developed to determine if nonpoint sources, background or large open water bird population is source of impairment. The Stormwater Utility and Low Country Institute would be willing partner in this effort.

#### **TMDL**

1. Expressing TMDL as a concentration does not allow for management of loads from nonpoint sources and could lead to solutions that could adversely affect the marine resources. Also reduction percentages could be met without any reduction of load to the

receiving waters. Beaufort County routinely measures low concentration discharges from stormwater discharges and orders of magnitude increases of concentration as these discharges leave forested wetland ditches. Reducing the concentration from the stormwater discharges in these situations will not decrease the loads. (page 21)

2. TMDL includes two separate hydrologic units (HUCs) and should be considered separately, especially since one of the hydrologic units also contains additional aquatic life violations downstream. Only shellfish station 18-09 is in one of the priority watersheds that SC and EPA Region 4 agreed to target.
3. The TMDL does not make any estimate of the natural background loading. This is especially important in a watershed that has only 5.1% impervious cover. Requiring reduction in loads that does not acknowledge background, places unattainable reduction burden on nonpoint sources. It is our understanding that these impairments have been in place for a long time and may date to initial construction of a causeway in 1970's that impacted tidal flow.
4. TMDL does not acknowledge impacts of runoff volume and the documented impacts of fecal load increases from low concentration discharges. SCDOT Permit to address fecal coliform may not allow for load reductions caused by road runoff volume. See local study documenting impacts of low concentration discharges in published articles on Utility's website. <http://www.bcgov.net/departments/Engineering-and-Infrastructure/stormwater-management/manuals-and-plans.php>
5. How are causeway road structures considered in analysis? Are they background or potential sources or causes? How would they be addressed?
6. There should be a map of the SCDOT roads that are owned and operated in the watershed so that they can be seen in relationship to the impaired stations.
7. Page 28 of draft TMDL mentions observation of runoff from impervious surfaces and consideration of collection of stormwater runoff from the major roads. Can this be included in SCDOT permit and what level of collection/treatment is recommended? County now has volume controls that are representative of 10% equivalent impervious cover (EIC). The watershed is now reported to be 5.1 percent impervious cover and future development could add some additional runoff volume. TMDL should have identified the sub watersheds that appeared to have high runoff during reported event.
8. While there is no continuous NPDES-permitted discharges to Chechessee Creek there is a sewer system with no discharge permits. This area (Callawassee) also has non-continuous point sources included in their drainage system. Will these be controlled under their current NPDES permit? Do not see how a potentially designated MS4 can be responsible to the LA for this TMDL when they have no control over existing loads. (page 13)
9. Not all hydric soils have low infiltration rates and we have many sandy hydric soils in county with high infiltration rates especially when ground water levels are low. (page 7) There is also class D soils that are not hydric and have low infiltration but they may not exist in watershed.
10. No explanation for increase in open water between 2001 and 2006 (1% or 16 acres). It would seem to be a significant change especially since developed area remained the same (Table 2).
11. TMDL should recognize wetlands discharges as a nonpoint source contributor in the watershed. (page 14) This has been proven to be a major source of FC load in other Beaufort County watersheds.



12. The no discharge permit for Callawassie could have impact on water quality by taking up storage space for irrigation that could require stormwater runoff to increase. (page 14-15)
13. While recognizing that determining existing load is difficult (page 22), it will be even more difficult to implement controls to reduce loads with the TMDL concentration reductions only. Having load reduction goals that are a function of volume and concentration will allow the addressing of the additional impact of that volume on the natural drainage system.
14. While we appreciate the recognition that freshwater runoff can change the chemistry of tidal creeks and cause salinity variations (page 28) it is of concern in that this watershed is presently below (5.1%) our goal volume controls of 10% EIC. Is this saying that Beaufort County's volume controls (Federal standards of control to 95percentile event) is not adequate?
15. How would the suggested collection and reclamation system (page 28) along major roads be incorporated into the current SCDOT MS4 permit?
16. It appears that under section 6.2 (page 30) that wording is reflective of an earlier TMDL and needs to be updated. The references to Beaufort County adopting Town of Bluffton's BMP are outdated. This was done in the earlier 2009 BMP manual and now the Town of Bluffton has adopted the County's volume standards and the situation is reversed. The latest BMP revision is 2012 that incorporates runoff volume control up to the 95 percentile event. Also the BC Stormwater Management Plan was dated 2006 not 2008 as listed in TMDL. The TMDL should also mention the 2010 County ordinance changes that require runoff volume control on residential lots not handling volume on a developmental level. (page 31)
17. Recommend that DHEC utilize and reference the number of published articles on volume controls available on the county website.

## Requests

1. Delay TMDL issuance until watershed becomes priority for restoration or at least until additional monitoring can be done to determine the breakdown between background and nonpoint sources. Addressing TMDL now could lead to removal of limited resources from priority watershed restoration projects.
2. If a TMDL is to be issued now it should only for the section in SCDHEC/EPA priority watershed (station 18-09). The Chechessee HUC violations should be addressed on a watershed basis with all the violations in the watershed.
3. TMDL should identify non point loads that must be reduced. Background loadings must be determined and estimated. If the background loadings are such that standards cannot be met that a use attainability study should be conducted to avoid unattainable requirements.
4. Stations 18-10 and 18-11 are in the Chechessee River HUC that has aquatic life violations and consideration should be given to an impervious cover TMDL. County's controls are based on Equivalent Impervious Cover (EIC) goals. FC goal is 5% and an aquatic life impervious cover TMDL would allow for better management of reductions. We do not understand why impervious cover TMDLs are limited to 10% or more impervious cover.
5. As part of the County Council's top priority agenda goal, the Council approved a Watershed Restoration plan in January 2012 and consideration should be given to

County's priority watershed restoration programs in Battery Creek; Headwaters of Okatie River and May River.

A handwritten signature in blue ink, appearing to read 'Dan B. Ahern', with a stylized, cursive script.

Daniel B. Ahern, P.E., BCEE  
Beaufort County Stormwater Manager



# **Historic Shellfish Monitoring Data Headwater Stations**

**November 2012 Stormwater Board  
Meeting**





# Outline



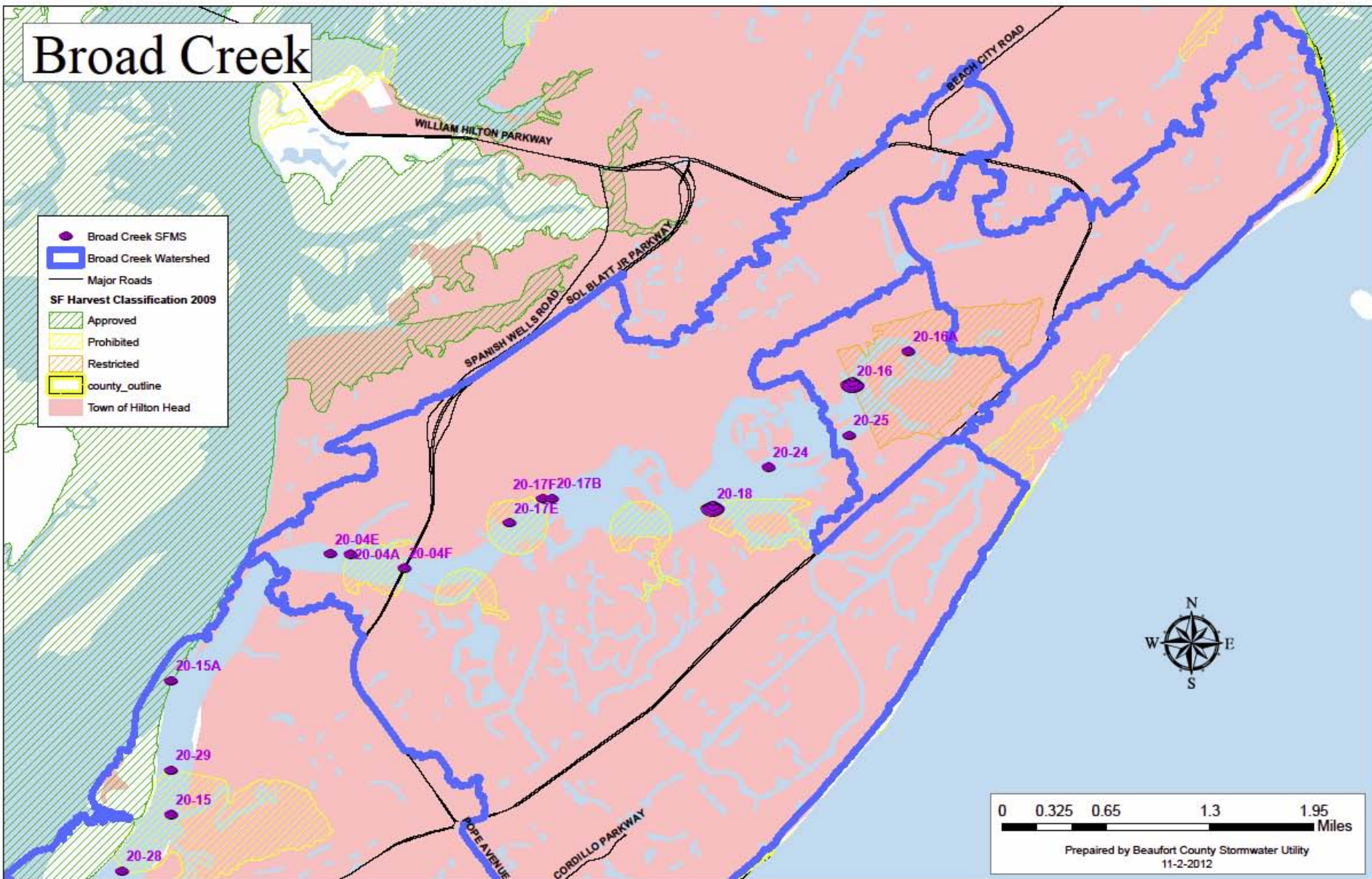
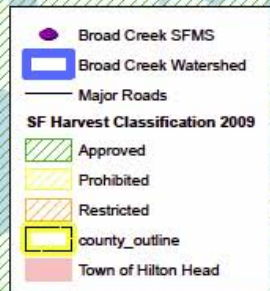
- **Broad Creek**
- **Okatie River**
- **May River**
- **Battery Creek**

# Broad Creek Data

## Station 20-16

Year	Data	Year	Data	Year	Data	Year	Data
1994	8/8	1999	6/2	2003	6/5	2008	1/0
1995	8/3	2000	4/3	2004	4/0	2009	2/1
1996	7/2	2001	4/2	2005	4/2	2010	3/3
1997	6/3	2002	4/1	2006	9/3	2011	3/0
1998	8/4			2007	5/0		

# Broad Creek



Prepared by Beaufort County Stormwater Utility  
11-2-2012

# Okatie River Station 18-08

Year	Data	Year	Data
1994	9/2	1999	6/3
1995	9/8	2000	3/0
1996	6/4	2001	4/1
1997	4/2	2002	3/2
1998	9/4		

Year	Data	Year	Data
2003	4/4	2008	8/6
2004	3/1	2009	9/5
2005	8/5	2010	10/4
2006	6/3	2011	8/5
2007	8/6		



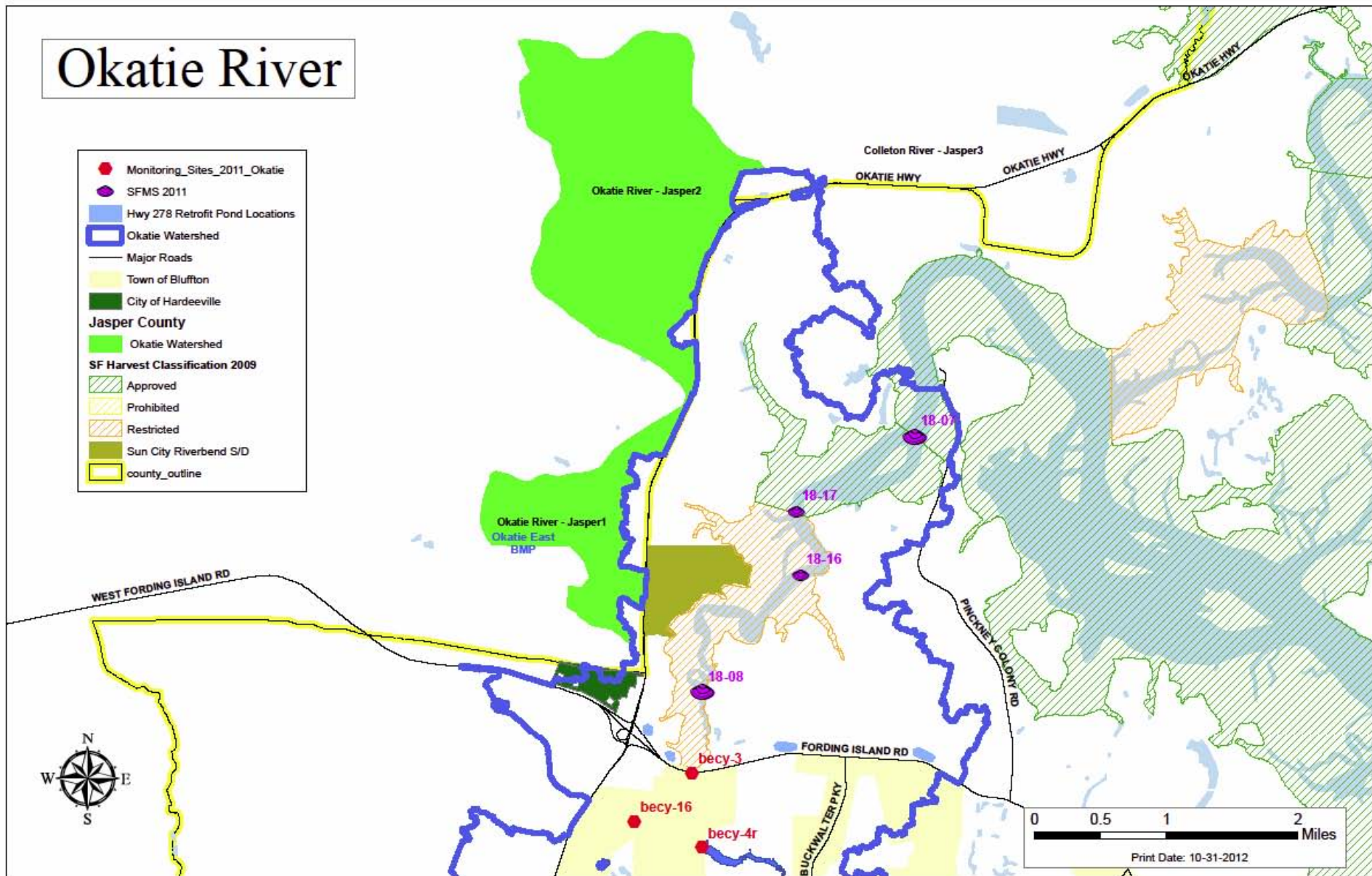
# Okatie River

- Monitoring\_Sites\_2011\_Okatie
- SFMS 2011
- Hwy 278 Retrofit Pond Locations
- ▭ Okatie Watershed
- Major Roads
- Town of Bluffton
- City of Hardeeville
- Jasper County**
- Okatie Watershed
- SF Harvest Classification 2009**
- ▨ Approved
- ▨ Prohibited
- ▨ Restricted
- Sun City Riverbend S/D
- ▭ county\_outline



0 0.5 1 2 Miles

Print Date: 10-31-2012



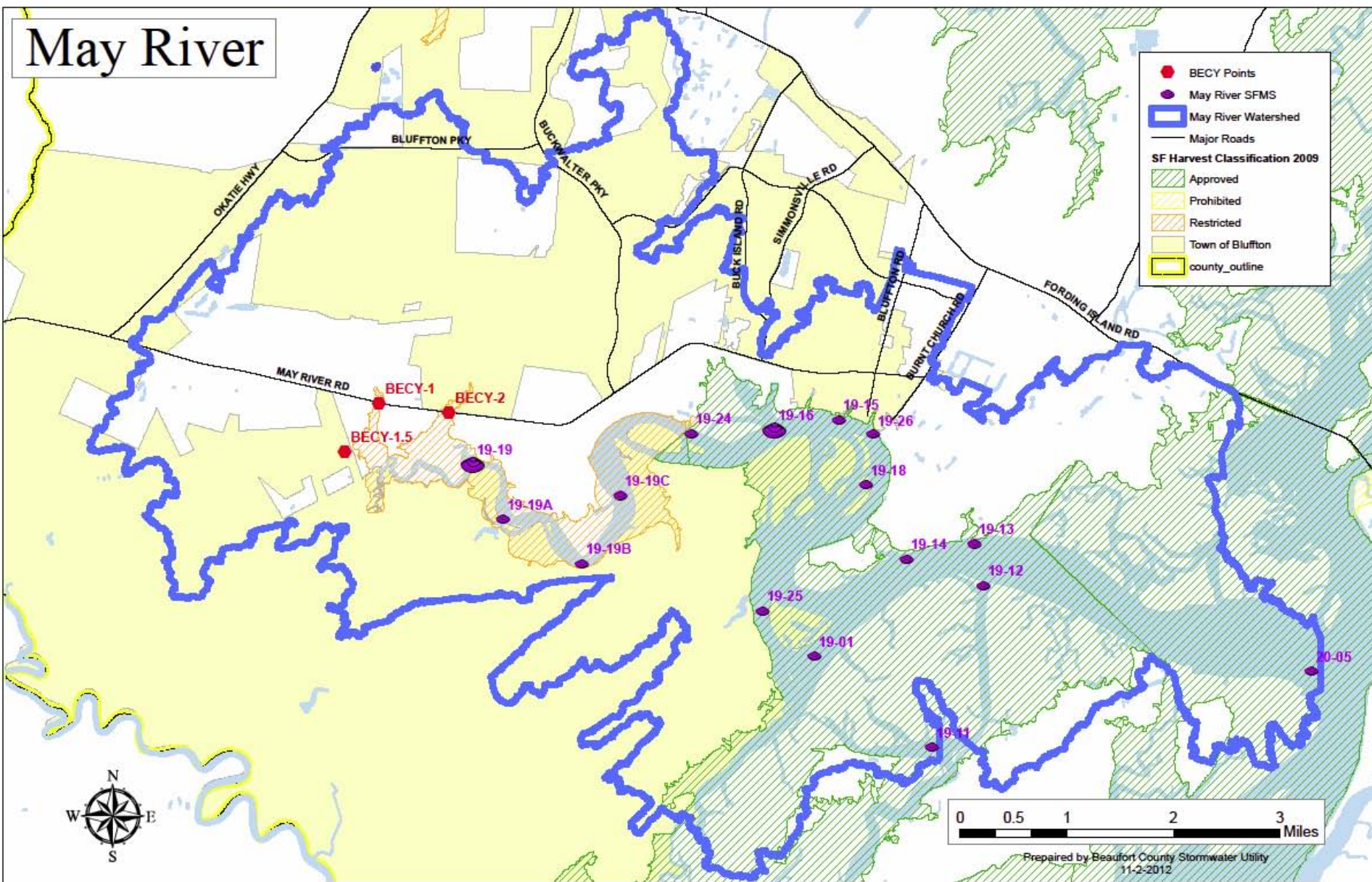
# May River Station 19-19

Year	Data	Year	Data
1994	1/0	1999	1/0
1995	5/0	2000	0/0
1996	0/0	2001	0/0
1997	1/0	2002	0/0
1998	2/0		

Year	Data	Year	Data
2003	1/0	2008	9/2
2004	1/1	2009	11/4
2005	1/1	2010	10/6
2006	2/0	2011	7/5
2007	4/2		



# May River





# Battery Creek

## Station 15-19

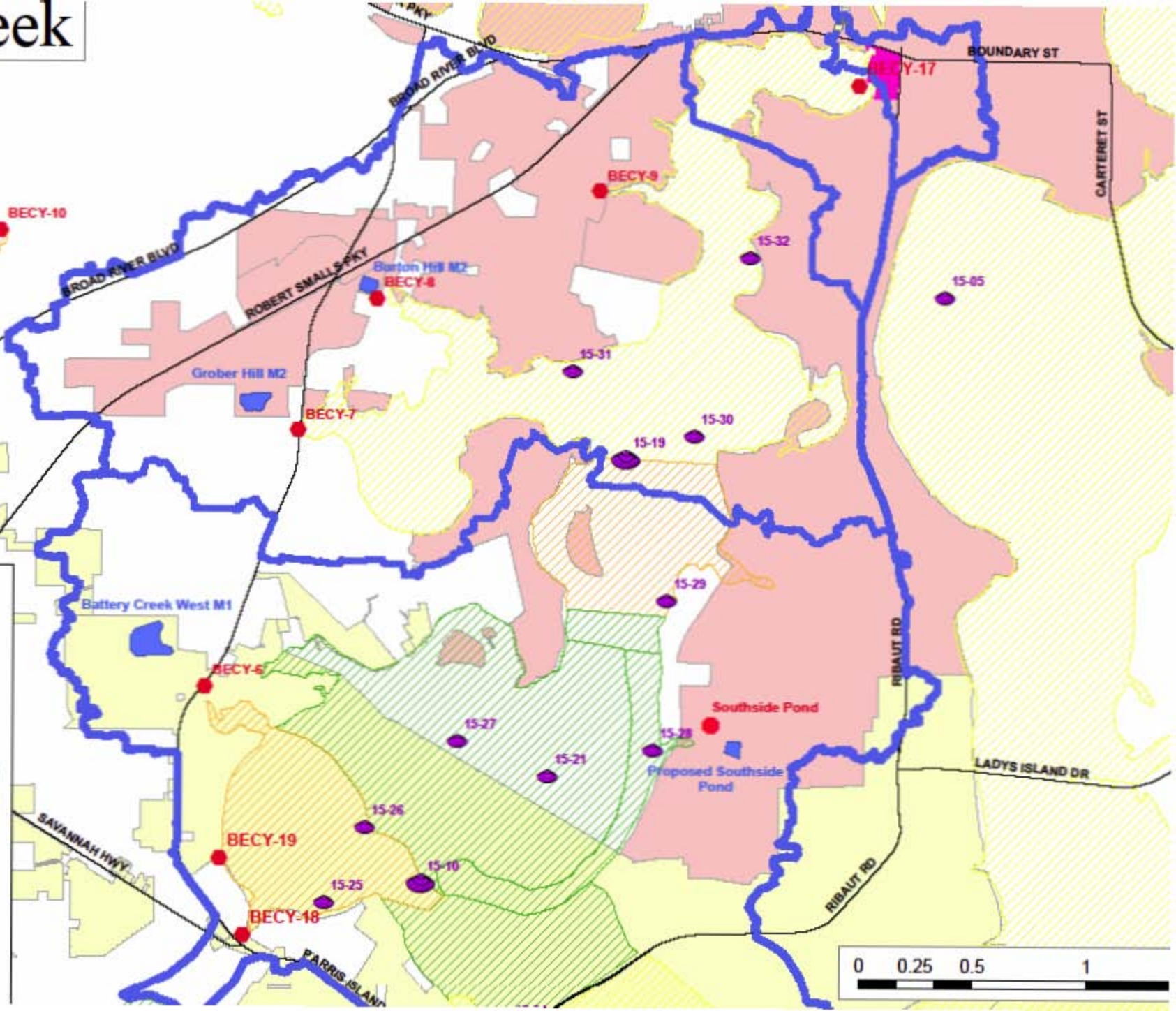
Year	Data	Year	Data
1994	2/0	1999	7/3
1995	3/0	2000	0/0
1996	4/3	2001	1/0
1997	1/1	2002	1/0
1998	6/3		

Year	Data	Year	Data
2003	5/2	2008	7/2
2004	4/1	2009	3/2
2005	3/1	2010	6/0
2006	7/0	2011	4/1
2007	2/0		

# Battery Creek



2011  
Spring Sites  
Main Retrofit  
Roads  
Ponds  
Battery Creek Watershed  
Classification 2011  
Paved  
Unpaved  
Protected  
Beaufort  
of Port Royal







# Questions



# Project Summaries

November 2012



## Beaufort County Public Works *Stormwater Infrastructure* Project Summary

Project: Bajala Drive East & West

Completed: Oct-12

Project #: 2013-558

Project Total: \$19,212.54

### Narrative Description of Project:

Project improved 934 L.F. of drainage system. Cleaned out 854 L.F. of roadside ditch. Extended (1) crossline pipe. Reinstalled (2) driveway pipes to correct elevation. Jetted (3) driveway pipes and (1) crossline pipe. Installed 80 L.F. of roadside pipe, rip rap and hydroseeded for erosion control.

### Site Photographs

Before



During



After





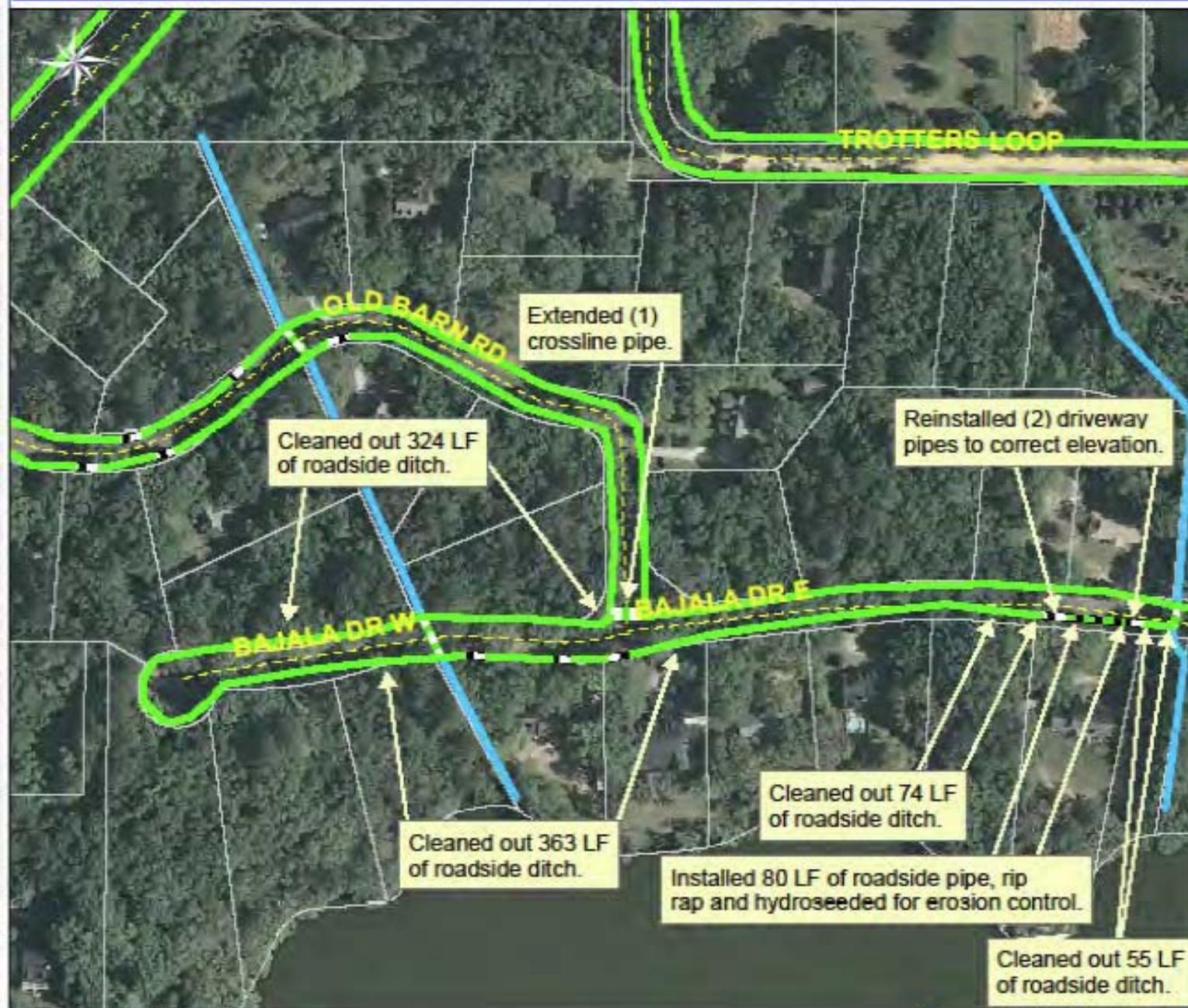
Project: Bajala Drive  
East and West  
Map 1

Activity: Drainage  
Improvement

Project #:  
2013-558

Township: Lady's  
Island

Completed:  
September 2012



0 45 90 180 270 360  
Feet

1 inch = 173 feet

Prepared By: BC Stormwater Management Utility

Date Print: 10/25/12

File: C:/sethdata/projects/projectmaps/Bajala Dr W&E 2013-558



Project: Bajala Drive  
East and West  
Map 2

Activity: Vacuum  
Truck














Project #:  
2013-558

Township: Lady's  
Island

Completed:  
September 2012

### Legend

#### Drainage Type

-  River
-  Stream
-  Outfall
-  Lateral
-  Lateral Pipe
-  Roadside
-  Roadside Pipe
-  Crossline
-  D/W
-  Access
-  Piped
-  Bleeder
-  Parcels

Jetted (1)  
crossline pipe.

Jetted (3)  
driveway pipes.

0 45 90 180 270 360  
Feet

1 inch = 173 feet

Prepared By: BC Stormwater Management Utility

Date Print: 10/25/12

File: C:/sethdata/projects/projectmaps/Vac/Bajala Dr W&E 2013-558





## Beaufort County Public Works *Stormwater Infrastructure* Project Summary

Project: Pinewood Circle and Mroz Road

Completed: Oct-12

Project #: 2013-559

Project Total: \$16,560.24

### Narrative Description of Project:

Project improved 16 L.F. of drainage system. Repaired (1) catch basin. Replaced 16 L.F. of crossline pipe. Repaired washout. Cleaned out (1) catch basin. Jetted (1) crossline pipe. Installed rip rap and hydroseeded for erosion control.

### Site Photographs

Before



During



After





Project: Pinewood  
Circle Map 1

Activity: Drainage  
Maintenance














Project #:  
2013-559

Township: Port  
Royal Island

Completed:  
October 2012

### Legend

#### Drainage Type

-  River
-  Stream
-  Outfall
-  Lateral
-  Lateral Pipe
-  Roadside
-  Roadside Pipe
-  Crossline
-  D/W
-  Access
-  Piped
-  Bleeder
-  Parcels



0 37.5 75 150 225 300  
Feet

1 inch = 147 feet

Prepared By: BC Stormwater Management Utility

Date Print: 10/31/12

File: C:/sethdata/projects/projectmaps/Pinewood Cir 2013-559



Project: Pinewood  
Circle and Mroz  
Road Map 2

Activity: Vacuum  
Truck














Project #:  
2013-559

Township: Port  
Royal Island

Completed:  
October 2012

### Legend

#### Drainage Type

-  River
-  Stream
-  Outfall
-  Lateral
-  Lateral Pipe
-  Roadside
-  Roadside Pipe
-  Crossline
-  D/W
-  Access
-  Piped
-  Bleeder
-  Parcels



Prepared By: BC Stormwater Management Utility

Date Print: 11/1/12

File: C:/sethdata/projects/projectmaps/Vac/Pinewood Cir 2013-559 Map2

0 37.5 75 150 225 300  
Feet

1 inch = 147 feet



# Small Drainage Projects

- Peaches Hill Circle Outfall

Sept. 12– St. Helena

- Cleaned out 1,610 feet of outfall ditch.

# Small Drainage Projects

- James Grant Road Outfall  
Sept. 12 – St. Helena  
– Cleaned out 1,367 feet of outfall ditch.

# Small Drainage Projects

- Big Estate Road Outfall  
Sept. 12 – Sheldon
  - Bush hogged 517 feet of work shelf, repaired a wash out, and installed (1) access pipe.



# Small Drainage Projects

- Sheldon Washout Repairs

Sept. 12 – Sheldon

- Repaired (6) washouts on Middlefield Cir., Horace Dawson Lane, and Jasmine Hall Rd. outfall ditches.



# Small Drainage Projects

- Capehart Circle

Sept. 12 – Port Royal Island

- Cleaned out 304 feet of roadside ditch and 157 feet of outfall ditch. Removed a section of driveway pipe, and jetted (2) driveways and (1) crossline pipe.

# Small Drainage Projects

- Port Royal Island Tree Removals  
Sept. 12 – Port Royal Island
  - Removed (2) fallen trees from work shelves.

# Small Drainage Projects

- McTeer Drive

Oct. 12 – St. Helena Island

- Replaced (1) crossline pipe to a higher elevation.



# Small Drainage Projects

- Sheldon Tree Removal  
Sept. 12 – Sheldon
  - Removed a fallen tree from the Jasmine Hall Rd. outfall ditch work shelf.



# Small Drainage Projects

- Sheldon Area Bush Hogging  
Oct. 12 – Sheldon
  - Bush hogged 142,235 feet of outfall ditch and associated work shelves.  
Total cost was \$59,670 and cost per foot was \$.42.

# Small Drainage Projects

- Huron Drive Outfall

Oct. 12 – Port Royal Island

- Cleaned out 112 feet of roadside ditch and installed 148 feet of outfall pipe.

# Small Drainage Projects

- Tanglewood and Capwing Drives

Oct. 12 – Port Royal

- Cleaned out 790 feet of valley drains and 1,012 feet of roadside ditch, jetted (1), (24) driveway pipes and 120 feet of roadside pipe. Installed straw mat and seeded for erosion control.



# Small Drainage Projects

- Old Barn Road

Oct. 12 – Lady's Island

- Cleaned out 1,238 feet of roadside ditch, jetted (5) driveways and (3) crossline pipes.