**BEAUFORT COUNTY**
**STORMWATER UTILITY**
**120 Shanklin Road**
**Beaufort, South Carolina 29906**
**Voice (843) 255-2805 Facsimile (843) 255-9436**

May 2021

**Stormwater Utility Board**
**May Packet**

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**BEAUFORT COUNTY**
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May 2021

**Stormwater Manager's Report for the Stormwater Utility Board Meeting**

Utility Update

1. Southern Lowcountry Regional Board (SoLoCo)
   a) The current schedule for completion and finalization on the document and activities of Center for Watershed Protection (CWP) is as follows:

      All project milestones have been completed.

2. Regionalization
   a) Regional Stormwater Design Standard and Model Ordinance Project – See update above.
   b) Regionalization of programs – With the finalization of the Regional Stormwater Design Standard and Model Ordinance it is hoped each participating jurisdiction will adopt these policy documents for implementation to provide consistent administration of Stormwater Management guidelines and policies in the region. Discussions of a Regional Stormwater Authority to administer the adopted guidelines and policies holistically within the region/jurisdictions can be fostered.
   c) Implementation of new standards began on February 1st, 2021. At this time Staff have been working with several contractors on new requirements.
   d) The technical subcommittee will be meeting May 3rd to continue discussions on Manual requirements.
3. Special presentation suggestions –
   - Suggestions for Future Meetings
     - Delinquent account presentation from Legal – June 2021
     - Research performed by Dr. Montie – mid to late fall 2021
     - Shell Point presentation – June 2021
     - Cypress Wetlands restoration – June 2021

4. Military installation and other State and Federal properties SWU fees – See "Delinquent Accounts" below. Staff continues to work with GIS to update impervious area layers for the military installations.

5. Delinquent accounts – Phase I Investigations with Gentry Locke Attorneys (looking at data, laws, ordinances, synopsis of case law) to provide recommendations and likely outcomes of either negotiations or litigation.
   - Gentry Locke continues to do research on delinquent fees.

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6. Reminder: Annual Financial report from the Municipalities are due – Per the Intergovernmental Agreements for the Utility, each year on September 30th, the City and Towns are required to submit a summary of revenue and expenditures for the previous fiscal year.
   a) Beaufort County – Received.
      i) Audited Financial Report attached.
      ii) Draft Enterprise Fund Report attached.
   b) Town of Hilton Head Island – Received.
   c) Town of Bluffton – Received.
   d) Town of Port Royal – Not received.
   e) City of Beaufort – Not received.

7. FY22 Budget is still being reviewed by Finance. Any updates will be presented at the next meeting.

Monitoring Update

1. Lab Update (From Dr. Alan Warren and Lab Manager Danielle Mickel)
   i. See attached.

Stormwater Implementation Committee (SWIC) Report

1. County staff will provide updated budget memos to municipalities should amendments be made to the FY22 budget.

Stormwater Related Projects

1. Easements – Staff is working on easement requests and meets monthly to review status. A few condemnations are still being pursued using outside legal counsel.

2. Complaints – Staff continually works numerous drainage related complaints each month.
   a) Flyover bridge preventative maintenance and deferred maintenance repairs – Recent update: Received one quote, out of the 50k threshold, will need to put project out to bid.
   b) Shell Point Community – Final report provided to staff on April 16th. Working on comments with consultant to provide final report to the appropriate parties.

3. Factory Creek Watershed Regional Detention Basin "Phase I" & Academy Park Subdivision (Design Cost $49,873, Tree Mitigation Cost $18,200 & $18,200, Construction Cost by the Developer) – As builts delivered, coordinating land acquisition with legal department.

4. Factory Creek Watershed Regional Detention Basin "Phase II" (Design Cost = $63,390, Tree Mitigation Cost is pending, Construction Cost by the Developer) – As builts delivered, staff coordinating to obtain easements with property owner.

5. Graves Property / Pepper Hall Public / private partnership – Staff continues to work with Davis and Floyd, other departments, and property owner. No additional invoices received

at this time.

6. Whitehall property purchase –No updates at this time.

7. Lady's Island Plan, Sea Level Rise, and "no-fill" ordinance – No updates at this time.

**Professional Contracts Report**

1. CIP FY 18 Grouping Stormwater Projects – (Design - Ward Edwards $202,000, Andrews Engineering $560,490, Const. est. $5,512,900)
    a) Salt Creek and Shanklin Road – 90% design for both projects. Still waiting for property owner interest.
    b) Salt Creek - Beaufort County MS4 and OCRM received. SCDOT verbally approved project. AEC reached out to property owners to gauge interest in moving forward with property acquisition, no response was received. Project is on hold while County decides on next steps in regards to property acquisition.
    c) Shanklin – USACE submittal underway. MS4, OCRM, and SCDOT submittals will be made as wetland impacts are finalized. AEC reached out to property owners to gauge interest in moving forward with property acquisition, no response was received. Project is on hold while County decides on next steps in regards to property acquisition.
    d) Brewer Memorial – Final permits have been obtained. Project is out for bid, held a pre-bid meeting on 4/28 with 6 interested groups.

2. Evergreen Regional Pond 319 grant project – (Design=$89,286, Construction=$590,000. Grant=$229,124) – OCRM, USACE, SCDOT, and Town of Bluffton permits received. Pre construction meeting held on April 8th, pre-clearing inspection scheduled for May 4th.

3. Stormwater engineering consulting services – Staff working with consultant on Scope #3, staff also coordinating Scope #4 for tax run assistance if needed.

**Regional Coordination**

1. Town of Bluffton and Beaufort County Joint meetings on Sanitary Sewer in the May River watershed – No update at this time.

2. Mossy Oaks Task Force – County working with USCB and City of Beaufort staff to begin sampling efforts in two areas where drainage improvements are being made.

3. Charleston Area MS4 managers group – No update at this time.

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4. May River Watershed Modeling – See municipal reports for more information.

5. Port Royal Sound Conservation Working Group – No additional update at this time.

6. Cost Shared Study with the Town of Bluffton – A changing estuary: Understanding historical patterns in salinity and fecal coliform levels in the May River, SC. Attached.

Municipal Reports

1. Town of Hilton Head Island (From Jeff Netzinger, Stormwater Manager and Brian Eber, MS4 Coordinator)
   i. See Attached.

2. Town of Bluffton (From Kim Jones, Watershed Management Division Director)
   i. No information was available at the time of this report.
3. City of Beaufort (From Nate Farrow, Public Works Director)
   i. No information was available at the time of this report.

4. Town of Port Royal (From Van Willis, Town Manager and Tony Maglione, consultant)
   i. No information was available at the time of this report.

MS4 Report

1. Plan Review – See the attached chart for Beaufort County Stormwater staff plan review workload for the past 12 months.

2. Stormwater Permits – See the attached chart for Beaufort County Stormwater permits issued for the past 12 months.

3. Monthly Inspection summary - See the attached chart for Beaufort County Stormwater staff inspection, complaint, IDDE, and violations summary for the past 12 months.

4. Weather Station Data. See attached report.

5. Public Education – See attached report.

6. Energov permitting software – Staff to continue to test and provide feedback to Energov Implementation team, current scheduled implementation date pushed until Sep/Oct.

7. MS4 Statewide General permit – No further update at this time.

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8. Statewide General permit for Construction – No additional updates at this time.

9. SCDOT – No further update at this time.

# BEAUFORT COUNTY, SOUTH CAROLINA

## STATEMENT OF ACTIVITIES
## FOR THE FISCAL YEAR ENDED JUNE 30, 2020

| Functions/Programs | Expenses | Program Revenues: Charges for Services | Program Revenues: Operating Grants and Contributions | Program Revenues: Capital Grants and Contributions | Net (Expense) Revenue and Changes in Net Position: Primary Government: Governmental Activities | Net (Expense) Revenue and Changes in Net Position: Primary Government: Business Type Activities | Net (Expense) Revenue and Changes in Net Position: Primary Government: Totals |
|---|---|---|---|---|---|---|---|
| Governmental activities: | | | | | | | |
| General government | $ 50,963,220 | $ 17,780,576 | $ 2,285,768 | $ 2,117,383 | $ (28,779,493) | $ - | $ (28,779,493) |
| Public safety | 63,648,919 | 9,584,384 | 2,647,448 | - | (51,417,087) | - | (51,417,087) |
| Public works | 25,077,022 | 7,564,330 | 321,775 | - | (17,190,917) | - | (17,190,917) |
| Public health | 15,366,160 | 547,458 | 8,026,239 | - | (6,792,463) | - | (6,792,463) |
| Public welfare | 7,951,215 | 282,529 | 863,693 | - | (6,804,993) | - | (6,804,993) |
| Cultural and recreation | 17,948,284 | 2,735,037 | 324,556 | - | (14,888,691) | - | (14,888,691) |
| Interest | 6,065,977 | - | - | - | (6,065,977) | - | (6,065,977) |
| Total governmental activities | 187,020,797 | 38,494,314 | 14,469,479 | 2,117,383 | (131,939,621) | - | (131,939,621) |
| Business-type activities: | | | | | | | |
| Stormwater utility | 4,796,915 | 6,725,471 | - | - | - | 1,928,556 | 1,928,556 |
| Lady's Island Airport | 548,152 | 539,273 | - | - | - | (8,879) | (8,879) |
| Hilton Head Airport | 2,945,805 | 3,925,494 | 44,300 | 3,069,935 | - | 4,093,924 | 4,093,924 |
| Total business-type activities | 8,290,872 | 11,190,238 | 44,300 | 3,069,935 | - | 6,013,601 | 6,013,601 |
| Total | $ 195,311,669 | $ 49,684,552 | $ 14,513,779 | $ 5,187,318 | (131,939,621) | 6,013,601 | (125,926,020) |
| | | | General revenues | | | | |
| | | | Property taxes | | 128,952,186 | - | 128,952,186 |
| | | | Sales taxes | | 45,195,996 | - | 45,195,996 |
| | | | Grants and contributions not restricted | | 9,547,798 | - | 9,547,798 |
| | | | Unrestricted investment earnings | | 5,044,088 | 181,486 | 5,225,574 |
| | | | Miscellaneous | | 3,617,284 | - | 3,617,284 |
| | | | Total general revenues | | 192,357,352 | 181,486 | 192,538,838 |
| | | | Change in net position | | 60,417,731 | 6,195,087 | 66,612,818 |
| | | | Net position, beginning | | 383,427,221 | 28,291,309 | 411,718,530 |
| | | | Net position, ending | | $ 443,844,952 | $ 34,486,396 | $ 478,331,348 |

**The accompanying notes are an integral part of these financial statements.**

# BEAUFORT COUNTY, SOUTH CAROLINA

## STATEMENT OF NET POSITION
## PROPRIETARY FUNDS
## JUNE 30, 2020

| | Business-Type Activities - Enterprise Funds | | | | Internal Service Fund |
|---|---|---|---|---|---|
| | Stormwater Utility | Lady's Island Airport | Hilton Head Airport | Totals | Garage |
| **ASSETS** | | | | | |
| Current assets: | | | | | |
| Cash and cash equivalents | $ 14,951,281 | $ 250 | $ - | $ 14,951,531 | $ - |
| Receivables, operating | 227,025 | 30,105 | 431,857 | 688,987 | 123,006 |
| Receivables, federal and state grants | - | - | 3,069,549 | 3,069,549 | - |
| Inventories | 143,707 | 32,081 | - | 175,788 | - |
| Prepayments | 58,419 | 19,464 | 47,517 | 125,400 | 4,007 |
| Total current assets | 15,380,432 | 81,900 | 3,548,923 | 19,011,255 | 127,013 |
| Capital assets | 5,945,586 | 5,526,329 | 43,582,141 | 55,054,056 | 445,159 |
| Accumulated depreciation | (2,949,885) | (1,219,709) | (11,495,700) | (15,665,294) | (412,798) |
| | 2,995,701 | 4,306,620 | 32,086,441 | 39,388,762 | 32,361 |
| Total assets | 18,376,133 | 4,388,520 | 35,635,364 | 58,400,017 | 159,374 |
| **DEFERRED OUTFLOWS OF RESOURCES** | | | | | |
| Pension | 500,704 | 30,035 | 222,172 | 752,911 | - |
| Total deferred outflows of resources | 500,704 | 30,035 | 222,172 | 752,911 | - |
| Total assets and deferred outflows of resources | $ 18,876,837 | $ 4,418,555 | $ 35,857,536 | $ 59,152,928 | $ 159,374 |
| **LIABILITIES** | | | | | |
| Current liabilities: | | | | | |
| Account payable | $ 105,632 | $ 55,050 | $ 1,307,232 | $ 1,467,914 | $ 159,374 |
| Accrued payroll | 113,681 | 4,203 | 48,499 | 166,383 | - |
| Accrued compensated absences | 17,820 | - | 7,116 | 24,936 | - |
| Advances from other funds | - | 1,517,921 | 8,108,649 | 9,626,570 | - |
| Current portion - due to debt service fund | - | - | 174,286 | 174,286 | - |
| Total current liabilities | 237,133 | 1,577,174 | 9,645,782 | 11,460,089 | 159,374 |
| Non-current liabilities: | | | | | |
| Accrued compensated absences | 109,468 | - | 43,709 | 153,177 | - |
| Net pension liability | 3,710,146 | 223,597 | 1,443,661 | 5,377,404 | - |
| Due to debt service fund | 5,000,000 | - | 2,599,297 | 7,599,297 | - |
| Total non-current liabilities | 8,819,614 | 223,597 | 4,086,667 | 13,129,878 | - |
| Total liabilities | 9,056,747 | 1,800,771 | 13,732,449 | 24,589,967 | 159,374 |
| **DEFERRED INFLOWS OF RESOURCES** | | | | | |
| Pension | 29,554 | 1,606 | 45,405 | 76,565 | - |
| Total deferred inflows of resources | 29,554 | 1,606 | 45,405 | 76,565 | - |
| **NET POSITION** | | | | | |
| Net investment in capital assets | 2,995,701 | 4,306,620 | 32,086,441 | 39,388,762 | 32,361 |
| Unrestricted (deficit) | 6,794,835 | (1,690,442) | (10,006,759) | (4,902,366) | (32,361) |
| Total net position | 9,790,536 | 2,616,178 | 22,079,682 | 34,486,396 | - |
| Total liabilities, deferred inflows of resources, and net position | $ 18,876,837 | $ 4,418,555 | $ 35,857,536 | $ 59,152,928 | $ 159,374 |

**The accompanying notes are an integral part of these financial statements.**

# BEAUFORT COUNTY, SOUTH CAROLINA

## STATEMENT OF REVENUES, EXPENSES AND CHANGES IN FUND NET POSITION
## PROPRIETARY FUNDS
## FOR THE FISCAL YEAR ENDED JUNE 30, 2020

| | Business-Type Activities - Enterprise Funds | | | | Internal Service Fund |
|---|---|---|---|---|---|
| | Stormwater Utility | Lady's Island Airport | Hilton Head Airport | Totals | Garage |
| **Operating Revenues** | | | | | |
| Garage billings | $ - | $ - | $ - | $ - | $ 77,266 |
| Fuel and oil sales | - | 345,140 | - | 345,140 | 573,111 |
| Stormwater Utility fees | 6,020,371 | - | - | 6,020,371 | - |
| Stormwater Utility project billings | 694,800 | - | - | 694,800 | - |
| Fixed base operator revenue | - | - | 419,927 | 419,927 | - |
| Passenger facility charges | - | - | 526,608 | 526,608 | - |
| Operating agreements/commission revenue | - | 2,721 | 615,436 | 618,157 | - |
| Concession sales | - | 2,567 | - | 2,567 | - |
| Firefighting/security fees | - | - | 607,676 | 607,676 | - |
| Landing fees | - | 18,904 | 217,236 | 236,140 | - |
| Parking/taxi fees | - | - | 235,737 | 235,737 | - |
| Rentals | - | - | 693,711 | 693,711 | - |
| Hangar rentals | - | 169,304 | 190,244 | 359,548 | - |
| Other charges | 10,300 | 637 | 418,919 | 429,856 | 32,525 |
| Total operating revenues | 6,725,471 | 539,273 | 3,925,494 | 11,190,238 | 682,902 |
| **Operating Expenses** | | | | | |
| Costs of sales and services | - | 214,889 | - | 214,889 | - |
| Personnel | 2,868,494 | 135,848 | 1,155,379 | 4,159,721 | - |
| Purchased services | 1,026,434 | 130,051 | 1,135,710 | 2,292,195 | 684,113 |
| Supplies | 319,945 | 12,352 | 77,431 | 409,728 | 563,020 |
| Capital | - | - | 3,198 | 3,198 | - |
| Depreciation | 398,778 | 54,006 | 498,312 | 951,096 | 8,767 |
| Total operating expenses | 4,613,651 | 547,146 | 2,870,030 | 8,030,827 | 1,255,900 |
| Operating income (loss) | 2,111,820 | (7,873) | 1,055,464 | 3,159,411 | (572,998) |
| **Non-Operating Revenues (Expenses)** | | | | | |
| Operating grant | - | - | 44,300 | 44,300 | - |
| Non-operating grant expenses | - | (1,006) | (429) | (1,435) | - |
| Gain on sale of capital assets | 4,929 | - | - | 4,929 | - |
| Interest income | 181,486 | - | - | 181,486 | - |
| Interest expense | (188,193) | - | (75,346) | (263,539) | - |
| Total non-operating revenues (expenses) | (1,778) | (1,006) | (31,475) | (34,259) | - |
| Income (loss) before capital contributions and transfers | 2,110,042 | (8,879) | 1,023,989 | 3,125,152 | (572,998) |
| **Capital Contributions** | | | | | |
| Capital grants - federal | - | - | 3,069,935 | 3,069,935 | - |
| Total capital contributions | - | - | 3,069,935 | 3,069,935 | - |
| **Transfers** | | | | | |
| Transfer in | - | - | - | - | 572,998 |
| Total other financing sources | - | - | - | - | 572,998 |
| Change in net position | 2,110,042 | (8,879) | 4,093,924 | 6,195,087 | - |
| Net position, beginning | 7,680,494 | 2,625,057 | 17,985,758 | 28,291,309 | - |
| Net position, ending | $ 9,790,536 | $ 2,616,178 | $ 22,079,682 | $ 34,486,396 | $ - |

**The accompanying notes are an integral part of these financial statements.**

# BEAUFORT COUNTY, SOUTH CAROLINA

## STATEMENT OF CASH FLOWS
## PROPRIETARY FUNDS
## FOR THE FISCAL YEAR ENDED JUNE 30, 2020

| | Business-Type Activities - Enterprise Funds | | | | Internal Service Fund |
|---|---|---|---|---|---|
| | Stormwater Utility | Lady's Island Airport | Hilton Head Airport | Totals | Garage |
| Cash Flows from Operating Activities: | | | | | |
| Cash received from customers and users | $ 6,625,197 | $ 618,434 | $ 1,625,635 | $ 8,869,266 | $ 855,401 |
| Cash received from other funds | - | 580,229 | 5,827,515 | 6,407,744 | - |
| Cash paid to employees | (2,414,120) | (151,034) | (1,003,826) | (3,568,980) | - |
| Cash paid to suppliers | (1,513,111) | (353,325) | (114,524) | (1,980,960) | (1,428,399) |
| Total provided by (used in) operating activities | 2,697,966 | 694,304 | 6,334,800 | 9,727,070 | (572,998) |
| Cash Flows from Non-capital Financing Activities: | | | | | |
| Operating grant - TSA | - | - | 44,300 | 44,300 | - |
| Interfund transfer | - | - | - | - | 572,998 |
| Non-operating grant expenses | - | (1,006) | (429) | (1,435) | - |
| Principal payment on note payable - Due to debt service fund | - | - | (169,896) | (169,896) | - |
| Interest paid | (188,193) | - | (75,346) | (263,539) | - |
| Total provided by (used in) non-capital financing activities | (188,193) | (1,006) | (201,371) | (390,570) | 572,998 |
| Cash Flows from Capital and Related Financing Activities: | | | | | |
| FAA grants | - | - | 3,069,935 | 3,069,935 | - |
| Proceeds from sale of capital assets | 4,929 | - | - | 4,929 | - |
| Purchase of capital assets | (89,168) | (693,298) | (9,203,564) | (9,986,030) | - |
| Total used in capital and related financing activities | (84,239) | (693,298) | (6,133,629) | (6,911,166) | - |
| Cash Flows from Investing Activities: | | | | | |
| Interest income | 181,486 | - | - | 181,486 | - |
| Total provided by investing activities | 181,486 | - | - | 181,486 | - |
| Net change in Cash and Cash Equivalents | 2,607,020 | - | (200) | 2,606,820 | - |
| Cash and Cash Equivalents, beginning of year | 12,344,261 | 250 | 200 | 12,344,711 | - |
| Cash and Cash Equivalents, end of year | $ 14,951,281 | $ 250 | $ - | $ 14,951,531 | $ - |

**(Continued)**

# BEAUFORT COUNTY, SOUTH CAROLINA

## STATEMENT OF CASH FLOWS
## PROPRIETARY FUNDS
## FOR THE FISCAL YEAR ENDED JUNE 30, 2020

| | Business-Type Activities - Enterprise Funds | | | | Internal Service Fund |
|---|---|---|---|---|---|
| | Stormwater Utility | Lady's Island Airport | Hilton Head Airport | Totals | Garage |
| Reconciliation of Operating Income (Loss) to Net Cash Flows Provided by (Used in) Operating Activities: | | | | | |
| Operating Income (loss) | $ 2,111,820 | $ (7,873) | $ 1,055,464 | $ 3,159,411 | $ (572,998) |
| Adjustments to reconcile: | | | | | |
| Depreciation | 398,778 | 54,006 | 498,312 | 951,096 | 8,767 |
| Changes in Assets and Liabilities: | | | | | |
| Decrease (increase) in accounts receivable | (100,274) | 79,161 | (2,299,859) | (2,320,972) | 172,499 |
| Increase in inventories | (10,931) | (5,828) | - | (16,759) | - |
| Increase in other current assets | (19,020) | (13,040) | (19,213) | (51,273) | (2,841) |
| Increase (decrease) in accounts payable | (136,781) | 22,835 | 1,121,028 | 1,007,082 | (178,425) |
| Increase in due to general fund | - | 580,229 | 5,827,515 | 6,407,744 | - |
| Increase (decrease) in accrued payroll | 35,977 | (1,168) | 14,316 | 49,125 | - |
| Increase (decrease) in accrued compensated absences | 10,843 | (6,484) | 12,768 | 17,127 | - |
| Increase (decrease) in pension deferred inflows/outflows and liability | 407,554 | (7,534) | 124,469 | 524,489 | - |
| | 187,368 | 648,171 | 4,781,024 | 5,616,563 | (8,767) |
| Net Cash Flow Provided by (used in) Operating Activities | $ 2,697,966 | $ 694,304 | $ 6,334,800 | $ 9,727,070 | $ (572,998) |

**The accompanying notes are an integral part of these financial statements.**

## NOTE 3. RECEIVABLES/DUE FROM OTHER GOVERNMENTS/NOTE RECEIVABLE (CONTINUED)

### Note Receivable from Stormwater Utility Fund

In June 2017, the County issued a bond for $5,000,000 to provide capital funding for the MS4 Stormwater initiative. The bond is payable in semi-annual payments, including interest at 2.88% through June 2037.

Annual requirements to amortize the note receivable from Stormwater Utility Fund outstanding at June 30, 2020, are as follows:

| Fiscal Year Ending June 30, | Note Payable to Debt Service Fund | Principal | Interest |
|---|---|---|---|
| 2021 | $ 188,268 | $ - | $ 188,268 |
| 2022 | 247,092 | 58,824 | 188,268 |
| 2023 | 244,151 | 58,824 | 185,327 |
| 2024 | 241,210 | 58,824 | 182,386 |
| 2025 | 238,268 | 58,824 | 179,444 |
| 2026 – 2030 | 2,335,410 | 1,578,923 | 756,487 |
| 2031 – 2035 | 2,558,737 | 2,194,116 | 364,621 |
| 2036 and 2037 | 1,038,387 | 991,665 | 46,722 |
| Total | $ 7,091,523 | $ 5,000,000 | $ 2,091,523 |

### Interfund Balances between the General Fund and the Proprietary Funds

Interfund advances to/from as of June 30, 2020, are as follows:

| Receivable Fund | Payable Fund | Total |
|---|---|---|
| General Fund | Hilton Head Airport Fund | $ 8,108,649 |
| General Fund | Lady's Island Airport Fund | 1,517,921 |
| | | $ 9,626,570 |

Advances are used for the long-term interfund loans. The General Fund has two outstanding advances at June 30, 2020 to the Hilton Head Airport Fund and Lady’s Island Airport Fund for ongoing projects.

Beaufort County, South Carolina
Stormwater Utility

Statement of Revenues, Expenses and Changes in Net Position
For the Fiscal Year from July, 1, 2020 through April 30,2021

| | Yearly Revised budget | Year to date Spent/ encumbered | Available Budget | % Received | % Year Completed |
|---|---|---|---|---|---|
| Operating revenues | | | | | |
| Stormwater Utility Fees | $ 6,177,216 | $ 6,674,276 | $ 497,060 | 108.05% | 83.33% |
| Stormwater Utility project billings | 826,103 | 707,486 | (118,617) | 85.64% | 83.33% |
| Other charges | 11,175 | 13,325 | 2,150 | 119.24% | 83.33% |
| Total operating revenues | 7,014,494 | 7,395,087 | 380,593 | | |
| Operating expenses | | | | | |
| Personnel services | 3,710,558 | 1,492,384 | 2,218,174 | 40.22% | 83.33% |
| Purchased services | 5,086,564 | 2,398,965 | 2,687,599 | 47.16% | 83.33% |
| Supplies | 429,780 | 313,661 | 116,119 | 72.98% | 83.33% |
| Capital | 703,345 | 341,001 | 362,344 | 48.48% | 83.33% |
| Depreciation | 555,672 | - | 555,672 | 0.00% | 83.33% |
| Total operating expenses | 10,485,919 | 4,546,011 | 5,939,908 | | |
| Operating income (loss) | (3,471,425) | 2,849,076 | (5,559,315) | -82.07% | 83.33% |
| Non-Operating Revenues (Expenses) | | | | | |
| Gain on sale of capital assets | - | 3,720 | 3,720 | 0.00% | 83.33% |
| Interest income | 112,500 | - | (112,500) | 0.00% | 83.33% |
| Interest expense | (188,268) | (188,193) | 75 | 99.96% | 83.33% |
| Total capital contributions | (188,268) | (184,473) | 3,795 | | |
| Change in net position | (3,659,693) | 2,664,603 | (5,555,520) | -72.81% | 83.33% |
| Net position, beginning of year | | 9,790,536 | | | |
| Net position, ending | | $ 12,455,139 | | | |
| Net position | | | | | |
| Net investment in capital assets | | 2,995,701 | | | |
| Unrestricted deficit | | 9,459,438 | | | |
| Total net position | | $ 12,455,139 | | | |

# USCB Water Quality Lab Update

## ACTIVE PROJECTS

## Beaufort County

**BC Monitoring Plan 2021:**

- **Description**: Monitoring plan for 2021 continue from last year to include sampling sites covering all 5 categorical types:

  Category 1: TMDL monitoring
  Category 2: IDDE screening and monitoring
  Category 3: Water quality monitoring (baseline, based upon 303d list)
  Category 4: MOA points
  Category 5: Special project monitoring

- **Status:** Second quarter has begun with all dry collection sites completed and partial collection of wet collection sites.

**Memorandum of Understanding:**

- Instead of a MOU, a sole source contract agreement has been generated and waiting on approval. The current MOU expires on May 4, 2021.

**Pepper Hall Drainage Study:**

- **Description:** Pepper Hall property monitoring plan consists of a bi-monthly collection of six sampling sites; 3 inlets and 3 outlets to determine baseline data prior to construction. Sampling will continue during and after construction to measure the effectiveness of BMP's required on-site.

- **Status:** Bi-monthly sampling has begun in January 2021.

**Okatie West Pond: Bold and Gold**

- **Description:** Environmental Conservation Solutions, LLC, in conjunction with Beaufort County, installed an innovative bacteria and nutrient removing side-bank filter to a section of a newly constructed wet detention pond for the Okatie West Regional Stormwater Project. The purpose of the joint effort is to evaluate the efficiency of the Bold & Gold Side-Bank filter for the possible application in the county to achieve target stormwater treatment in existing and new stormwater BMPs. The pilot project is a 60-foot side bank filter with a 2-foot layer of Bold & Gold® CTS Filtration media as the treatment mechanism, overlaid by a 6-inch well-draining soil that is connected to an underdrain pipe. The filter is located on the south side of the wet detention pond.

- **Status:** Another sampling and analytical effort for Environmental Conservation Solutions, LLC to measure the ability of the Bold and Gold filtration media to remove bacteria from stormwater detained in the pond known as Okatie West is requested and we are waiting on increases in both water level and bacterial counts. The previous sampling and analytical efforts occurred in March 2020. Efforts were made in November, but bacterial counts were too low to gauge efficiency of filter.

**Port Royal Cypress Wetland**

- **Description:** The Town of Port Royal wanted to continue with WQ monitoring at the Cypress as the Town is working on a plan to renovate the wetlands to eliminate invasive as much as possible, re-dredge the open water areas and eliminate as many Tallow trees as possible. Having a current base line of WQ information before any work is performed is critical to assessing the "before and after" conditions in Cypress.

- **Status:** Re-dredging is complete and waiting to hear to collect the "after" conditions in September. Cypress wetland project last sampling effort was on September 13th and 18th 2019 for a dry and wet event respectively. Power Point report was included in the February 2020 lab update.

**Port Royal Redevelopment:**

- **Description:** The Town of Port Royal continues with WQ monitoring for the four sites in the proposed redevelopment area. The sampling schedule is quarterly wet events and is included in Beaufort County's Monitoring Plan.

- **Status:** Second quarter collection is complete.

## Town of Bluffton

- **Description:** Monitoring for 2021 continues and includes monitoring for the categories; water quality, 319, MS4, MST, TMDL, and shared locations. A request from Town of Bluffton was made for data analysis of sampling sites dating from 2009 to present.

- **Status**: Monitoring for 2021 continues. USCB is putting together a plan and awaiting data from the Town for the requested data analysis.

- **Memorandum of Understanding:** An addendum to the current MOU is being generated for the purposes of additional sampling efforts by the Town of Bluffton.

## USCB Laboratory

**Additional Projects:**

- Palmetto Bluff: Continued sampling efforts of 12x/year for 6 wet/6 dry events. Sampling sites have been revised to include additional sites to monitor the New River. So far this year, 2 wet/ 2 dry events have been collected along with additional parameters requested by Town of Bluffton at specific sampling sites.

**Lab Projects:**

- 2021 Proficiency testing for the Water Pollution and Water Supply study is complete and passed. This consisted of 10 different analyses requiring the analysis of an unknown sample, which is then reported to the PT provider and the State. The passing of all analyses in the study is

a requirement to keep laboratory state certification.

- On February 21, 2020, an investigation of an oyster aquaculture operation on St. Helena Island was performed at the request of the owner. The aquaculture pond's water is largely supplied by Wallace Creek, which is frequently closed to shellfish harvesting.

- Dr. Warren supplied USCB's mathematicians/computational science faculty with SCDHEC water quality data at every shellfish station in Areas 14-20. This is similar to what Dr. Warren did a few years ago, and what Dr. Montie did more recently with examining long-term trends and exceedances of fecal coliform based on harvesting standards.

- New equipment arrived to include Rhodamine sensor for various studies, including pond retention times.

## COMPLETED PROJECTS

## Beaufort County

**Crystal Lake:**

- **Description:** Crystal Lake bi-monthly sampling and analysis began in August at three locations; boardwalk, nature trail and drainage into lake.

- **Status:** Project ended at the end of September 2020.

**Okatie West Pond:**

- **Description:** The University of South Carolina Beaufort's Water Quality Lab collected data on a variety of water quality parameters, including fecal coliform and *E. coli* bacteria, prior to and after detention pond construction. Sampling points allowed for the determination of the pond's bacterial removal efficiency, as well as the extent to which pond effluent was reloaded with bacteria as it was conveyed by ditch to the Okatie River's headwaters. Sampling took place in February 2018, prior to pond construction, and again in February 2019 when pond construction was complete.

- **Status:** Project was completed in February 2019.

## USCB Laboratory

- **Hilton Head:** GEL Engineering: Discontinued receiving samples for Hilton Head collected by GEL Engineering 4x/ quarter due to using another laboratory .

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# A changing estuary: Understanding historical patterns in salinity and fecal coliform levels in the May River, SC

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ABSTRACT

The May River, South Carolina watershed has undergone rapid increases in population and development from 1999 to 2017. This study aimed to understand the factors that influence salinity and fecal coliform levels in this estuary and how these levels changed from 1999 to 2017. This analysis revealed that salinity levels decreased in the headwaters, while variability increased. Additionally, fecal coliform increased from 1999 to 2017 throughout the hydrological network, with drastic changes occurring in the headwaters. Salinity and fecal coliform were influenced by spatial (distance from the mouth of the river), temporal (year, season, and tidal cycles), environmental (El Niño Southern Oscillation and rainfall), and anthropogenic parameters (population). This analysis suggests that the synergistic nature of climate change, resulting in more intense and frequent El Niño events, and watershed development may lead to further decreases in salinity and increases in fecal coliform levels in the May River estuary.

## 1. Introduction

Coastal development threatens many estuarine environments in the southeast United States. Populations in coastal communities are increasing at a rate double the global population growth with greater than 50% of the population located along the coastline (Henrickson et al., 2001). This development has major implications for the health of estuaries, which support local economies and provide integral habitats for a diverse range of species (e.g. Lehnert and Allen, 2002; Cain and Dean, 1976; Weinstein, 1979; Shenker and Dean, 1979; Hackney et al., 1976). By monitoring salinity and fecal coliform levels, researchers can gain insight into the extent of habitat degradation.

The southeast United States is home to more than 320 high salinity estuaries and tidal rivers stretching from Cape Fear, North Carolina to Cape Canaveral, Florida, with nearly 50% comprising much of South Carolina's 4628-kilometer coastline (Vernberg et al., 1992). These watersheds play a vital role in providing nursery habitats for many ecologically and economically important invertebrate and fish species (e.g. oysters *Crassostrea virginica*, blue crabs *Callinectes sapidus*, red drum *Sciaenops ocellatus*, spotted seatrout *Cynoscion nebulosus*, and silver perch *Bairdiella chrysoura*; Able et al., 2001; Boesch and Turner, 1984). Salinity levels vary widely throughout these estuaries with lower salinities typically found in the headwaters and higher levels towards the mouth. In addition, temporal (e.g. tidal, lunar, and seasonal patterns) and environmental variables (e.g. rainfall and temperature) dramatically affect salinity levels (Ramos et al., 2011; Kawanisi et al., 2010; Able et al., 2001). Organismal response to salinity fluctuations tends to be species specific with salinity acting as an integral factor in their distribution (Upchurch and Wenner, 2008; Bulger et al., 1993; Gunter, 1961). Salinity influences osmoregulation and metabolic rates of estuarine species, which can influence reproduction, growth, and survival (Peterson, 2003; Buckel et al., 1995; Lankford Jr. and Targett, 1994). Many small, sessile organisms have an optimal salinity range, with large anomalies potentially stunting growth (Gunter, 1961; Bulger et al., 1993). Smaller, motile organisms tend to occupy lower salinities, and as these organisms grow, they generally migrate from habitats of lower

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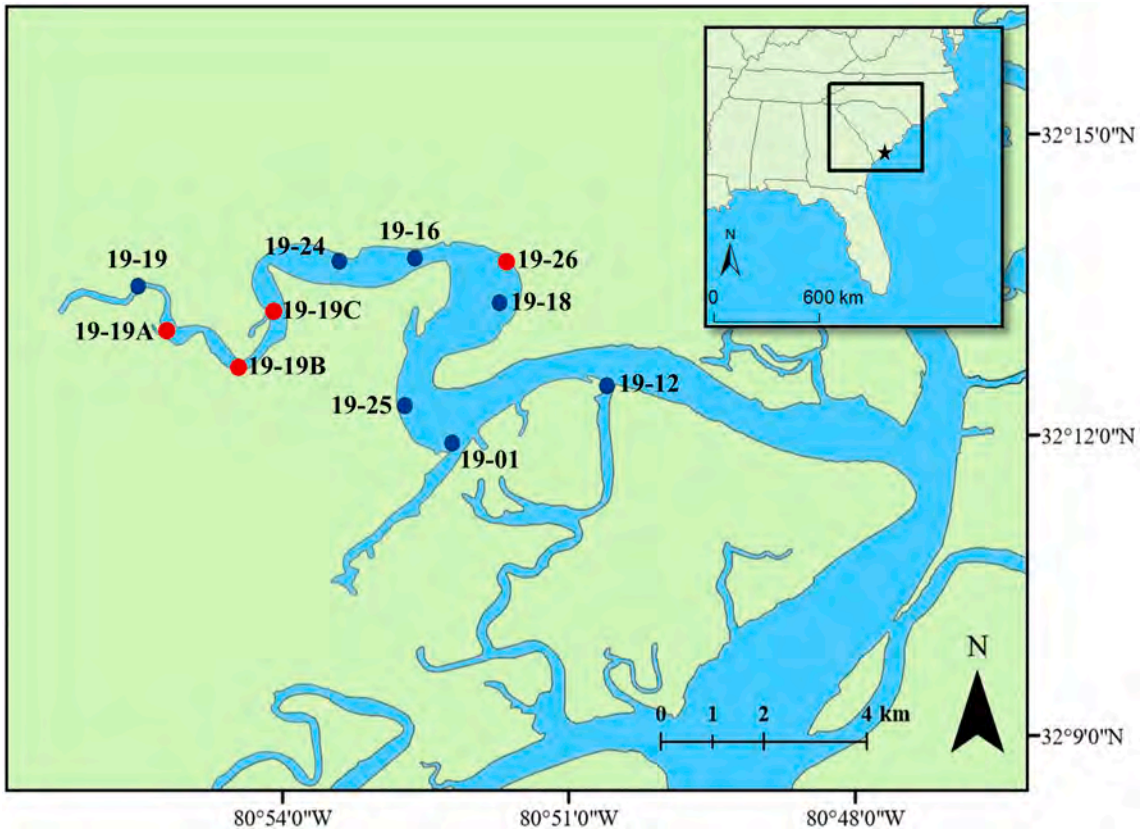


**Fig. 1.** Locations of SCDHEC long-term shellfish monitoring stations along the May River, SC, USA. Blue circles denote stations that were sampled from January 1999 until December 2017. Red circles denote stations that were sampled from January 2009 until December 2017. (Inset) The approximate location of the May River in reference to the Southeast US is denoted by a black star. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

salinity to areas of higher salinity (Labonne et al., 2009; Gunter, 1961). Greater species diversity generally occurs in higher salinity habitats, as many of these organisms are more sensitive to lower salinities (Labonne et al., 2009; Gunter, 1961).

In addition to monitoring salinity, fecal coliform provides another means to gauge estuarine health. Fecal coliform are a group of Fecal Indicator Bacteria (FIB) utilized to measure the presence and magnitude of fecal contamination within bodies of water (Arnone and Perdek Walling, 2007). Fecal Indicator Bacteria are often used as a proxy indicator for other pathogens (e.g. organisms in the genus *Giardia, Cryptosporidium,* and *Vibrio*) that might be fecal in origin but not as easily measured (Byappanahalli et al., 2012; Arnone and Perdek Walling, 2007). Since FIB correlate with other toxic fecal borne pathogens (i.e. bacteria, protozoa, and viruses), this measure is used to regulate shellfish harvesting activity in the United States (NSSP, 2017; Arnone and Perdek Walling, 2007). These fecal coliform bacteria generally occur naturally within the gastrointestinal tract of warm-blooded animals and comprise three main genera, *Citrobacter, Klebsiella*, and *Escherichia* (Jin et al., 2004). The exception is *Klebsiella*, which can originate from non-fecal sources, such as effluent discharge from pulp and paper mills (Jin et al., 2004; Caplenas and Kanarek, 1984).

In estuarine environments, numerous factors influence fecal coliform levels including rainfall, which can affect salinity (Freeman et al., 2019). While higher salinity levels in estuaries negatively influence fecal coliform levels, the mechanism driving this relationship remains unclear. Numerous studies have investigated whether this relationship is caused by salinity's negative impact on survivability of the bacteria, or whether decreasing salinity levels due to freshwater input correlate with increasing fecal coliform levels associated with rainfall runoff (Korajkic et al., 2019; Cahoon et al., 2016; Schulz and Childers, 2011; Chigbu et al., 2004; Lipp et al., 2001; Šolić and Krstulović, 1992). Additionally, population growth and watershed development have been shown to increase fecal coliform levels (Alford et al., 2016; Viau et al., 2011; Schiff and Benoit, 2007; Corbett et al., 1997). In Anchorage, Alaska and New Hanover and Pender Counties, North Carolina, population growth and subsequent watershed development led to an increase in fecal coliform levels (Frenzel and Couvillion, 2002; Mallin et al., 2000). In addition to increased impervious surfaces associated with development, other factors can increase fecal coliform levels including transformation of forested land to agricultural use (Mallin et al., 2001), increased pet and livestock waste, and septic system failures (Sowah et al., 2017; Kelsey et al., 2004).

The May River is a recreationally, economically, and ecologically important estuary located within Bluffton, SC. It provides a wonderful setting and natural resources for residents and tourists alike. From oyster and blue crab harvesting to fishing for spotted seatrout and red drum to observing bottlenose dolphins (*Tursiops truncatus*), these Bluffton traditions and the natural resources on which they depend impart a sense of place. The local community relies heavily upon the river as a means of recreation, income, and sustenance. Within this region of South Carolina, the local estuaries are utilized for subsistence fishing by Gullah Geechee African American communities, who rely on these local waters as a food source (Ellis et al., 2014). Additionally, local eco-tourism companies rely on the health of the May River estuary and its natural resources. Within the Town of Bluffton, the Bluffton Oyster Company relies on local shellfish beds to provide oysters to numerous local and statewide restaurants.

As in most coastal towns and cities in South Carolina, the population of Bluffton has increased dramatically from approximately 794 residents in 1990 to 21,085 residents in 2017 in large part to increased coastal

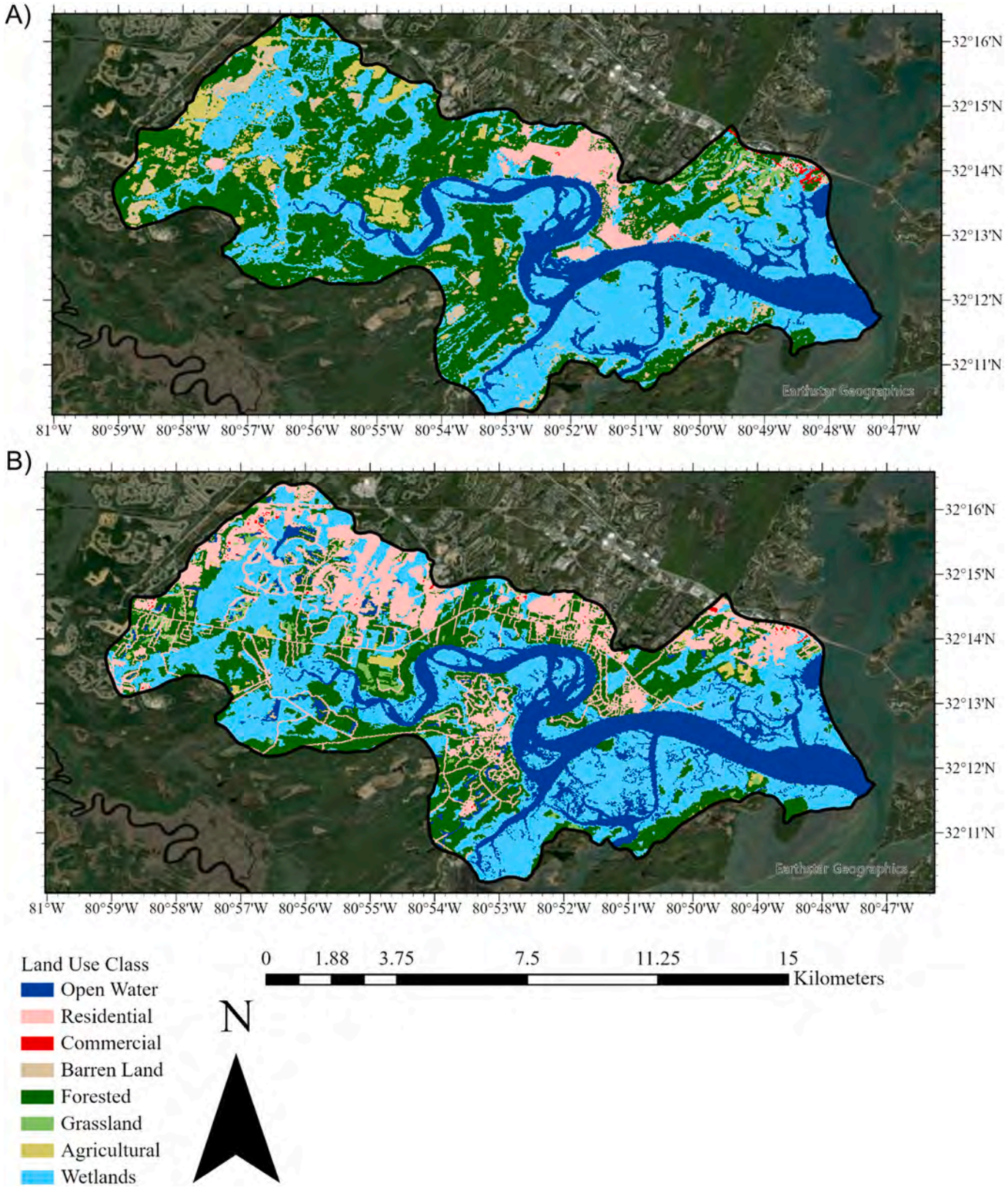


**Fig. 2.** Land-use change within the May River watershed from (A) 1992 to (B) 2016. Dark blue denotes open water, light blue denotes wetlands, pink denotes residential land-use, red denotes commercial land-use, tan denotes barren land, dark green denotes forested land, light green denotes grassland, and yellow denotes agricultural land-use. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

**Table 1**
The percent land-use in 1992 and 2016 within the May River Watershed, SC.

| Land-use class | 1992 | 2016 |
|---|---|---|
| Open water | 13.9% | 18.2% |
| Residential | 4.5% | 17.9% |
| Commercial | 0.3% | 0.2% |
| Barren land | 3.7% | 0.2% |
| Forested | 36.0% | 24.5% |
| Grassland | 0.9% | 1.7% |
| Agricultural | 4.2% | 0.9% |
| Wetlands | 36.5% | 36.3% |

development and annexation of surrounding areas. This change equated to a 2696% population growth rate in just 27 years (US Census Bureau, 2019). Over the past two decades, land-use within the watershed has changed drastically, with an increase in developed land and a decrease in forested land (Homer et al., 2012). The associated expansion of housing, roads, commercial infrastructure, and increased recreational use of the May River have resulted in an increased risk to the health of the estuary and its natural resources.

In 2009, the South Carolina Department of Health and Environmental Control (SCDHEC) restricted harvesting oysters in the upper portions of the May River estuary, SC due to elevated levels of fecal coliform. In response to these restrictions, in 2011, the Town of Bluffton, in conjunction with a consultant team and local stakeholders, developed the May River Watershed Action Plan Advisory Committee (WAPAC). This organization detailed a plan of action to help reduce fecal coliform loadings in the river and help conserve the watershed (AMEC et al., 2011). One such initiative was the microbial source tracking program, which has revealed fecal coliform sources stemming from pet waste, wildlife, and humans (i.e. septic systems). Currently, agricultural input is not of concern as there are no large-scale farming or concentrated animal feeding operations occurring within the watershed. As a result of this degradation, the first objective of our research was to investigate factors that influenced salinity and fecal coliform levels from 1999 to 2017. These factors included temporal (year, season, lunar phase, tidal phase), geographical (distance from the mouth of the river), and environmental parameters. Our second objective was to explore how changes in salinity and fecal coliform levels along the May River related to changes in human population and land-use.

## 2. Methods and materials

### 2.1. Study area

The May River (32°12′49.46″N, 80°52′23.14″W), SC, is a large subtidal river estuary that is approximately 22 km long and 0.01 km wide near the headwaters and 1 km wide at the mouth (Fig. 1). The water depth near the headwaters ranges from ~3 to 7 m while near the mouth it ranges from ~4 to 18 m. Bordering the river and creeks are intermittent oyster rubble and live oyster reefs (i.e. eastern oyster) and vast areas of salt marsh composed of smooth cord grass *Spartina alterniflora*. This estuary is strongly influenced by ~2.5 to 3 m semi-diurnal tides. Additionally, the region experiences higher mean levels of rainfall during the spring and summer, and lower mean rainfall levels in the fall and winter. In recent years, the region has been impacted by tropical storms and hurricanes occurring mainly in late summer and few in early fall with a total of 13 named storms making landfall on South Carolina's coastline from 2009 to 2017. However, there was not a relationship between yearly rainfall levels and the yearly number of tropical storms and hurricanes that impacted the region.

The May River is directly bordered primarily by non-forested wetlands; however, within the watershed, land-use varies widely and includes open water, residential, commercial, barren land, forested, grassland, agricultural, and wetlands (Fig. 2; Homer et al., 2012). From 1992 to 2016, the amount of residential land-use increased by ~13%, while the amount of forested land decreased by ~11.5% (Table 1; Fig. 2). In 1992, the headwaters were surrounded primarily by wetlands and forested land; in 2016, the headwaters were surrounded primarily by residential land.

In 2009, the shellfish harvesting classification at the station located closest to the headwaters (i.e. 19-19) was downgraded due to increasing fecal coliform levels. This observation prompted the establishment of new stations to monitor salinity and fecal coliform in the headwaters (i.e. 19-19A, 19-19B, and 19-19C). Currently, the five stations (i.e. 19-19, 19-19A, 19-19B, 19-19C, and 19-24) located near the headwaters are classified as a "Restricted Area" (Moody, 2016).

### 2.2. Salinity and fecal coliform measurements

The South Carolina Department of Health and Environmental Control (SCDHEC) recorded salinity and fecal coliform data as part of their shellfish-monitoring program. A SCDHEC field team measured salinity in situ using a refractometer and collected water samples for fecal coliform analysis following guidelines outlined in the National Shellfish Sanitation Program (2017). SCHDEC teams collected samples of water at each shellfish monitoring site and conducted an A-1M 10 Tube Decimal Dilution Method. Results of these analyses generate a Most Probable Number (MPN), which is a statistically derived means of estimating the amount of bacteria per unit of water. In this program, SCDHEC analyzes 100 mL of water per sample. The MPN is determined through both positive and negative results from a series of fermentation tubes.

### 2.3. Statistical analysis of SCDHEC shellfish monitoring data

SCDHEC compiled monthly salinity and fecal coliform measurements from 1999 until 2017 at seven stations along the May River (19-19, 19-24, 19-16, 19-18, 19-25, 19-01, and 19-12) with four additional stations (19-19A, 19-19B, 19-19C, and 19-26) added in 2009 (Fig. 1). We measured the distance of each station from the mouth of the river using Google Earth Pro software (Google LLC, Mount View, CA). Stations 19-19, 19-19A, 19-19B, 19-19C, 19-24, 19-16, 19-26, 19-18, 19-25, 19-01, and 19-12 are 22.91, 21.72, 19.84, 18.58, 16.31, 14.97, 13.44, 12.41, 9.81, 8.58, and 5.60 km from the mouth of the May River, respectively. In addition to salinity and fecal coliform, SCDHEC measured tidal phase at each station, which was categorized into eight categories: early rising, mid rising, late rising, high, early falling, mid falling, late falling, and low tides.

Data we utilized in this analysis, but not provided by SCDHEC, included Oceanic Niño Index (ONI), rainfall, population, lunar cycle, and season. The Oceanic Niño Index a monthly temperature anomaly in the equatorial Pacific, served as an indicator of the El Niño Southern Oscillation (ENSO). When the anomaly is positive, El Niño conditions dominate; when the anomaly is negative, La Niña dominates. These data originated from the National Oceanic and Atmospheric Administration (NOAA) database (https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml). We used daily rainfall data provided by NOAA rain gauges located within the May River watershed (www.ncdc.noaa.gov/cdoweb/search); continuous data were only available from 2009 to 2017. To create a monthly value, we totaled the rainfall between SCDHEC sampling days. For the annual population levels of Bluffton, we used data obtained from the US Census Bureau (https://www.census.gov/programs-surveys/popest/data/data-sets.html). Season was divided into four categories (winter, spring, summer, and fall) using the solstice and equinox dates for each year. The lunar cycle was divided into four categories: first quarter (lunar days 5-11), full moon (lunar days 12-19), last quarter (lunar days 20-26), and new moon (lunar days 27-4) (Eggleston et al., 1998).

To understand historical trends, we investigated how temporal (e.g. year, season, lunar phase, and tidal phase), geographical (e.g. distance from the mouth of the river), environmental (e.g. rainfall, ONI), and population factors influenced salinity and fecal coliform levels. We used

general linear models (GLM) and correlation tests to understand the effects of these variables on salinity and fecal coliform. Statistical analyses were conducted using SPSS Statistics 24 software (IBM Corporation, Armonk, NY, USA). Since we did not have rainfall data from 1999 to 2009, we performed two models to investigate how factors influenced salinity. The first model contained data from the longer period 1999 to 2017 and assessed the influence that the distance from the mouth of the river (using the seven original stations), year, season, lunar phase, tidal phase, and ONI had on salinity. The second model contained data from the shorter period 2009 to 2017 and assessed the influence that the distance from the mouth of the river (using all eleven stations), year, season, lunar phase, tidal phase, ONI, and rainfall had on salinity. Water temperature was not included in the GLMs, as SCDHEC measurements were not available at each station. We did not include population in the GLMs, since population data were assessed yearly, and SCDHEC sampling occurred monthly.

Since we did not have rainfall data from 1999 to 2009 and because salinity and rainfall exhibited collinearity, we performed three separate models to investigate how factors influenced fecal coliform. The first model contained data from 1999 to 2017 and assessed the influence that the distance from the mouth of the river (using the seven original stations), year, season, lunar phase, tidal phase, ONI, and salinity had on fecal coliform. The second model contained data from 2009 to 2017 and assessed the influence that the distance from the mouth of the river (using all eleven stations), year, season, lunar phase, tidal phase, ONI, and salinity had on fecal coliform. The third model contained data from 2009 to 2017 and assessed the influence that the distance from the mouth of the river (using all eleven stations), year, season, lunar phase, tidal phase, ONI, and rainfall had on fecal coliform.

We performed correlation analyses to determine the relationships between salinity (and salinity variability) and ONI, rainfall, population, or year for each SCDHEC station. We also performed correlation analyses to determine the relationships between fecal coliform levels and salinity, population, or year for each SCDHEC station. When data were normally distributed, we used Pearson's correlation tests; when data were not normally distributed, we performed Kendall tau_b correlation tests. To ensure that we were making an accurate comparison across all stations, when one or more stations were not normally distributed, we conducted the more conservative, non-parametric Kendall's tau_b test. To understand historical trends in salinity and fecal coliform at each station, we performed a Kendall's tau-b correlation using the 2-year centered salinity moving average, which filtered the signal associated with ONI. We also performed a Kendall's tau-b correlation on fecal coliform at each station using a 30-point running geometric mean to determine if the stations exceeded SCDHEC's approved limit from 1999 until 2017. We conducted Pearson's and Kendall tau_b correlation tests to understand the relationship between the annual population of Bluffton and the annual salinity and fecal coliform means, respectively, for each station.

Normality was determined through examining the histograms, skewness, and kurtosis of the datasets and their residuals. For salinity's GLMs, datasets had an absolute skewness value <2 and an absolute kurtosis value <7 indicating normal distributions (Ghasemi and Zahediasl, 2012). For fecal coliform's GLMs, to achieve normality, we log transformed the data. Equality of variances was determined by conducting a Levene's test. Post-hoc tests determined significant differences between group means for each categorical variable. Tukey's honest significant difference (HSD) test was used for data with equality of variances, while a Dunnett's C test was used for data that violated this assumption.

## 3. Results

### 3.1. Salinity

From 1999 to 2017, we found that distance from the mouth of the river, year, season, lunar cycle, tidal cycle, and ONI influenced salinity levels (Table 2). Year influenced salinity the most with a $\eta^2$ of 0.293, while lunar cycle had the smallest influence on salinity with a $\eta^2$ of 0.006. From 2009 to 2017, we determined that distance from the mouth of the river, year, season, tidal cycle, rainfall, and ONI influenced salinity (Table 2). Year had the largest influence on salinity with a $\eta^2$ of 0.299, while tidal cycle had the smallest influence on salinity with a $\eta^2$ of 0.027. For both datasets, these factors helped explain 41% and 59% of the salinity variability, respectively, in the May River.

Distance from the mouth of the river influenced salinity dramatically. For both datasets, we found that mean salinity increased from the headwaters to the mouth (Fig. 3). Samples taken at stations closest to the headwaters had the lowest mean salinity and largest range in salinity for the 1999–2017 dataset (i.e. mean salinity was 27.23‰ and the range was 31.00‰ at Station 19-19) and the 2009–2017 dataset (i.e. mean salinity was 26.16‰ and the range was 30.00‰ at Station 19-19). Samples taken closest to the mouth had the highest mean salinity and

**Table 2**
Results of general linear models that tested the significance of specific factors on long-term salinity monitoring in the May River, SC. Values in **bold** are significant $p < 0.05$.

| | df | Partial $\eta^2$ | F | p |
|---|---|---|---|---|
| *1999 to 2017* | | | | |
| Year | 18 | 0.293 | 35.145 | **0.000** |
| Distance from the mouth of the river (km) | 1 | 0.088 | 147.685 | **0.000** |
| Season | 3 | 0.054 | 28.831 | **0.000** |
| Tidal cycle | 7 | 0.022 | 4.951 | **0.000** |
| Oceanic Nino Index | 1 | 0.017 | 26.861 | **0.000** |
| Lunar cycle | 3 | 0.006 | 2.943 | **0.032** |
| R squared | 0.41 | | | |
| *2009 to 2017* | | | | |
| Year | 8 | 0.299 | 60.295 | **0.000** |
| Distance from the mouth of the river (km) | 1 | 0.207 | 294.420 | **0.000** |
| Rainfall | 1 | 0.151 | 200.553 | **0.000** |
| Season | 3 | 0.103 | 43.126 | **0.000** |
| Oceanic Nino Index | 1 | 0.078 | 95.431 | **0.000** |
| Tidal cycle | 7 | 0.027 | 4.478 | **0.000** |
| Lunar cycle | 3 | 0.003 | 1.155 | 0.326 |
| R squared | 0.59 | | | |

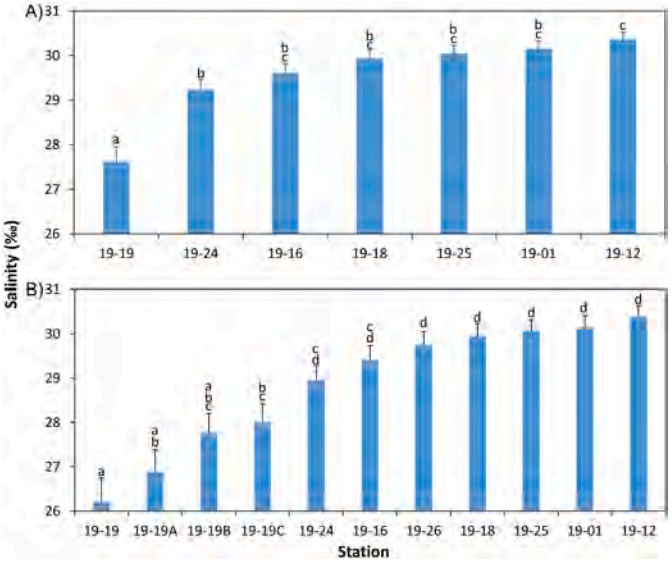


**Fig. 3.** Mean salinity (‰) at each SCDHEC shellfish monitoring station from (A) January 1999 until December 2017 and (B) January 2009 until December 2017. Stations that share a letter are not significantly different from each other.

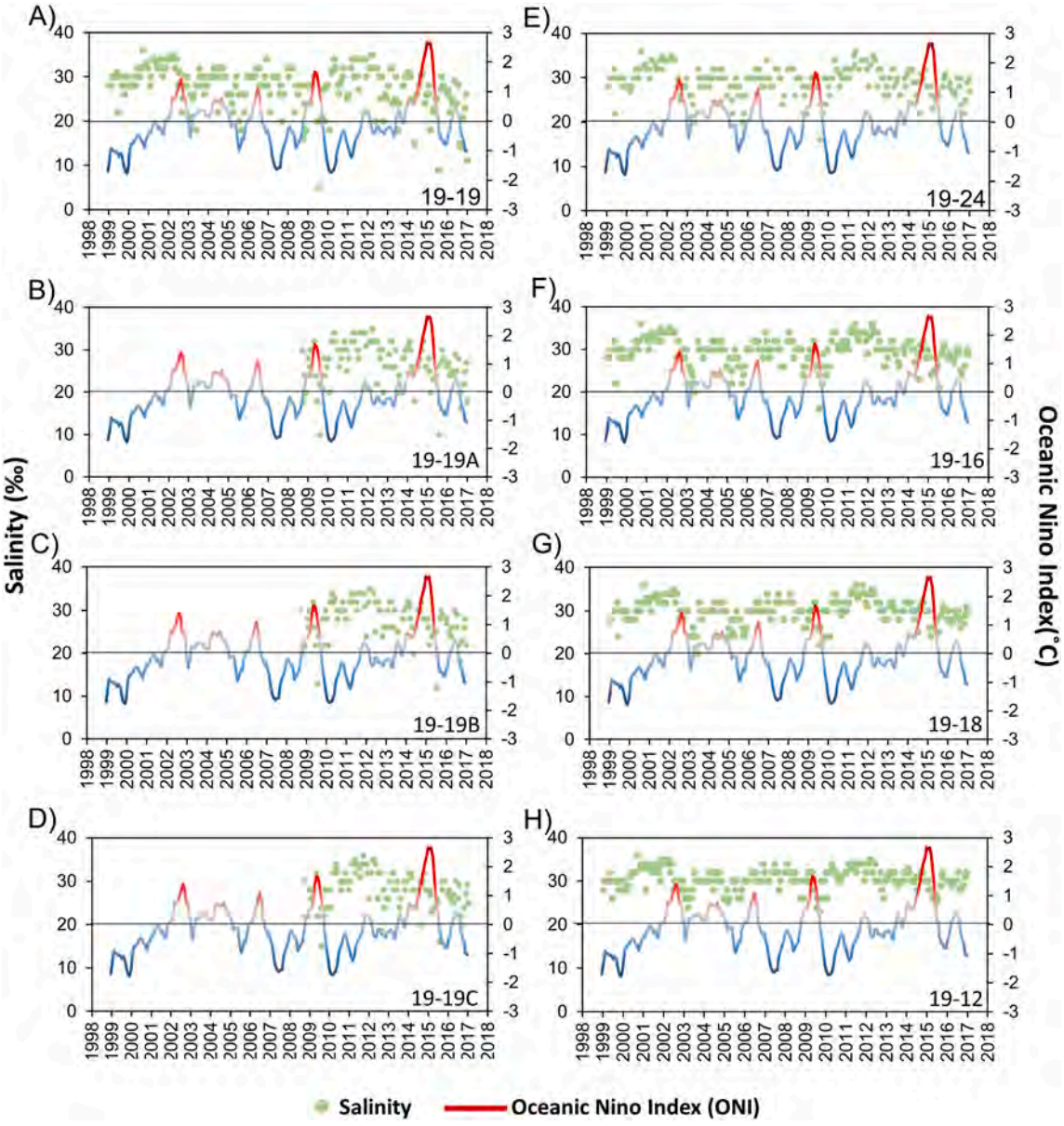


**Fig. 4.** SCDHEC monthly salinity (‰) measurements at eight of the eleven SCDHEC stations along the May River, SC, USA from January 1999 until December 2017. Oceanic Niño Index (°C) is plotted on the secondary y-axis. The blue sections of the line indicate La Niña phases, while the red sections of the line denote El Niño phases. Stations 19-19, 19-19A, 19-19B, and 19-19C were located closer to the source, stations 19-24 and 19-16 were located along the middle of the May River, and stations 19-18 and 19-12 were located closer to the mouth. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

**Table 3**
Kendall's tau_b ($T_b$) correlation comparing year versus salinity standard error and Oceanic Nino Index (ONI) versus salinity from 1999 to 2017 at each station in the May River, SC. Values in **bold** are significant at $p < 0.05$.

| | Year vs. standard error | | ONI vs. salinity | |
|---|---|---|---|---|
| | $T_b$ | p | $T_b$ | p |
| 19-19 | 0.532 | **0.001** | −0.310 | 0.519 |
| 19-24 | 0.180 | 0.916 | −0.077 | 0.110 |
| 19-16 | −0.070 | 0.674 | −0.060 | 0.209 |
| 19-18 | −0.240 | 0.151 | −0.082 | 0.092 |
| 19-25 | −0.146 | 0.382 | −0.109 | **0.024** |
| 19-01 | −0.201 | 0.408 | −0.098 | **0.043** |
| 19-12 | −0.176 | 0.294 | −0.101 | **0.039** |

the smallest range in salinity for the 1999–2017 dataset (i.e. mean salinity was 30.36‰ and the range was 13.00‰ at Station 19-12) and the 2009–2017 dataset (i.e. mean salinity was 30.39‰ and the range was 12.00‰ at Station 19-12).

We found that year had the greatest influence on salinity levels in the May River (Table 2). Mean salinity for each year fluctuated in a cyclical pattern from 1999 to 2017 possibly due to ENSO (Fig. 4). We determined that years with positive ONIs (i.e. wetter years) decreased salinity, while years with negative ONIs (i.e. drier years) increased salinity (Table 3; Fig. 4). Salinity levels correlated negatively with ONI, and this pattern was most dramatic at stations near the mouth of the May River (Table 3). We detected a cyclical pattern in the long-term salinity dataset that may be attributed to El Niño and La Niña episodes (Fig. 4). The periods of dry weather and warm temperatures associated with La Niña may have increased salinity levels, while the periods of wet weather and cool temperatures associated with El Niño may have decreased salinity

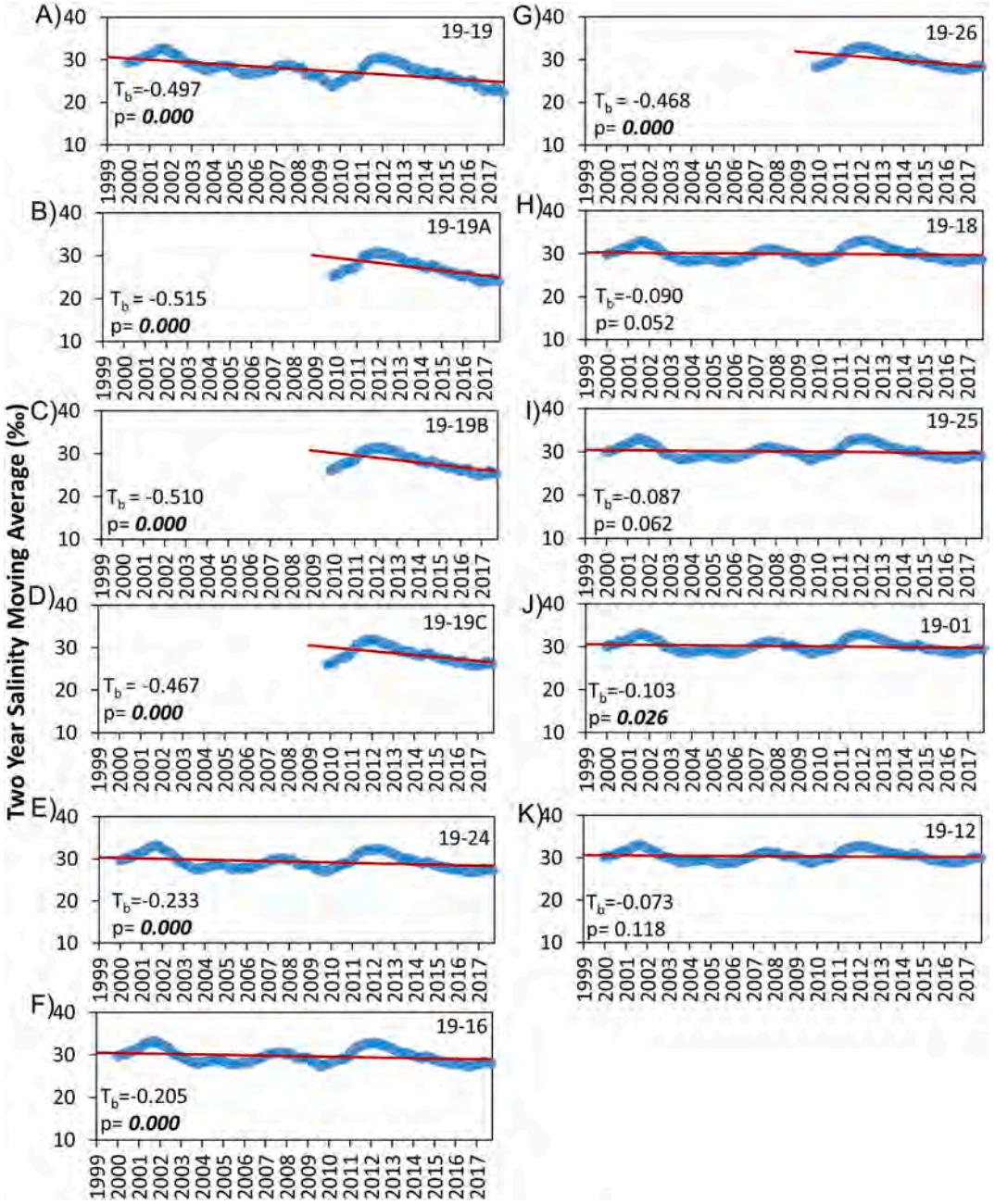


**Fig. 5.** Two year moving average of salinity (‰) plotted from January 1999 until December 2017 at SCDHEC stations (A) 19-19, (B) 19-19A, (C) 19-19B, (D) 19-19C, (E) 19-24, (F) 19-16, G) 19-26, (H) 19-18, (I) 19-25, (J) 19-01, and (K) 19-12. Stations 19-19A, 19-19B, 19-19C, and 19-26 were added in 2009.

levels.

We observed that other temporal factors influenced salinity including season, lunar cycle, and tidal cycle. Fall had significantly higher salinity levels compared to the other seasons (spring, summer, and winter) due to the lowest rainfall (Fig. S1A). Although summer had the highest amount of rainfall, it did not have the lowest salinity. Salinity was the highest during the new and full moons as compared to the first and last quarters (Fig. S1B). We observed increases in salinity during the higher tidal phases (early rising, mid rising, late rising, and high tide) and decreases during the lower tidal phases (early falling, mid falling, late falling, and low tide) (Fig. S1C). Ocean water floods the river during the rising tide, increasing the salinity, while on the low tide, a combination of receding oceanic water and fresh, groundwater intrusion lowers the salinity.

We determined that the May River has undergone long-term changes in salinity levels and variability, which correlated with rainfall and population. We detected an increase in salinity variability in the headwaters (at station 19-19) from 1999 to 2017 (Table 3; Fig. S2). Population, which can be an indicator of impervious surface, increased rapidly in the Town of Bluffton from 1999 to 2017 and correlated negatively with salinity in the headwaters (station 19-19) (Table 4). Additionally, we showed that salinity negatively correlated with rainfall at all eleven stations in the 2009 to 2017 dataset with stronger negative correlations in the headwaters (Table 4). If we reduced the salinity signal from ENSO (which causes more rainfall in the Southeast) by applying a 2-year centered moving average for each station, there is evidence that many of the sampling locations along the May River have undergone a significant decrease in salinity from 1999 to 2017 (Fig. 5).

**Table 4**
Pearson's (r) or Kendall's tau_b ($T_b$) correlation test comparing Bluffton's population versus salinity (1999–2017) and rainfall versus salinity (2009–2017) at each station in May River, SC. Values in **bold** are significant at $p < 0.05$.

| | Population vs. salinity | | Rainfall vs. salinity | |
|---|---|---|---|---|
| | r | p | $T_b$ | p |
| 19-19 | −0.662 | **0.002** | −0.281 | **0.000** |
| 19-19A[a] | −0.528 | 0.144 | −0.287 | **0.000** |
| 19-19B[a] | −0.499 | 0.171 | −0.280 | **0.000** |
| 19-19C[a] | −0.367 | 0.331 | −0.255 | **0.000** |
| 19-24 | −0.306 | 0.202 | −0.260 | **0.000** |
| 19-16 | −0.237 | 0.329 | −0.237 | **0.000** |
| 19-26[a] | −0.407 | 0.277 | −0.231 | **0.000** |
| 19-18 | −0.121 | 0.623 | −0.219 | **0.000** |
| 19-25 | −0.107 | 0.662 | −0.230 | **0.000** |
| 19-01 | −0.117 | 0.632 | −0.255 | **0.000** |
| 19-12 | −0.086 | 0.728 | −0.241 | **0.000** |

[a] Denotes stations that were added in 2009, so correlations performed between 2009 and 2017.

**Table 5**
Results of general linear models that tested the significance of specific factors on long- term fecal coliform monitoring in the May River, SC. All fecal coliform measurements were log transformed. Values in **bold** are significant at $p < 0.05$.

| | df | Partial $\eta^2$ | F | p |
|---|---|---|---|---|
| *1999 to 2017* | | | | |
| Distance from the mouth of the river (km) | 1 | 0.161 | 287.838 | **0.000** |
| Year | 18 | 0.101 | 9.419 | **0.000** |
| Salinity | 1 | 0.100 | 166.787 | **0.000** |
| Tidal cycle | 7 | 0.036 | 7.965 | **0.000** |
| Oceanic Nino Index | 1 | 0.017 | 26.323 | **0.000** |
| Season | 3 | 0.006 | 3.060 | **0.027** |
| Lunar cycle | 3 | 0.005 | 2.379 | 0.068 |
| R squared | 0.39 | | | |
| *2009 to 2017 including salinity* | | | | |
| Distance from the mouth of the river (km) | 1 | 0.347 | 588.172 | **0.000** |
| Tidal cycle | 7 | 0.106 | 18.822 | **0.000** |
| Year | 8 | 0.055 | 8.048 | **0.000** |
| Salinity | 1 | 0.066 | 77.791 | **0.000** |
| Lunar cycle | 3 | 0.012 | 4.627 | **0.003** |
| Oceanic Nino Index | 1 | 0.009 | 10.266 | **0.001** |
| Season | 3 | 0.005 | 1.734 | 0.158 |
| R squared | 0.55 | | | |
| *2009 to 2017 including rainfall* | | | | |
| Distance from the mouth of the river (km) | 1 | 0.450 | 907.372 | **0.000** |
| Tidal cycle | 7 | 0.116 | 20.729 | **0.000** |
| Year | 8 | 0.051 | 7.491 | **0.000** |
| Lunar cycle | 3 | 0.012 | 4.321 | **0.003** |
| Rainfall | 1 | 0.008 | 8.580 | **0.003** |
| Season | 3 | 0.005 | 1.929 | 0.132 |
| Oceanic Nino Index | 1 | 0.001 | 1.005 | 0.316 |
| R squared | 0.52 | | | |

### 3.2. Fecal coliform

For the first model (1999–2017), we determined that distance from the mouth of the river, year, season, tidal cycle, salinity, and ONI influenced fecal coliform levels (Table 5). Distance influenced fecal coliform the most with a $\eta^2$ of 0.161, while season had the smallest influence on fecal coliform with a $\eta^2$ of 0.006. For the second model (2009–2017; salinity included in the GLM), we found that distance from the mouth of the river, year, lunar cycle, tidal cycle, salinity and ONI significantly influenced fecal coliform levels (Table 5). Distance influenced fecal coliform the most with a $\eta^2$ of 0.347, while ONI had the smallest influence on fecal coliform with a $\eta^2$ of 0.009. For the third model (2009–2017; rainfall included in the GLM), we found that

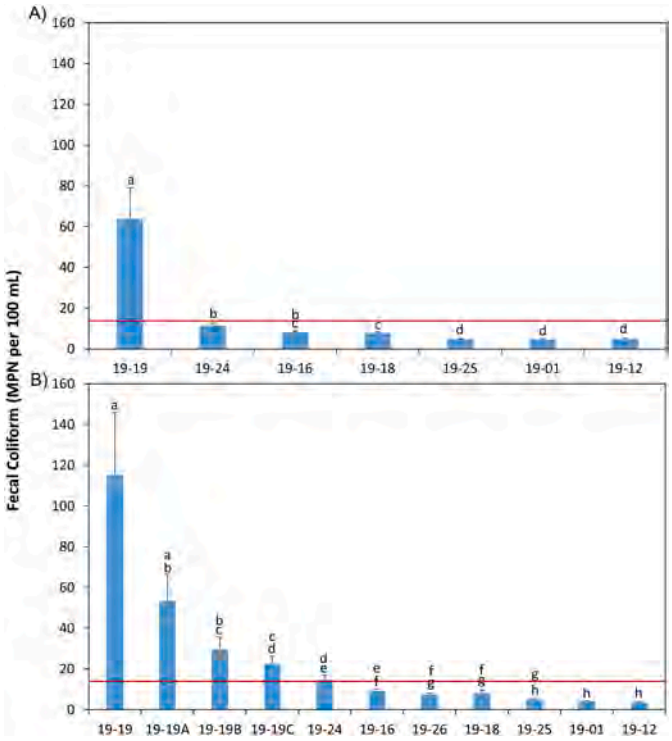


**Fig. 6.** Mean fecal coliform levels (FCMPN/100 mL) at each SCDHEC shellfish monitoring station from (A) January 1999 until December 2017 and (B) January 2009 until December 2017. The red line indicates SCDHEC's restriction of shellfish harvesting if levels exceed 14 FCMPN/100 mL. Stations that share a letter are not significantly different from each other. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

distance from the mouth of the river, year, lunar cycle, tidal cycle, and rainfall influenced fecal coliform levels (Table 5). Distance influenced fecal coliform the most with a $\eta^2$ of 0.450, while rainfall had the smallest influence on fecal coliform with a $\eta^2$ of 0.008. For the models, these factors helped to explain 39%, 55%, and 52% of the fecal coliform variability, respectively, in the May River, SC.

We observed that the distance from the mouth of the river had the greatest influence on fecal coliform for all three datasets (Table 5). Mean fecal coliform levels were the highest in the headwaters and decreased towards the mouth (Fig. 6). The fecal coliform levels closest to the headwaters were well above the approved SCDHEC fecal coliform maximum of 14 MPN per 100 mL; when the geometric mean of the most recent 30 samples exceeds this point, the shellfish beds are restricted for harvesting (NSSP, 2017). From 1999 to 2017, the locations closest to the headwaters had the highest mean fecal coliform level (63.66 MPN/100 mL at Station 19-19) and the largest range (1698.10 MPN/100 mL at Station 19-19). During this period, we observed that fecal coliform levels closer to the mouth had lower means and smaller ranges; station 19-01 had the lowest mean (4.52 MPN/100 mL) and station 19-25 had the smallest range (31.3 MPN/100 mL).

We determined that year was a significant factor that influenced fecal coliform levels in the May River (Table 5). Since 1999, the mean fecal coliform levels near the headwater stations have increased dramatically, as high as 3150% at station 19-19. At stations 19-19, 19-19A, 19-19B, 19-19C, and 19-24 (locations closest to the headwaters), fecal coliform levels have been above SCDHEC's approved limit in recent years (Figs. 7, S3-S4). Since ONI influenced fecal coliform levels (Table 5), we removed the signal from ENSO (by using a 2-year centered moving average) to better understand the strength of the change (as measured by the magnitude of the Kendall's tau-b correlation coefficient). Additionally, we determined which stations have significantly

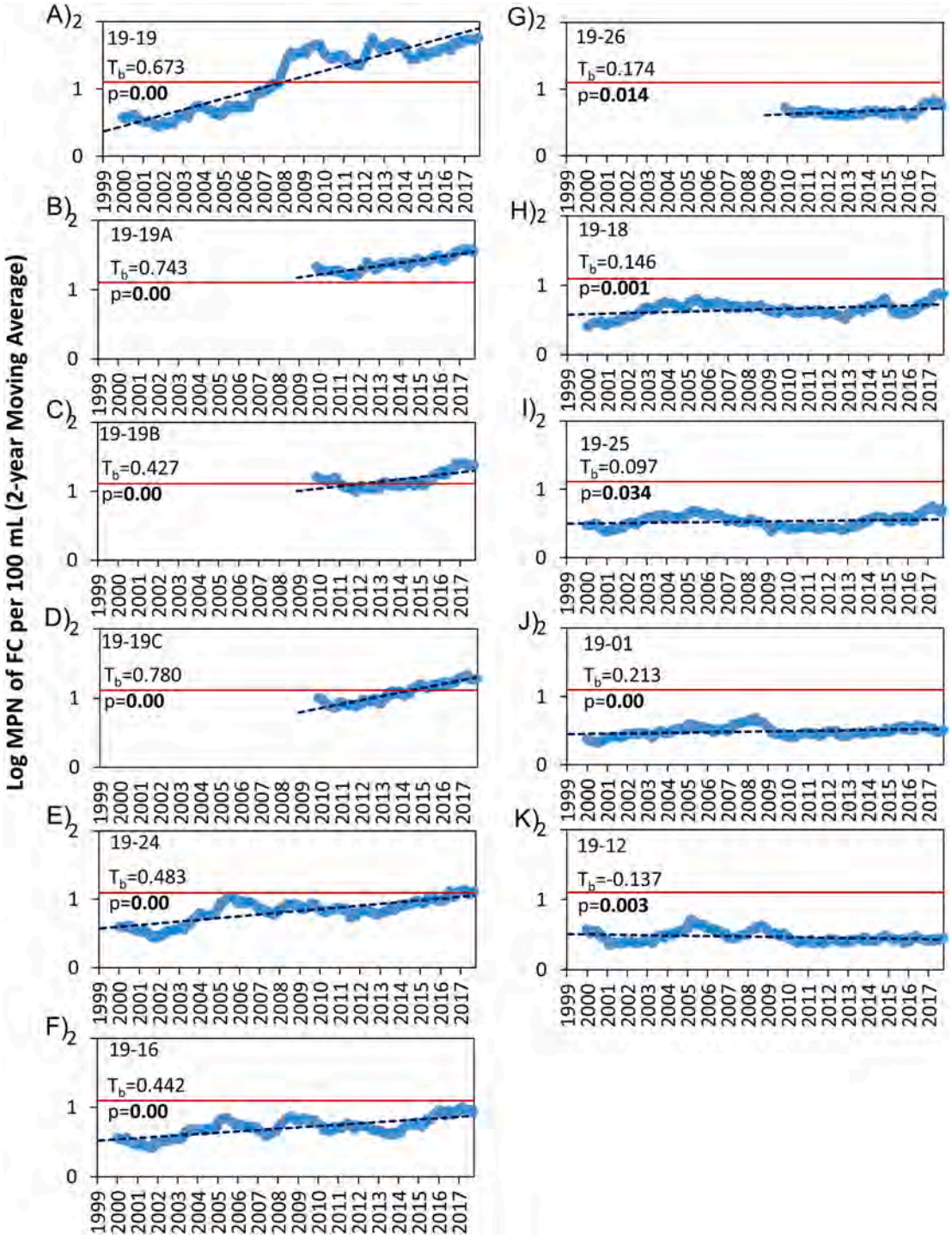


**Fig. 7.** Two year centered moving average of fecal coliform (log FCMPN/100 mL) plotted from January 1999 until December 2017 at SCDHEC stations (A) 19-19, (B) 19-19A, (C) 19-19B, (D) 19-19C, (E) 19-24, (F) 19-16, G) 19-26, (H) 19-18, (I) 19-25, (J) 19-01, and (K) 19-12. Stations 19-19A, 19-19B, 19-19C, and 19-26 were added in 2009. The red line indicates SCDHEC's restriction of shellfish harvesting if levels exceed log (14 FCMPN/100 mL). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

increased over time and exceeded SCDHEC's approved limit from 1999 until 2017 by using the conventional, 30-point running geometric mean. Since 1999, fecal coliform levels have significantly increased throughout the river with the most drastic changes occurring in the headwaters (Figs. 7, S3-S4).

We observed that fecal coliform levels were higher when salinity levels were lower, and that this negative relationship was strongest at sampling stations closest to the headwaters (Table 6; Fig. 8). Additionally, we found that fecal coliform levels increased as population levels grew in the Town of Bluffton, and that this positive relationship was strongest at sampling locations closest to the headwaters (Table 6).

## 4. Discussion

We identified spatial, temporal, environmental, and anthropogenic factors that influenced long-term salinity and fecal coliform levels in the

**Table 6**
Kendall's tau_b ($T_b$) correlation comparing salinity versus fecal coliform and population versus fecal coliform at each station in the May River, SC from 1999 to 2017.
All fecal coliform measurements were log transformed. Values in **bold** are significant at $p < 0.05$.

| | Salinity vs. fecal coliform | | Population vs. fecal coliform | |
|---|---|---|---|---|
| | $T_b$ | p | $T_b$ | p |
| 19-19 | −0.325 | **0.000** | 0.754 | **0.002** |
| 19-19A[a] | −0.140 | 0.050 | 0.667 | **0.012** |
| 19-19B[a] | −0.252 | **0.000** | 0.278 | 0.297 |
| 19-19C[a] | −0.130 | 0.069 | 0.500 | 0.061 |
| 19-24 | −0.254 | **0.000** | 0.556 | **0.001** |
| 19-16 | −0.179 | **0.000** | 0.474 | **0.005** |
| 19-26[a] | −0.053 | 0.459 | 0.197 | 0.532 |
| 19-18 | −0.117 | **0.022** | 0.205 | 0.221 |
| 19-25 | −0.118 | **0.021** | 0.076 | 0.649 |
| 19-01 | −0.120 | **0.020** | 0.298 | 0.074 |
| 19-12 | −0.125 | **0.015** | −0.228 | 0.172 |

[a] Denotes stations that were added in 2009, so correlations performed between 2009 and 2017.

May River estuary. From 1999 to 2017, we found that salinity levels decreased in the headwaters of the river, while variability increased. Salinity levels were influenced by temporal cycles (i.e. tidal, lunar, seasonal and annual) and correlated negatively with rainfall, population, and ENSO. From 1999 to 2017, we found that fecal coliform levels increased dramatically in the headwaters of the May River. Fecal coliform concentrations were influenced by temporal cycles (i.e. tidal, seasonal, and annual cycles) and correlated positively with rainfall, salinity, population, and El Niño Southern Oscillation. We hypothesize that increasing population growth, which has led to land-use change (an increase in residential land and a decrease in forested land), coupled with more frequent and intense El Niño events may lead to further degradation of the May River watershed. While we did not include land-use or sedimentation within our models, research in similar watersheds suggests that both factors significantly influence fecal coliform levels and should be integrated in future studies.

### 4.1. Salinity levels have decreased in the May River

We found that various spatial and temporal factors influenced salinity levels in the May River estuary. Salinity levels were lower and more variable towards the source of the May River. Studies in other estuaries have found that locations closer to the headwaters are typically more sensitive to factors that influence salinity (rainfall, runoff, tidal cycles, and lunar cycles), while areas located closer to the mouth are buffered by larger volumes of water (Van Dolah et al., 2008). Beyond shorter, temporal cycles (tidal and lunar phases), we discovered that

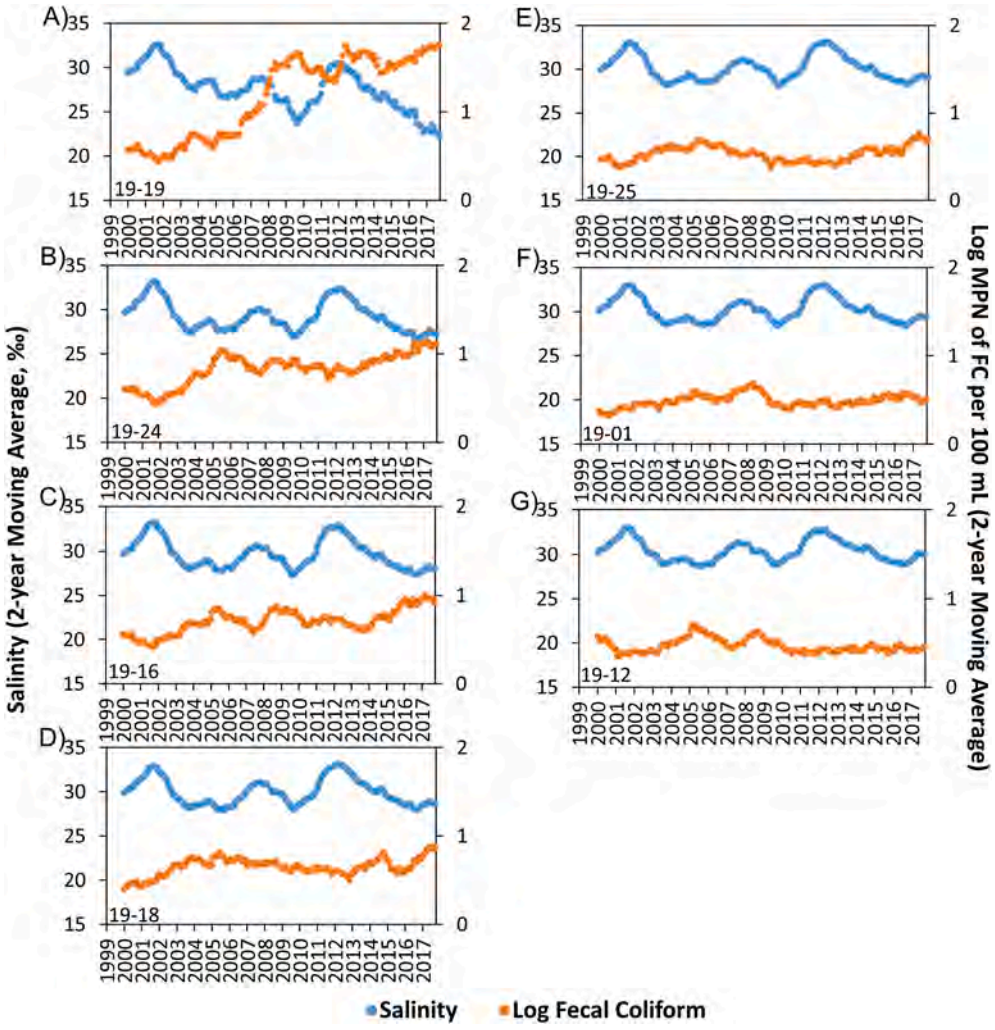


**Fig. 8.** Two year centered moving averages of fecal coliform (log FCMPN/100 mL) and salinity (‰) plotted in orange and blue respectively from January 1999 until December 2017 at seven SCDHEC stations: (A) 19-19, (B) 19-24, (C) 19-16, (D) 19-18, (E) 19-25, (F) 19-01, and (G) 19-12. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

salinity in the May River varied over longer, seasonal scales. Research in other estuaries has illustrated that interactions between evaporation and rainfall influence the seasonal salinity patterns in estuaries (Seager et al., 2009; Hollins and Ridd, 1997). In the May River, this interaction explains why summer (a season with the highest rainfall amounts but the highest rates of evaporation) did not have the lowest salinity levels. In addition, we found evidence that salinity levels varied yearly and correlated with ENSO patterns. El Niño Southern Oscillation affects the southeastern United States and exhibits inter-annual variability, with El Niño and La Niña episodes alternating every 2–7 years (D'Arrigo and Jacoby, 1991). In the southeast US, El Niño episodes exhibit decreased temperatures and increased rainfall (which decrease salinity), while La Niña episodes exhibit higher temperatures and decreased rainfall (which increase salinity) (Yu et al., 2012; Ropelewski and Halpert, 1986). Our findings in the May River estuary are similar to the findings observed in Florida Bay and along the Texas coast, which showed increased salinity levels occurring during La Niña episodes and decreased levels during El Niño episodes (Tolan, 2007; Cronin et al., 2002).

Over the last two decades, as the population of Bluffton has increased, salinity levels have decreased but salinity variability has increased in the May River estuary, with a more dramatic change in the headwaters. A combination of increased watershed development and climate change may have led to decreased salinity levels (and increased variability) in the headwaters. Developed and deforested lands have higher levels of freshwater input into estuaries, which leads to decreased salinity levels and increased salinity variability (Holland et al., 2004). Additionally, scientific evidence suggests that climate change is resulting in more frequent and intense El Niño events, which can reduce salinity levels in estuaries (Wang et al., 2017; Lee and McPhaden, 2010; Timmermann et al., 1999). Our analysis may indicate that, as both watershed development increases and climate change progresses, there is potential for further decreases in salinity in the headwaters of the May River, SC. However, it is possible that sea level rise could impede these changes (Ross et al., 2015; Barlow and Reichard, 2010).

### 4.2. Fecal coliform levels have increased in the May River

We observed that fecal coliform levels were higher when salinity levels were lower, and that this negative relationship was strongest at sampling stations closest to the headwaters. Additionally, we found that fecal coliform levels in the headwaters increased as population levels grew in Bluffton, and that this positive relationship was strongest at sampling locations closest to the headwaters. As previous research in different estuaries and watersheds have indicated, we suggest that the rising levels of fecal coliform in the May River are associated with the loss of forested land and the increase of impervious surfaces within the watershed (Sanger et al., 2013; Holland et al., 2004). The headwaters can serve as an early warning signal of potential degradation of the entire watershed as they experience a greater sensitivity to factors that influence fecal coliform (rainfall, salinity, and population growth), while areas closer to the mouth are buffered by larger, more stable bodies of water (Van Dolah et al., 2008; Holland et al., 2004). In other watersheds, studies have reported that larger amounts of freshwater input and storm-water runoff decrease salinity levels and increase fecal coliform; in fact, some studies have shown that lower salinity levels increase the survival rate of fecal coliform bacteria (Anderson et al., 2005; Chigbu et al., 2004; Lipp et al., 2001; Šolić and Krstulović, 1992).

Multiple studies have investigated the link between FIB and watershed development (e.g. Schoonover and Lockaby, 2006; Carle et al., 2005; Kelsey et al., 2004; Holland et al., 2004; Frenzel and Couvillion, 2002). In South Carolina and Georgia, studies of tidal creeks surrounded by various forms of land-use (forested, suburban, urban, and industrial) reported a significant increase in fecal coliform contamination when impervious surfaces exceeded 20–30%, largely due to increased storm-water runoff. As pervious surfaces are converted to impervious, it has been shown that the amount of stormwater runoff increases from ~15% to ~60% (Schoonover and Lockaby, 2006; Holland et al., 2004; Bolund and Hunhammar, 1999; Arnold Jr and Gibbons, 1996). Another similar study that sampled for FIB (i.e. fecal coliform, *E. coli*, and enterococcus) in fourteen stream sites in Anchorage, Alaska found higher concentrations of FIB at more populated sites (Frenzel and Couvillion, 2002). These studies indicate that watersheds with more impervious surface contain higher fecal coliform levels and possibly more virulent pathogens.

In addition to septic leakage, which has become a prevalent issue in the May River watershed, we suggest that rising fecal coliform levels in the May River are associated with an additive or synergistic effect involving the loss of forested land, increased impervious surface, and climate change. Transformation of forested land to urbanized areas increases the amount of impervious surface surrounding the watershed, resulting in larger amounts of storm-water runoff entering estuaries at an increased rate (Holland et al., 2004). The loss of wetlands and forests also decreases natural sinks for storm-water runoff, resulting in a decrease in salinity of volume-sensitive waters, which is more favorable for the survival of fecal coliform bacteria. In addition, stronger and more frequent El Niño events, associated with climate change, provide more rainfall to the Southeast, decreasing salinity levels in volume-sensitive waters (Wang et al., 2017; Lee and McPhaden, 2010; Hughen et al., 1999; Timmermann et al., 1999). Our analyses indicate that the additive synergistic nature of urbanization and climate change has led to and may lead to further increases in fecal coliform levels in the May River.

While this study determined that spatial (i.e. distance from the mouth of the river), temporal (i.e. year, season, and tidal cycles), environmental (i.e. salinity, ENSO, and rainfall), and anthropogenic (i.e. population and land-use) parameters influence fecal coliform levels, research suggests that sediment dynamics also play a key role in fecal coliform concentrations. Chen and Liu (2017) found that the settling velocity of suspended sediments was key in influencing fecal coliform levels; slower settling velocities result in higher fecal coliform levels in estuarine systems. Studies in Florida, Arizona, and California suggest that fecal coliform levels are higher in the suspended sediment fractions compared to the levels in the water column (Feng et al., 2016; Rippy et al., 2013; Crabill et al., 1999). Furthermore, Anderson et al. (2005) found that the decay rates of fecal coliform bacteria within sediments are slower than those seen in the water column, suggesting a greater persistence of fecal coliform associated with suspended sediments. These studies provide evidence that sediment dynamics are important when modeling fecal coliform concentrations within a watershed.

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## CRediT authorship contribution statement

**Jamileh Soueidan**: Methodology, Software, Formal Analysis, Writing – Original Draft, Visualization. **Alan Warren**: Conceptualization, Resources, Writing – Reviewing & Editing. **Mike Pearson**: Conceptualization, Investigation, Resources, Writing – Reviewing & Editing. **Eric W. Montie**: Funding Acquisition, Conceptualization, Project Administration, Supervision, Resources, Writing – Original Draft.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## References

Able, K.W., Nemerson, D.M., Bush, R., Light, P., 2001. Spatial variation in Delaware Bay (USA) marsh creek fish assemblages. Estuaries 24 (3), 441–452.

Alford, J. B., Debbage, K. G., Mallin, M. A., & Liu, Z. J. (2016). Surface water quality and landscape gradients in the North Carolina Cape Fear River Basin: the key role of fecal coliform. *Southeastern Geographer*, *56*(4), 428–453.

AMEC, Center for Watershed Protection, Thomas & Hutton, and Ward Edwards. 2011. May River Watershed Action Plan. Prepared for the Town of Bluffton. 126 pp. https://www.townofbluffton.sc.gov/engineering-department/pdfs/may-river-watershed-action-plan.pdf.

Anderson, K.L., Whitlock, J.E., Harwood, V.J., 2005. Persistence and differential survival of fecal indicator bacteria in subtropical waters and sediments. Appl. Environ. Microbiol. 71 (6), 3041–3048.

Arnold Jr., C.L., Gibbons, C.J., 1996. Impervious surface coverage: the emergence of a key environmental indicator. J. Am. Plan. Assoc. 62 (2), 243–258.

Arnone, R.D., Perdek Walling, J., 2007. Waterborne pathogens in urban watersheds. J. Water Health 5 (1), 149–162.

Barlow, P.M., Reichard, E.G., 2010. Saltwater intrusion in coastal regions of North America. Hydrogeol. J. 18 (1), 247–260.

Boesch, D.F., Turner, R.E., 1984. Dependence of fishery species on salt marshes: the role of food and refuge. Estuaries 7 (4), 460–468.

Bolund, P., Hunhammar, S., 1999. Ecosystem services in urban areas. Ecol. Econ. 29 (2), 293–301.

Buckel, J.A., Steinberg, N.D., Conover, D.O., 1995. Effects of temperature, salinity, and fish size on growth and consumption of juvenile bluefish. J. Fish Biol. 47, 696–706.

Bulger, A.J., Hayden, B.P., Monaco, M.E., Nelson, D.M., McCormick-Ray, M.G., 1993. Biologically-based estuarine salinity zones derived from a multivariate analysis. Estuaries 16 (2), 311–322.

Byappanahalli, M.N., Nevers, M.B., Korajkic, A., Staley, Z.R., Harwood, V.J., 2012. Enterococci in the environment. Microbiol. Mol. Biol. Rev. 76 (4), 685–706.

Cahoon, L.B., Hales, J.C., Carey, E.S., Loucaides, S., Rowland, K.R., Toothman, B.R., 2016. Multiple modes of water quality impairment by fecal contamination in a rapidly developing coastal area: southwest Brunswick County, North Carolina. Environ. Monit. Assess. 188 (2), 89.

Cain, R.L., Dean, J.M., 1976. Annual occurrence, abundance and diversity of fish in a South Carolina intertidal creek. Mar. Biol. 36 (4), 369–379.

Caplenas, N.R., Kanarek, M.S., 1984. Thermotolerant non-fecal source Klebsiella pneumoniae: validity of the fecal coliform test in recreational waters. Am. J. Public Health 74 (11), 1273–1275.

Carle, M.V., Halpin, P.N., Stow, C.A., 2005. Patterns of watershed urbanization and impacts on water quality 1. JAWRA Journal of the American Water Resources Association 41 (3), 693–708.

Chen, W.B., Liu, W.C., 2017. Investigating the fate and transport of fecal coliform contamination in a tidal estuarine system using a three-dimensional model. Mar. Pollut. Bull. 116 (1–2), 365–384.

Chigbu, P., Gordon, S., Strange, T., 2004. Influence of inter-annual variations in climatic factors on fecal coliform levels in Mississippi Sound. Water Res. 38 (20), 4341–4352.

Corbett, C.W., Wahl, M., Porter, D.E., Edwards, D., Moise, C., 1997. Nonpoint source runoff modeling a comparison of a forested watershed and an urban watershed on the South Carolina coast. J. Exp. Mar. Biol. Ecol. 213 (1), 133–149.

Crabill, C., Donald, R., Snelling, J., Foust, R., Southam, G., 1999. The impact of sediment fecal coliform reservoirs on seasonal water quality in Oak Creek, Arizona. Water Res. 33 (9), 2163–2171.

Cronin, T.M., Dwyer, G.S., Schwede, S.B., Vann, C.D., Dowsett, H., 2002. Climate variability from the Florida Bay sedimentary record: possible teleconnections to ENSO, PNA and CNP. Clim. Res. 19 (3), 233–245.

D'Arrigo, R.D., Jacoby, G.C., 1991. A 1000-year record of winter precipitation from northwestern New Mexico, USA: a reconstruction from tree-rings and its relation to El Niño and the Southern Oscillation. The Holocene 1 (2), 95–101.

Eggleston, D.B., Lipcius, R.N., Marshall Jr., L.S., Ratchford, S.G., 1998. Spatiotemporal variation in postlarval recruitment of the Caribbean spiny lobster in the central Bahamas: lunar and seasonal periodicity, spatial coherence, and wind forcing. Mar. Ecol. Prog. Ser. 174, 33–49.

Ellis, J.H., Friedman, D.B., Puett, R., Scott, G.I., Porter, D.E., 2014. A qualitative exploration of fishing and fish consumption in the Gullah/Geechee culture. J. Community Health 39 (6), 1161–1170.

Feng, Z., Reniers, A., Haus, B.K., Solo-Gabriele, H.M., Kelly, E.A., 2016. Wave energy level and geographic setting correlate with Florida beach water quality. Mar. Pollut. Bull. 104 (1–2), 54–60.

Freeman, L.A., Corbett, D.R., Fitzgerald, A.M., Lemley, D.A., Quigg, A., Steppe, C.N., 2019. Impacts of urbanization and development on estuarine ecosystems and water quality. Estuar. Coasts 42 (7), 1821–1838.

Frenzel, S.A., Couvillion, C.S., 2002. Fecal-indicator bacteria in streams along a gradient of residential development 1. JAWRA Journal of the American Water Resources Association 38 (1), 265–273.

Ghasemi, A., Zahediasl, S., 2012. Normality tests for statistical analysis: a guide for non-statisticians. Int. J. Endocrin. Metab. 10 (2), 486.

Gunter, G., 1961. Some relations of estuarine organisms to salinity. Limnol. Oceanogr. 6 (2), 182–190.

Hackney, C.T., Burbanck, W.D., Hackney, O.P., 1976. Biological and physical dynamics of a Georgia tidal creek. Chesap. Sci. 17 (4), 271–280.

Henrickson, S.E., Wong, T., Allen, P., Ford, T., Epstein, P.R., 2001. Marine swimming-related illness: implications for monitoring and environmental policy. Environ. Health Perspect. 109 (7), 645–650.

Holland, A.F., Sanger, D.M., Gawle, C.P., Lerberg, S.B., Santiago, M.S., Riekerk, G.H., Zimmermann, L.E., Scott, G.I., 2004. Linkages between tidal creek ecosystems and the landscape and demographic attributes of their watersheds. J. Exp. Mar. Biol. Ecol. 298 (2), 151–178.

Hollins, S., Ridd, P.V., 1997. Evaporation over a tropical tidal salt flat. Mangrove Salt Marshes 1 (2), 95–102.

Homer, C.H., Fry, J.A., Barnes, C.A., 2012. The national land cover database. US Geological Survey Fact Sheet 3020 (4), 1–4.

Hughen, K.A., Schrag, D.P., Jacobsen, S.B., Hantoro, W., 1999. El Niño during the last interglacial period recorded by a fossil coral from Indonesia. Geophys. Res. Lett. 26 (20), 3129–3132.

Jin, G., Englande, A.J., Bradford, H., Jeng, H.W., 2004. Comparison of E. coli, enterococci, and fecal coliform as indicators for brackish water quality assessment. Water Environ. Res. 76 (3), 245–255.

Kawanisi, K., Razaz, M., Kaneko, A., Watanabe, S., 2010. Long-term measurement of stream flow and salinity in a tidal river by the use of the fluvial acoustic tomography system. J. Hydrol. 380 (1–2), 74–81.

Kelsey, H., Porter, D.E., Scott, G., Neet, M., White, D., 2004. Using geographic information systems and regression analysis to evaluate relationships between land use and fecal coliform bacterial pollution. J. Exp. Mar. Biol. Ecol. 298 (2), 197–209.

Korajkic, A., Wanjugi, P., Brooks, L., Cao, Y., Harwood, V.J., 2019. Persistence and decay of fecal microbiota in aquatic habitats. Microbiol. Mol. Biol. Rev. 83 (4).

Labonne, M., Morize, E., Scolan, P., Lae, R., Dabas, E., Bohn, M., 2009. Impact of salinity on early life history traits of three estuarine fish species in Senegal. Estuar. Coast. Shelf Sci. 82 (4), 673–681.

Lankford Jr., T.E., Targett, T.E., 1994. Suitability of estuarine nursery zones for juvenile weakfish (Cynoscion regalis): effects of temperature and salinity on feeding, growth and survival. Mar. Biol. 119, 611–620.

Lee, T., McPhaden, M.J., 2010. Increasing intensity of El Niño in the central-equatorial Pacific. Geophys. Res. Lett. 37 (14).

Lehnert, R.L., Allen, D.M., 2002. Nekton use of subtidal oyster shell habitat in a southeastern US estuary. Estuaries 25 (5), 1015–1024.

Lipp, E.K., Kurz, R., Vincent, R., Rodriguez-Palacios, C., Farrah, S.R., Rose, J.B., 2001. The effects of seasonal variability and weather on microbial fecal pollution and enteric pathogens in a subtropical estuary. Estuaries 24 (2), 266–276.

Mallin, M.A., Williams, K.E., Esham, E.C., Lowe, R.P., 2000. Effect of human development on bacteriological water quality in coastal watersheds. Ecol. Appl. 10 (4), 1047–1056.

Mallin, M.A., Ensign, S.H., McIver, M.R., Shank, G.C., Fowler, P.K., 2001. Demographic, landscape, and meteorological factors controlling the microbial pollution of coastal waters. In: In The Ecology and Etiology of Newly Emerging Marine Diseases (pp. 185–193). Springer, Dordrecht.

Moody, R., 2016. Shellfish management area 19-2016 annual update. In: Submitted by the Shellfish Sanitation Section, Water Monitoring, Assessment and Protection Division, Environmental Quality Control–Bureau of Water, South Carolina 11 Department of Health and Environmental Control. SC, Columbia. Retrieved from. http://scdhec.gov/FoodSafety/Docs/sfrp_19.pdf.

NSSP. (2017). Guide for the Control of Molluscan Shellfish 2017 Revision. National Shellfish Sanitation Program. Retrieved November 18, 2019. https://www.fda.gov/media/117080/download.

Peterson, M.S., 2003. A conceptual view of environment-habitat-production linkages in tidal river estuaries. Rev. Fish. Sci. 11 (4), 291–313.

Ramos, J.A.A., Barletta, M., Dantas, D.V., Lima, A.R.A., Costa, M.F., 2011. Influence of moon phase on fish assemblages in estuarine mangrove tidal creeks. J. Fish Biol. 78 (1), 344–354.

Rippy, M.A., Franks, P.J.S., Feddersen, F., Guza, R.T., Moore, D.F., 2013. Factors controlling variability in nearshore fecal pollution: the effects of mortality. Mar. Pollut. Bull. 66 (1–2), 191–198.

Ropelewski, C.F., Halpert, M.S., 1986. North American precipitation and temperature patterns associated with the El Niño/Southern Oscillation (ENSO). Mon. Weather Rev. 114 (12), 2352–2362.

Ross, A.C., Najjar, R.G., Li, M., Mann, M.E., Ford, S.E., Katz, B., 2015. Sea-level rise and other influences on decadal-scale salinity variability in a coastal plain estuary. Estuar. Coast. Shelf Sci. 157, 79–92.

Sanger, D., Blair, A., DiDonato, G., Washburn, T., Jones, S., Riekerk, G., Wirth, E., Stewart, J., White, D., Vandiver, L., Holland, A.F., 2013. Impacts of coastal development on the ecology of tidal creek ecosystems of the US Southeast including consequences to humans. Estuar. Coasts 38 (1), 49–66.

Schiff, R., Benoit, G., 2007. Effects of impervious cover at multiple spatial scales on coastal watershed streams 1. JAWRA Journal of the American Water Resources Association 43 (3), 712–730.
Schoonover, J.E., Lockaby, B.G., 2006. Land cover impacts on stream nutrients and fecal coliform in the lower Piedmont of West Georgia. J. Hydrol. 331 (3–4), 371–382.
Schulz, C.J., Childers, G.W., 2011. Fecal Bacteroidales diversity and decay in response to variations in temperature and salinity. Appl. Environ. Microbiol. 77 (8), 2563–2572.
Seager, R., Tzanova, A., Nakamura, J., 2009. Drought in the southeastern United States: causes, variability over the last millennium, and the potential for future hydroclimate change. J. Clim. 22 (19), 5021–5045.
Shenker, J.M., Dean, J.M., 1979. The utilization of an intertidal salt marsh creek by larval and juvenile fishes: abundance, diversity and temporal variation. Estuaries 2, 154–163.
Šolić, M., Krstulović, N., 1992. Separate and combined effects of solar radiation, temperature, salinity, and pH on the survival of faecal coliforms in seawater. Mar. Pollut. Bull. 24 (8), 411–416.
Sowah, R.A., Habteselassie, M.Y., Radcliffe, D.E., Bauske, E., Risse, M., 2017. Isolating the impact of septic systems on fecal pollution in streams of suburban watersheds in Georgia, United States. Water Res. 108, 330–338.
Timmermann, A., Oberhuber, J., Bacher, A., Esch, M., Latif, M., Roeckner, E., 1999. Increased El Niño frequency in a climate model forced by future greenhouse warming. Nature 398 (6729), 694.
Tolan, J.M., 2007. El Niño-Southern Oscillation impacts translated to the watershed scale: estuarine salinity patterns along the Texas Gulf coast, 1982 to 2004. Estuarine, Coastal and Shelf Science 72 (1-2), 247–260.
Upchurch, S., Wenner, E., 2008. Fish and decapod crustacean assemblages from the Ashepoo-Combahee-Edisto Basin, South Carolina (1993–1999). J. Coast. Res. 55, 200–213.
US Census Bureau, 2019. *Population and Housing Unit Estimates Datasets*. United States Census Bureau. Retrieved from. https://www.census.gov/programs-surveys/popest/data/data-sets.html.
Van Dolah, R.F., Riekerk, G.H.M., Bergquist, D.C., Felber, J., Chestnut, D.E., Holland, A. F., 2008. Estuarine habitat quality reflects urbanization at large spatial scales in South Carolina's coastal zone. Sci. Total Environ. 390, 142–154.
Vernberg, F.J., Vernberg, W.B., Blood, E., Fortner, A., Fulton, M., McKellar, H., Michener, W., Scott, G., Siewicki, T., El Figi, K., 1992. Impact of urbanization on high-salinity estuaries in the southeastern United States. Neth. J. Sea Res. 30, 239–248.
Viau, E.J., Goodwin, K.D., Yamahara, K.M., Layton, B.A., Sassoubre, L.M., Burns, S.L., Boehm, A.B., 2011. Bacterial pathogens in Hawaiian coastal streams—associations with fecal indicators, land cover, and water quality. Water Res. 45 (11), 3279–3290.
Wang, G., Cai, W., Gan, B., Wu, L., Santoso, A., Lin, X., Chen, Z., & McPhaden, M. J. (2017). Continued increase of extreme El Niño frequency long after 1.5 C warming stabilization. Nature Climate Change, 7(8), 568.
Weinstein, M.P., 1979. Shallow marsh habitats as primary nurseries for fishes and shellfish, Cape Fear River, North Carolina. Fish. Bull. 77 (2), 339.
Yu, J.Y., Zou, Y., Kim, S.T., Lee, T., 2012. The changing impact of El Niño on US winter temperatures. Geophys. Res. Lett. 39 (15).

**May 2021 Municipal Report - Town of Hilton Head Island**
**Prepared for the Stormwater Utility Board**
**Reporting Period Ending on April 30, 2021**

# 1. MS4 Update (EBER/SCHUMACHER)

| | |
|---|---|
| **MCM1**<br>Public Education & Outreach | • Healthy Pond Series: Aquatic Plants 3-04-2021<br>• Keeping ponds healthy 3-31-21<br>• Being a neighbor for clean water webinar 4-6-21 |
| **MCM2**<br>Public Involvement & Participation | • Adopt a Salt-water Watershed Train the Trainer started certification process with DHEC. This will involve training volunteers who want to test surface water for water quality parameters.4-19-2021 |
| **MCM3**<br>Illicit Discharge Detection & Elimination | 18 H2O quality monitoring sites tested & analyzed<br>1 Complaints received<br>1 Investigated with SCDHEC<br>0 Resolved |
| **MCM4**<br>Construction Site SW Runoff Control | 10 Plan reviews w/ corrections required<br>37 Plan reviews approved<br>1 Utility Permits<br>32 Active permitted construction sites<br>130 Inspections completed; Failed-0, P.Pass-16<br>6 Pre-Clear Inspection by Eber<br>5 C of C Inspections by Eber<br>0 Pre-Clear Inspections done by Schumacher<br>0 NOV issued |
| **MCM5**<br>Post-Construction SW Management | • 3 PCBMP inspections this month.<br>• 3 PCBMP Completed for April<br>• 27 PCBMP inspection by July 1<br>• Employed Cartegraph for PCBMP inspections. |
| **MCM6**<br>Pollution Prevention/Good Housekeeping | • Presentations to Town staff given via virtual Meetings, including a quiz.<br>• Community Development completed 7/3 & 8/7<br>• Facilities Completed in September 2020 |

## 2. Service Requests (MARTIN)

### A. April 2021 Service Request Activity:

- New requests: 3 83 (FY21 to date)
- Requests closed: 0 86 (FY21 to date)

### B. Open Requests as of April 30, 2021:

- Open Qualifying: 288
  - Public (96)
  - Private* (192)
- Open Enforcement 10
  - IDDE (3)
  - Other (7)
- Open Referrals 43
  - County (19)
  - SCDOT (24)

** Located in residential POAs with current maintenance agreements*

### C. Service Request Totals as of April 30, 2021:

- Open: 309 change in last 30 days: +3
- Closed: 1113 change in last 30 days: 0
- Total: 1422 change in last 30 days: +3

## 3. Major Capital Improvements Update (LADD)

### A. Lawton Canal SW Pump Station (Sea Pines) – Electrical System Rehabilitation

Reconstruction of the pump station facility is underway.

- Contract (utilizing current on-call services contract)
  - Prime: BRW Construction
  - Total construction cost: $1.6 million.
  - NTP on October 9, 2020
  - Estimated completion date: May 28, 2021 (8 Months).
- Construction Status Update
  - Building construction underway.
  - Safety disconnect platform underway.
  - Intake chamber repairs underway.

### B. Wexford SW Pump Station – Electrical & Structural Assessment

Electrical, structural and mechanical assessment of existing facility structures and systems with recommendations for upgrades to controls, emergency power switch gear, surge protection, starters, monitoring devices, intake chamber, debris screens, etc.

- Contract (utilizing current on-call services contract)
  - Prime: BRW Construction
  - Total construction cost: $16.5K
  - NTP on May 1, 2021
  - Estimated completion date: May 31, 2021

**C. Shipyard SW Pump Station – Electrical Assessment**

Electrical and mechanical assessment of existing facility structures and systems with recommendations for upgrades to controls, emergency power switch gear, surge protection, starters, monitoring devices, etc.

- Contract (utilizing current on-call services contract)
  - Prime: BRW Construction
  - Total construction cost: $8K
  - NTP on May 1, 2021
  - Estimated completion date: May 31, 2021

## 4. Pump Station and Routine Maintenance Projects (LADD)

**A. Routine Channel Maintenance**

Vegetation and debris management within Town-owned and maintained drainage ways.

- Contract (utilizing current on-call services contract)
  - Prime: Aqualis & Hilton Head Landscapes
  - Refer to attached Routine Maintenance Schedule for construction costs and schedules, Revised 5/1/2021

**B. Routine Pump & Pump Station Maintenance**

Routine pump station inspection and maintenance at (3) pump station facilities (Jarvis Creek, Wexford, and Shipyard), and routine maintenance to (9) pumps.

- Contract (utilizing current on-call services contract)
  - Prime: BRW Construction
  - Total construction cost: $57K.
  - NTP on February 8, 2021
  - Project Completed April 16, 2021.

**C. Jarvis Creek SW Pump Station – Pump Repairs**

Repairs to pumps 1, 2 and 3.

- Contract (utilizing current on-call services contract)
  - Prime: BRW Construction
  - Sub: MWI (Moving Water Industries)
  - Total construction cost: $113K
  - NTP on March 29, 2021

  Project to be completed by May 10, 2021.

## 5. CIP and Maintenance Projects (UYESUGI)

Refer to attached SWU FY21 Projects Schedule, Revised 5/3/2021

## 6. Inventory & Modeling Program (NETZINGER)

**A. South Forest Beach/Lawton Creek Study (FY20 Budgeted Watershed)**
The Town will utilize an on-call consultant to study this watershed. ***We anticipate work beginning on this project in May of 2021.***

**B. North Forest Beach/Shipyard/Wexford Study (FY21 Budgeted Watershed)**
The Town will utilize an on-call consultant to study this watershed. ***We anticipate work beginning on this project in May of 2021***.

**TOWN OF HILTON HEAD ISLAND**
**SWU ROUTINE MAINTENANCE**

## ROUTINE MAINTENANCE SCHEDULE

**UPDATED: May 1, 2021**

| MUNIS PROJECT CODE | NO. | WARD | SYSTEM | PROJECT LOCATION / LIMITS | SERVICE CONTRACT | ANNUAL BUDGET | ACTUAL (YTD) | ANNUAL SERVICE FREQUENCY | FY 2021 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 2020 | | | | | | 2021 | | | | | | | |
| | | | | | | | | | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | | |
| XR001 | 1 | 1 | AIRPORT OUTFALL CHANNEL | HHI AIRPORT TO DILLON RD | C11-2020 AQL | $ 1,468 | $ - | 1 | | | | | | | | | | | X | | | |
| XR002 | 2 | 1 | PALMETTO HEADLANDS | BEACH CITY RD TO HHI AIRPORT & CARDINAL RD & HUNTER RD | C11-2020 AQL | $ 16,420 | $ 7,088 | 2 | X | | | | | | | | | | X | | | |
| XR003 | 3 | 1 | SUMMIT / GATEWAY | ROADSIDE DITCHES, DILLON ROAD TO CUL-DE-SAC | C11-2020 AQL | $ - | $ - | TBD | | | | | | | | | | | | | | |
| XR004 | 4 | 1 | TABBY WALK | TABBY WALK APARTMENTS FROM MATHEWS DR TO NORTHRIDGE WETLAND | C11-2020 AQL | $ - | $ - | TBD | | | | | | | | | | | | | | |
| XR005 | 5 | 1 | NORTHRIDGE TRACT | CULVERTS AT PALMETTO PKY & US 278 BUSINESS | C10-2020 HHL | $ 849 | $ - | 1 | | | | | | | | | | | | X | | |
| XR006 | 6 | 1 | MID-ISLAND TRACT | US 278 BUSINESS TO UNION CEMETERY RD & UNION CEMETERY RD TO MARKET PLACE DR | C11-2020 AQL | $ 3,155 | $ 74,426 | 1 | | | | X | | | | | | | | | | |
| XR007 | 7 | 1 | MATHEWS SIDE STREETS | DRAINAGE AREA AT END OF POWER ALLEY | C11-2020 AQL | $ 1,379 | $ - | 1 | | | | | | | | | | | X | | | |
| XR008 | 8 | 6 | ISLANDERS BEACH PARK / SPARKLEBERRY DITCH | ISLANDER'S BEACH PARK | C11-2020 AQL | $ 1,754 | $ 836 | 2 | | X | | | | | | | | | | X | | |
| XR009 | 9 | 6 | FOLLY FIELD POA | STARFISH DR TO ISLAND CLUB SUBDIVISION | C11-2020 AQL | $ 2,104 | $ - | 1 | | | | | | | | | | | | X | | |
| XR010 | 10 | 6 | FOLLY FIELD BEACH PARK | FOLLY FIELD BEACH PARKING LOT & ENTRANCE | C11-2020 AQL | $ 705 | $ - | 1 | | | | | | | | | | | X | | | |
| XR011 | 11 | 4 | OTTER CREEK CHANNEL | US 278 BUSINESS TO LEG O'MUTTON RD | C10-2020 HHL | $ 24,250 | $ 11,595 | 2 | | X | | | | | | | | | | X | | |
| XR012 | 12 | 1 | OAKS/SEA TURTLE CHANNEL | SOUTHWOOD PARK DR TO INDIAN TR | C11-2020 AQL | $ 2,581 | $ - | 1 | | | | | | | | | | X | | | | |
| XR013 | 13 | 1 | OLD WOODLANDS CHANNEL | ACCESS OFF END OF INDIAN TR | C11-2020 AQL | $ 3,175 | $ 1,425 | 2 | | | | X | | | | | | | | X | | |
| XR014 | 14 | 1 | ASHMORE CHANNEL | US 278 BUSINESS TO MATHEWS DR | C11-2020 AQL | $ 2,061 | $ 17,867 | 1 | | | | | X | | | | | | | | | |
| XR015 | 15 | 1 | MATHEWS CHANNEL | ISLAND DR TO BROAD CREEK @ ASHMORE OUTFALL | C11-2020 AQL | $ 860 | $ - | 1 | | | | | | | | | | | X | | | |
| XR016 | 16 | 1 | MARSHLAND OUTFALL | 15 MARSHLAND RD TO BROAD CREEK | C11-2020 AQL | $ 988 | $ - | 1 | | | | | | | | | | | X | | | |
| XR017 | 17 | 4 | VICTORIA SQUARE OUTFALL | VICTORIA SQUARE TO BROAD CREEK | C11-2020 AQL | $ 1,108 | $ - | 1 | | | | | | | | | | | X | | | |
| XR018 | 18 | 1 & 4 | NORTH MAIN STREET | WHOOPING CRANE TO HOSPITAL CENTER BLVD | C11-2020 AQL | $ - | $ - | TBD | | | | | | | | | | | | | | |
| XR019 | 19 | 1 | BERMUDA POINTE OUTFALL | SQUIRE POPE RD TO SKULL CREEK | C11-2020 AQL | $ 922 | $ - | 1 | | | | | | | | | | | | X | | |
| XR020 | 20 | 1 & 2 | GUMTREE CHANNEL | SQUIRES GATE RD TO WILD HORSE RD | C11-2020 AQL | $ 3,941 | $ - | 1 | | | | | | | | | | | | X | | |
| XR021 | 21 | 1 | CLIFFORD MILLER CHANNEL | GUMTREE RD TO POND AT FIRST TEE GOLF COURSE | C10-2020 HHL | $ 935 | $ - | 1 | | | | | | | | | | | | X | | |
| XR022 | 22 | 1 | CAROLINA ISLES SYSTEM | WEIR & OUTFALL, GUMTREE RD TO MARSHSIDE DR | C10-2020 HHL | $ 740 | $ - | 1 | | | | | | | | | | | | X | | |
| XR023 | 23 | 1 | WILBORN OUTFALL | MAIN ST TO JARVIS CREEK CHANNEL | C11-2020 AQL | $ - | $ - | TBD | | | | | | | | | | | | | | |
| XR024 | 24 | 6 | JARVIS CREEK CHANNEL NORTH | HILTON HEAD PLANTATION TO US 278 BUSINESS | C11-2020 AQL | $ 1,269 | $ - | 1 | | | | | | | | | | | | X | | |
| XR025 | 25 | 4 | JARVIS CREEK CHANNEL SOUTH | NATURES WAY TO CROSS ISLAND PKY | C11-2020 AQL | $ 3,848 | $ - | 1 | | | | | | | | | | | | X | | |
| XR026 | 26 | 4 | JARVIS CREEK PUMP STATION | US 278 BUSINESS TO NATURES WAY | C11-2020 AQL | $ 1,280 | $ 640 | 2 | | X | | | | | | | | | | X | | |
| XR027 | 27 | 4 | JARVIS CREEK PARK OUTFALL | LAKE AT JARVIS CREEK PARK | C10-2020 HHL | $ 2,024 | $ - | 1 | | | | | | | | | | | | X | | |
| XR028 | 28 | 1 | OAKVIEW CHANNEL | SPANISH WELLS RD TO OAKVIEW RD | C10-2020 HHL | $ 2,630 | $ 1,670 | 2 | | | | | | X | | | | | | X | | |
| XR029 | 29 | 1 & 3 | SAM FRAZIER CHANNEL | OAKVIEW RD TO JARVIS CREEK | C10-2020 HHL | $ 3,410 | $ 2,570 | 2 | | | | | | X | | | | | | X | | |
| XR030 | 30 | 1 | MUDDY CREEK CHANNEL NORTH | BRYANT RD TO MUDDY CREEK RD | C10-2020 HHL | $ 3,047 | $ 2,275 | 2 | | | | | | X | | | | | | X | | |
| XR031 | 31 | 1 & 3 | MUDDY CREEK CHANNEL SOUTH | 54 MUDDY CREEK RD TO CROSS ISLAND PKY | C10-2020 HHL | $ - | $ - | TBD | | | | | | | | | | | | | | |
| XR032 | 32 | 4 | DIANAH DRIVE CHANNEL | 2 DIANAH'S DRIVE & MARSHLAND ROAD | C10-2020 HHL | $ 1,820 | $ 19,221 | 2 | X | | | | | | | | | | | X | | |
| XR033 | 33 | 1 | BLAZING STAR LANE | POND AT END OF BLAZING STAR LANE | C11-2020 AQL | $ - | $ - | TBD | | | | | | | | | | | | | | |
| XR034 | 34 | 1 | ALEX PATTERSON ROAD | MARSHLAND ROAD TO CUL-DE-SAC | C11-2020 AQL | $ - | $ - | TBD | | | | | | | | | | | | | | |
| XR035 | 35 | 3 | YACHT COVE OUTFALL | YACHT COVE POA TO BROAD CREEK | C11-2020 AQL | $ 772 | $ - | 1 | | | | | | | | | | | | X | | |
| XR036 | 36 | 3 | WEXFORD PUMP STATION | 54 YORKSHIRE DR (WEXFORD PLANTATION) | C11-2020 AQL | $ 1,386 | $ 693 | 2 | | | | X | | | | | | | | X | | |
| XR037 | 37 | 3 | HAIG POINT CHANNEL | PALMETTO BUSINESS PARK TO BROAD CREEK | C11-2020 AQL | $ - | $ - | | | | | | | | | | | | | | | |
| XR038 | 38 | 3 | ARROW ROAD CHANNEL | BIKE PATH FROM ARROW RD TO CROSSINGS PARK | C11-2020 AQL | $ 8,630 | $ - | 1 | | | | | | | | | | | | X | | |
| XR039 | 39 | 3 | WEXFORD CHANNEL | US 278 BUSINESS TO DUNNAGAN'S ALLEY | C11-2020 AQL | $ 1,110 | $ - | 1 | | | | | | | | | | | | X | | |
| XR040 | 40 | 3 | SHIPYARD PUMP STATION | CORDILLO DR (SHIPYARD PLANTATION) | C10-2020 HHL | $ 1,252 | $ 626 | 2 | X | | | | | | | | | | | X | | |
| XR041 | 41 | 4 | IBIS CHANNEL | HERON STREET & NORTH FOREST BEACH DRIVE | C11-2020 AQL | $ 753 | $ 2,643 | 1 | | | | | | | | | X | | | | | |
| XR042 | 42 | 5 | FIRST BAPTIST CHANNEL | SOUTH FOREST BEACH DR TO CORDILLO PKWY | C11-2020 AQL | $ 2,643 | $ - | 1 | | | | | | | | | X | | | | | |
| XR043 | 43 | 5 | LAWTON CANAL PUMP STATION | GREENWOOD DR (SEA PINES PLANTATION) | C10-2020 HHL | $ - | $ - | TBD | | | | | | | | | | | | | | |
| XR044 | 44 | 3 | ARROW ROAD | ARCHER ROAD TO HELMSMAN WAY | C11-2020 AQL | $ 1,580 | $ - | 1 | | | | | | | | | | | | X | | |
| XR045 | 45 | 3 | DELANDER/GENESTA CHANNEL | TOWN PROPERTY BEHIND DELANDER COURT AND GENESTA STREET | C11-2020 AQL | $ 1,746 | $ - | 1 | | | | | | | | | X | | | | | |
| XR046 | 46 | 1 | PALMETTO BUSINESS PARK | PONDS AT PALMETTO BUSINESS PARK | C11-2020 AQL | $ - | $ - | TBD | | | | | | | | | | | | | | |
| XR047 | 47 | 3 | BOYS & GIRLS CLUB | BOYS & GIRLS CLUB & FIRST TEE OF THE LOWCOUNTRY | C11-2020 AQL | $ 1,468 | $ - | 1 | | | | | | | | | | | X | | | |
| XR048 | 48 | 5 | WOODWARD AVENUE | END OF WOODWARD AVENUE & ALDER LANE | C11-2020 AQL | $ 3,125 | $ - | 1 | | | | | | | | | X | | | | | |
| | | | | | | **$ 113,184** | $ 143,574 | **49** | 3 | 3 | | 3 | 1 | 3 | | 4 | 1 | 6 | 25 | | | |

**COMPLETE** X **UNDERWAY** X **SCHEDULED** X

**PLANNED** X **ON HOLD** X **CANCELED** X

### Notes

| | |
|---|---|
| XR006 | Capacity & work shelf project is completed pending final invoice payment (Q3); Bi-annual routine maintenace begins in 2021 |
| XR014 | Work shelf project is completed pending final invoice payment (Q3); Bi-annual routine maintenace begins in 2021 |
| XR032 | Capacity and workshelf restoration project completed (Q1); bi-annual routine maintenance begins in 2021 |
| XR042 | Work shelf project is on hold pending permanent easement. |
| XR043 | Routine Mainenance scope will begin once pump station reconstruction is complete in FY22. |
| XR046 | Routine maintenace scope and budget requirements will be reassessed once pond control structure and outfall system functionality is restored. Date TBD |

TOWN OF HILTON HEAD ISLAND

# STORMWATER UTILITY - FY21 REPAIR AND MAINTENANCE PROJECT SCHEDULE

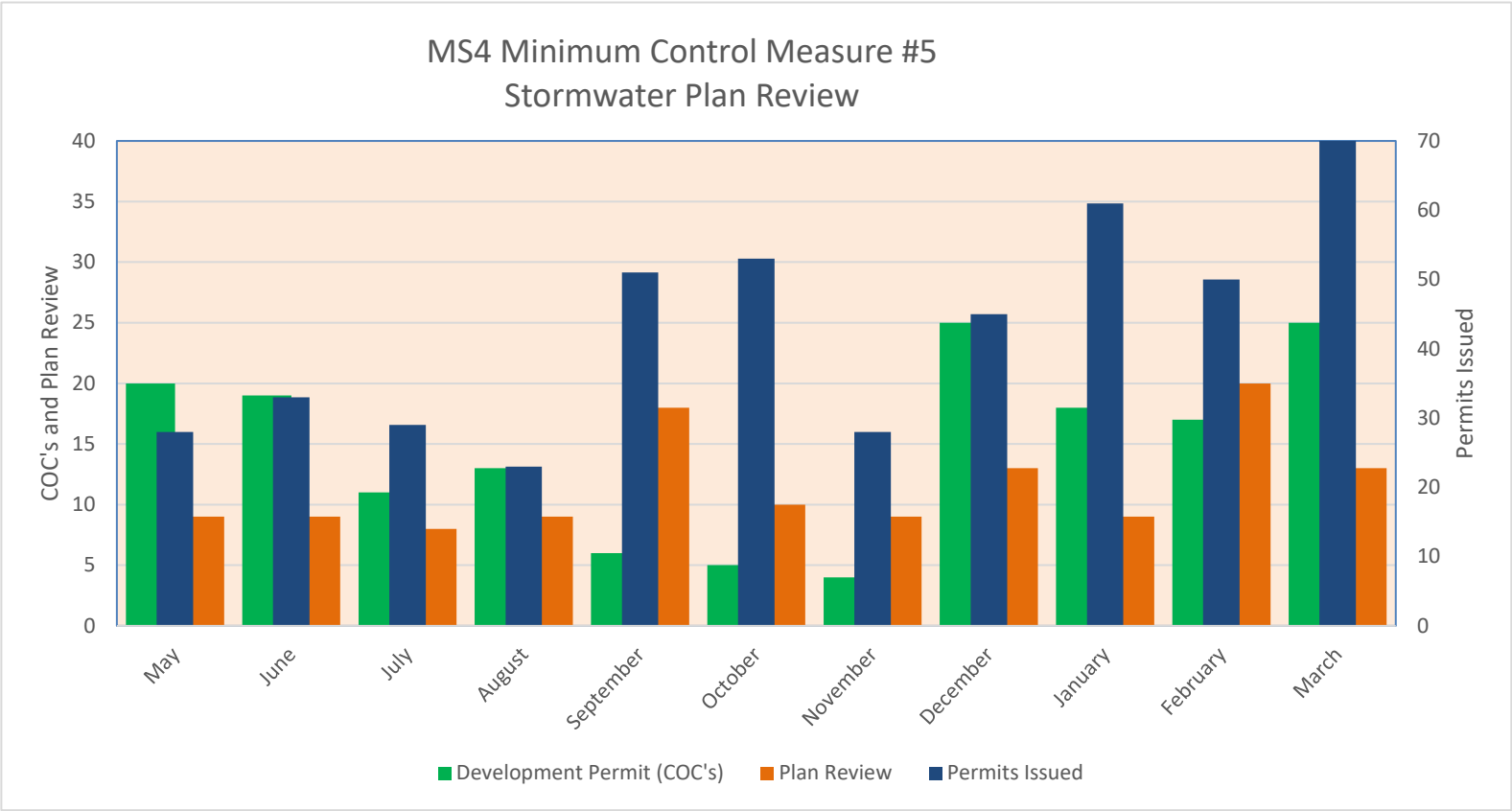
Revised May 3, 2021

| Project Assignments | |
|---|---|
| Reimbursement | 1 |
| Jeff Netzinger | 5 |
| Kelli Uyesugi | 47 |
| Erik Ladd | 12 |
| | 65 |

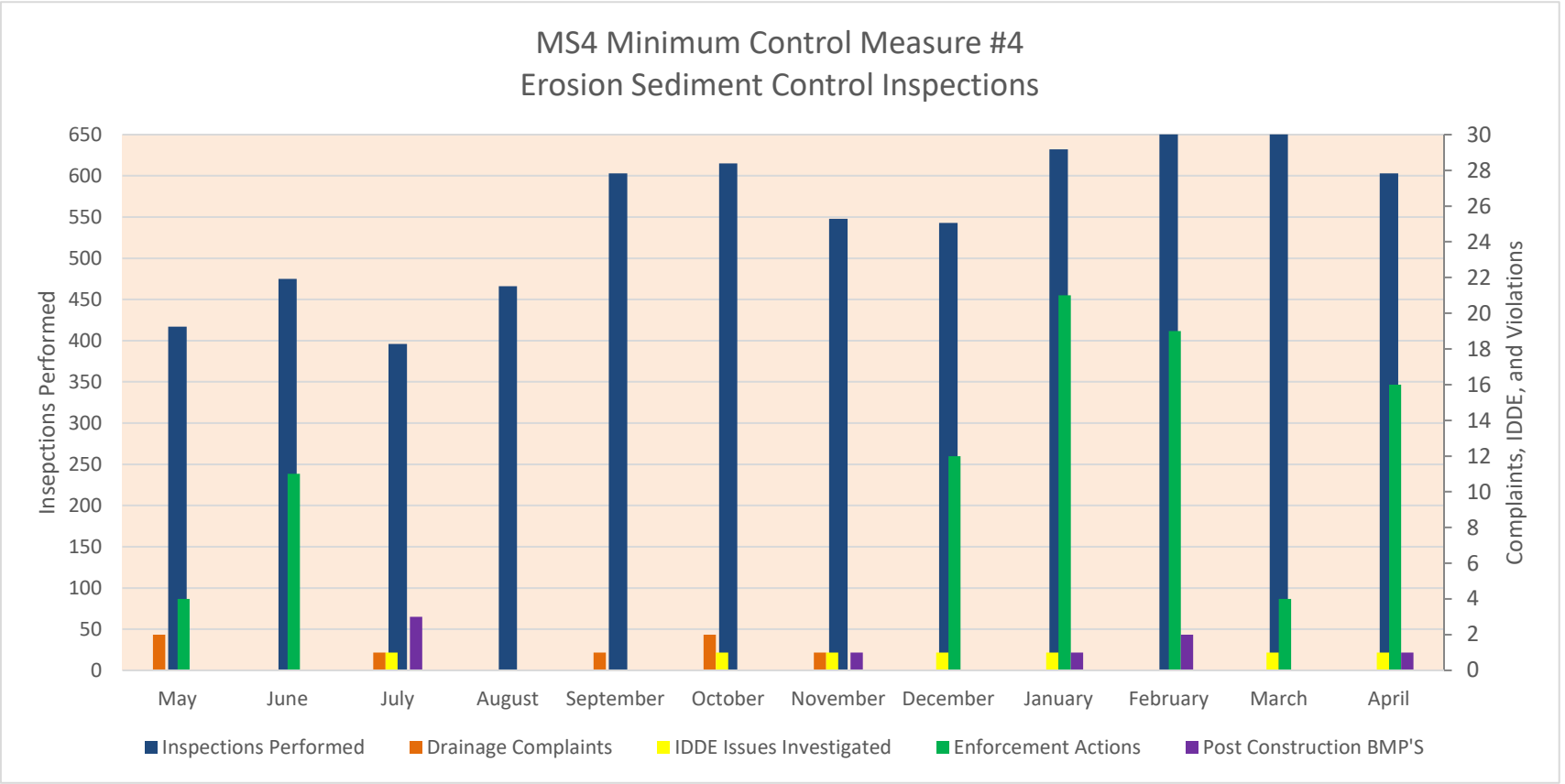
| Service Totals | | BUDGET | ACTUAL |
|---|---|---|---|
| Maintenance Agreements | 82% | $ 3,492,629 | $ 806,059 |
| Public System | 18% | $ 764,277 | $ 12,915 |
| Total | | $ 4,256,906 | $ 818,974 |

C COMPLETE
U UNDERWAY
P PLANNED

| EVAL | SR # | PA | DESCRIPTION | Prog | BUDGET | ACTUAL | NOTES | Q1 | Q2 | Q3 | Q4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **INVENTORY & MODELING** | | | | | | | ( 2 ) | | | | |
| n/a | n/a | J | SOUTH FOREST BEACH/SEA PINES (SP041) | FY21B | $ 375,000 | | Thomas & Hutton | | | P | ► |
| n/a | n/a | J | SHIPYARD / WEXFORD / NORTH FOREST BEACH | FY21B | $ 350,581 | | Woolpert | | | P | ► |
| | | | **TOTAL INVENTORY & MODELING** | | **$ 725,581** | **$ -** | | | | | |
| **MAINTENANCE AGREEMENT CAPITAL PROJECTS** | | | | | | | | | | | |
| **SHIPYARD** | | | | | | | ( 1 ) | | | | |
| 12 | 1523 | K | GALLEON COURSE #8 TEE CULVERT REPLACEMENT (SH021) | FY21B | $ 25,000 | $ 71,300 | internal design | | | C | |
| **SEA PINES** | | | | | | | ( 3 ) | | | | |
| 18 | 1403 | E | SEA PINES PUMP STATION (SPP01) | | $ 1,659,167 | | | | U | ► | ► |
| 11 | 852 | K | 38 CANVAS BACK PIPE REPLACEMENT (SP034) | FY21B | $ 41,593 | $ 39,200 | | | C | | |
| 10 | 1089 | K | MIZZENMAST/LIGHTHOUSE PIPE REPLACEMENT (SP043) | FY21B | $ 45,000 | | | | | | P |
| **WEXFORD** | | | | | | | ( 1 ) | | | | |
| 12 | 1021 | K | WEXFORD CLUB DRIVE FLOODING (WE007) CHANNEL MAINTENANCE | FY21B | $ 13,000 | $ 35,859 | | | C | | |
| | | | **TOTAL PUD CAPITAL PROJECTS** | | **$ 1,783,760** | **$ 146,359** | | | | | |
| **PUBLIC CAPITAL PROJECTS** | | | | | | | | | | | |
| **TOWN SYSTEM** | | | | | | | ( 3 ) | | | | |
| 7 | 1152 | K | 104 CORDILLO PKWAY (HEDGES) DRAINAGE (XN082) | FY21B | $ 45,000 | | internal design | | | | P |
| 9 | 1352 | K | 400 William Hilton Parkway (The Oaks Pathway) | FY21B | $ 60,000 | | Waiting on ROE | | | | U |
| 12 | 1499 | J | Arrow Rd Pathway Crossing at Crossings Park Outfall | FY21B | $ 40,000 | | flap gate purchase | | | | P |
| 10 | 954 | K | 25 Moonshell Road (piping part of the Folly Field Ditch) | FY21C | $ 50,000 | | | | | | P |
| 8 | 1026 | K | 83 Old Wild Horse Road | FY21C | $ 20,000 | | | | | | P |
| | | | **TOTAL NON-PUD CAPITAL PROJECTS** | | **$ 215,000** | **$ -** | | | | | |
| **MAINTENANCE AGREEMENT PROJECTS** | | | | | | | | | | | |
| **HILTON HEAD PLANTATION** | | | | | | | ( 3 ) | | | | |
| 10 | 896 | K | 37 DEERFIELD RD DRAINAGE IMPROVEMENTS (HH039) | FY21B | $ 60,000 | $ 59,531 | | C | | | |
| 9 | 1227 | R | Pine Island - Beach Renourishment | FY21B | $ 100,000 | $ 100,000 | **reimbursement** | | | | |
| 12 | 1068 | E | 245 Seabrook Drive Weir Gate | FY21B | $ 15,000 | | | | | | P |
| **INDIGO RUN** | | | | | | | ( 4 ) | | | | |
| 6 | 872 | K | 4 DRUMMOND LN CHANNEL CLEAN (IR013) | FY21B | $ 23,940 | $ 15,183 | ◄ combined w/ SR 1238 | | C | | |
| 9 | 1238 | K | 29 PRIMROSE CHANNEL MAINT (IR019) | FY21B | $ 8,000 | | | | C | | |
| 6 | 1124 | K | 53 ABERDEEN CT SINKHOLE/POINT REPAIR (IR020) | FY21B | $ 4,000 | $ 2,000 | | | C | | |
| 14 | 1295 | K | 46 Sussex Lane (Indigo Run) Pipe Cleaning & Sumps | FY21B | $ 17,500 | | | | | U | ► |
| **LONG COVE** | | | | | | | ( 1 ) | | | | |
| 6 | 1175 | K | 2 LONG BROW RD SINKHOLE / POINT REPAIR (LC007) | FY21B | $ 5,000 | $ 1,500 | | | C | | |
| **LEAMINGTON** | | | | | | | ( 2 ) | | | | |
| 5 | 904 | K | 48 HEATH CT WEST POINT REPAIR / CLEAN (LM007) | FY21B | $ 5,000 | | | | | | P |
| 6 | 1495 | K | 9 Niblick Court (Palmetto Dunes George Fazio GC 4th Fairway) CCTV | FY21B | $ 15,000 | | | | | | P |
| **PALMETTO DUNES** | | | | | | | ( 5 ) | | | | |
| 6 | 1242 | K | FLOTILLA SINKHOLE REPAIR (PD027) | FY21B | $ 11,000 | | | | | | P |
| 6 | 1241 | K | DINGHY LN SINKHOLE REPAIR (PD028) | FY21B | $ 10,000 | | | | | | P |
| 6 | 1244 | K | 1 LONG BOAT SINKHOLE REPAIR (PD029) | FY21B | $ 10,000 | | | | | | P |
| 6 | 1243 | K | 2 HIGH RIGGER SINKHOLE REPAIR (PD030) | FY21B | $ 9,500 | | | | | | P |
| 10 | 1313 | K | 29 Starboard Tack Pipe Replacement | FY21B | $ 9,000 | $ 9,300 | | C | | | |
| **PALMETTO HALL** | | | | | | | ( 3 ) | | | | |
| 9 | 1231 | K | 25 LENOX TO 19 CLYDE LAGOON PIPE CLEANING (PH011) | FY21B | $ 44,848 | $ 50,112 | | | C | | |
| 7 | 1312 | K | 32 Madison Lane Inlet Replacement | FY21B | $ 1,000 | | | | | | P |
| 11 | 1519 | J | Palmetto Hall System Outfall at Fish Haul Rd | FY21B | $ 50,000 | | CONSULTANT DESIGN | | | | P |
| **PORT ROYAL** | | | | | | | ( 7 ) | | | | |
| 6 | 1210 | E | 16 BARNACLE RD PIPE CLEAN / CHANNEL MAINT (PR029) | FY21B | $ 3,000 | | | | | | P |
| 6 | 1211 | E | 16 COQUINA RD PIPE CLEAN / CHANNEL MAINT (PR030) | FY21B | $ 3,000 | | | | | | P |
| 6 | 1212 | E | 16 DONAX RD PIPE CLEAN / CHANNEL MAINT (PR031) | FY21B | $ 3,000 | | | | | | P |
| 8 | 1395 | K | 12 Scarborough Head (Ditch & Pipe Cleaning) | FY21B | $ 12,000 | | | | | | P |
| 8 | 1482 | K | 3 Wimbledon Ct (Grasslawn/S. Port Royal median) Pipe Replacement | FY21B | $ 15,000 | $ 10,000 | | | | | C |
| 9 | 1496 | K | 61 S. Port Royal Drive Point Repair | FY21B | $ 2,500 | $ 2,500 | | C | | | |
| 9 | 1520 | K | 5 Resolute Place Channel Maintenance | FY21B | $ 15,000 | $ 16,254 | | C | | | |
| **SEA PINES** | | | | | | | ( 13 ) | | | | |
| 11 | 1236 | E | LAWTON PUMP STATION OUTFALL GATE REPAIR (SP038) | FY21B | $ 3,000 | | | | | | P |
| 7 | 1335 | K | 16 Wagon Road Point Repair | FY21B | $ 10,000 | | | | | | P |
| 7 | 1432 | E | 135 Lighthouse Road (Flap Gate) | FY21B | $ 9,000 | | | | | | P |
| 7 | 1492 | K | 3 Governors Road Point Repair | FY21B | $ 5,000 | | | | | | U |
| 8 | 1423 | K | 13 Genoa Court (upstream Mizzenmast Ct system) Pipe Replacement | FY21B | $ 115,000 | $ 75,000 | | | | C | |
| 9 | 1040 | E | 30 Governors Road- Near Clubhouse Entrance near Hole #10 Gate Repair | FY21B | $ 7,000 | | quote received | | | | P |
| 9 | 1289 | K | 226 Portside Drive (Lagoon Villas) Pipe Replacement/Ditch | FY21B | $ 29,000 | | permit received | | | | U |
| 9 | 1398 | E | 20 Audubon Pond Drive Flap Gate Replacement | FY21B | $ 11,000 | | quote needed | | | | P |
| 10 | 1399 | E | 1 Baynard Cove Road (Baynard Cove Outfall) Gate Cleaning & Repair | FY21B | $ 24,000 | | ON HOLD | | | | |
| 10 | 1463 | K | 18 Surf Scoter Road (Beach Pathway 26) Pipe Replacement | FY21B | $ 24,000 | $ 43,000 | | | | C | |
| 11 | 1336 | K | 33 Battery Road CCTV & Pipe Replacement | FY21B | $ 28,000 | $ 26,000 | | | U | C | |
| 12 | 1400 | K | 35 Lawton Drive Channel Maintenance | FY21B | $ 7,000 | | | | | | P |
| 14 | 1402 | K | 4 Snowy Egret Road (Beach Access Marker 25) Pipe Replacement | FY21B | $ 48,000 | $ 42,407 | | | C | | |
| **SHIPYARD** | | | | | | | ( 4 ) | | | | |
| 13 | 1408 | K | 63 Shipyard Drive (Shipmaster) Channel Excavation | FY20C | $ 25,000 | $ 92,413 | | | C | | |
| 9 | 1412 | K | 45 Shipyard Drive Point Repair | FY21B | $ 5,000 | $ 2,900 | | | C | | |
| 13 | 1485 | K | Intersection of Barcelona Drive and Shipyard Drive Pipe Replacement | FY21B | $ 5,000 | $ 9,000 | | | | C | |
| 14 | 1424 | K | 200 Colonnade Rd (Galleon 6 F'way) Sonesta Outfall System | FY21B | $ 21,000 | $ 6,000 | | | | C | |
| 11 | 1526 | K | 90 Gloucester Road (Harbourmaster) Pipe Cleaning & Channel Excavation | FY21C | $ 15,000 | | | | | | P |
| 11 | 1534 | K | 48 Kingston Road (Pipe Cleaning and Lagoon Excavation) | FY21C | $ 12,000 | $ 9,600 | | | | C | |
| **WEXFORD** | | | | | | | ( 1 ) | | | | |
| 11 | 1525 | K | PRIM CHL, RM WEXFORD POWERLINE RV PARK DITCH (WE008) | FY21B | $ 15,000 | $ 87,000 | | | U | C | |
| | | | **PUD MAINTENANCE CONTINGENCY (CP000)** | | **$ 73,000** | | | | | | |
| | | | **TOTAL PUD MAINTENANCE PROJECTS** | | **$ 943,288** | **$ 659,700** | | | | | |
| **PUBLIC MAINTENANCE PROJECTS** | | | | | | | | | | | |
| **TOWN SYSTEM** | | | | | | | ( 8 ) | | | | |
| **LADD** | | | NON-PUD MAINTENANCE (XN000) | FY21B | $ 260,000 | | refer to RM program | | | | |
| **EBER** | | | STREET SWEEPING (XN066) | FY21B | $ 98,000 | | ongoing weekly schedule | | | | |
| 11 | 827 | J | 54 SHAMROCK / COBIA CT DRAINAGE IMPRVMTS (XN081) | FY21B | $ 23,277 | | internal dgn/County to install | | | U | |
| 7 | 1305 | E | 50 Dillon Road (WHP- Planters Row GC) Pathway Flooding | FY21B | $ 5,000 | | part of C11-2020-JO19 | | C | | |
| 7 | 1498 | K | 32 Office Park Road Inlet Repair | FY21B | $ 2,000 | | | | | | P |
| 7 | 1455 | K | 316 Squire Pope Road Pipe Cleaning | FY21B | $ 2,000 | | | | | | P |
| 9 | 1324 | K | 271 William Hilton Parkway (Island Tire) Workshelf/Channel Maintenance | FY21B | $ 66,000 | | deferred ► FY22 | | | | |
| 9 | 1428 | K | 89 Squire Pope Road Pathway Flooding | FY21B | $ 15,000 | | Survey | | | | P |
| 10 | 1338 | E | 10 Bow Circle (Arrow Road Ditches) Channel Maintenance | FY21B | $ 35,000 | | on hold, int dgn rqd | | | | |
| 13 | 1522 | K | 59 Shelter Cove Lane (Veteran's Memorial Park) Dam Repair | FY21B | $ 18,000 | $ 12,915 | | | C | | |
| | | | **CONTINGENCY** | | **$ -** | | | | | | |
| | | | **TOTAL NON-PUD MAINTENANCE PROJECTS** | | **$ 524,277** | **$ 12,915** | | | | | |
| **PUMP STATION MAINTENANCE PROJECTS** | | | | | | | ( 1 ) | | | | |
| **LADD** | | | SHIPYARD PUMP STATION (SHP00) | FY21B | $ 15,000 | | annual pump maint | | | P | |
| **LADD** | | | WEXFORD PUMP STATION (WEP00) | FY21B | $ 25,000 | | annual pump maint | | | P | |
| **LADD** | | | JARVIS PUMP STATION (XNP00 & XNP01) | FY21B | $ 15,000 | | annual pump maint | | | P | |
| | | | **PUMP STATION CONTINGENCY (CGP00)** | | **$ 10,000** | | | | | | |
| | | | **TOTAL PUMP STATION MAINTENANCE PROJECTS** | | **$ 65,000** | **$ -** | | | | | |

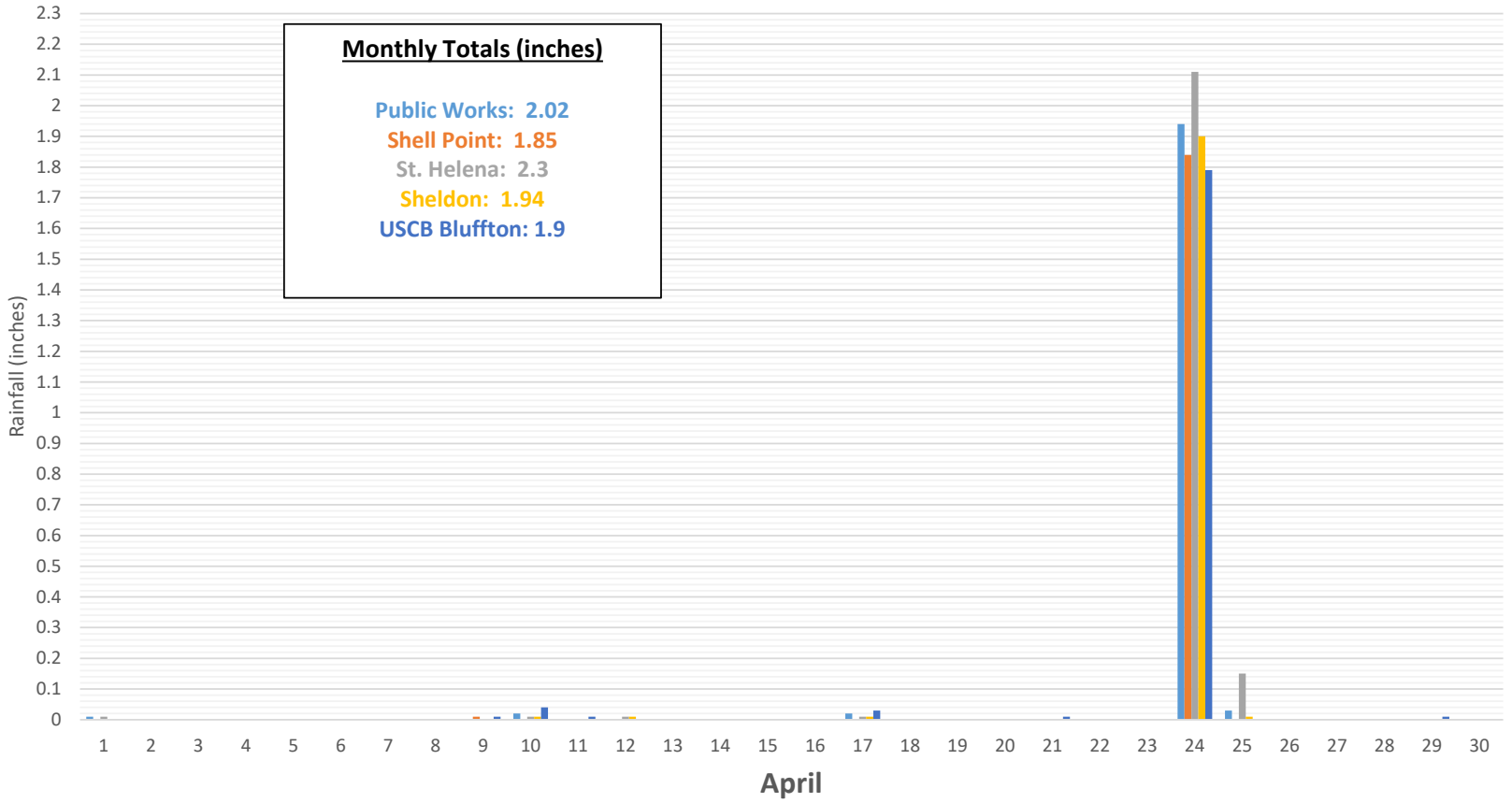



| TYPE | May | June | July | August | September | October | November | December | January | February | March | April | Last 12 Months |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Development Permit (COC's) | 20 | 19 | 11 | 13 | 6 | 5 | 4 | 25 | 18 | 17 | 25 | 33 | 196 |
| Plan Review | 9 | 9 | 8 | 9 | 18 | 10 | 9 | 13 | 9 | 20 | 13 | 20 | 147 |
| Permits Issued | 28 | 33 | 29 | 23 | 51 | 53 | 28 | 45 | 61 | 50 | 75 | 63 | 539 |




| TYPE | May | June | July | August | September | October | November | December | January | February | March | April | Last 12 Months |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inspections Performed | 417 | 475 | 396 | 466 | 603 | 615 | 548 | 543 | 632 | 724 | 794 | 603 | 6816 |
| Drainage Complaints | 2 | 0 | 1 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 7 |
| IDDE Issues Investigated | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| Enforcement Actions | 4 | 11 | 0 | 0 | 0 | 0 | 0 | 12 | 21 | 19 | 4 | 16 | 87 |
| Post Construction BMP'S | - | - | 3 | - | - | - | 1 | 0 | 1 | 2 | 0 | 1 | 9 |

# Beaufort County Weather Stations
# Daily Rainfall Amounts - April 2021



# Lowcountry Stormwater Partners (LSP) Monthly Report
# 3/1/21 – 3/31/21

## Completed Stormwater Outreach/Involvement Activities:

- Low Impact Development Design in Coastal SC: Challenging Sites
  - 4/07/21, online, 100+
- Being a Neighbor for Clean Water Webinar Series
- Tuesdays in April, online, still calculating final numbers
- LSP Changing Tides Newsletter
  - The Changing Tides is an informative publication for the general public. It includes a small article on a stormwater-related topic and information on past, current, and future events.
  - 4/5/20, online, 137

## Ongoing Stormwater Outreach/Involvement Activities:

- That's MY Truck Coloring Contest Planning
  - Flyer coming soon
- Rain Barrel Sale
  - Planned for June
- LSP Website Overhaul
  - The website is complete.
- Mossy Oaks Rain Garden Workshop
  - The school district has approved the plans and I am coordinating to see how installation could be done in the spring.
- Septic System Resources
  - A workshop plan, factsheet series, and magnets are in development for the summer.
- Creation of an HOA Direct Mailing List
  - I began creating a list of mailing addresses for existing HOAs/PUDs to send pond training announcements and an invitation to join the Big News for Small Ponds listserv.
- Direct Contacts
  - During this time frame, I helped five (5) individuals who directly contacted me.
  - 5, phone call and email
- LSP Facebook page
  - The LSP Facebook page serves to engage and involve citizens in water-quantity and water-quality information. I also use the Facebook page to announce local, regional, and state-wide events.
  - 307 Likes

## Planned Stormwater Outreach/Involvement Activities:

- LSP Changing Tides Newsletter
  - The Changing Tides is an informative publication for the general public. It includes a small article on a stormwater-related topic and information on past, current, and future events.
  - 5/14/20, online
- Coastal Flooding and Regulations Workshop (final title TBD)
  - Every Wednesday in June starting June 9th, online

## Other Activities for Strategic Plan Compliance:

- Pet Waste Station Map
- Small grants program

- Septic media campaign
- 2021 Beaufort Area Stormwater Pond Conference
- Soil sample post cards and placards for retailers
- Soil sample bag distribution
- Buffer workshop
- Promotional seed packet
- Native plant distributor list
- Native plant signage
- Construction Site Social Media Campaign
- Contractor trainings
- LID Lunch-and-Learns
- BMP workshop for homeowners
- BMP survey

Completed Strategic Plan Items:

- Pond Workshop
- Pond training listserv and direct mailer list
- Pet waste mass media campaign
- 2019 Beaufort Area Stormwater Pond Conference
- Master Pond Manager
- Pond mass media campaign
- Pond management website
- Soil sample trainings (satisfied by Cultivating a Carolina Yards workshops)
- Soil sample bags at festivals, nurseries, farmer's markets, and Master Gardener events
- Construction site trainings for contractors (satisfied by CEPSCI courses)
- LID factsheets
- LID training for design professionals (will be satisfied when DNR's Coastal Training Program reschedules to LID Manual Training)
- LID signs
- BMP workshops for homeowners (satisfied by Cultivating a Carolina Yards workshops, rain garden presentations, and Being a Neighbor for Clean Water Webinar Series)
- Master Rain Gardener
- Step-stake sign for rain gardens
- Rain Garden Rack Card
- Pond Rack Card
- Buffer Packets

# MEMORANDUM

Date: May 03, 2021

To: Stormwater Management Utility Board

From: Matthew Rausch, Stormwater Infrastructure Superintendent

Re: **Maintenance Project Report**

This report will cover one major project and eight minor projects. The Project Summary Reports are attached.

**Major Project:**

- **Vineyard Point Road – St. Helena Island (SWUD 8):** This project improved 5,713 feet of drainage system. The scope of work included cleaning 5,713 feet of roadside ditch, jetting 24 driveway pipes, 3 crossline pipes and hydroseeding for erosion control. The total cost was **$18,835.24.**

**Minor or Routine Projects:**

- **Sheldon Bush Hog – Sheldon (SWUD 5):** This project improved 95,204 feet of drainage system. The scope of work included bush hogging 93,465 feet of channel and 1,739 feet of roadside ditch. The total cost was **$53,697.71.**

- **Lady's Island Vacuum Truck – Lady's Island (SWUD 7):** This project improved 282 feet of drainage system. The scope of work included cleaning out 60 catch basins, 8 manholes, jetting 6 driveway pipes, 21 crossline pipes and 282 feet of roadside pipe. The total cost was **$16,124.37.**

- **Peaches Hill Circle Channel – St. Helena Island (SWUD 8):** This project improved 7,250 feet of drainage system. The scope of work included cleaning out 446 feet of roadside ditch and 6,804 feet of channel. The total cost was **$14,241.90.**

- **Port Royal Island Valley Drains – Port Royal Island (SWUD 6):** This project improved 12,240 feet of drainage system. The scope of work included cleaning out 12,240 feet of valley drains. The total cost was **$4,422.47.**

- **St. Helena Island Tree Removal – St. Helena Island (SWUD 8):** The scope of work included removing fallen trees from workshelf and roadside. The total cost was **$2,214.49.**

- **Shed Road – St. Helena Island (SWUD 8):** This project improved 530 feet of drainage system. The scope of work included cleaning out 503 feet of roadside ditch. The total cost was **$1,989.83.**

- **Harbor River Drive – St. Helena Island (SWUD 8):** The scope of work included removing blockages from flowline. The total cost was **$1,567.61.**

- **Joseph Lane – Sheldon (SWUD 5):** This project improved 100 feet of drainage system. The scope of work included cleaning out 100 feet of roadside ditch. The total cost was **$327.44.**

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

**Project Summary:** Vineyard Point Road

**Activity:** Routine/Preventive Maintenance
**Duration:** 12/15/20-01/28/21

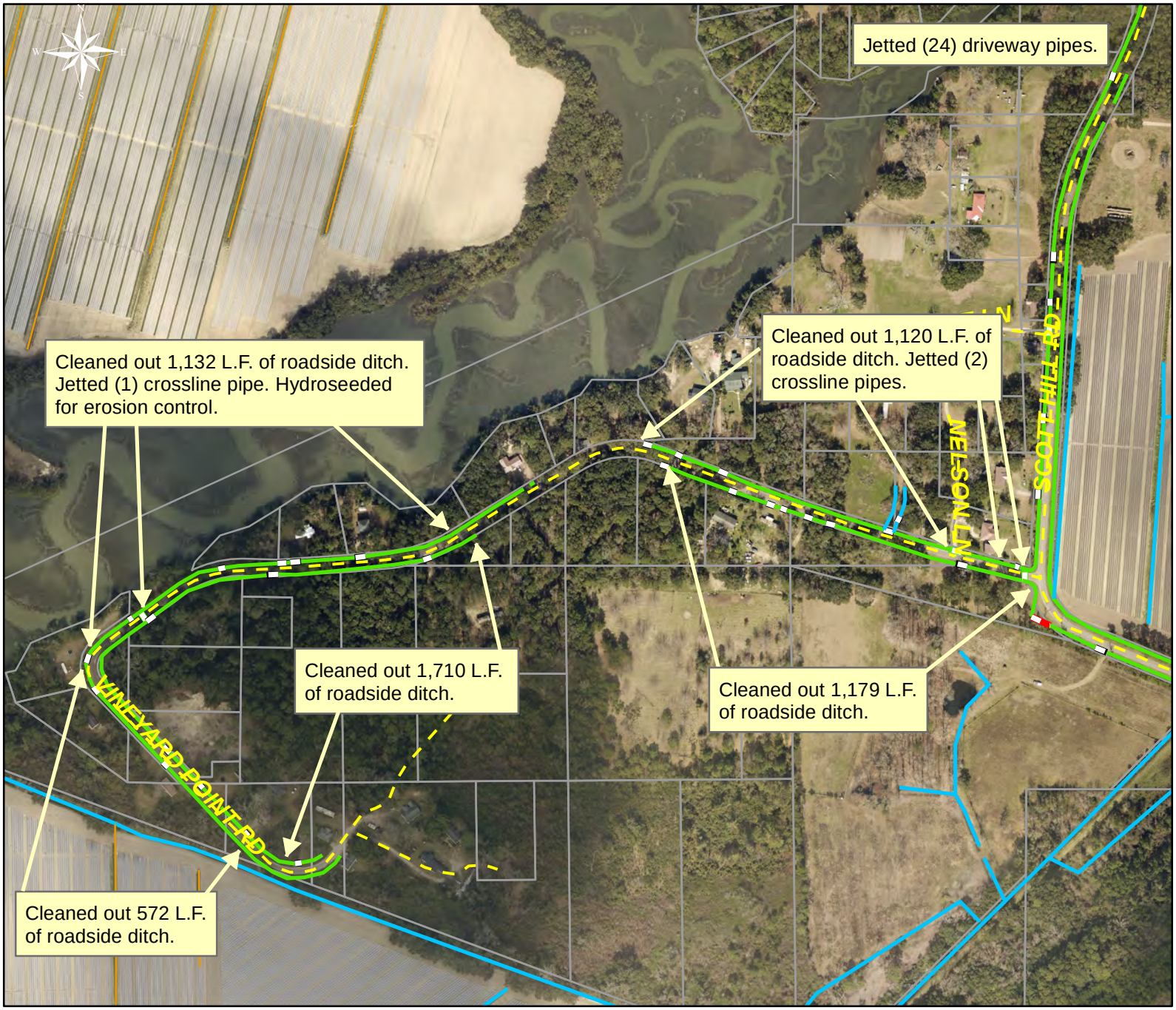
**Narrative Description of Project:**
This project improved 5,713 L.F. of drainage system. Cleaned out 5,713 L.F. of roadside ditch. Jetted (24) driveway pipes and (3) crossline pipes. Hydroseeded for erosion control.

| **2021-525 / Vineyard Point Road** | **Labor Hours** | **Labor Cost** | **Equipment Cost** | **Material Cost** | **Contractor Cost** | **Indirect Labor** | **Total Cost** |
|---|---|---|---|---|---|---|---|
| AUDIT / Audit Project | 2.0 | $43.58 | $0.00 | $0.00 | $0.00 | $0.00 | $43.58 |
| DPJT / Driveway Pipe - Jetted | 56.0 | $1282.48 | $243.04 | $179.76 | $0.00 | $48.84 | $1754.12 |
| HAUL / Hauling | 86.0 | $1,910.42 | $1639.16 | $381.42 | $0.00 | $230.72 | $4,161.72 |
| HYDR / Hydroseeding | 32.0 | $651.76 | $69.60 | $944.62 | $0.00 | $309.36 | $1975.34 |
| RSDCL / Roadside Ditch - Cleanout | 335.0 | $7071.00 | $1479.48 | $384.24 | $0.00 | $1946.79 | $10,881.51 |
| UTLOC / Utility locates | 0.5 | $12.35 | $0.00 | $0.00 | $0.00 | $6.62 | $18.97 |
| 2021-525 / Vineyard Point Road Project Sub Total | 511.5 | $10,971.59 | $3431.28 | $1890.04 | $0.00 | $2,542.32 | $18,835.24 |
| **Grand Total** | **511.5** | **$10,971.59** | **$3,431.28** | **$1,890.04** | **$0.00** | **$2,542.32** | **$18,835.24** |

**Before**

**During**


**After**




Project: Vineyard Point Road

Activity: Routine/ Preventive Maintenance

Project #: 2021-525

Township/SW Dist: St. Helena Island/8

Completed: January 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 85 170 340 510 680 Feet

**1 inch = 420 feet**

Prepared By: BC Stormwater Management Utility
Date Print:02/22/21
File:C:\project summaries map/Vineyard Point Road_2021-525

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

**Project Summary:** Sheldon Bush Hog

**Activity:** Routine/Preventive Maintenance
**Duration:** 07/01/20-02/22/21

**Narrative Description of Project:**

First Rotation: 07/01/20-02/22/21 Project improved 95,204 L.F. of drainage system. Bush hogged 93,465 L.F. of channel and 1,739 L.F. of roadside ditch. This project consisted of the following areas: Wimbee Landing Road (8,158 L.F.), Dale Drop Center (550 L.F.), Old Dawson Acres (6,076 L.F.), Jasmine Hall Road (10,068 L.F.), River Oaks Road (2,967 L.F.), Pap Kee Lane (1,441 L.F.), Dean Hall Road (849 L.F.), Horace Dawson Lane (5,506 L.F.), Mitchell Road (8,047 L.F.), Paige Point Bluff (483 L.F.), Priester Road (1,190 L.F.), Robinson Hill Road (2,011 L.F.), Johnson Road (3,226 L.F.), Sheldon Drop Off Center (784 L.F.), Archie Sumpter Road (1,310 L.F.), Cuthbert Farm Road (702 L.F.), George Williams Lane (2,476 L.F.), William Campbell Lane (1,257 L.F.), Fire Station Lane (340 L.F.), Huspah Drive (2,285 L.F.), Huspah Court S (1,365 L.F.), Huspah Court N (800 L.F.), Bailey Road (1,672 L.F.), Nix Road (1,005 L.F.), Prescott Road (1,545 L.F.), Bailey Circle (302 L.F.), African Baptist Church Road (1,907 L.F.), Dash Road (270 L.F.), Horse Tail Road (3,044 L.F.), Booker T Washington Circle (1,895 L.F.), Albertha Fields Circle (2,225 L.F.), Big Estate Road 1,934 L.F.), Gray Road (3,245 L.F.), Big Estate Circle (1,455 L.F.), Swallowtail Lane (1,756 L.F.), Newberry Circle (1,139 L.F.), Joseph Lane 1,244 L.F.), Twickenham Plantation Road (7,318 L.F.), Jenkins Road (550 L.F.) and Big Estate Drop Off Center (807 L.F.)

| **2021-303 / Sheldon Bush Hog** | **Labor Hours** | **Labor Cost** | **Equipment Cost** | **Material Cost** | **Contractor Cost** | **Indirect Labor** | **Total Cost** |
|---|---|---|---|---|---|---|---|
| AUDIT / Audit Project | 2.0 | $43.58 | $0.00 | $0.00 | $0.00 | $0.00 | $43.58 |
| CBH / Channel- bushhogged | 1072.0 | $22,671.49 | $12,318.27 | $2,231.46 | $0.00 | $14,351.20 | $51,572.42 |
| DEBREM / Debris Removal - Jobsite | 19.0 | $403.90 | $191.22 | $91.62 | $0.00 | $256.30 | $943.04 |
| HAUL / Hauling | 24.0 | $532.36 | $445.16 | $108.23 | $0.00 | $52.92 | $1,138.67 |
| 2021-303 / Sheldon Bush Hog Project Sub Total | 1117.0 | $23,651.33 | $12,954.65 | $2,431.31 | $0.00 | $14,660.42 | $53,697.71 |
| **Grand Total** | **1117.0** | **$23,651.33** | **$12,954.65** | **$2,431.31** | **$0.00** | **$14,660.42** | **$53,697.71** |

**Before**

**During**

**After**

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

**Project Summary:** Lady's Island Vacuum Truck
Old Distant Island Road, Ethel Grant Lane, Friendship Lane, Honeysuckle Lane, Token Lane, Wade Hampton Drive,Sherman Drive, Miller Drive E, Needlerush Court, Piney Lane, Turtle Lane, Marsh Drive, Fiddler Drive, Dowitcher Court, Shorts Landing Road

**Activity:** Routine/Preventive Maintenance
**Duration:** 08/19/20-02/03/21

**Narrative Description of Project:**

This project improved 282 L.F. of drainage system. Cleaned out (60) catch basins and (8) manholes. Jetted (6) driveway pipes, (21) crossline pipes and 282 L.F. of roadside pipe.

| **2021-307 / Ladys Island Vacuum Truck** | **Labor Hours** | **Labor Cost** | **Equipment Cost** | **Material Cost** | **Contractor Cost** | **Indirect Labor** | **Total Cost** |
|---|---|---|---|---|---|---|---|
| AUDIT / Audit Project | 2.0 | $43.58 | $0.00 | $0.00 | $0.00 | $0.00 | $43.58 |
| CBCO / Catch basin - clean out | 288.0 | $6,422.92 | $3,799.48 | $928.64 | $0.00 | $1,174.44 | $12,325.48 |
| CLPJT / Crossline Pipe - Jetted | 82.0 | $1,839.95 | $854.84 | $247.45 | $0.00 | $527.31 | $3,469.55 |
| DPJT / Driveway Pipe - Jetted | 6.0 | $137.25 | $114.96 | $33.54 | $0.00 | $0.00 | $285.75 |
| 2021-307 / Ladys Island Vacuum Truck Project Sub Total | 378.0 | $8,443.71 | $4,769.28 | $1,209.63 | $0.00 | $1,701.75 | $16,124.37 |
| **Grand Total** | **378.0** | **$8,443.71** | **$4,769.28** | **$1,209.63** | **$0.00** | **$1,701.75** | **$16,124.37** |

**Before**

**During**

**After**


Project: Lady's Island Vacuum Truck - Old Distant Island Road Map #1

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 20 40 80 120 160 Feet

**1 inch = 100 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/10/21
File:C:\project summaries map/Lady's Island Vac Truck- Old Distant Island Road Map #1_2021-307


Project: Lady's Island Vacuum Truck - Ethel Grant Lane Map #2

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 5 10 20 30 40 Feet

**1 inch = 43 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/10/21
File:C:\project summaries map/Lady's Island Vac Truck- Ethel Grant Lane Map #2_2021-307


Project: Lady's Island Vacuum Truck - Friendship Lane Map #3

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 65 130 260 390 520 Feet

**1 inch = 330 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/10/21
File:C:\project summaries map/Lady's Island Vac Truck- Friendship Lane Map #3_2021-307


Project: Lady's Island Vacuum Truck - Token Lane Map #4

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

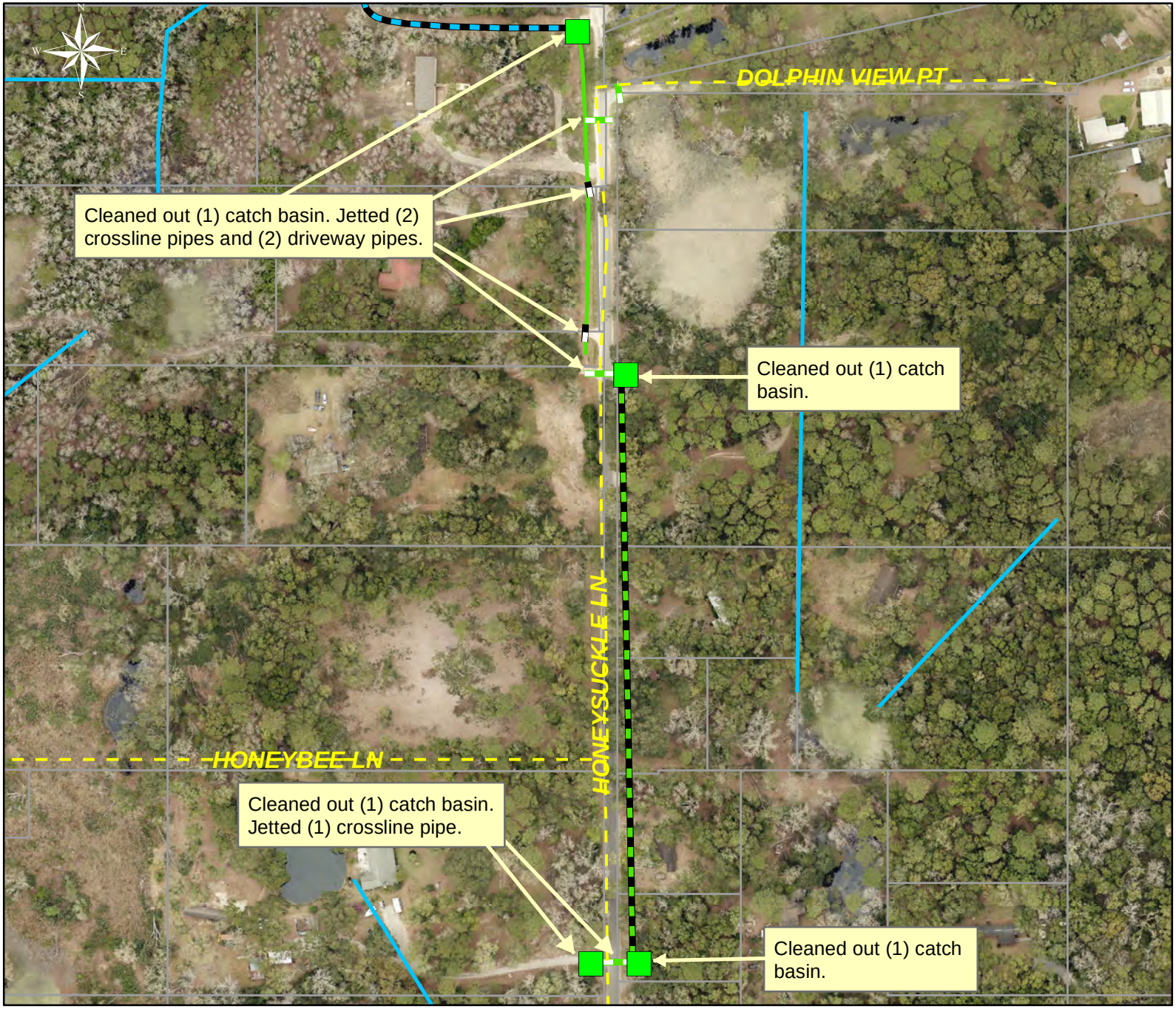
**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 25 50 100 150 200 Feet

**1 inch = 130 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/08/21
File:C:\project summaries map/Lady's Island Vac Truck- Token Lane Map #4_2021-307




Project: Lady's Island Vacuum Truck - Honeysuckle Lane Map #5

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 40 80 160 240 320 Feet

**1 inch = 210 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/14/21
File:C:\project summaries map/Lady's Island Vac Truck- Honeysuckle Lane Map #5_2021-307


Project: Lady's Island Vacuum Truck - Wade Hampton Drive Map #6

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 30 60 120 180 240 Feet

**1 inch = 170 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/08/21
File:C:\project summaries map/Lady's Island Vac Truck- Wade Hampton Drive Map #6_2021-307


Project: Lady's Island Vacuum Truck - Sherman Drive Map #7

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 40 80 160 240 320 Feet

**1 inch = 210 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/08/21
File:C:\project summaries map/Lady's Island Vac Truck- Sherman Drive Map #7_2021-307


Project: Lady's Island Vacuum Truck - Needlerush Ct Map #8

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 25 50 100 150 200 Feet

**1 inch = 130 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/08/21
File:C:\project summaries map/Lady's Island Vac Truck-Needlerush Ct Map #8_2021-307


Project: Lady's Island Vacuum Truck - Piney Lane Map #9

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 35 70 140 210 280 Feet

**1 inch = 190 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/08/21
File:C:\project summaries map/Lady's Island Vac Truck-Piney Lane Map #9_2021-307


Project: Lady's Island Vacuum Truck - Turtle Lane Map #10

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

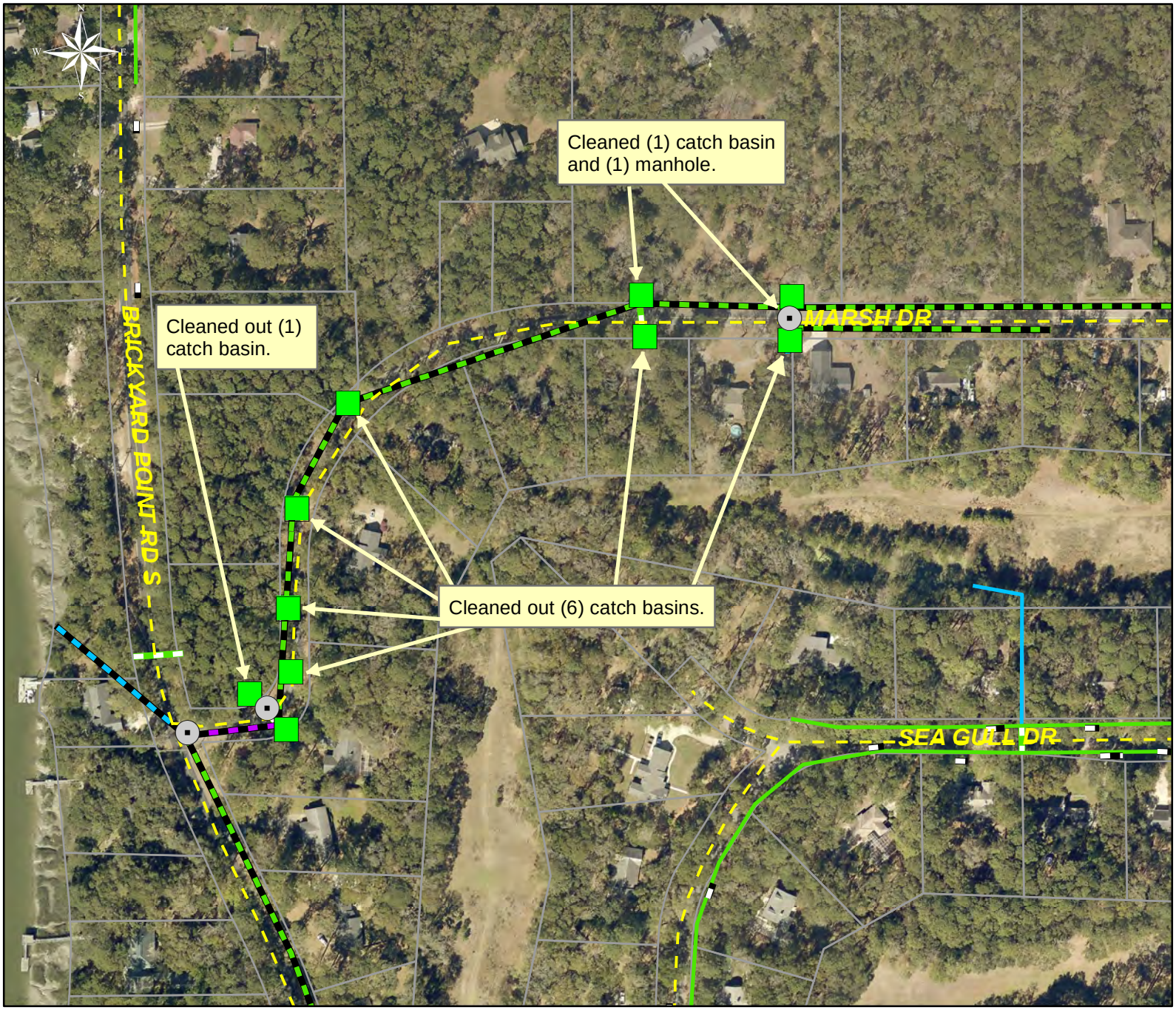
**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 20 40 80 120 160 Feet

**1 inch = 97 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/14/21
File:C:\project summaries map/Lady's Island Vac Truck- Turtle Lane Map #10_2021-307




Project: Lady's Island Vacuum Truck - Marsh Drive Map #11

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 40 80 160 240 320 Feet

**1 inch = 210 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/10/21
File:C:\project summaries map/Lady's Island Vac Truck- Marsh Drive Map #11_2021-307


Project: Lady's Island Vacuum Truck - Marsh Drive Map #12

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

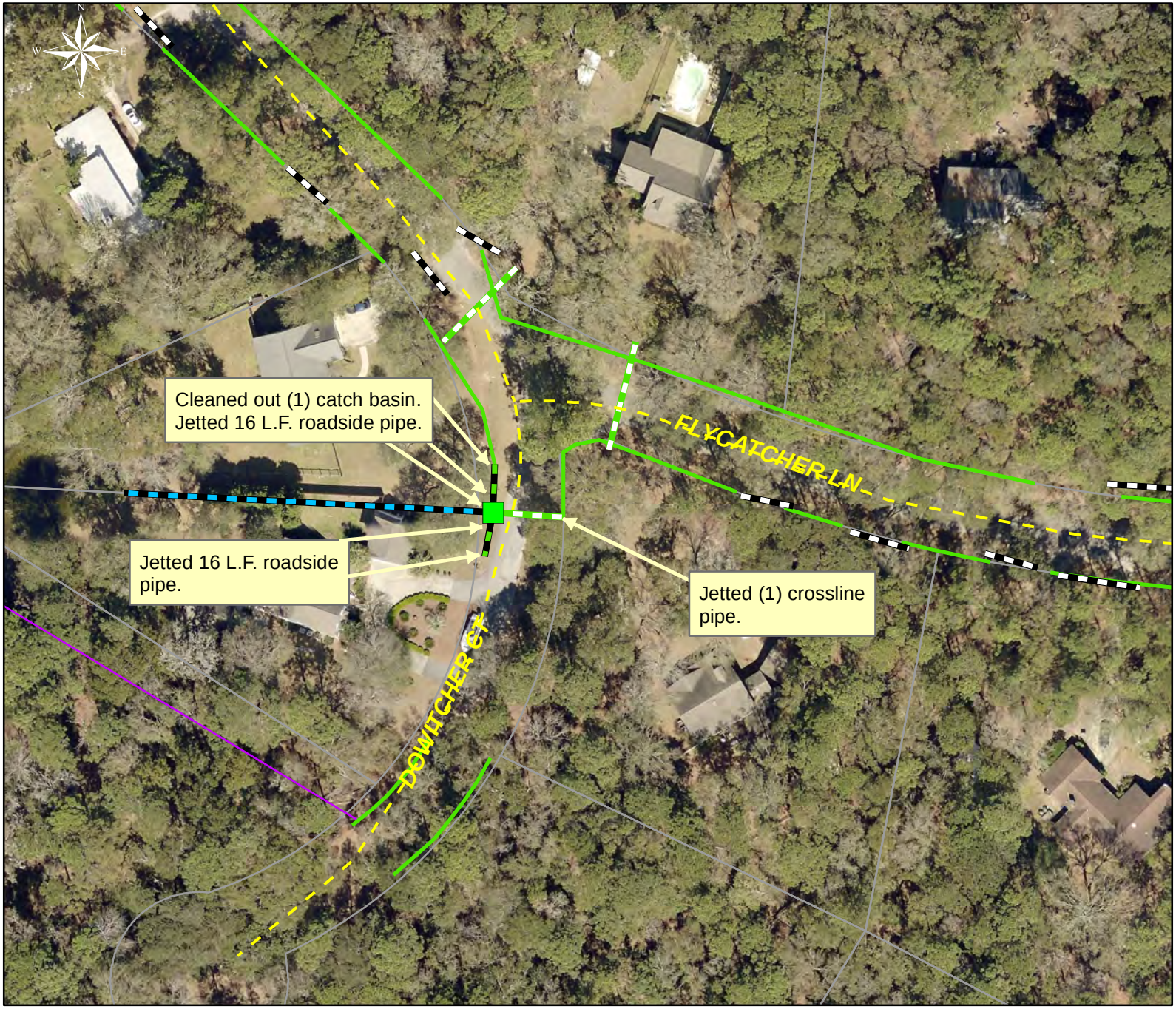
**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 65 130 260 390 520 Feet

**1 inch = 330 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/10/21
File:C:\project summaries map/Lady's Island Vac Truck- Marsh Drive Map #12_2021-307




Project: Lady's Island Vacuum Truck - Dowitcher Ct Map #13

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 15 30 60 90 120 Feet

**1 inch = 83 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/10/21
File:C:\project summaries map/Lady's Island Vac Truck- Dowitcher Ct Map #13_2021-307


Project: Lady's Island Vacuum Truck - Fiddler Drive Map #14

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 80 160 320 480 640 Feet

**1 inch = 420 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/08/21
File:C:\project summaries map/Lady's Island Vac Truck- Fiddler Drive Map #14_2021-307


Project: Lady's Island Vacuum Truck - Shorts Landing Road and Miller Drive E Map #15

Activity: Routine/ Preventive Maintenance

Project #: 2021-307

Township/SW Dist: Lady's Island/7

Completed: February 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 30 60 120 180 240 Feet

**1 inch = 250 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/16/21
File:C:\project summaries map/Lady's Island Vac Truck- Shorts Landing Road & Miller Drive E Map #15_2021-307

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

**Project Summary:** Peaches Hill Circle Channel

**Activity:** Routine/Preventive Maintenance
**Duration:** 12/14/20 - 01/16/21

**Narrative Description of Project:**
This project improved 7,250  L.F. of drainage system. Cleaned out 446 L.F. of roadside ditch and 6,804 L.F. of channel.

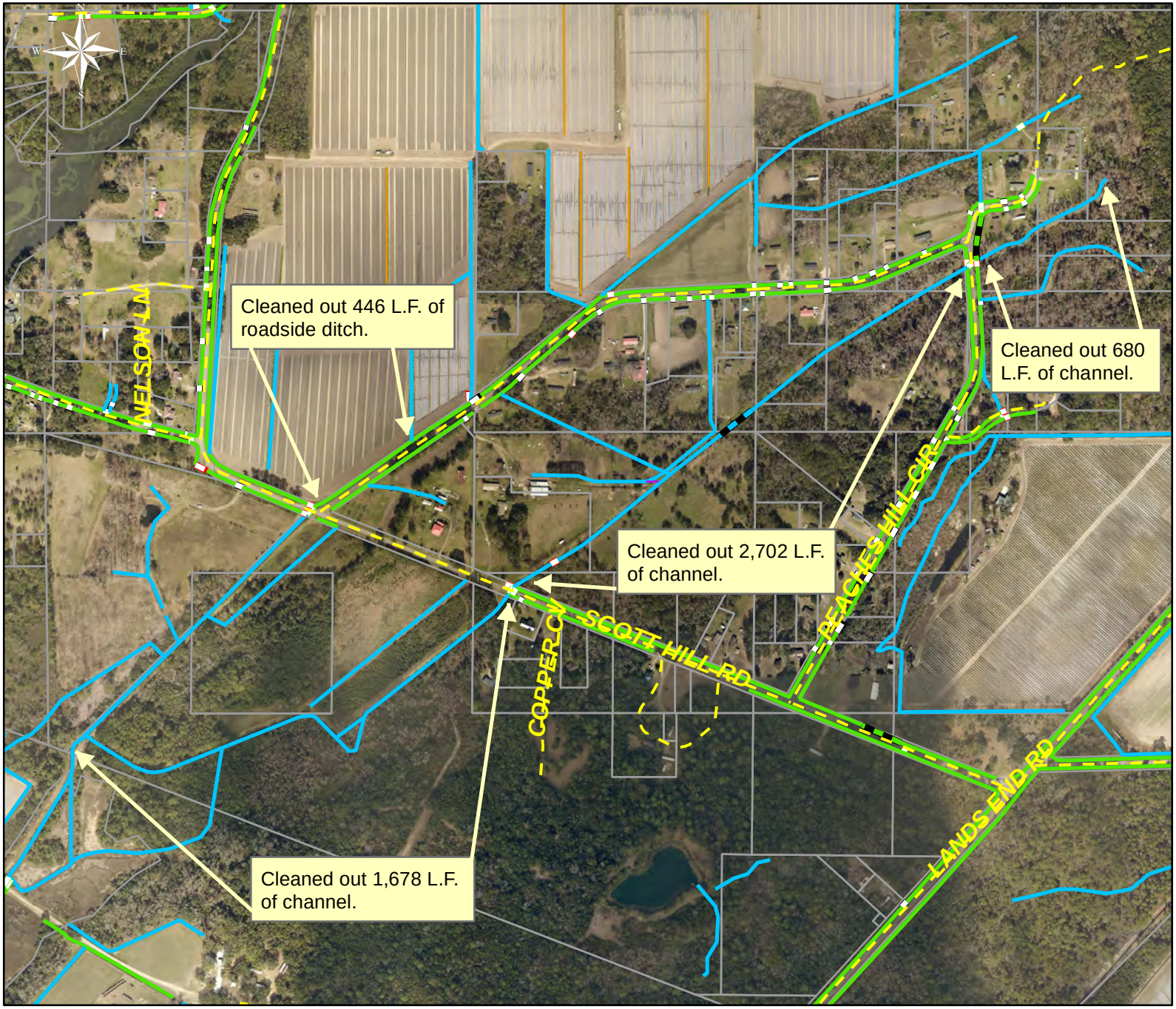
| **2021-522 / Peaches Hill Circle Channel** | **Labor Hours** | **Labor Cost** | **Equipment Cost** | **Material Cost** | **Contractor Cost** | **Indirect Labor** | **Total Cost** |
|---|---|---|---|---|---|---|---|
| AUDIT / Audit Project | 1.5 | $32.69 | $0.00 | $0.00 | $0.00 | $0.00 | $32.69 |
| CCO / Channel - cleaned out | 247.0 | $5,074.74 | $2,036.15 | $339.36 | $0.00 | $1,989.93 | $9,440.18 |
| HAUL / Hauling | 74.0 | $1,681.13 | $1,353.26 | $223.01 | $0.00 | $403.76 | $3,661.16 |
| RSDCL / Roadside Ditch - Cleanout | 32.0 | $651.76 | $119.76 | $27.00 | $0.00 | $309.36 | $1,107.88 |
| 2021/522 Peaches Hill Circle Channel Project Sub Total | 354.5 | $7,440.32 | $3,509.17 | $589.37 | $0.00 | $2,703.05 | $14,241.90 |
| **Grand Total** | **354.5** | **$7,440.32** | **$3,509.17** | **$589.37** | **$0.00** | **$2,703.05** | **$14,241.90** |

**(Before)**

**(During)**

**(Ending)**

**(No Picture Available )**




Project: Peaches Hill Circle and Scott Hill Road Channel #1 Map #1

Activity: Routine/ Preventive Maintenance

Project #: 2021-522

Township/SW Dist: St. Helena Island/8

Completed: January 2021

**Legend**

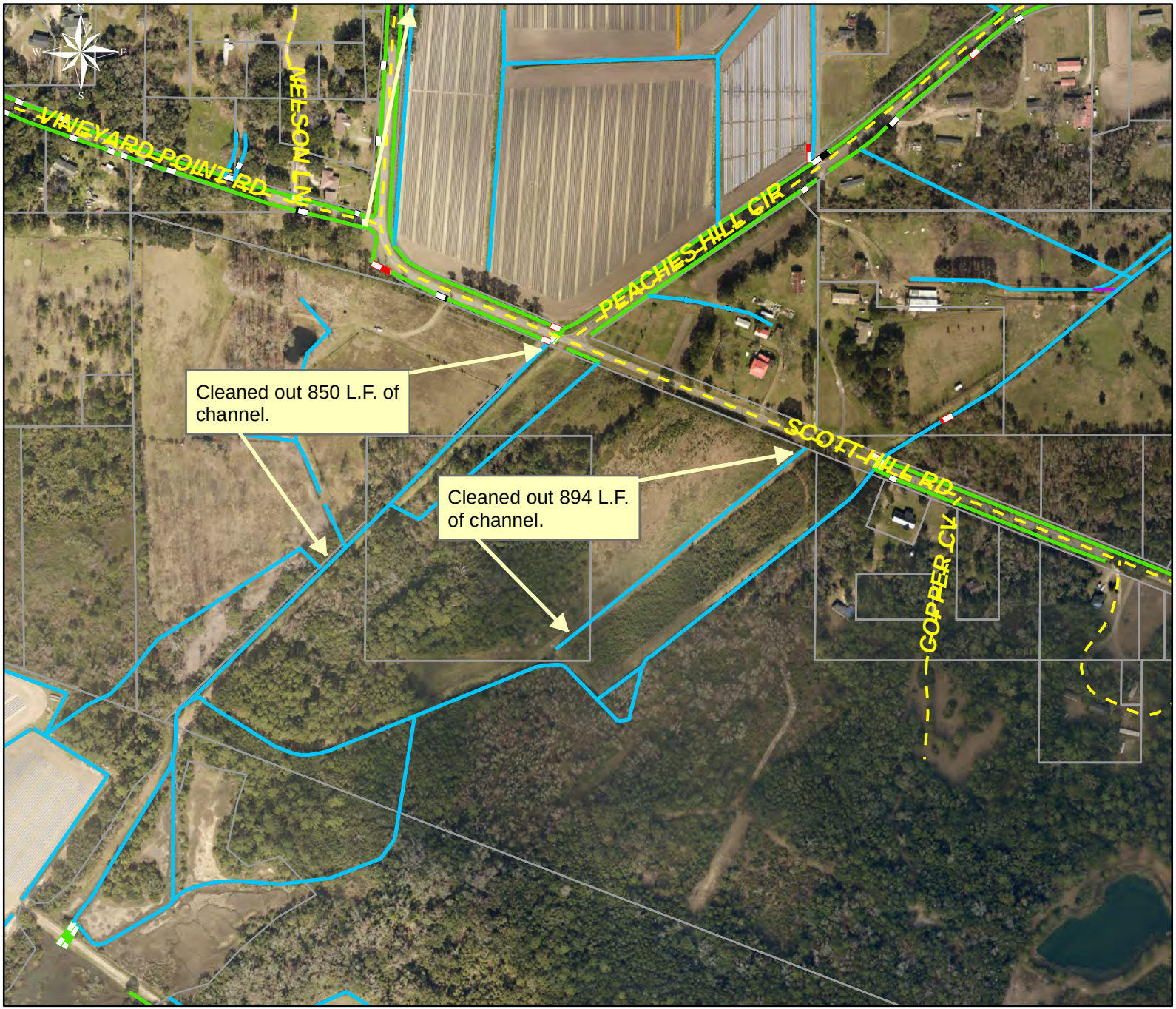
**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 95 190 380 570 760 Feet

**1 inch = 670 feet**

Prepared By: BC Stormwater Management Utility
Date Print:02/16/21
File:C:\project summaries map/Peaches Hill Circle and Scott Hill Road Channel #1 Map #1_2021-522




Project: Peaches Hill Circle and Scott Hill Road Channel #1 Map #2

Activity: Routine/ Preventive Maintenance

Project #: 2021-522

Township/SW Dist: St. Helena Island/8

Completed: January 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 65 130 260 390 520 Feet

**1 inch = 420 feet**

Prepared By: BC Stormwater Management Utility
Date Print:02/16/21
File:C:\project summaries map/Peaches Hill Circle and Scott Hill Road Channel #1 Map #2_2021-522

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

**Project Summary:** Port Royal Island Valley Drains- Murray Drive, Blackburn Pierce Drive, Harold Drive

**Activity:** Routine/Preventive Maintenance
**Duration:** 07/31/19 - 08/08/19

**Narrative Description of Project:**
Project improved 12,240 L.F. of drainage system. Cleaned out 12,240 L.F. of valley drains. This project consisted of the following area: Blackburn Pierce Drive (1,530 L.F), Murray Drive (7, 810 L.F.) and Harold Drive (2,900 L.F.)

| **2020-314 / Port Royal Island Valley Drains** | **Labor Hours** | **Labor Cost** | **Equipment Cost** | **Material Cost** | **Contractor Cost** | **Indirect Labor** | **Total Cost** |
|---|---|---|---|---|---|---|---|
| AUDIT / Audit Project | 1.0 | $21.79 | $0.00 | $0.00 | $0.00 | $0.00 | $21.79 |
| COVD / Cleaned Out Valley Drains | 92.0 | $2,432.71 | $228.06 | $163.32 | $0.00 | $613.41 | $3,437.50 |
| HAUL / Hauling | 18.0 | $400.86 | $254.88 | $47.88 | $0.00 | $259.56 | $963.18 |
| 2020-314 / Port Royal Island Valley Drains Project Sub | 111.0 | $2,855.36 | $482.94 | $211.20 | $0.00 | $872.97 | $4,422.47 |
| **Grand Total** | **111.0** | **$2,855.36** | **$482.94** | **$211.20** | **$0.00** | **$872.97** | **$4,422.47** |

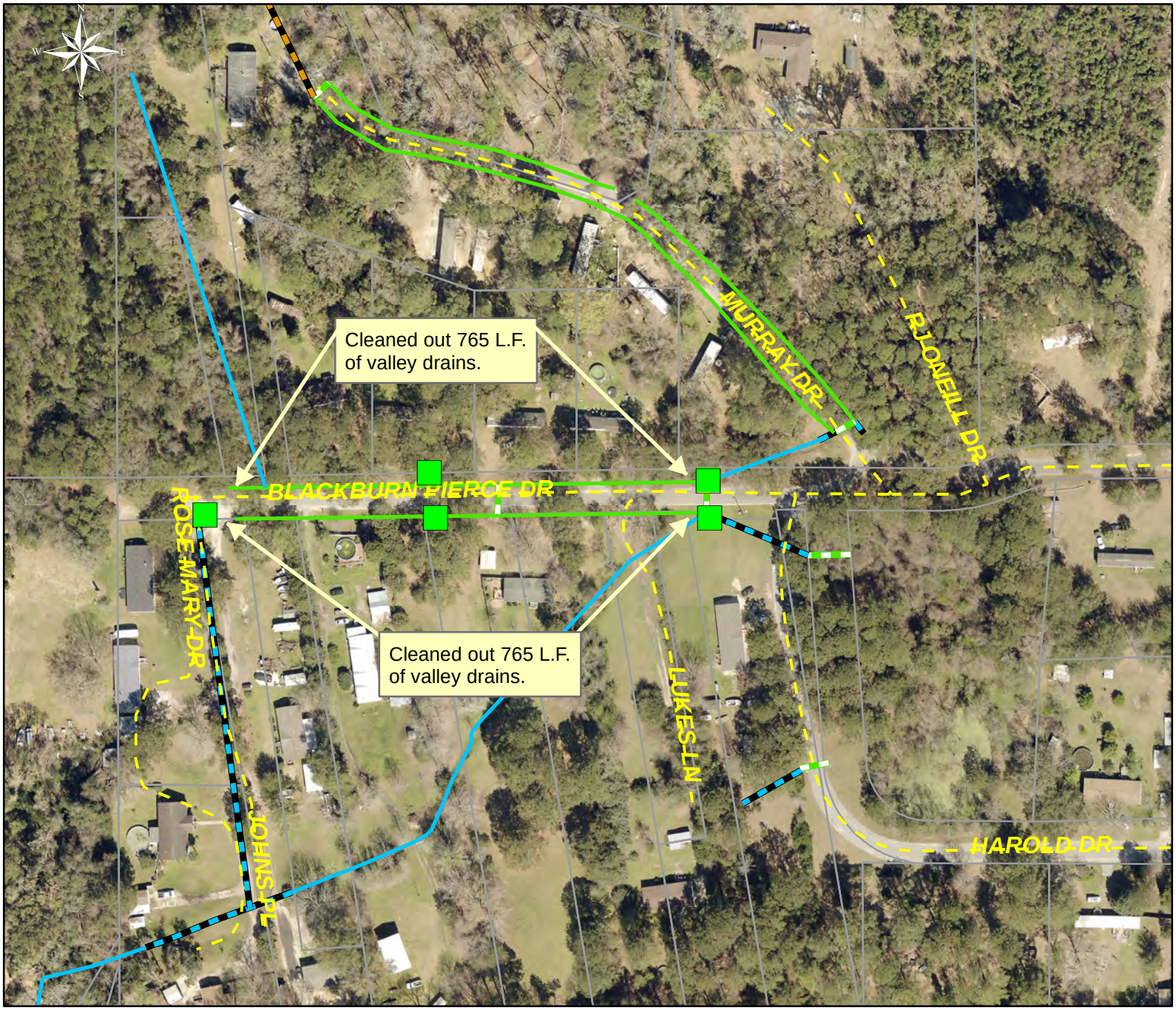
**Before**

**During**

**(No Pictures Available)**

**Ending**

**(No Pictures Available)**




Project: Port Royal Island Valley Drains- Blackburn Pierce Drive Map #1

Activity: Routine/ Preventive Maintenance

Project #: 2020-314

Township/SW Dist: Port Royal Island/6

Completed: August 2019

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 2550 100 150 200 Feet

**1 inch = 170 feet**

Prepared By: BC Stormwater Management Utility
Date Print:02/16/21
File:C:\project summaries map/Port Royal Island Valley Drains- Blackburn Pierce Dr.Map #1_2020-314


Project: Port Royal Island Valley Drains- Harold Drive Map #2

Activity: Routine/ Preventive Maintenance

Project #: 2020-314

Township/SW Dist: Port Royal Island/6

Completed: August 2019

**Legend**

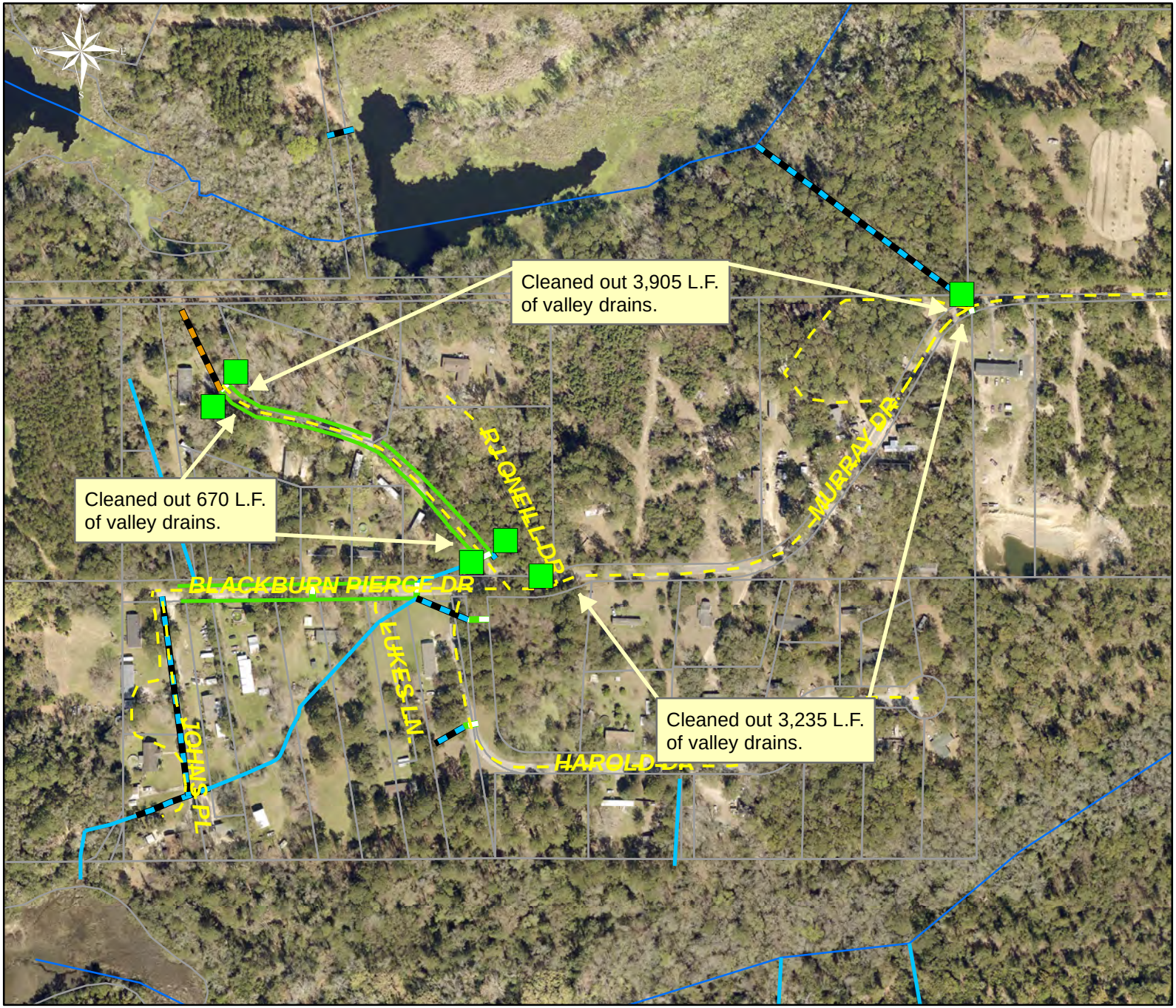
**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 2550 100 150 200 Feet

**1 inch = 170 feet**

Prepared By: BC Stormwater Management Utility
Date Print:02/16/21
File:C:\project summaries map/Port Royal Island Valley Drains- Harold Drive Map #2_2020-314




Project: Port Royal Island Valley Drains- Murray Drive Map #3

Activity: Routine/ Preventive Maintenance

Project #: 2020-314

Township/SW Dist: Port Royal Island/6

Completed: August 2019

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 60120 240 360 480 Feet

**1 inch = 330 feet**

Prepared By: BC Stormwater Management Utility
Date Print:02/16/21
File:C:\project summaries map/Port Royal Island Valley Drains- Murray Drive Map #3_2020-314

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

**Project Summary:** St. Helena Island Tree Removal

**Activity:** Routine/Preventive Maintenance
**Duration:** 05/14/19-05/20/20

**Narrative Description of Project:**
Removed fallen trees from workshelf and roadside.

| **2020-322A / St Helena Tree Removal** | **Labor Hours** | **Labor Cost** | **Equipment Cost** | **Material Cost** | **Contractor Cost** | **Indirect Labor** | **Total Cost** |
|---|---|---|---|---|---|---|---|
| AUDIT / Audit Project | 1.0 | $21.79 | $0.00 | $0.00 | $0.00 | $0.00 | $21.79 |
| HAUL / Hauling | 20.0 | $438.00 | $283.20 | $121.80 | $0.00 | $144.20 | $987.20 |
| RMTRW / Remove trees - Workshelf | 35.0 | $761.20 | $220.85 | $40.30 | $0.00 | $183.15 | $1,205.50 |
| 2020-322A / St Helena Tree Removal Project Sub Total | 56.0 | $1,220.99 | $504.05 | $162.10 | $0.00 | $327.35 | $2,214.49 |
| **Grand Total** | **56.0** | **$1,220.99** | **$504.05** | **$162.10** | **$0.00** | **$327.35** | **$2,214.49** |

# (No Pictures Available)


Project: St. Helena Island Tree Removal- Bay Point Road Map#1

Activity: Routine/ Preventive Maintenance

Project #: 2021-322A

Township/SW Dist: St. Helena Island/8

Completed: May 2020

**Legend**

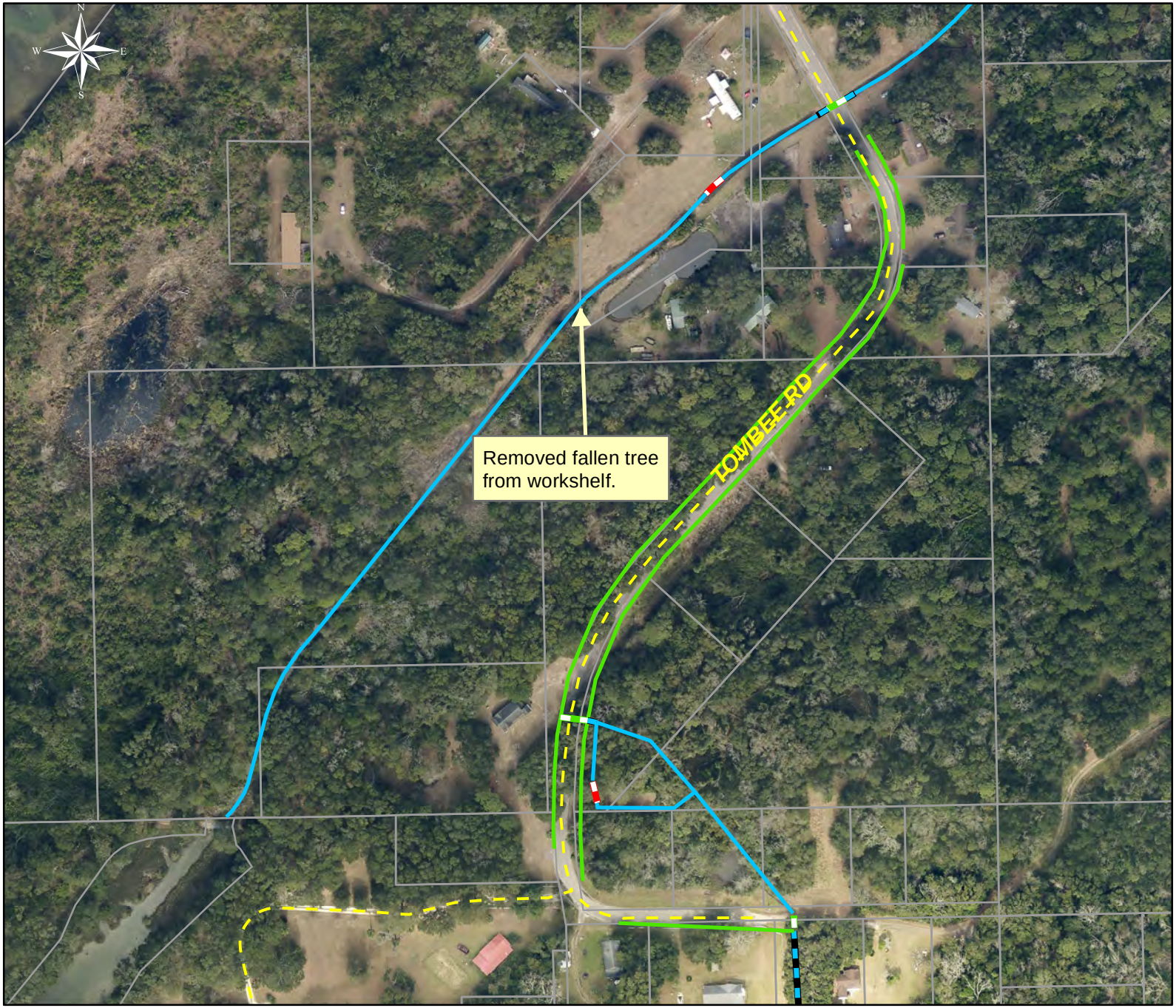
**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 4080 160 240 320 Feet

**1 inch = 250 feet**

Prepared By: BC Stormwater Management Utility
Date Print:10/6/20
File:C:\project summaries map/St.Helena Island Tree Removal- Bay Point Road Map#1_2021-322A




Project: St. Helena Island Tree Removal- Tombee Road Map#2

Activity: Routine/ Preventive Maintenance

Project #: 2021-322A

Township/SW Dist: St. Helena Island/8

Completed: May 2020

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 35 70 140 210 280 Feet

**1 inch = 210 feet**

Prepared By: BC Stormwater Management Utility
Date Print:02/17/21
File:C:\project summaries map/St.Helena Island Tree Removal- Tombee Road Map#2_2021-322A

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

**Project Summary:** Shed Road

**Activity:** Routine/Preventive Maintenance
**Duration:** 10/29/20-11/02/20

**Narrative Description of Project:**
This project improved 530  L.F. of drainage system. Cleaned out 530 L.F. of roadside ditch.

| **2021-510 / Shed Road** | **Labor Hours** | **Labor Cost** | **Equipment Cost** | **Material Cost** | **Contractor Cost** | **Indirect Labor** | **Total Cost** |
|---|---|---|---|---|---|---|---|
| AUDIT / Audit Project | 1.0 | $21.79 | $0.00 | $0.00 | $0.00 | $0.00 | $21.79 |
| HAUL / Hauling | 8.0 | $210.08 | $152.48 | $80.00 | $0.00 | $0.00 | $442.56 |
| RSDCL / Roadside Ditch - Cleanout | 39.0 | $838.55 | $325.77 | $83.36 | $0.00 | $277.80 | $1,525.48 |
| 2021-510 / Shed Road Project Sub Total | 48.0 | $1070.42 | $478.25 | $163.36 | $0.00 | $277.80 | $1989.83 |
| **Grand Total** | **48.0** | **$1070.42** | **$478.25** | **$163.36** | **$0.00** | **$277.80** | **$1,989.83** |

# No Pictures Available


Project: Shed Road

Activity: Routine/ Preventive Maintenance

Project #: 2021-510

Township/SW Dist: St. Helena Island/8

Completed: November 2020

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 55 110 220 330 440 Feet

**1 inch = 250 feet**

Prepared By: BC Stormwater Management Utility
Date Print:03/31/21
File:C:\project summaries map/Shed Road_2021-510

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

**Project Summary:** Harbor River Drive

**Activity:** Routine/Preventive Maintenance
**Duration:** 01/04/21

**Narrative Description of Project:**
Removed blockages from flowline.

| **2021-519 / Harbor River Drive** | **Labor Hours** | **Labor Cost** | **Equipment Cost** | **Material Cost** | **Contractor Cost** | **Indirect Labor** | **Total Cost** |
|---|---|---|---|---|---|---|---|
| AUDIT / Audit Project | 1.0 | $21.79 | $0.00 | $0.00 | $0.00 | $0.00 | $21.79 |
| HAUL / Hauling | 16.0 | $356.32 | $304.96 | $73.80 | $0.00 | $230.72 | $965.80 |
| RB / Remove blockage from flowline | 16.0 | $333.20 | $149.14 | $0.00 | $0.00 | $97.68 | $580.02 |
| 2021-519 / Harbor River Drive Project Sub Total | 33.0 | $711.31 | $454.10 | $73.80 | $0.00 | $328.40 | $1,567.61 |
| **Grand Total** | **33.0** | **$711.31** | **$454.10** | **$73.80** | **$0.00** | **$328.40** | **$1,567.61** |

**Before**

**During**


**After**


Project: Harbor River Drive

Activity: Routine/ Preventive Maintenance

Project #: 2021-519

Township/SW Dist: St. Helena Island/8

Completed: January 2021

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 25 50 100 150 200 Feet

**1 inch = 130 feet**

Prepared By: BC Stormwater Management Utility
Date Print:02/16/21
File:C:\project summaries map/Harbor River Drive_2021-519

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

**Project Summary:** Joseph Lane

**Activity:** Routine/Preventive Maintenance
**Duration:** 10/01/20

**Narrative Description of Project:**
This project improved 100  L.F. of drainage system. Cleaned out 100 L.F. of roadside ditch.

| **2021-530 / Joseph Lane** | **Labor Hours** | **Labor Cost** | **Equipment Cost** | **Material Cost** | **Contractor Cost** | **Indirect Labor** | **Total Cost** |
|---|---|---|---|---|---|---|---|
| AUDIT / Audit Project | 1.0 | $21.79 | $0.00 | $0.00 | $0.00 | $0.00 | $21.79 |
| RSDCL / Roadside Ditch - Cleanout | 9.0 | $191.73 | $34.34 | $3.26 | $0.00 | $76.32 | $305.65 |
| 2021-530 / Joseph Lane Project Sub Total | 10.0 | $213.52 | $34.34 | $3.26 | $0.00 | $76.32 | $327.44 |
| **Grand Total** | **10.0** | **$213.52** | **$34.34** | **$3.26** | **$0.00** | **$76.32** | **$327.44** |

# (No Pictures Available )


Project: Joseph Lane

Activity: Routine/ Preventive Maintenance

Project #: 2021-530

Township/SW Dist: Sheldon/5

Completed: October 2020

**Legend**

**Drainage Type**

- Access Pipe
- Bleeder Pipe
- Channel Pipe
- Channel
- Stream
- Crossline Pipe
- Driveway Pipe
- Lateral
- Lateral Pipe
- River
- Road Pipe
- Roadside
- Roadside Pipe

0 25 50 100 150 200 Feet

**1 inch = 100 feet**

Prepared By: BC Stormwater Management Utility
Date Print:02/09/21
File:C:\project summaries map/Joseph Lane_2021-530

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

March 10, 2021 at 2:00 p.m.

Beaufort County Council Chambers, Administration Building, Beaufort County Government Robert Smalls Complex, 100 Ribaut Road, Beaufort, South Carolina and via Webex

**Board Members**

| Present | Absent |
|---|---|
| Allyn Schneider | |
| James Clark | |
| Marc Feinberg | |
| Patrick Mitchell | |
| Steven Andrews | |
| Brian Watkins | |

**Ex-Officio Members**

| Present | Absent |
|---|---|
| | Nate Farrow |
| | Van Willis |
| | Kim Jones |

**Beaufort County Staff**

Tiffany Patrick
Katie Herrera
Carolyn Wallace

**Visitors**

Ellen Sturup Comeau, Clemson Extension
Jeff Netzinger, Town of Hilton Head
Alice Howard, County Council
Bryan Durrance

**1. Meeting called to order –** Marc Feinberg at 2:00 pm

**A.** Agenda – Approved

**B.** Approval of Minutes – Approved

**2. Introductions –** Completed.

**3. Public Comment(s) –** None.

**4. Reports**

*Reports attached in agenda*

***Highlights:***

**A. Utility Update –** Katie Herrera

- ✓ Southern Lowcountry Regional Board (SoLoCo)
  - o All project milestones have been reached and the design manual has been completed. Design standards were implemented February 1, 2021.

- ✓ A request was received from Mr. Andrews to present on the Battery Creek watershed and bacteria levels. Katie will present on that at the June board meeting.

- ✓ DHEC will be present at the September meeting to present their annual report summary.

- ✓ The county continues to work on delinquent accounts for the military installations. This is still being handled by the county's legal department.

- ✓ Reminder: Annual Financial report from the Municipalities are due – Per the Intergovernmental Agreements for the Utility, each year on September 30th, the City and Towns are required to submit a summary of revenue and expenditures for the previous fiscal year.
    - ***Beaufort County –*** Waiting on annual financial report, anticipating completion in April.
    - ***Town of Hilton Head Island – Received.***
    - ***Town of Bluffton – Received.***
    - Town of Port Royal – Not received.
    - City of Beaufort – Not received

**B. Monitoring Update –** Katie Herrera
***Highlights:***

- ✓ Drainage studies for Pepper Hall began.

- ✓ Okatie West Pond Bold and Gold testing results have been unsuccessful due to low bacteria.

- ✓ Port Royal redevelopment and Cypress Wetlands testing continues.

**C. Stormwater Implementation Committee (SWIC) Report –** Katie Herrera
***Highlights:***

- ✓ The annual report memo as well as the management fee memo was submitted to the municipalities. They have until April 1, 2021 to provide concurrence letters.

**D. Stormwater Related Projects** – Katie Herrera
***Highlights:***

- ✓ County staff continues to work on getting easements and meets monthly to review.

- ✓ The flyover bridge permitting and updating of new cost estimates has been completed. Beaufort County will be using the list of contractors under $15,000 to complete the work.

- ✓ Shell Point Community – County staff will meet with Cranston Engineering on March 12, 2021 to extend the contract until May 31, 2021. The extended contract ensures all project milestones have been completed and the participation of Cranston Engineering in public hearings and meetings.

- ✓ Factory Creek Watershed Regional Detention Basin "Phase I" & Academy Park Subdivision – Construction is complete and ready for close out. Andrews Engineering is scheduled to complete the as-built by the end of March.

- ✓ Factory Creek Watershed Regional Detention Basin "Phase II – Construction has been completed and will only require an easement acquisition.

- ✓ Graves Property – Staff is meeting with developers and owners on a bi-monthly basis to make sure all departments within the county are fully aware of the steps still needed to be taken. Beaufort County has issued the first payment for $375,000 based on the development agreement requirement to pay 50% of stormwater infrastructure and drainage costs that the developer incurs.

- ✓ Lady's Island Plan, Sea Level Rise, and "no-fill" ordinance – The committee is working behind the scenes with the Charleston group and Community Development Director, Mr. Rod Merchant to finalize the plan.

**E. Professional Contracts Report –** Katie Herrera
***Highlights:***

- ✓ Salt Creek and Shanklin Road – All necessary permits have been obtained. Beaufort County is still working with DOT. The county is not getting community feedback. After Quarter One of Fiscal Year 2022, if there is no interest by property owners to participate in regional BMPs, they will be taken off the CIP list. The next step is to get the land acquisition lawyer involved to ensure that people are not interested in this project and then move forward.

- ✓ Brewer Memorial – Conditional final SRT approval has been received. The Beaufort County Open Land Trust has approved the plans as designed and the County is awaiting final SRT approval.

- ✓ Evergreen Regional Pond 319 – The final contract has been sent to CBG Incorporated for their signature and then the project can proceed.

- ✓ Stormwater engineering consulting services – Woolpert conducted in house training in February for Beaufort County employees and The Town of Bluffton, The Town of Hilton Head Island, The City of Beaufort and the Town of Port Royal staff. Woolpert completed a review of the TMDL that is to be written for Capers Creek.

**F. Regional Coordination** – Katie Herrera
***Highlights:***

- ✓ Mossy Oaks Task Force – Completion of construction is rapidly coming to an end for both phases of the project. The engineering analysis has demonstrated that the previous drainage system within that system was not constructed taking the entire area into consideration, this has now been corrected with the new plan. The final project close out is anticipated by late April or early May 2021. The project has been on schedule and on budget.

**G. Municipal Reports –** Katie Herrera
*Reports attached in agenda*
***Highlights:***
*Reports information.*

- ✓ Brian Eber, Town of Hilton Head Island MS4 Coordinator, Bill Bower, Town of Bluffton, and Katie Herrera met mid-February to discuss efforts with MS4 compliance.

- ✓ Town of Hilton Head Island (From Jeff Netzinger, Stormwater Manager)
  - o Reports Received
  - o Major capital improvements were completed last year overhauling the Jarvis Creek pump station. This fall the same will begin with the Lawton pump station in Sea Pines.
  - o Application was submitted for the work on these pump stations with the Municipal Association of South Carolina in the Public Works category. The Town of Hilton Head Island was selected as the winner for that award.

- ✓ Town of Bluffton (From Kim Jones, Watershed Management Division Director)
  - o Reports Received – attached to the minutes

- ✓ City of Beaufort (From Nate Farrow, Public Works Director)
  - o No information was available at the time of this report.

- ✓ Town of Port Royal (From Van Willis, Town Manager)
  - o No information was available at the time of this report.

**H. MS4 Update –** Katie Herrera

***Highlights:***

- ✓ Permits, permit issuance, plan reviews and inspections have not subsided. The County had over 700 inspections last month.

- ✓ Rainfall Report – Beaufort County received quite a bit of rain but is not seeing an influx of drainage issues.

- ✓ Katie Herrera will be filming with the County Channel at Okatie West Pond to talk about the MS4 program and the history of the EPA and Clean Water Act.

- ✓ MS4 Statewide General Permit – Paul Quattlebaum has left DHEC; Beaufort County is anticipating delays on MS4 permits until his position is filled. The statewide general permit for construction was effective as of March 1, 2021. Anything less than one acre is going to receive automatic coverage for the NOI. Construction activities related to public emergency will not require permits to be in place prior to the work being started, they will have 30 days to let the state know that work has begun.

- ✓ Education Report - Ellen Sturup Comeau, Clemson Extension
  - o Upcoming webinar, Keeping Ponds Healthy with Proactive Management will be held on March 31, 2021. The Clemson Extension water resources team is bringing back the Being a Neighbor for Clean Water webinars. More information can be found on the Facebook page.
  - o The first ever rain barrel sale is in the works for this summer.
  - o In person events are still limited at this time.

**I. Maintenance Projects Report** – Katie Herrera
***Highlights:***

- ✓ One major project:
  - Buckwalter Parkway – Bluffton (SWUD 4): $19,934.85

- ✓ Six minor or routine projects:
  - Lady's Island Bush Hog – Lady's Island (SWUD 7): $19,837.48
  - St. Helena Island Vacuum Truck – St. Helena Island (SWUD 8): $14,738.62
  - Roseida Road – Port Royal Island (SWUD 9): $4,064.64
  - Chisholm Hill Road Channel #1 – Port Royal Island (SWUD 6): $3,912.98
  - Bluffton Bush Hog – Bluffton (SWUD 4): $3,646.15
  - Brickyard Point Road N – Lady's Island (SWUD 7): $1,980.68

**J. Liaison Report – Beaufort County Council -** Alice Howard
***Highlights:***

- ✓ The mayors of The City of Beaufort and the Town of Port Royal have both written letters regarding their opposition to collecting stormwater fees from the military.

**5. New Business –**

- ✓ Katie Herrera acknowledged Carolyn Wallace's exemplary work on this year's Stormwater budget.

- ✓ The budget summary was sent to the board on March 1, 2021. One question was received from Alice Howard regarding the stormwater engineering study of the Shell Point area and whether or not that was included in a category underneath the budget. Results from that study are still pending, once received a task force will be created to oversee that the correct participants are included and that the correct improvements are being funded. It will then be included in the budget. The board has concerns with the tardiness of the reports from Cranston Engineering. Katie stated that it has been noted by Beaufort County as well.

- ✓ FY22 Budget Summary Report –
  *Report attached in agenda*

  - The budget has been entered into the financial system and will be going to County Council for review beginning in April 2021.
  - Work is being done to update the MOUs and MOAs within municipalities.
  - Mr. Feinberg noted that it was anticipated last year that the budget would be $500,000 and it is now up to $750,000 for next year. The Stormwater budget has to absorb the increase. Katie responded that the increase for next year is due to the work on the roads and infrastructure that is going for final permitting at this time, the bulk of the infrastructure construction is expected to be completed in FY22.
  - Mr. Feinberg requested a presentation by the legal team tasked with the military delinquency fees.

**6. Public Comment(s)** – *None*

**7. Next Meeting Agenda** –

- ✓ Mr. Feinberg requested to move meetings to bi-monthly. Katie responded that Boards and Commissions would need to be consulted to make certain that FOIA requirements are being followed. The current schedule was created and approved by the board in November 2020 based upon important milestones throughout the year. A board packet is provided monthly to keep board members abreast of all information.
- ✓ Mr. Watkins motioned to set the meetings to bi-monthly. The motion failed by vote.
- ✓ Mr. Mitchell motioned that the next meeting will be as scheduled June 9, 2021 and at that time the board will revisit the schedule to make it bi-monthly if necessary. Motioned passed unanimously.
- ✓ Mr. Schneider motioned that the Stormwater Utility Board recommend that Beaufort County Council approve the budget as presented. Motion passed unanimously.
- ✓ Mr. Feinberg would like to add to the June agenda to have Beaufort County's legal personnel present to the board regarding the military's delinquent accounts.
- ✓ Mr. Feinberg would like a report from Dr. Montie added to the June agenda.
- ✓ Mr. Schneider moved to approve an amended June agenda with the two additions.
- ✓ Mr. Clark requested a Shell Point presentation be added to the June agenda.
- ✓ Mr. Mitchell amended his motion to: the next meeting will be as scheduled June 9, 2021 with the three amended discussions to be added to the agenda. Motion passed unanimously.
- ✓ Amended agenda approved by vote.

**8. Meeting Adjourned**

**TOWN COUNCIL**

**STAFF REPORT**
**Engineering Department**

| | |
|---|---|
| **MEETING DATE:** | March 9, 2021 |
| **SUBJECT:** | Engineering Department Monthly Report |
| **PROJECT MANAGER:** | Bryan McIlwee, Director of Engineering |

## ***CAPITAL IMPROVEMENTS PROGRAM (CIP) AND SPECIAL PROJECTS UPDATE***

### PATHWAYS

**1. Goethe-Shults Sidewalks Phase 2**

- Construction documents and easements are complete.
- Invitation for Bids were posted on 1/8/2021
- **Next Steps**
  - Obtain bids on 2/15/2021.
  - Submit contract for approval at the March Town Council meeting.

**2. Buck Island-Simmonsville Neighborhood Sidewalks and Lighting**

- Phase 5 Kitty Road to 301 Buck Island Road, construction is complete. Design of street lighting is underway.
- Phase 6A along Simmonsville Road from Grayco northward to Sugaree Drive is under design and permit review. Invitation to bid to be posted in February.
- Phase 6B along Simmonsville Road from Sugaree Drive northward to the existing New Mustang Road sidewalks is under design.
- **Next Steps**
  - Phase 5 from Kitty Road to lot 310 Buck Island Road inspection and permit closeout.
  - Submit Phase 5 street lighting for an SCDOT encroachment permit. Install street lighting in the second quarter of 2021.
  - Phase 6 design and construction of the remaining Simmonsville Road sidewalks, to be completed in FY 2021-2022.

**3. Bridge Street Streetscape**

- Construction documents and permitting are underway for Phase 1 streetscape, Burnt Church Road to Calhoun Street. 70% construction drawings are complete and Staff provided plan comments to Cranston Engineering.

- SCDHEC 319 grant application was awarded for $179,700 for drainage and water quality improvements.
- **Next Steps**
  - Complete engineering design in February 2021.
  - Execute contract with Cranston Engineering to complete design modifications and reporting related to the 319 Grant.
  - Prepare easement plats, appraisals, obtain easements and issue bid documents in FY 2021.
  - Construction to start in FY 2022.

**4. Boundary Street Streetscape**

- Obtained contract approval for engineering services with Thomas and Hutton.
- Project kick off meeting on 1/28/21
- **Next Steps**
  - Begin Preliminary Engineering Design in February 2021.

**5. New Riverside Linear Trail**

- **Next Steps**
  - Begin surveying and prepare a Conceptual Master Plan in FY 2022, pending budget approval.
  - Research grant opportunities to fund planning and construction of future trail improvements.

## SEWER & WATER

**1. Buck Island-Simmonsville Sewer (Phases 5A-5D)**

- Construction is underway on Phase 5A-D.
- **Next Steps**
  - Complete construction on Phase 5A-D by 7/1/21 contingent upon no extensive weather delays or unforeseen utility conflicts.
  - Start house connections after the main line is approved by DHEC.

**2. Historic District Sewer Extension Phase 1 - Pritchard Street**

- Construction has started.
- **Next Steps**
  - Start house connections after the main line is approved by DHEC.

**3. Historic District Sewer Extension Phase 2 - Bridge Street**

- Received SCDHEC permit to construct.
- Continue negotiations with property owners for right of entry agreements.

- **Next Steps**
  - Obtain road ownership from SCDOT.
  - Advertise for bids.

**4. Historic District Sewer Extension Phase 3 – Colcock Street**

- Started surveying and design.
- **Next Steps**
  - Review design drawings.

**5. Historic District Sewer Extension Phase 4 – Lawrence Street**

- Started surveying and design.
- **Next Steps**
  - Review design drawings.

**6. Historic District Sewer Extension Phase 5 – Green Street**

- Started surveying and design.
- **Next Steps**
  - Review design drawings.

**7. Historic District Sewer Extension Phase 6 – Water Street**

- Started surveying and design.
- **Next Steps**
  - Review design drawings.

## HISTORIC DISTRICT IMPROVEMENTS

**1. Boundary Street Lighting**

- Phase 2 photometric plans complete.
- Received encroachment permit from SCDOT.
- Lighting agreements approved by Town Council in May 2020.
- Agreement has been executed by both parties.
- Dominion Energy is negotiating modifications to SCDOT encroachment permits.
- SCDOT and Dominion indicated poles must be installed on Private Property due to conflicts with Sewer Force Main along Boundary Street
- **Next Steps**
  - Obtain easements as needed for Phase 2 street lighting.
  - Begin installation of street lighting in March 2021.

**2. Historic District Enhancements**

- Watershed Management Staff is evaluating preliminary plans to prepare drainage solutions at AME Church.
- Traffic calming guidelines and plan are being negotiated with engineering consultant.

- **Next Steps**
  - ADA ramps and crosswalks are being mapped in Cartegraph by GIS/IT.
  - Continue planning of crosswalks and ADA improvements.
  - Complete Traffic Calming Assessment and Plan.

**3. Calhoun Street Streetscape**

- Conceptual Master Planning is complete and reviewed at the July Quarterly Workshop.
- Obtained contract approval for Engineering services at the January 2021 Town Council meeting
- Project Kick-off meeting on 1/28/2021.
- **Next Steps**
  - Begin Engineering design in February 2021.

**4. Squire Pope Carriage House Preservation**

- Construction Documents are complete and submitted to SHPO for a courtesy review.
- **Next Steps**
  - Finalize any modifications to the Construction Documents and prepare bid solicitation package.
  - Awaiting budget approval for future construction.
  - Coordinate design of "Coming Soon" sign.

**PARK DEVELOPMENT**

**1. Oyster Factory Park**

- Conceptual Master Plan has been updated and reviewed by Town Council at the January Quarterly Workshop.
- **Next Steps**
  - Obtain ACOE and DHEC Permit for installation of salvaged dock components from Calhoun Street.
  - Begin final design of next phase of improvements per Town Council direction provided at the Workshop.

**2. 68 Boundary Street Park Renovations**

- Construction and maintenance contracts complete.
- **Next Steps**
  - Fabricate Martin Family dedication sign prior to 4/8/2021 park dedication.

**3. Calhoun Street Dock and Public Riverfront Access Improvements**

- Dock construction is complete.
- **Next Steps**
  - Complete installation of Dock signage.

**4. Wright Family Park**

- Bulkhead, boardwalk, restroom building, perimeter sidewalks, landscaping and parking area are complete.
- Site signage, and furniture are 99% complete.
- **Next Steps**
  - Coordinate Ribbon Cutting Ceremony as pandemic allows.
  - Additional benches are on reorder and will be installed in February 2021.
  - Prepare change order to add a sidewalk connection from park to the hammerhead/dock.

**5. Oscar Frazier Park**

- **Next Step**
  - Sidewalk construction complete.
  - Continue planning of future improvements in FY 2022.

**6. New Riverside Barn/Park**

- Submitted grant application to LWCF for $500,000.00 funding of the initial phase of the project. Application is under review by NPS and Staff expects to hear response in the Spring of 2021.
- Archeological Report complete as needed for Grant eligibility.
- Obtained Town Council approval of the Conceptual Master Plan at the December 2020 Council meeting.
- Obtained Proposals from Thomas and Hutton for Phase 1 Engineering design.
- **Next Steps**
  - Hart Howerton to complete Design Development drawings for Phase 1 site development and schematic design of barn improvements.
  - Complete construction drawings, cost estimating and permitting of Phase 1 development by July 2021.
  - Phase 1 bidding and construction anticipated to begin in FY 2022.

## TOWN FACILITIES AND MISCELLANEOUS PLANNING

**1. Buckwalter Place Multi-County Commerce Park**

- Buckwalter Place Park and Veterans Memorial are complete. Additional work was approved to modify irrigation system conversion from irrigation pond to BJWSA system.
- Executed contracts for Buckwalter Park restroom design with Thomas and Hutton and Pearce Scott Architects.
- Site planning for future development parcel underway with Cranston Engineering.
- Prepared estimate of probable construction cost and appraisal for future development site.

- **Next Steps**
  - Complete irrigation conversion at Park by January 2021.
  - Review progress plans for restroom building and utility extensions at Buckwalter Park.
  - Continue site planning for future development parcel.

**2. Town of Bluffton Housing Project**

- Surveying and geotechnical services complete for 1095 May River Road and 115 Bluffton Road sites.
- **Next Steps**
  - Planning and design to begin in FY 2021 as directed by Joint Venture Agreement.
  - Assist with the preparation of a comprehensive cost estimate for planning, design and construction for the various housing projects.

**3. Law Enforcement Center Facility Improvements**

- Parking and Service Yard Expansion construction began in December 2020 with CBG Siteworks Construction.
- Interior paint of Substation complete.
- **Next Steps**
  - Continue construction of LEC service yard and parking improvements. Construction anticipated to be complete by the July 2021.
  - Information Technology department coordinating upgrades to building security systems.

**4. Ghost Roads**

- Surveying and easement exhibits are complete.
- Pritchard Street Quit Claim Deed exhibits are 95% complete.
- The Town Attorney is working with Bridge Street property owners to obtain Quit Claim Deeds and agreement to extend service to homes.
- Staff is meeting with individual property owners to raise awareness of the acquisition efforts and communicate next steps.
- **Next Steps**
  - Continue meeting with individual property owners and obtaining quit claim deeds.

**5. Community Safety Cameras**

- Cameras have been installed at Bluffton Road Public Parking Lot, Veterans Park, Wright Family Park, Calhoun Street Dock .
- 14 older cameras in the network have been replaced.
- **Next Steps**
  - Continue with camera replacements and upgrades as necessary.

**6. Public Works Facility Improvements**

- Finalize the plans for expanding of Public Works yard.
- Install new plumbing/ electric for the washer and dryer.
- **Next Steps**
  - Begin permitting and bid for the expansion of the yard.
  - Bid the installation of the plumbing / electric.

**7. Rotary Community Center Facility Improvements**

- Replace the hardwood floor in the main area.
- **Next Steps**
  - Request bids for the replacement of the new floor.

**8. Watershed Management Facility Improvements**

- Remove the carpet and install new flooring in the rear office space.
- **Next Steps**
  - Request quotes on completing the new flooring in the office.

## ***DIVISION/STAFF UPDATES***

Project Management

Thirty-five (35) CIP projects are currently in progress. Don Ryan Center, Veteran Memorial, Buckwalter Park and BIS Phase 5 sidewalks, Wright Family Park and the Calhoun Street Dock have recently been completed. CIP projects including BIS Phase 5E sewer, and Pritchard Street sewer are currently under construction and nearing completion. The LEC Parking Expansion, BIS Phase 5A-D Sewer started construction in December 2020, and the Boundary Street Lighting projects is expected to start construction in March 2021. The remaining CIP projects are in the design phase and several are planned for construction in FY 2022.

Watershed Management

**1. Southern Lowcountry Regional Board (SoLoCo)**

**a. Regional Southern Lowcountry Post Construction Stormwater Ordinance and Design Manual**

- Via concurrence of the Mayor and direction by the Town Manager, staff has participated in the SoLoCo Technical Working Group to develop a regional stormwater model ordinance and design manual and investigate the viability of a regional stormwater authority.
- Beaufort County adopted the SoLoCo Stormwater ordinance and design manual and began implementation 2/1/21.
- 2/9/21 Town Council tabled the item until 4/13/21.
- **Next Steps**
  - 4/13/21 Town Council – Public Hearing and 2nd reading.
  - Anticipated implementation date of 5/1/21.

**2. Sea Level Rise Task Force**

- Following Beaufort County's presentation and request for regional participation at the 10/22/19 SoLoCo meeting, staff attended the Sea Level Rise Task Force meetings to discuss a possible No Fill Ordinance and county-wide sea level rise adaptation strategies.
- Task Force met 12/15/20 and 12/18/20 to prioritize recommendations for final document with strategies for local governments to implement policies, ordinances and projects to mitigate the potential impacts of sea level rise.
- **Next Steps**
  - Beaufort County to present and request a recommendation from SoLoCo for regional partners to adopt.

**3. Joint Councils Meeting for Watershed Management Initiatives**

- BJWSA developed their CIP list for FY 2020 sewer projects which does not include any projects in the County's jurisdiction in the May River Headwaters without cost-sharing.
- Following the Joint Councils Meeting with BJWSA, held on 2/25/20, staff from Beaufort County and Town of Bluffton met to discuss sewer extension scope and strategy on 2/27/20.
- Staff from the Town, County, and BJWSA met via Zoom 3/27/20 to confirm project scope, cost, and potential project manager. the last project cost estimate to extend, connect, and abandon septic in the Stoney Creek project area is $4.7 million (B. Chemsak email 7/22/19) but they anticipate those numbers increasing to $5.5 million. The proposal is 1/3 cost-share, so the Town's portion would be approximately $1.83 million. Beaufort County has not formally agreed or committed any funding.
- Neither BJWSA nor Beaufort County have committed funds in FY 2021 to begin sewer extension.
- Town Manager, Director of Engineering and staff met with BJWSA General Manager, Engineer and staff on 6/5/20 to discuss how to move the project forward.
- The Town submitted a response on 12/18/21 to BJWSA's "call for projects" request that prioritizes May River Watershed sewer projects.
- Staff drafted a letter for the Town Manager's review requesting Beaufort County commit to cost-sharing sewer projects in the May River watershed.
- **Next Steps**
  - Staff to present another update on current status at 4/13/21 Town Council meeting.

**4. SC Department of Health and Environmental Control May River Shellfish Harvesting Monitoring Data Year-to-Date and May River Shellfish Harvesting Status Exhibit – Attachments 1 and 1a**

**5. May River Watershed Action Plan Implementation Summary - Attachment 2**

**6. Municipal Separate Storm Sewer System (MS4) Program Update**

- Staff is currently updating the Town's MS4 Stormwater Management Plan and supporting documentation. SCDHEC is currently in the process of developing a revised National Pollutant Discharge and Elimination (NPDES) Permit for Small MS4s and will re-issue to permittees, including the Town, in the future.

**7. MS4 Minimum Control Measure (MCM) - #1 Public Education and Outreach, and MS4 MCM - #2 Public Participation and Involvement**

- Staff attended the Beaufort County Stormwater Utility Board meeting on 2/10/21.
- The May River Watershed Action Plan Advisory Committee met 2/25/21. **Attachment 3**
- Staff is working the Town Digital Communication Manager to promote a series of MS4 stormwater educational tips and reminders for the Bluffton community via the Town's Facebook page.
- Staff has tentatively set the date for the 2021 May River Cleanup for 5/01/21. Over the next several months, staff will be working to secure partnerships and coordinate this event if conditions allow it to be held.

**8. MS4 MCM – #3 Illicit Discharge Detection and Elimination**

- Stormwater Infrastructure Inventory Map - **Attachment 4a**
- *E. coli* Concentrations Trend Map - **Attachment 4b**
- Monthly, Microbial Source Tracking (MST) Maps - **Attachments 4c and 4d**
  - Town staff coordinates with the SC Department of Health and Environmental Control (SCDHEC) to pull MST samples concurrently with the state's routine shellfish harvesting water quality sampling at stations 19-19, 19-19A, 19-19B, 19-19C, and 19-24. SCDHEC will conduct sampling on 2/22/21. Staff will notify Council and Senior Staff of any pertinent findings from this sampling event via email.
  - Town staff collected seventeen (17) MST samples on 2/15/21 following approximately 2.19 inches of rainfall over seven (7) days. Staff will notify Council and Senior Staff of any pertinent findings from this sampling event via email.
- Illicit Discharge Investigations – **Attachment 4e**

**9. MS4 MCM – #4 Construction Site Stormwater Runoff Control – Attachment 5**

**10. MS4 MCM – #5 Stormwater Plan Review and Related Activity – Attachment 6**

**11. MS4 MCM – #6 Good Housekeeping (Staff Training/Education)**

- Town Staff attended a Beaufort County Staff training on 2/11/21 regarding SoLoCo implementation to maintain consistency between the jurisdictions for the new ordinance and design manual.
- Staff participated in a Sontek IQ-flow monitoring data training on 2/17/21.

**12. Citizen Drainage, Maintenance, and Inspections Concerns Map – Attachment 7**

**13. Citizen Request for Watershed Management Services & Activities – Attachment 8**

Public Works

**1. MS4 MCM – #6 Good Housekeeping (Ditch, Drainage and Roadside Maintenance)**

- Performed weekly street sweeping on Calhoun Street, Highway 46, Bruin Road, May River Road, Pin Oak Street, and curbs and medians on Simmonsville and Buck Island Roads.
- Performed ditch inspections
  - Arrow ditch (2,569 LF)
  - Red Cedar ditch (966 LF)
  - Buck Island roadside ditch (15,926 LF)
  - Simmonsville roadside ditch (13,792 LF)
- Ongoing roadside mowing, litter clean-up and maintenance of Masters' Way, McCracken Circle, Hampton Parkway, Buck Island and Simmonsville Roads, Goethe Road, Shults Road, Jason and Able Streets, Whispering Pine Road, May River Road and Eagles Field.
- Ongoing mowing of the New River side trail and field at New River barn.
- Beautification Program –Landscape Maintenance - ongoing routine.

**2. Facilities**

- Facilities and Parks Maintenance - ongoing routine.

**3. Public Works Activities Report - Attachment 10**

Attachments

1. SCDHEC Shellfish Harvesting Monitoring Data Year-to-Date
   a. SCDHEC May River Shellfish Harvesting Status Exhibit
2. May River Watershed Action Plan Implementation Summary*
3. MS4 Minimum Control Measures #1 and #2 – May River Watershed Action Plan Advisory Committee Cancelation Notice
4. MS4 Minimum Control Measure #3 – Illicit Discharge Detection and Elimination
   a. Stormwater Infrastructure Inventory Map
   b. *E. coli* Concentrations Trend Map
   c. Microbial Source Tracking Trend Map – Human Source
   d. Microbial Source Tracking Map – All Sources
   e. Illicit Discharge Investigations
5. MS4 Minimum Control Measure #4 – Construction Site Stormwater Runoff Control
6. MS4 Minimum Control Measure #5 – Stormwater Plan Review and Related Activity
7. Citizen Drainage, Maintenance and Inspections Concerns Map
8. Citizen Request for Watershed Management Services and Activities Map
9. Beautification Committee Agenda
10. Public Works Activities Report
11. CIP Project Schedules

* Attachment noted above includes the latest updates in bold and italic font.

SCDHEC Shellfish Harvesting Monitoring Data Year-to-Date
May River Headwaters Shellfish Stations

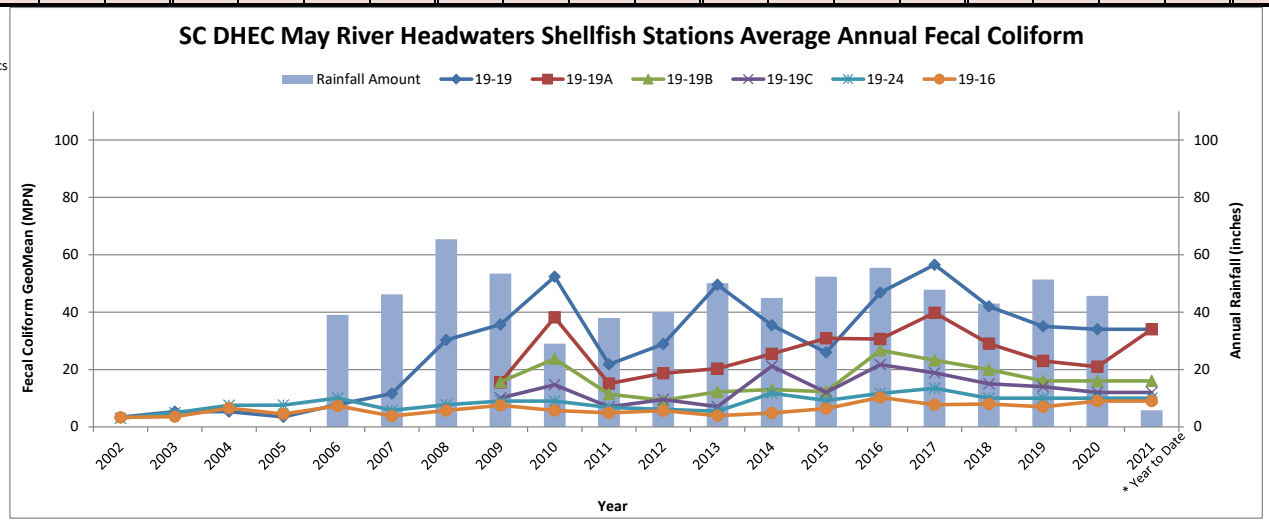
ATTACHMENT 1

| | 19-19 | | | | 19-19A | | | | 19-19B | | | | 19-19C | | | | 19-24 | | | | 19-16 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2018 | 2019 | 2020 | 2021 | 2018 | 2019 | 2020 | 2021 | 2018 | 2019 | 2020 | 2021 | 2018 | 2019 | 2020 | 2021 | 2018 | 2019 | 2020 | 2021 | 2018 | 2019 | 2020 | 2021 |
| | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) | Fecal Coliform (MPN) |
| December | 79.0 | 170.0 | 17.0 | | 49.0 | 33.0 | 22.0 | | 33.0 | 140.0 | 17.0 | | 46.0 | 33.0 | 4.5 | | 23.0 | 13.0 | 4.0 | | 21.0 | 110.0 | 11.0 | |
| November | 49.0 | 17.0 | 70.0 | | 13.0 | 6.8 | 31.0 | | 23.0 | 7.8 | 17.0 | | 17.0 | 11.0 | 13.0 | | 17.0 | 4.5 | 13.0 | | 7.8 | 2.0 | 4.5 | |
| October | 79.0 | 7.8 | 49.0 | | 23.0 | 4.5 | 79.0 | | 7.8 | 2.0 | 31.0 | | 7.8 | 4.5 | 21.0 | | 7.8 | 1.8 | 33.0 | | 2.0 | 2.0 | 79.0 | |
| September | 49.0 | 79.0 | 110.0 | | 23.0 | 33.0 | 49.0 | | 13.0 | 6.8 | 49.0 | | 17.0 | 17.0 | 33.0 | | 17.0 | 4.5 | 33.0 | | 17.0 | 1.8 | 33.0 | |
| August | 70.0 | 70.0 | 49.0 | | 23.0 | 49.0 | 49.0 | | 13.0 | 33.0 | 23.0 | | 4.5 | 22.0 | 23.0 | | 7.8 | 7.8 | 17.0 | | 17.0 | 17.0 | 22.0 | |
| July | 23.0 | 4.5 | 33.0 | | 33.0 | 13.0 | 13.0 | | 11.0 | 7.8 | 23.0 | | 7.8 | 17.0 | 7.8 | | 13.0 | 22.0 | 7.8 | | 4.5 | 13.0 | 17.0 | |
| June | 11.0 | 33.0 | NS | | 23.0 | 49.0 | NS | | 23.0 | 49.0 | NS | | 7.8 | 46.0 | NS | | 4.5 | 13.0 | NS | | 1.8 | 4.5 | NS | |
| May | 17.0 | 7.8 | 70.0 | | 33.0 | 9.2 | 49.0 | | 17.0 | 7.8 | 23.0 | | 13.0 | 2.0 | 22.0 | | 23.0 | 6.8 | 6.8 | | 13.0 | 4.5 | 4.5 | |
| April | 33.0 | 23.0 | 33.0 | | 13.0 | 13.0 | 33.0 | | 17.0 | 7.8 | 13.0 | | 17.0 | 6.8 | 6.8 | | 49.0 | 23.0 | 13.0 | | 17.0 | 6.8 | 13.0 | |
| March | 22.0 | 23.0 | 170.0 | | 21.0 | 23.0 | 49.0 | | 4.5 | 6.8 | 130.0 | | 11.0 | 13.0 | 49.0 | | 7.8 | 7.8 | 70.0 | | 9.3 | 4.5 | 33.0 | |
| February | 17.0 | 64.0 | 17.0 | | 7.8 | 33.0 | 7.8 | | 17.0 | 23.0 | 21.0 | | 17.0 | 31.0 | 4.5 | | 2.0 | 6.8 | 4.5 | | 7.8 | 13.0 | 6.8 | |
| January | 13.0 | 23.0 | 95.0 | 17.0 | 2.0 | 23.0 | 33.0 | 17.0 | 4.5 | 13.0 | 33.0 | 13.0 | 2.0 | 33.0 | 17.0 | 23.0 | 1.8 | 7.8 | 17.0 | 17.0 | 4.5 | 23.0 | 17.0 | 13.0 |
| Additional Samples | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Samples | | | | | | | | | | | | | | | | | | | | | | | | |
| Average Annual GeoMean | 30.8 | 26.4 | 51.4 | 17.0 | 17.5 | 19.0 | 31.9 | 17.0 | 13.1 | 13.0 | 27.3 | 13.0 | 10.7 | 14.5 | 14.0 | 23.0 | 9.8 | 8.0 | 13.8 | 17.0 | 7.9 | 7.5 | 15.3 | 13.0 |
| ** Truncated GeoMetric Mean | 42.0 | 35.0 | 34.0 | 34.0 | 29.0 | 23.0 | 21.0 | 34.0 | 20.0 | 16.0 | 16.0 | 16.0 | 15.0 | 14.0 | 12.0 | 12.0 | 10.0 | 10.0 | 10.0 | 10.0 | 8.0 | 7.0 | 9.0 | 9.0 |
| ** Truncated 90th Percentile | 176.0 | 168.0 | 106.0 | 106.0 | 115.0 | 89.0 | 59.0 | 106.0 | 71.0 | 63.0 | 50.0 | 50.0 | 56.0 | 52.0 | 37.0 | 37.0 | 44.0 | 38.0 | 31.0 | 31.0 | 30.0 | 32.0 | 35.0 | 35.0 |

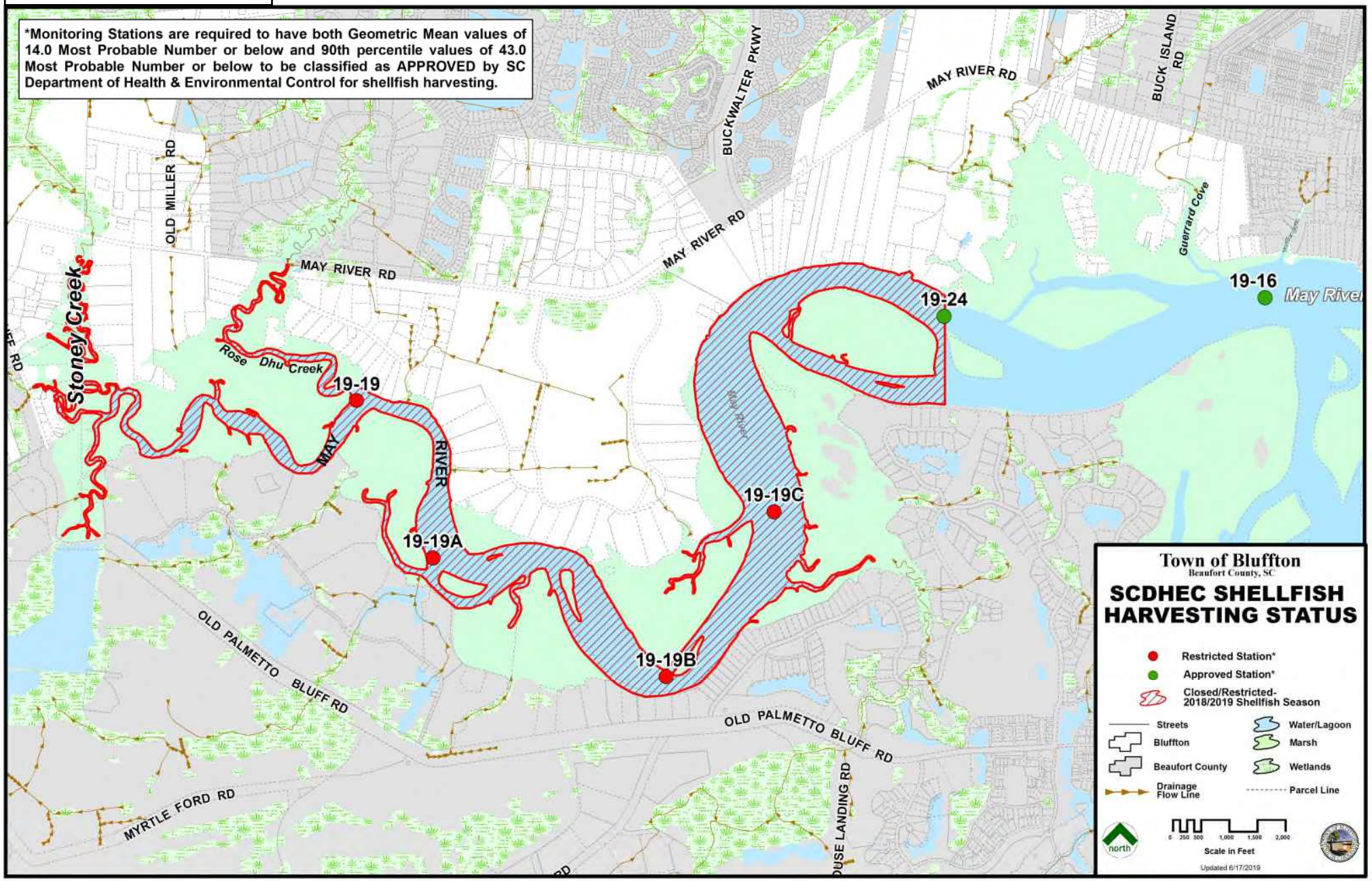
NS = No Sample

AS = Additional Samples

** Town staff calculations utilizing DHEC statistics



# May River Headwaters



| ACTIVITY - FINANCIAL | STATUS |
|---|---|
| Funding Opportunities | Council unanimously adopted $115 SWU Fee and NPDES-related Fees on 6/9/20. |
| **ACTIVITY - POLICIES** | **STATUS** |
| Sewer Connection & Extension Policy | *Completed 2017.* |
| Septic to Sewer Conversion Program | *Completed 2018.* |
| Sewer Connection Ordinance and Ordinance Amendment | *Completed 2015 and 2018, respectively.* |
| Southern Lowcountry Regional Stormwater Ordinance and Design Manual | ***Current project updates are included in Engineering Consent Agenda under "Southern Lowcountry Regional Board (SoLoCo)."*** |
| **ACTIVITY - PROJECTS** | **STATUS** |
| Sanitary Sewer Extension | Completed Buck Island/Simmonsville Road (BIS) Phases I, II, III, IV; Toy Fields; Jason/Able; and Poseys Court. Six project phases of Historic District sewer extension are proposed in the 5-year Capital Improvement Program. ***Current project updates are included in Engineering Consent Agenda under "Sewer & Water."*** |
| May River 319 Grant Phase 1 - New Riverside Pond (Grant award of $483,500 in 2009) | *Completed 2013.* |
| May River 319 Grant Phase 2 - Pine Ridge (Grant award of $290,000 in 2011) | *Completed 2016.* |
| May River 319 Grant Phase 3 - Town Hall Parking Retrofit (Grant award of $231,350 in 2016) | *Completed 2019*. |
| May River 319 Grant Phase 4 - Sanitary Sewer Connections (Grant award of $365,558.36 in 2019) | Grant to construct 49 sewer lateral connections in Poseys Court, Little Aaron and Historic District Phases 1 and 2. ***Current project updates are included in Engineering Consent Agenda under "Sewer & Water."*** |
| May River 319 Grant Phase 5 - Bridge Street Streetscape (Grant award of $179,900 in 2020) | Supports enhanced drainage and water quality improvements as part of the Bridge Street Streetscape project. ***Current project updates are included in Engineering Consent Agenda under "Pathways."*** |
| Stoney Creek Wetlands Restoration: Preliminary Design Phase | Project on hold following Council direction on 5/31/17. |
| May River Watershed Action Plan Update & Modeling Report | *Completed 2021.* ***Town Council adoption of document as a supporting document to the Comprehensive Plan on 2/9/21.*** |
| **ACTIVITY - PROGRAMS** | **STATUS** |
| Public Outreach/Participation/Involvement (MS4 Minimum Control Measures #1 & 2) | Outreach and involvement efforts continue through county-wide partnership with Carolina Clear as Lowcountry Stormwater Partners - Neighbors for Clean Water, through local cleanups, civic group presentations, and the May River Watershed Action Plan Advisory Committee. ***Current updates are included in Engineering Consent Agenda and Attachment 3.*** |
| Infrastructure Mapping/GIS (MS4 Minimum Control Measure #3) | Data points continue to be collected with new development to meet MS4 requirements & populate water quality model. ***Current updates are included in Engineering Consent Agenda Attachment 4a.*** |
| Water Quality Monitoring Program (MS4 Minimum Control Measure #3) | 1. SCDHEC Shellfish monitoring results and map<br>2. *E. coli* bacteria "hot spot" concentrations<br>3. Microbial Source Tracking of bacteria<br>4. Illicit Discharge investigation and monitoring<br>5. BMP efficacy monitoring<br>6. MS4 monitoring<br>***Current updates are included in Engineering Consent Agenda Attachments 1, 1a, 4b - 4d.*** |

| ACTIVITY - PROGRAMS continued | STATUS continued |
|---|---|
| Illicit Discharge Detection & Elimination (IDDE) Program<br>(MS4 Minimum Control Measure #3) | Response to reported and observed non-stormwater discharges to the stormwater drainage system. ***Current updates are included in Engineering Consent Agenda Attachment 4e.*** |
| Construction Site Stormwater Runoff Control Program<br>(MS4 Minimum Control Measure #4) | Sediment and erosion control inspections with escalating enforcement response. ***Current updates are included in Engineering Consent Agenda Attachment 5.*** |
| Stormwater Plan Review & Related Activity Program<br>(MS4 Minimum Control Measure #5) | SCDHEC delegated plan review-related activities. ***Current updates are included in Engineering Consent Agenda Attachment 6.*** |
| Ditch Inspection/Maintenance Program<br>(MS4 Minimum Control Measure #6) | Continued coordination with SCDOT, Beaufort County and Town Public Works to inspect and maintain ditches within the Town's jurisdiction. ***Current updates are included in Engineering Consent Agenda Attachment 7.*** |
| Neighborhood Assistance Program - Septic System Maintenance Program | On-going assistance offered to Town residents regardless of financial status through Neighborhood Assistance Program (NAP). ***Current updates are provided in Growth Management Consent Agenda.*** |

# May River Watershed Action Plan Advisory Committee Meeting

**Tuesday, February 25, 2021 at 9:00 AM**

**Electronic Meeting**

## AGENDA

This meeting can be viewed on the Town of Bluffton's Facebook page

**PUBLIC COMMENT**

*Public comments will be received via conference line provided by the Stormwater Coordinator. All requests for public comment will be accepted up to close of business (5:30 PM) the day prior to the scheduled meeting start time. Public Comments may be submitted electronically via the Town's website at https://www.townofbluffton.sc.gov/FormCenter/Town-15/Public-Comment-60 or to the Stormwater Coordinator at ldelhomme@townofbluffton.com.

**I. Call to Order**

**II. Notice Regarding Posting of Meeting per South Carolina Freedom of Information (FOIA) Requirements**

**III. Roll Call and Confirmation of Quorum**

**IV. Adoption of the Agenda**

**V. Adoption of the Minutes**

1. Meeting Minutes of January 21, 2021

**VI. Presentations, Celebrations and Recognitions**

1. Lowcountry Stormwater Partners – Ellen Comeau, Water Resources Agent, Clemson Extension

**VII. Public Comment**

**VIII. Old Business**

1. Water Quality Monitoring Program (Standing Item) – Beth Lewis, Water Quality Program Administrator
    a. Monthly Sampling Update
    b. Microbial Source Tracking (MST) Update
    c. SCDHEC Shellfish Data Update

**IX. Discussion**

**X. Adjournment**

**NEXT MEETING DATE: 9:00 AM, Thursday, March 25, 2021**

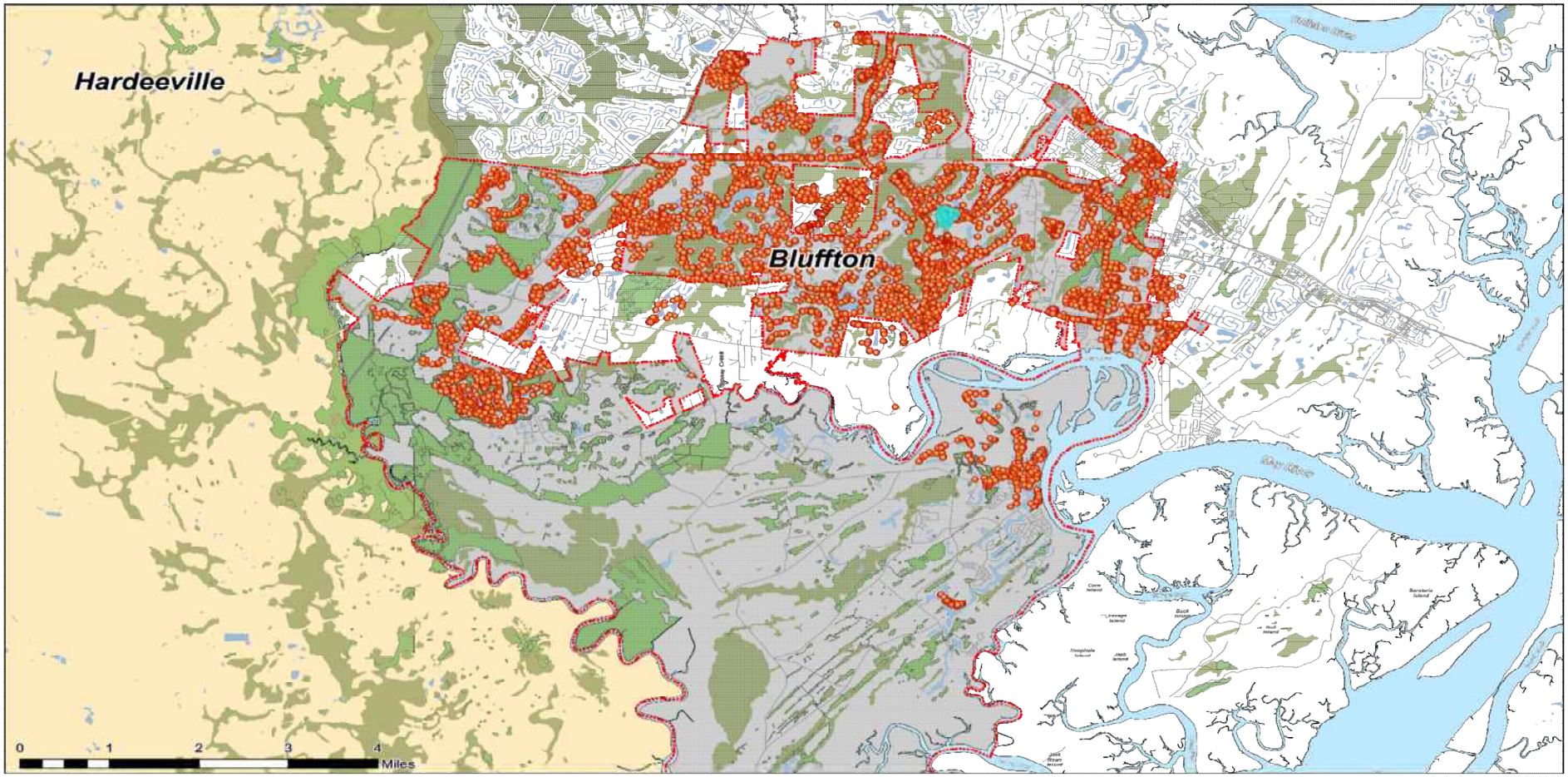
*"FOIA Compliance – Public notification of this meeting has been published and posted in compliance with the Freedom of Information Act and the Town of Bluffton policies."*

*In accordance with the requirements of Title II of the Americans with Disabilities Act of 1990 ("ADA"), the Town of Bluffton will not discriminate against qualified individuals with disabilities on the basis of disability in its services, programs, or activities. The Town of Bluffton Council Chambers are ADA compatible. Any person requiring further accommodation should contact the Town of Bluffton ADA Coordinator at 843.706.4500 or adacoordinator@townofbluffton.com as soon as possible but no later than 48 hours before the scheduled event.*

**Please note that each member of the public may speak at public comment session and a form must be filled out and given to Town Staff. Public comment must not exceed three (3) minutes.*

ATTACHMENT 4a

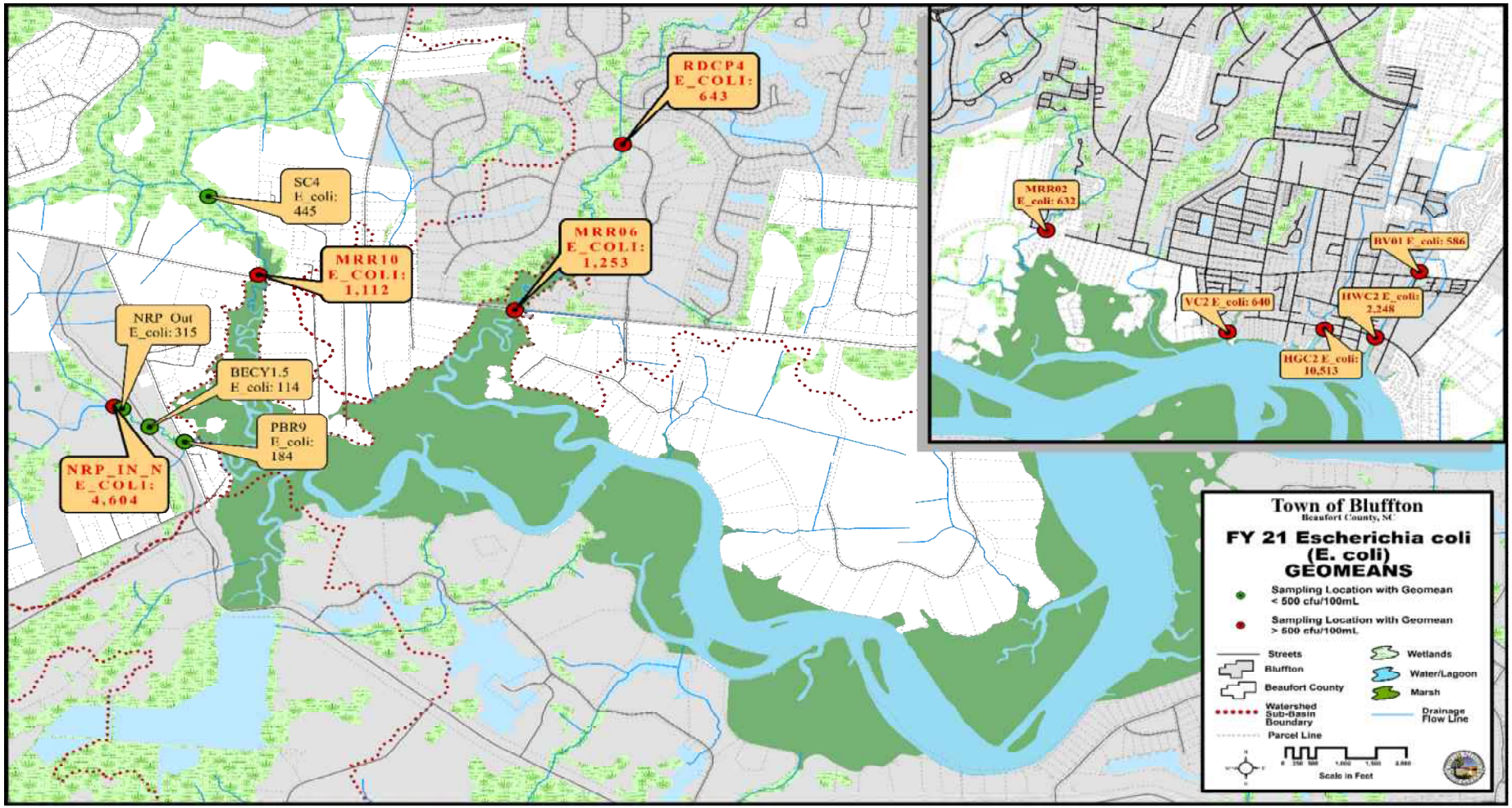
# MS4 Minimum Control Measure #3 – IDDE (Illicit Discharge Detection & Elimination): Stormwater Infrastructure Inventory




| Stormwater Infrastructure Inventory Collection Status | |
|---|---|
| FY 2021 YTD Collection Totals | 992 |
| FY 2020 Collection Totals | 4,878 |
| FY 2019 Collection Totals | 2,925 |
| FY 2018 Collection Totals | 3,777 |

ATTACHMENT 4b

# MS4 Minimum Control Measure #3 – IDDE: *E. coli* Concentrations Trend Map



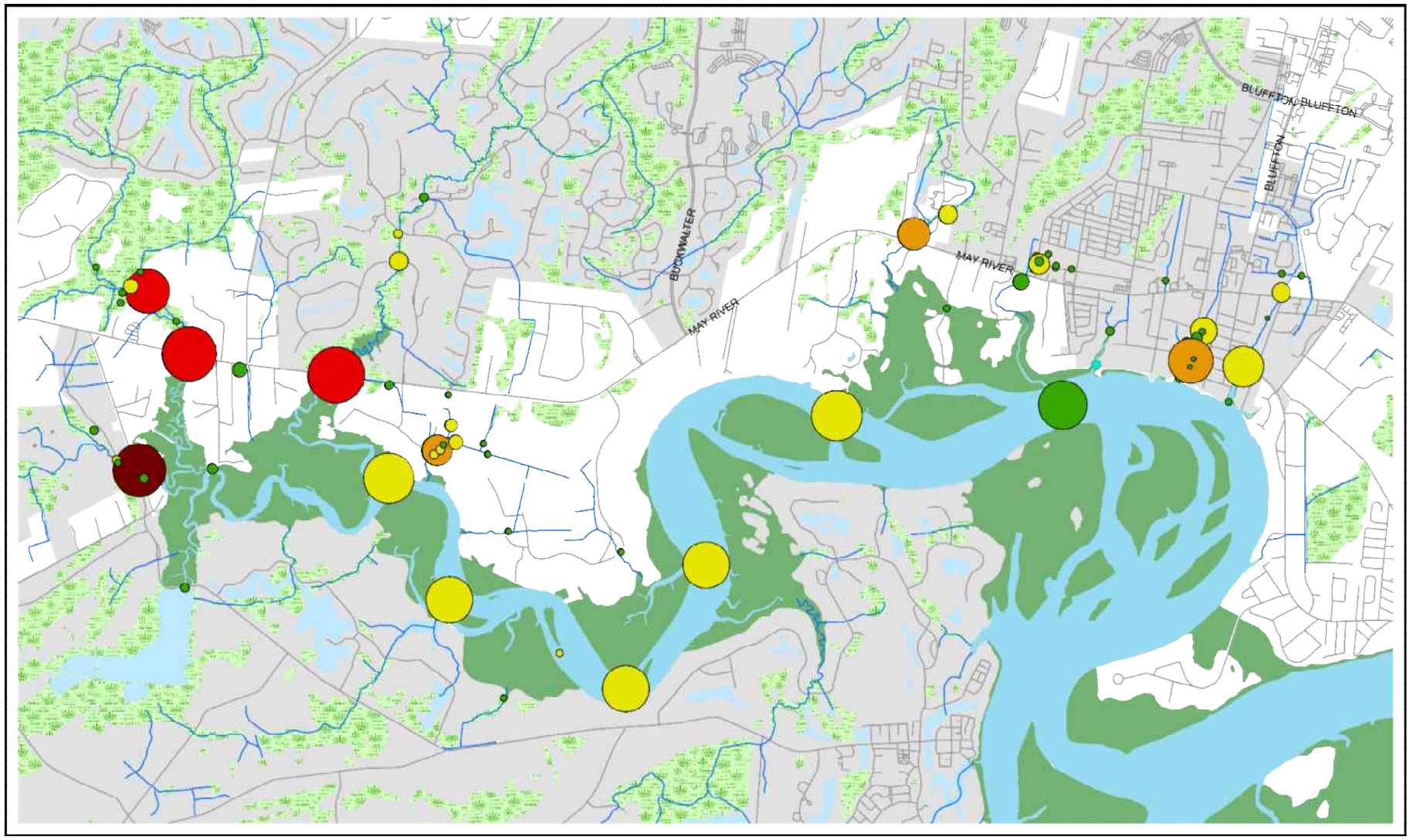

E coliform geomeans updated as of: 1/19/2021

| | USCB Water Quality Samples | Microbial Source Tracking Samples | MS4 Quarterly Samples Collected |
|---|---|---|---|
| FY 2021 YTD Totals | 277 | 70 | 95 |
| FY 2020 Totals | 223 | 115 | 123 |
| FY 2019 Totals | 280 | 193 | 264 |
| FY 2018 Totals | 216 | 217 | 224 |

- MST program began November 2016; MS4 Quarterly Sampling initiated 2/2017
- Totals include only samples submitted for laboratory analysis, and not *in situ* parameters.

ATTACHMENT 4c

# MS4 Minimum Control Measure #3 – IDDE: Microbial Source Tracking (MST) Trend Map – Human Source




Town Jurisdiction
Beaufort County
Drainage Flow Lines

Positive Hits
0 1-3 3-6 6-9 >10

Times Sampled
1 - 3 4 - 6 7 - 10 >10

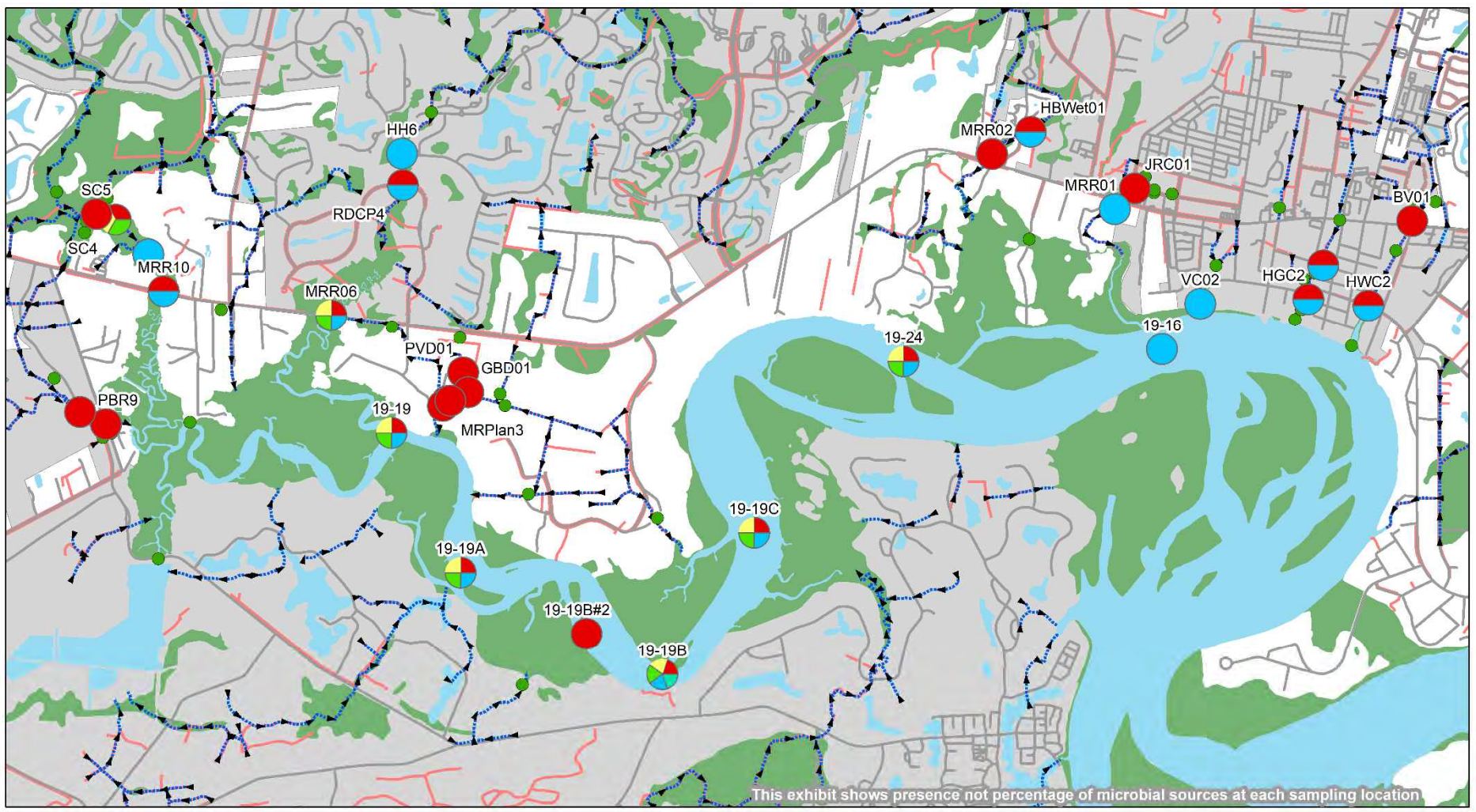
Size of dot correlates to # of times the site has been sampled.

Updated Date: 1/19/2021

N W E S

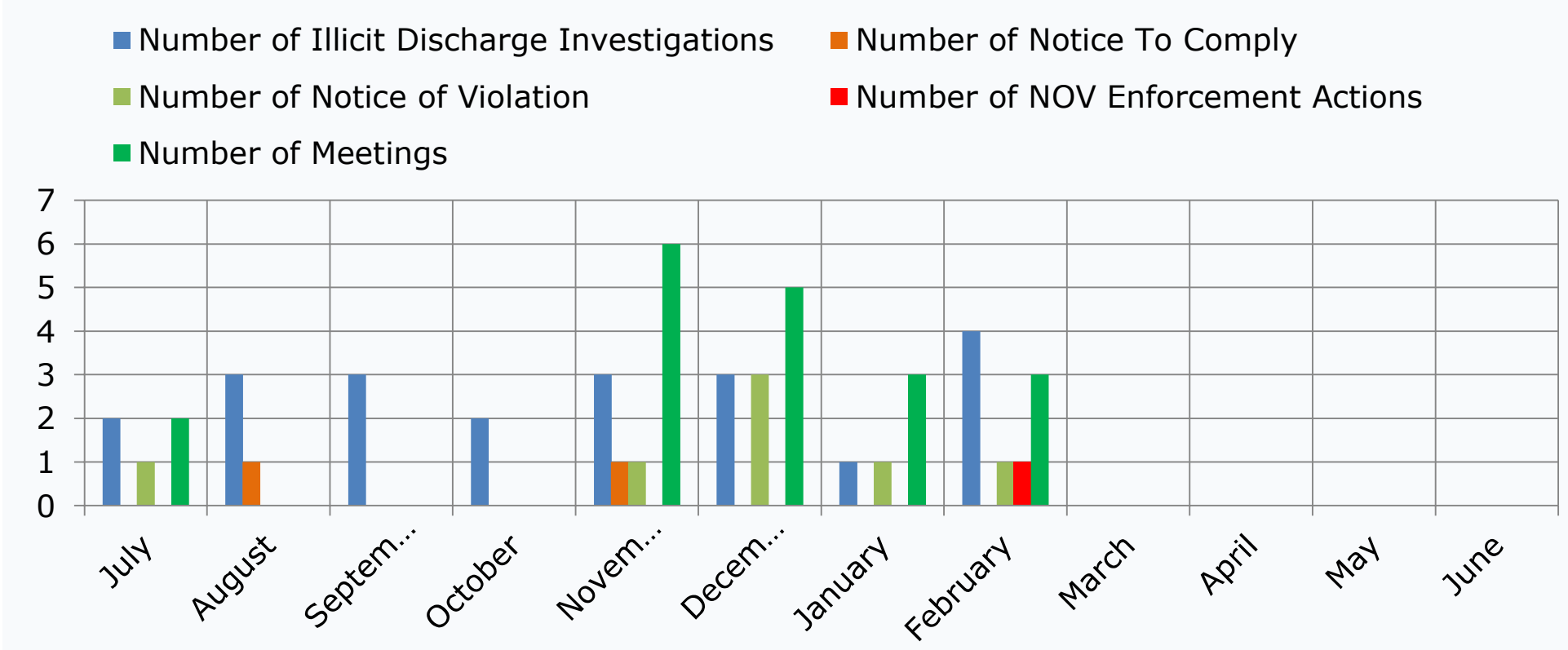
ATTACHMENT 4d

# MS4 Minimum Control Measure #3 – IDDE:
# Microbial Source Tracking (MST) Map – All Sources



ATTACHMENT 4e

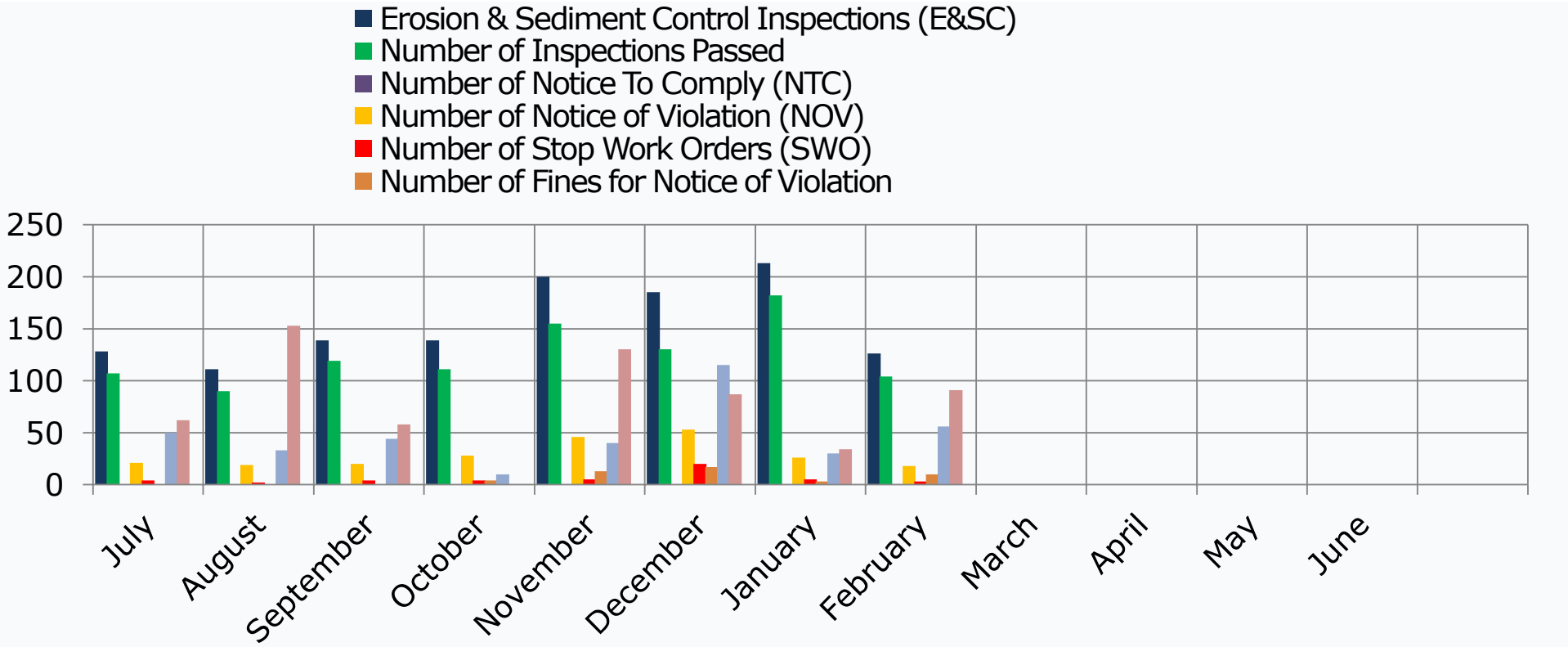
# MS4 Minimum Control Measure #3 – IDDE: Illicit Discharge Investigations




| | Number of Illicit Discharge Investigations | Number of Notices To Comply Issued | Number of Notices of Violation Issued | Number of NOV Enforcement Actions | Number of Meetings |
|---|---|---|---|---|---|
| FY 2021 YTD Totals | 21 | 2 | 7 | 1 | 19 |
| FY 2020 Totals | 45 | 10 | 8 | 6 | 49 |
| FY 2019 Totals | 38 | 20 | 3 | 1 | 61 |
| FY 2018 Totals | 48 | 20 | 4 | 2 | 60 |

ATTACHMENT 5

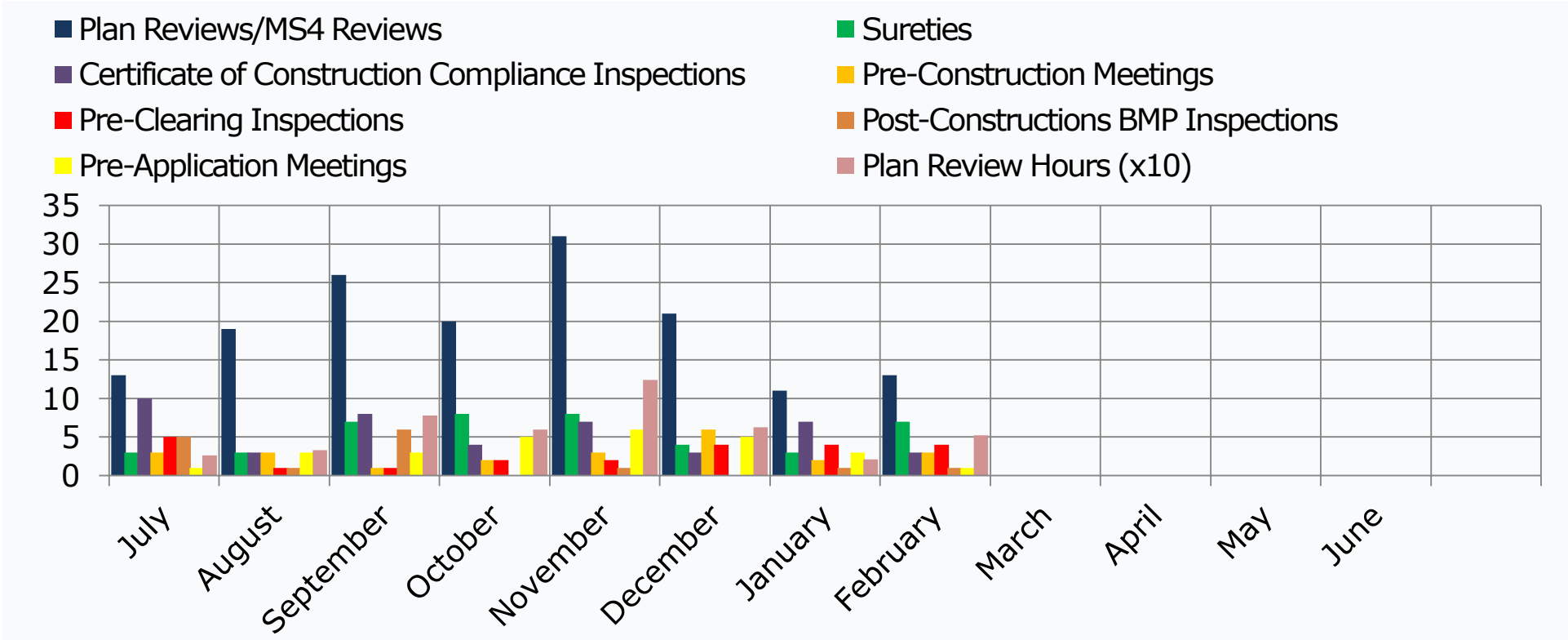
# MS4 Minimum Control Measure #4 - Construction Site Stormwater Runoff Control




| | Number of Sediment & Erosion Control Inspections | Number of Inspections Passed | Number of NTC Issued | Number of NOVs Issued | Number of SWO Issued | Number of NOV Enforcement Actions | Number of E&SC Meetings |
|---|---|---|---|---|---|---|---|
| FY 2021 YTD Totals | 1224 | 1016 | N/A | 197 | 28 | 30 | 304 |
| FY 2020 Totals | 1,517 | 1187 | 128 | 185 | 16 | 9 | 496 |
| FY 2019 Totals | 1,688 | 1,384 | 254 | 72 | N/A | 7 | 403 |

ATTACHMENT 6

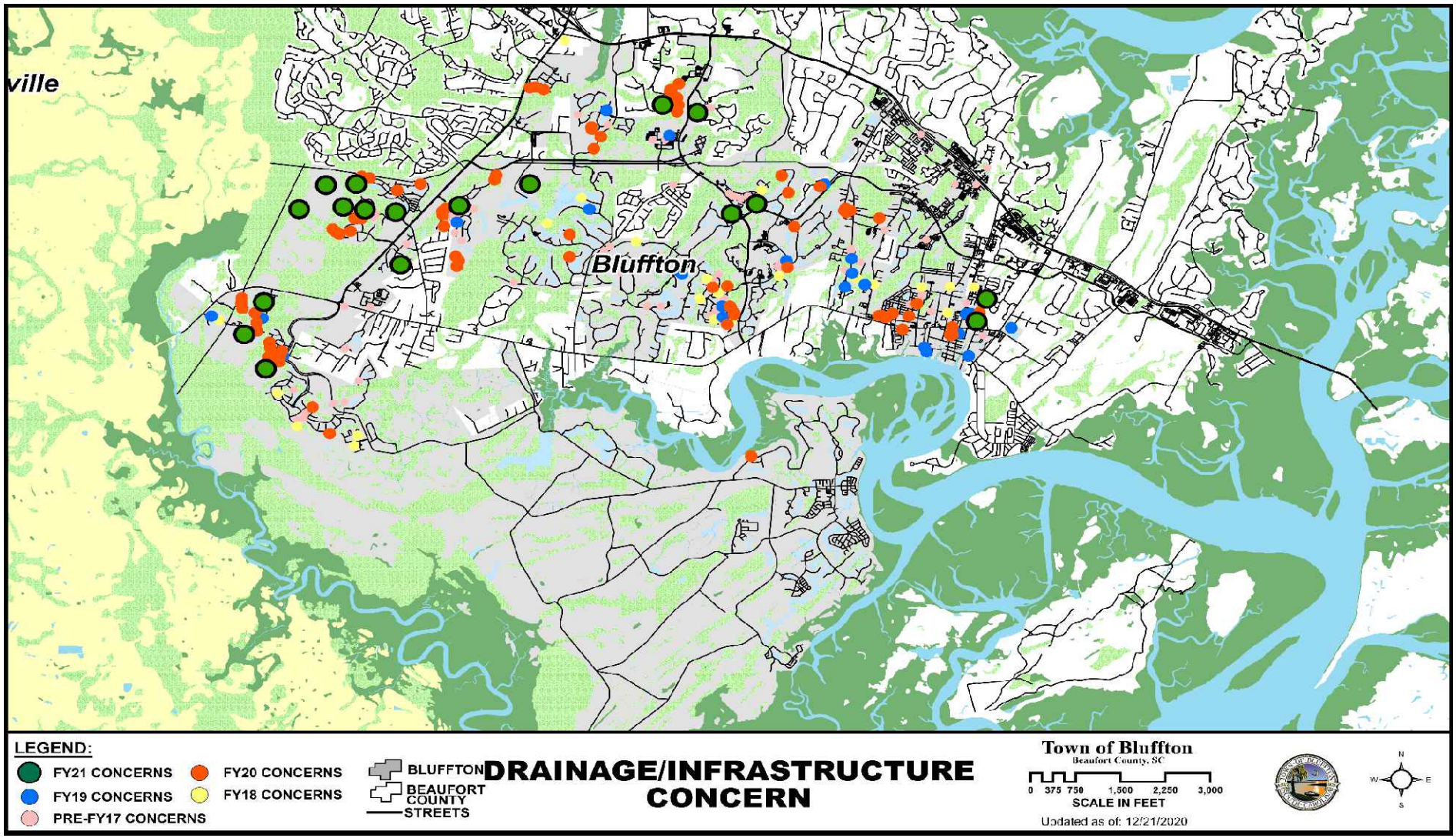
# MS4 Minimum Control Measure #5
# Stormwater Plan Review & Related Activity




| | Plan Reviews MS4 Reviews | Sureties | Certificate of Construction Compliance Inspections | Pre-Construction Meetings | Pre-Clearing Inspections | Post Construction BMP Inspections | Pre-Application Meetings | Total Plan Review Hours |
|---|---|---|---|---|---|---|---|---|
| FY 2021 YTD Totals | 120 | 32 | 39 | 13 | 15 | 14 | 21 | 394 Hrs. |
| FY 2020 Totals | 176 | 53 | 46 | 36 | 17 | 8 | 36 | 789 Hrs. |
| FY 2019 Totals | 208 | 52 | 53 | 47 | 37 | 27 | 63 | 1,040 Hrs. |

ATTACHMENT 7

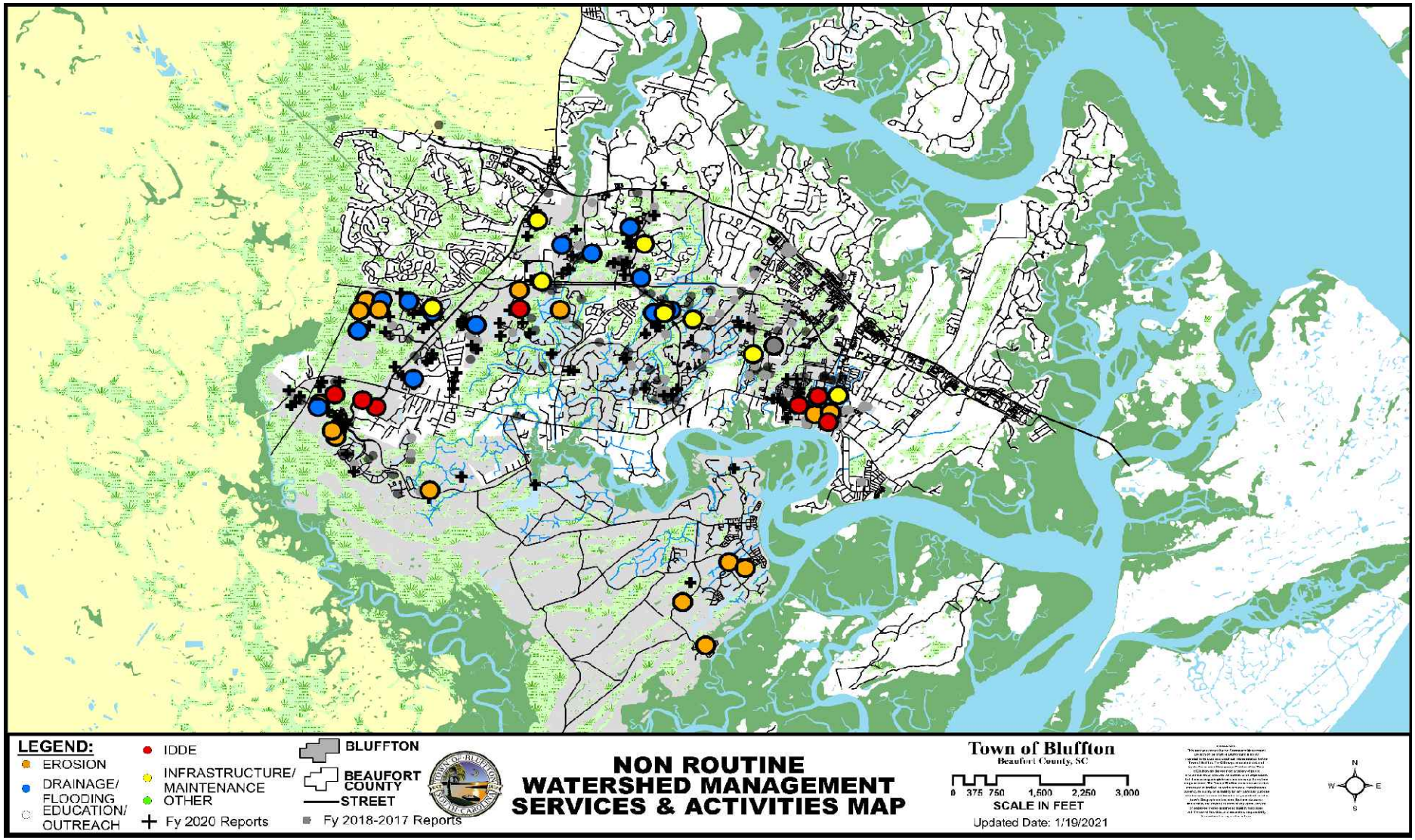
# Citizen Drainage, Maintenance and Inspections Concerns Map




| | Number of Drainage Concerns Investigated | Number of Meetings |
|---|---|---|
| FY 2021 YTD Totals | 27 | 28 |
| FY 2020 Totals | 68 | 76 |
| FY 2019 Totals | 54 | 59 |

ATTACHMENT 8

# Citizen Request for Watershed Mngt. Services & Activities Map




| | Number of Citizen Requests Investigated | Number of Meetings |
|---|---|---|
| FY 2021 YTD Totals | 31 | 30 |
| FY 2020 Totals | 99 | 102 |
| FY 2019 Totals | 75 | 79 |

No Quorum

# TOWN OF BLUFFTON
# BEAUTIFICATION COMMITTEE MEETING AGENDA

ELECTRONIC MEETING

Thursday, February 18, 2021, 10:00 a.m.

---

This meeting can be viewed on the Town of Bluffton's Facebook page starting at 1:00 p.m.
https://www.facebook.com/TownBlufftonSC/

I. CALL TO ORDER

II. ROLL CALL

III. ADOPTION OF THE AGENDA

IV. ADOPTION OF MINUTES – February 20, 2020

V. PUBLIC COMMENTS*

VI. OLD BUSINESS

VII. NEW BUSINESS

1. Introduction of New Beautification Committee Member – Michael Salas
2. Election of Officers
3. Adoption of 2021 Meeting Dates
4. Review and Approve Beautification Work Plan for FY 2022 Budget
5. Update on Power Line Trimming
6. Review Bench/Tree Memorial Program
7. Discuss Special Project for FY 2021 – Receptacles
8. Arbor Day Ceremony – Tree Planting Location

VIII. DISCUSSION

1. Wright Family Park Camellia Garden

IX. ADJOURNMENT

**NEXT MEETING DATE: Thursday, March 18, 2021**

* Public Comments may be submitted electronically via the Town's website at (https://bit.ly/TOBPublicComment) or by emailing your comments to the Engineering and Public Works Coordinator at rrexrode@townofbluffton.com. Comments will be accepted up to 2 hours prior to the scheduled meeting start time. All comments will be read aloud for the record and will be provided to the Development Review Committee.

*FOIA COMPLIANCE – Public notification of this meeting has been published and posted in compliance with the Freedom of Information Act and the Town of Bluffton policies.*

*In accordance with the requirements of Title II of the Americans with Disabilities Act of 1990 ("ADA"), the Town of Bluffton will not discriminate against qualified individuals with disabilities on the basis of disability in its services, programs, or activities. The Town of Bluffton Council Chambers are ADA compatible. Any person requiring further accommodation should contact the Town of Bluffton ADA Coordinator at 843.706.4500 or adacoordinator@townofbluffton.com as soon as possible but no later than 48 hours before the scheduled event.*

# Public Works Activities Report

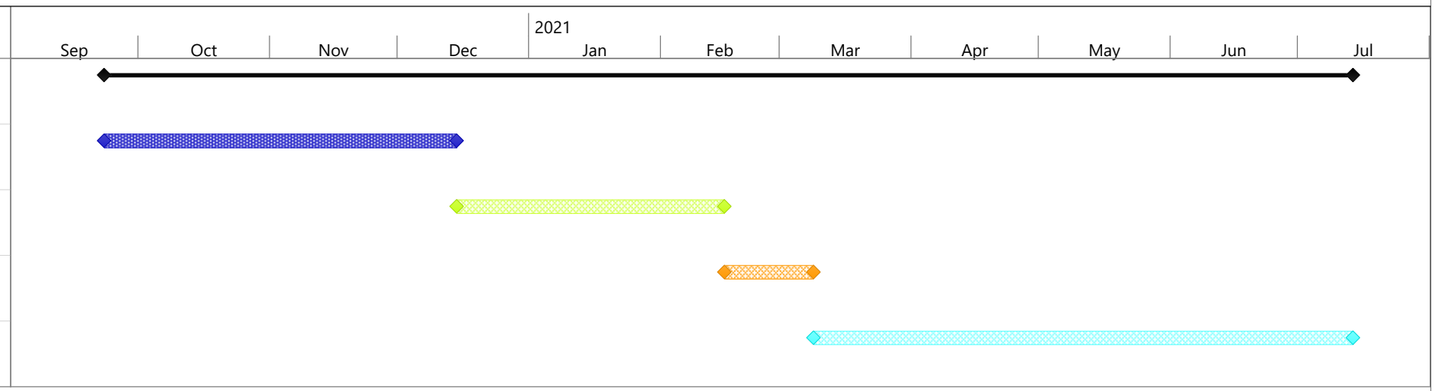
| Week | # of Activities | Labor Cost | Equipment Cost | Other Cost | Total |
|---|---|---|---|---|---|
| FY21WK1 | 61 | $4,397.00 | $3,188.00 | | **$7,584.00** |
| FY21WK2 | 56 | $5,474.00 | $3,574.00 | $121.00 | **$9,168.00** |
| FY21WK3 | 48 | $4,880.00 | $3,502.00 | | **$8,382.00** |
| FY21WK4 | 62 | $5,828.00 | $3,970.00 | | **$9,799.00** |
| FY21WK5 | 45 | $4,706.00 | $3,575.00 | | **$8,281.00** |
| FY21WK6 | 54 | $5,645.00 | $3,114.00 | | **$9,126.00** |
| FY21WK7 | 60 | $4,855.00 | $4,232.00 | | **$9,087.00** |
| FY21WK8 | 67 | $5,118.00 | $4,221.00 | | **$9,339.00** |
| FY21WK9 | 50 | $5,784.00 | $3,923.00 | | **$9,707.00** |
| FY21WK10 | 54 | $6,131.00 | $4,248.00 | $21.00 | **$10,400.00** |
| FY21WK11 | 41 | $4,677.00 | $2,740.00 | | **$7,417.00** |
| FY21WK12 | 70 | $5,580.00 | $2,587.00 | $326.00 | **$8,494.00** |
| FY21WK13 | 94 | $5,864.00 | $5,084.00 | | **$10,949.00** |
| FY21WK14 | 49 | $6,171.00 | $4,261.00 | | **$10,431.00** |
| FY21WK15 | 53 | $5,870.00 | $4,059.00 | | **$9,929.00** |
| FY21WK16 | 62 | $5,239.00 | $3,531.00 | | **$8,771.00** |
| FY21WK17 | 77 | $4,660.00 | $3,769.00 | $364.00 | **$8,792.00** |
| FY21WK18 | 45 | $4,679.00 | $3,417.00 | | **$8,096.00** |
| FY21WK19 | 62 | $6,186.00 | $7,048.00 | | **$13,234.00** |
| FY21WK20 | 41 | $4,135.00 | $2,633.00 | | **$6,768.00** |
| FY21WK21 | 51 | $5,446.00 | $3,073.00 | | **$8,519.00** |
| FY21WK22 | 39 | $3,229.00 | $3,599.00 | | **$6,828.00** |
| FY21WK23 | 51 | $5,072.00 | $3,014.00 | | **$8,085.00** |
| FY21WK24 | 76 | $6,073.00 | $5,257.00 | | **$11,329.00** |
| FY21WK25 | 56 | $4,245.00 | $2,976.00 | | **$7,221.00** |
| FY21WK26 | 38 | $1,890.00 | $1,936.00 | | **$3,826.00** |
| FY21WK27 | 50 | $4,417.00 | $4,060.00 | | **$8,477.00** |
| FY21WK28 | 69 | $5,753.00 | $4,185.00 | | **$9,938.00** |
| FY21WK29 | 36 | $4,703.00 | $6,365.00 | | **$11,069.00** |
| FY21WK30 | 69 | $5,100.00 | $4,540.00 | | **$9,640.00** |
| FY21WK31 | 62 | $5,581.00 | $3,627.00 | | **$9,208.00** |
| FY21WK32 | 89 | $5,648.00 | $3,808.00 | | **$9,456.00** |
| FY21WK33 | 67 | $4,845.00 | $3,486.00 | | **$8,331.00** |
| FY21WK34 | | | | | |
| FY21WK35 | | | | | |
| FY21WK36 | | | | | |
| FY21WK37 | | | | | |
| FY21WK38 | | | | | |
| FY21WK39 | | | | | |
| FY21WK40 | | | | | |
| FY21WK41 | | | | | |
| FY21WK42 | | | | | |
| FY21WK43 | | | | | |
| FY21WK44 | | | | | |
| FY21WK45 | | | | | |
| FY21WK46 | | | | | |
| FY21WK47 | | | | | |
| FY21WK48 | | | | | |
| FY21WK49 | | | | | |
| FY21WK50 | | | | | |
| FY21WK51 | | | | | |
| FY21WK52 | | | | | |
| **Total** | **1904** | **$167,881.00** | **$126,602.00** | **$832.00** | **$295,681.00** |

# Public Works Activities Report

| Week | # of Activities | Labor Cost | Equipment Cost | Other Cost | Total |
|---|---|---|---|---|---|
| FY21WK1 | 61 | $4,397.00 | $3,188.00 | | **$7,584.00** |
| FY21WK2 | 56 | $5,474.00 | $3,574.00 | $121.00 | **$9,168.00** |
| FY21WK3 | 48 | $4,880.00 | $3,502.00 | | **$8,382.00** |
| FY21WK4 | 62 | $5,828.00 | $3,970.00 | | **$9,799.00** |
| FY21WK5 | 45 | $4,706.00 | $3,575.00 | | **$8,281.00** |
| FY21WK6 | 54 | $5,645.00 | $3,114.00 | | **$9,126.00** |
| FY21WK7 | 60 | $4,855.00 | $4,232.00 | | **$9,087.00** |
| FY21WK8 | 67 | $5,118.00 | $4,221.00 | | **$9,339.00** |
| FY21WK9 | 50 | $5,784.00 | $3,923.00 | | **$9,707.00** |
| FY21WK10 | 54 | $6,131.00 | $4,248.00 | $21.00 | **$10,400.00** |
| FY21WK11 | 41 | $4,677.00 | $2,740.00 | | **$7,417.00** |
| FY21WK12 | 70 | $5,580.00 | $2,587.00 | $326.00 | **$8,494.00** |
| FY21WK13 | 94 | $5,864.00 | $5,084.00 | | **$10,949.00** |
| FY21WK14 | 49 | $6,171.00 | $4,261.00 | | **$10,431.00** |
| FY21WK15 | 53 | $5,870.00 | $4,059.00 | | **$9,929.00** |
| FY21WK16 | 62 | $5,239.00 | $3,531.00 | | **$8,771.00** |
| FY21WK17 | 77 | $4,660.00 | $3,769.00 | $364.00 | **$8,792.00** |
| FY21WK18 | 45 | $4,679.00 | $3,417.00 | | **$8,096.00** |
| FY21WK19 | 62 | $6,186.00 | $7,048.00 | | **$13,234.00** |
| FY21WK20 | 41 | $4,135.00 | $2,633.00 | | **$6,768.00** |
| FY21WK21 | 51 | $5,446.00 | $3,073.00 | | **$8,519.00** |
| FY21WK22 | 39 | $3,229.00 | $3,599.00 | | **$6,828.00** |
| FY21WK23 | 51 | $5,072.00 | $3,014.00 | | **$8,085.00** |
| FY21WK24 | 76 | $6,073.00 | $5,257.00 | | **$11,329.00** |
| FY21WK25 | 56 | $4,245.00 | $2,976.00 | | **$7,221.00** |
| FY21WK26 | 38 | $1,890.00 | $1,936.00 | | **$3,826.00** |
| FY21WK27 | 50 | $4,417.00 | $4,060.00 | | **$8,477.00** |
| FY21WK28 | 69 | $5,753.00 | $4,185.00 | | **$9,938.00** |
| FY21WK29 | 36 | $4,703.00 | $6,365.00 | | **$11,069.00** |
| FY21WK30 | 69 | $5,100.00 | $4,540.00 | | **$9,640.00** |
| FY21WK31 | 62 | $5,581.00 | $3,627.00 | | **$9,208.00** |
| FY21WK32 | 89 | $5,648.00 | $3,808.00 | | **$9,456.00** |
| FY21WK33 | 67 | $4,845.00 | $3,486.00 | | **$8,331.00** |
| FY21WK34 | | | | | |
| FY21WK35 | | | | | |
| FY21WK36 | | | | | |
| FY21WK37 | | | | | |
| FY21WK38 | | | | | |
| FY21WK39 | | | | | |
| FY21WK40 | | | | | |
| FY21WK41 | | | | | |
| FY21WK42 | | | | | |
| FY21WK43 | | | | | |
| FY21WK44 | | | | | |
| FY21WK45 | | | | | |
| FY21WK46 | | | | | |
| FY21WK47 | | | | | |
| FY21WK48 | | | | | |
| FY21WK49 | | | | | |
| FY21WK50 | | | | | |
| FY21WK51 | | | | | |
| FY21WK52 | | | | | |
| **Total** | **1904** | **$167,881.00** | **$126,602.00** | **$832.00** | **$295,681.00** |

BUCKWALTER PLACE PARK RESTROOMS
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **Buckwalter Place Park Restrooms** | **210 days** | **Wed 9/23/20** | **Tue 7/13/21** |
| 2 | **Planning and Conceptual Design** | **59 days** | **Wed 9/23/20** | **Mon 12/14/20** |
| 7 | **Final Design and Construction Documents** | **45 days** | **Tue 12/15/20** | **Mon 2/15/21** |
| 10 | **Permitting** | **15 days** | **Tue 2/16/21** | **Mon 3/8/21** |
| 13 | **Bidding and Contracts** | **91 days** | **Tue 3/9/21** | **Tue 7/13/21** |

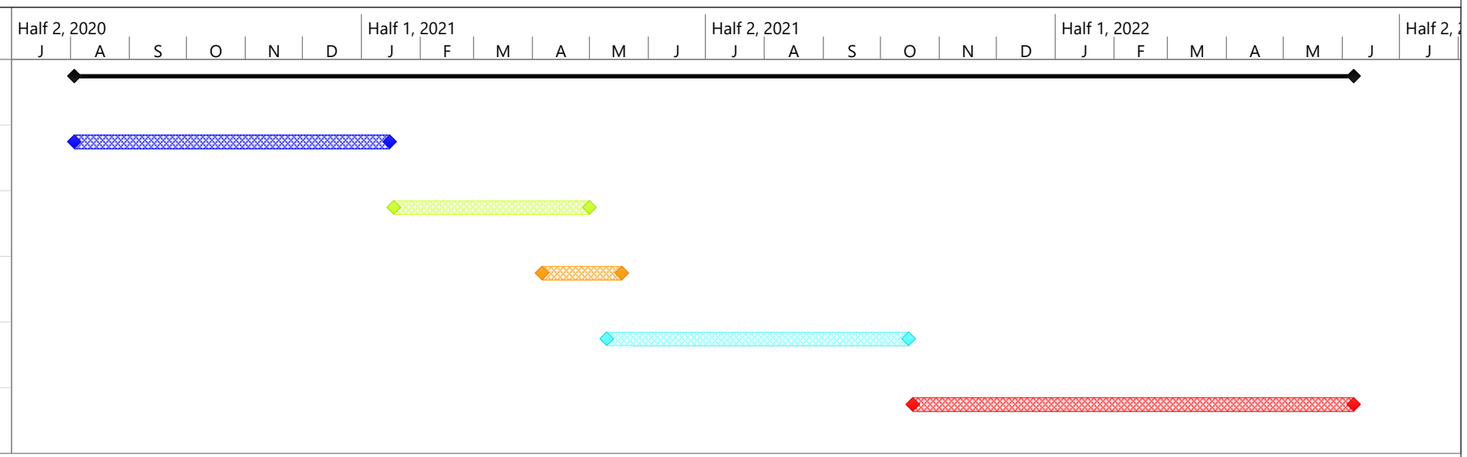



Project: 00040
Date: Wed 1/27/21

Milestone
Critical Task
Task
Project Duration
Planing and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisitions
Bidding and Contracts
Construction

BUCKWALTER MULTI-COUNTY COMMERCE PARK
PHASE II DEVELOPMENT PARCEL - PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **PHASE II DEVELOPMENT PARCEL** | **481 days** | **Mon 8/3/20** | **Mon 6/6/22** |
| 2 | **Planning and Conceptual Design** | **120 days** | **Mon 8/3/20** | **Fri 1/15/21** |
| 9 | **Final Design and Construction Documents** | **75 days** | **Mon 1/18/21** | **Fri 4/30/21** |
| 16 | **Permitting** | **30 days** | **Tue 4/6/21** | **Mon 5/17/21** |
| 21 | **Bidding and Contracts** | **115 days** | **Mon 5/10/21** | **Fri 10/15/21** |
| 32 | **Construction** | **166 days** | **Mon 10/18/21** | **Mon 6/6/22** |

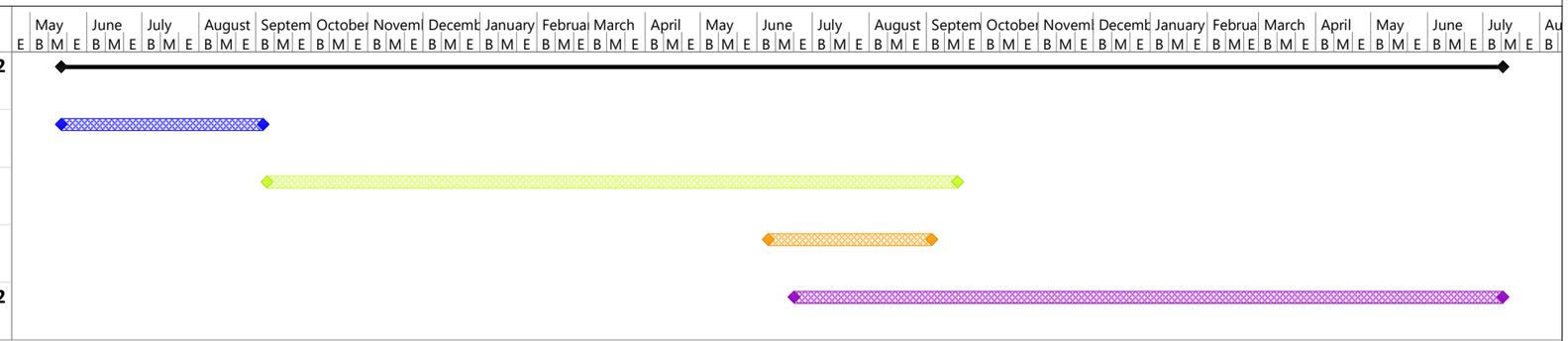



Project: 00040
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planning and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisition
Bidding and Contracts
Construction

CALHOUN STREET STREETSCAPE
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **CALHOUN STREET STREETSCAPE** | **561 days** | **Mon 5/18/20** | **Mon 7/11/22** |
| 2 | **Planning and Conceptual Design** | **80 days** | **Mon 5/18/20** | **Fri 9/4/20** |
| 7 | **Final Planning and Construction Documents** | **270 days** | **Mon 9/7/20** | **Fri 9/17/21** |
| 27 | **Permitting Phase** | **65 days** | **Mon 6/7/21** | **Fri 9/3/21** |
| 32 | **Easements and Land Acquisition** | **276 days** | **Mon 6/21/21** | **Mon 7/11/22** |

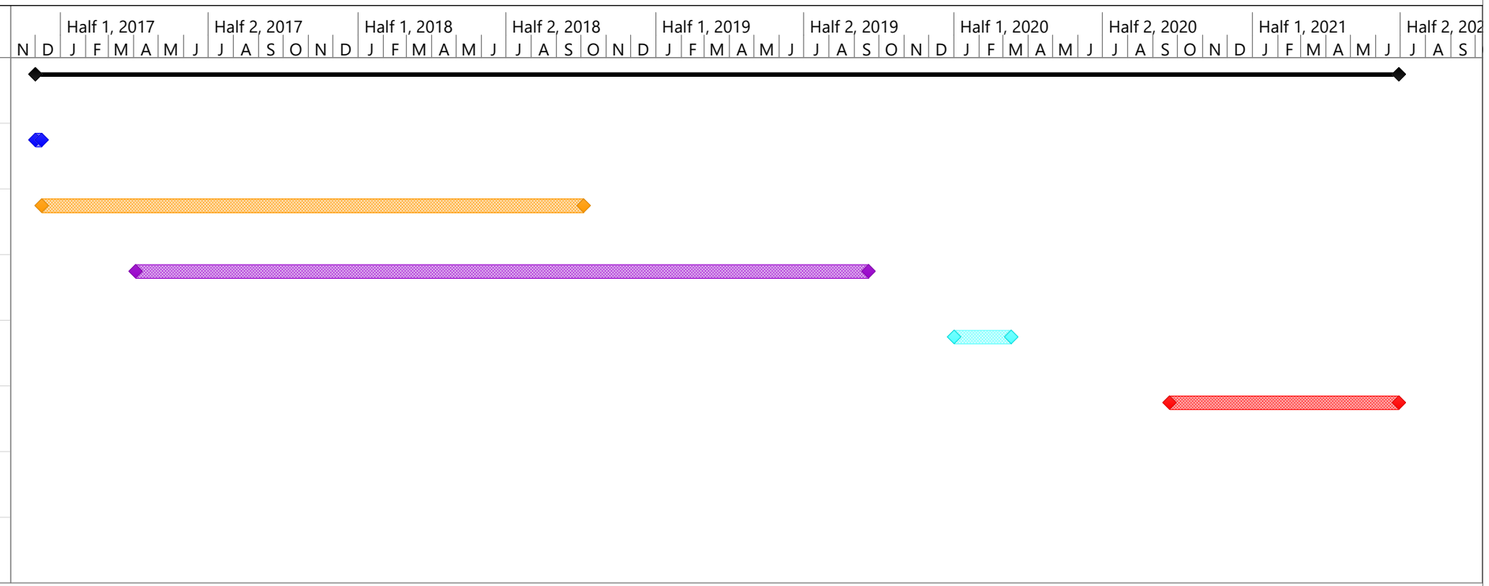



Project: 00042
Date: Wed 1/27/21

Milestone ◆ Task
Critical Task ★ Project Duration
Planning and Conceptual Design
Final Design and Construction Documents
Permitting
Bidding and Contract
Easements and Land Acquisitions
Construction

BUCK ISLAND-SIMMONSVILLE SANITARY SEWER PHASE 5 A-D
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **PHASE 5 A-D** | **1193 days?** | **Thu 12/1/16** | **Mon 6/28/21** |
| 2 | **Planning and Conceptual Design** | **6 days** | **Thu 12/1/16** | **Thu 12/8/16** |
| 4 | **Permitting** | **474 days** | **Fri 12/9/16** | **Wed 10/3/18** |
| 11 | **Easements and Land Acquisition** | **642 days** | **Mon 4/3/17** | **Tue 9/17/19** |
| 16 | **Bidding and Contracts** | **50 days** | **Wed 1/1/20** | **Tue 3/10/20** |
| 21 | **Construction** | **201 days** | **Mon 9/21/20** | **Mon 6/28/21** |
| 29 | | | | |
| 30 | | | | |

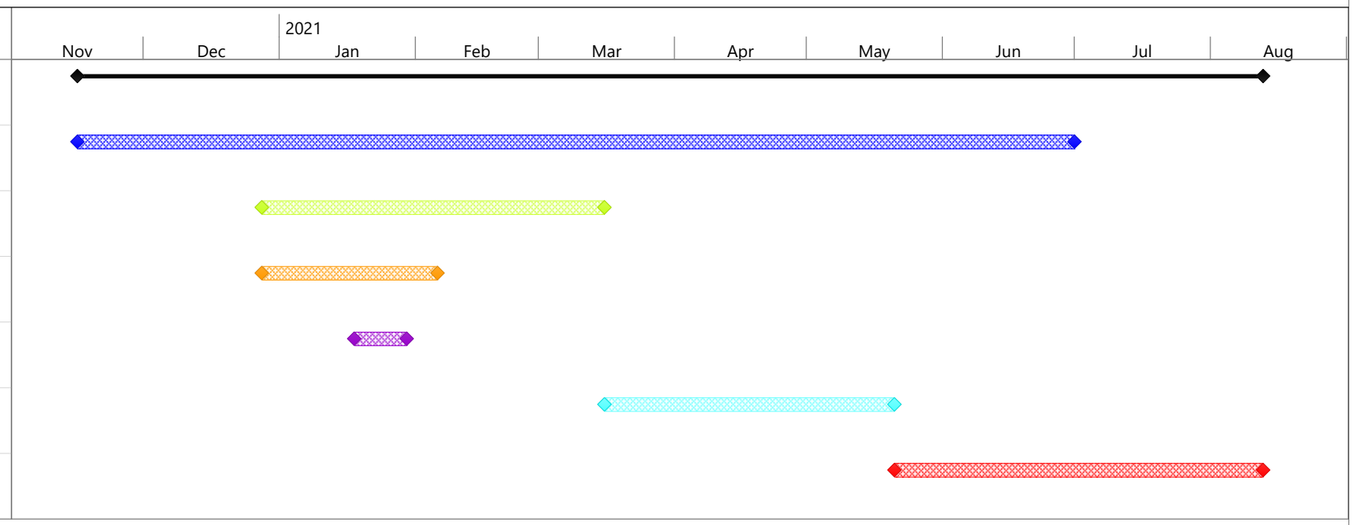



Project: 00044
Date: Wed 1/27/21

Milestone
Critical Task
Task
Project Duration
Planning and Conceptual Design
Final Design and Construction Documents
Permitting
Bidding and Contract
Easements and Land Acquisitions
Construction

# HISTORIC DISTRICT STREETSCAPE AND DRAINAGE IMPROVEMENTS PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **Traffic Calming Study and AME Church Rain Garden** | **194 days** | **Mon 11/16/20** | **Thu 8/12/21** |
| 2 | **Planning and Conceptual Design** | **163 days** | **Mon 11/16/20** | **Wed 6/30/21** |
| 7 | **Final Design and Construction Documents** | **56 days** | **Mon 12/28/20** | **Mon 3/15/21** |
| 10 | **Permitting** | **30 days** | **Mon 12/28/20** | **Fri 2/5/21** |
| 14 | **Easements and Land Acquisition** | **10 days** | **Mon 1/18/21** | **Fri 1/29/21** |
| 17 | **Bidding and Contracts** | **48 days** | **Tue 3/16/21** | **Thu 5/20/21** |
| 22 | **Construction** | **60 days** | **Fri 5/21/21** | **Thu 8/12/21** |

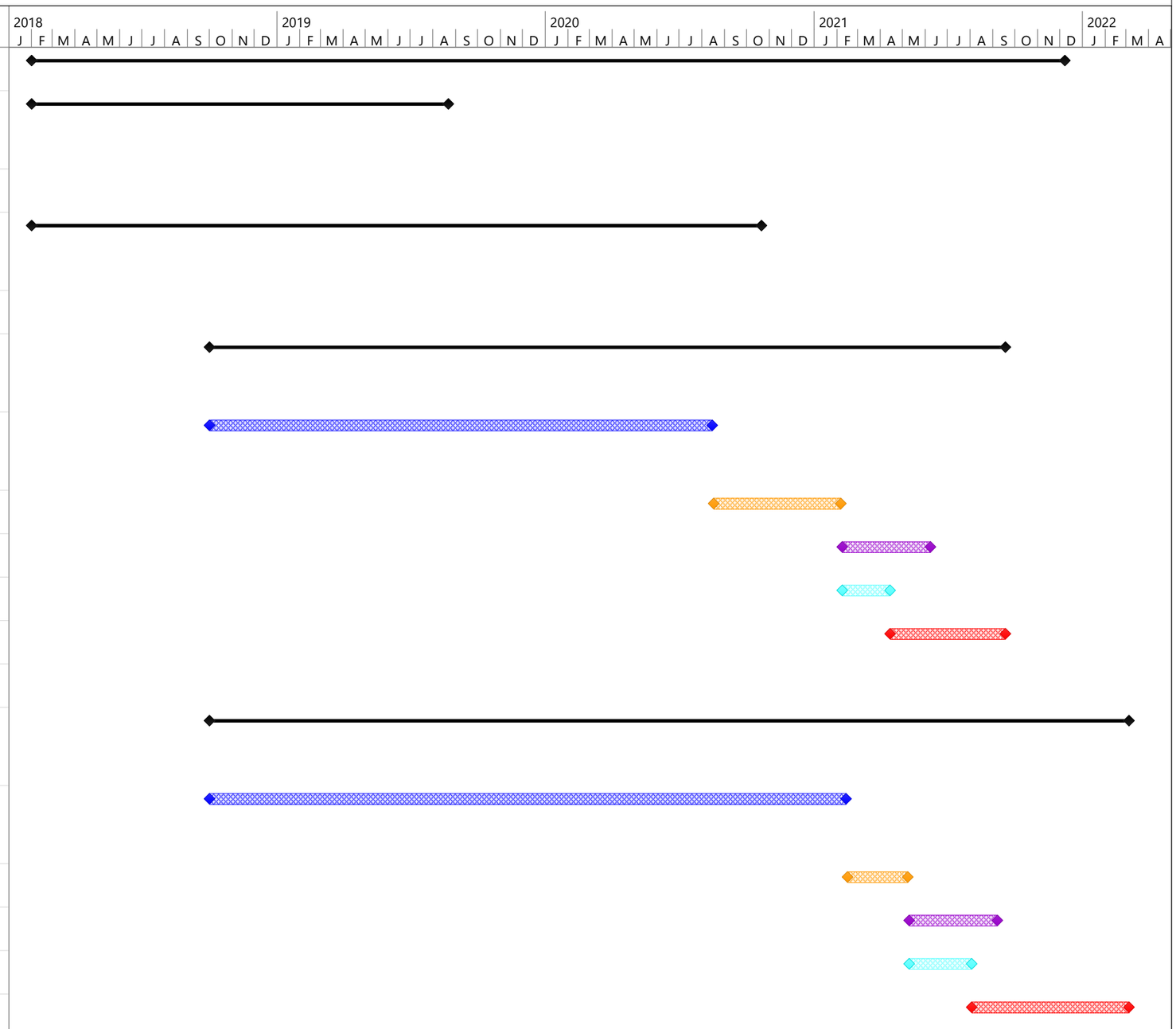



Project: 00050
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planing and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisitions
Bidding and Contracts
Construction

BUCK ISLAND-SIMMONSVILLE NEIGHBORHOOD SIDEWALKS
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **SIDEWALKS AND LIGHTING** | 1004 days | Thu 2/1/18 | Tue 12/7/21 |
| 2 | **Sidewalk from Jennifer Ct to Simmonsville Rd** | **405 days** | **Thu 2/1/18** | **Wed 8/21/19** |
| 26 | | | | |
| 27 | **Sidewalk from Kitty Road to 301 Buck Island Rd** | **709 days** | **Thu 2/1/18** | **Tue 10/20/20** |
| 53 | | | | |
| 54 | **Sidewalk from Grayco to Sugaree (Simmonsville Rd)** | **775 days** | **Mon 10/1/18** | **Fri 9/17/21** |
| 55 | **Final Design and Construction Documents** | **490 days** | **Mon 10/1/18** | **Fri 8/14/20** |
| 61 | **Permitting** | **125 days** | **Mon 8/17/20** | **Fri 2/5/21** |
| 63 | **Easements** | **86 days** | **Mon 2/8/21** | **Mon 6/7/21** |
| 68 | **Bidding/Contract** | **47 days** | **Mon 2/8/21** | **Tue 4/13/21** |
| 73 | **Construction** | **113 days** | **Wed 4/14/21** | **Fri 9/17/21** |
| 80 | | | | |
| 81 | **Sidewalk from Sugaree to Windy Lake (Simmonsville Rd)** | **895 days** | **Mon 10/1/18** | **Fri 3/4/22** |
| 82 | **Final Design and Construction Documents** | **620 days** | **Mon 10/1/18** | **Fri 2/12/21** |
| 88 | **Permitting** | **60 days** | **Mon 2/15/21** | **Fri 5/7/21** |
| 90 | **Easements** | **86 days** | **Mon 5/10/21** | **Mon 9/6/21** |
| 95 | **Bidding/Contract** | **61 days** | **Mon 5/10/21** | **Mon 8/2/21** |
| 100 | **Construction** | **154 days** | **Tue 8/3/21** | **Fri 3/4/22** |

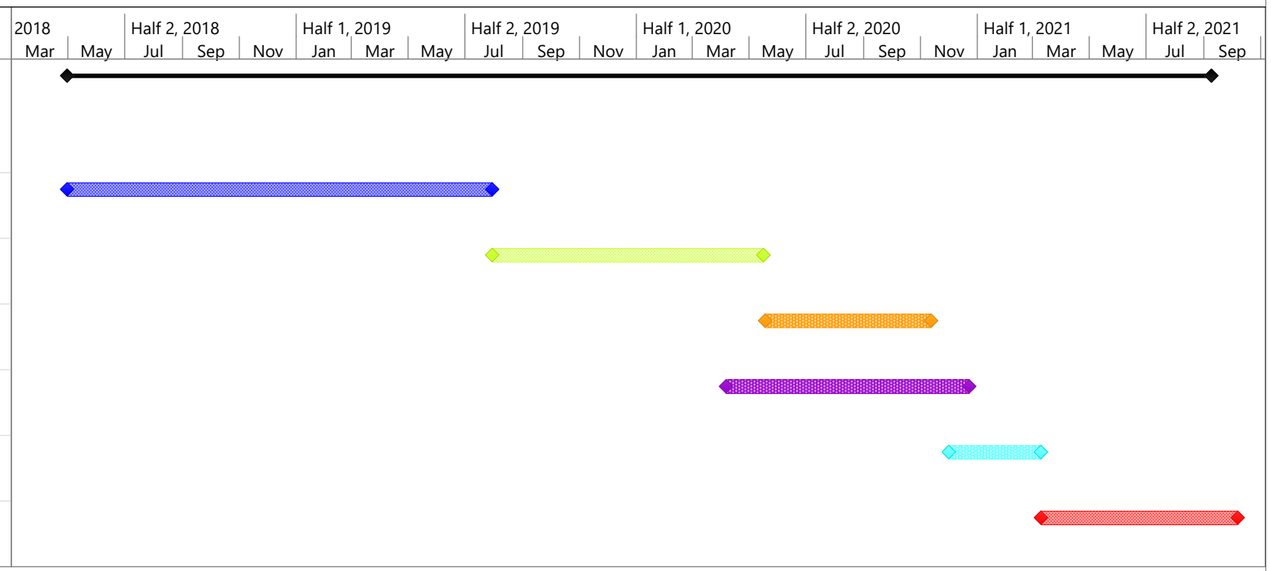



Project: 00054
Date: Wed 1/27/21

Milestone
Critical Task
Task
Project Duration
Planning and Conceptual Design
Final Design and Construction Documents
Permitting
Bidding and Contract
Easements and Land Acquisitions
Construction

GOETHE-SHULTS NEIGHBORHOOD IMPROVEMENTS PHASE 2
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **GOETHE/SHULTS NEIGHBORHOOD IMPROVEMENTS PHASE 2** | **878 days** | **Mon 4/30/18** | **Wed 9/8/21** |
| 2 | **PLANNING AND CONCEPTUAL DESIGN** | **326 days** | **Mon 4/30/18** | **Mon 7/29/19** |
| 12 | **FINAL DESIGN AND CONSTRUCTION DOCUMENTS** | **209 days** | **Tue 7/30/19** | **Fri 5/15/20** |
| 21 | **PERMITTING** | **128 days** | **Mon 5/18/20** | **Wed 11/11/20** |
| 25 | **EASEMENTS AND LAND ACQUISITION** | **187 days** | **Mon 4/6/20** | **Tue 12/22/20** |
| 32 | **BIDDING AND CONTRACTS** | **71 days** | **Tue 12/1/20** | **Tue 3/9/21** |
| 37 | **CONSTRUCTION** | **151 days** | **Wed 3/10/21** | **Wed 10/6/21** |

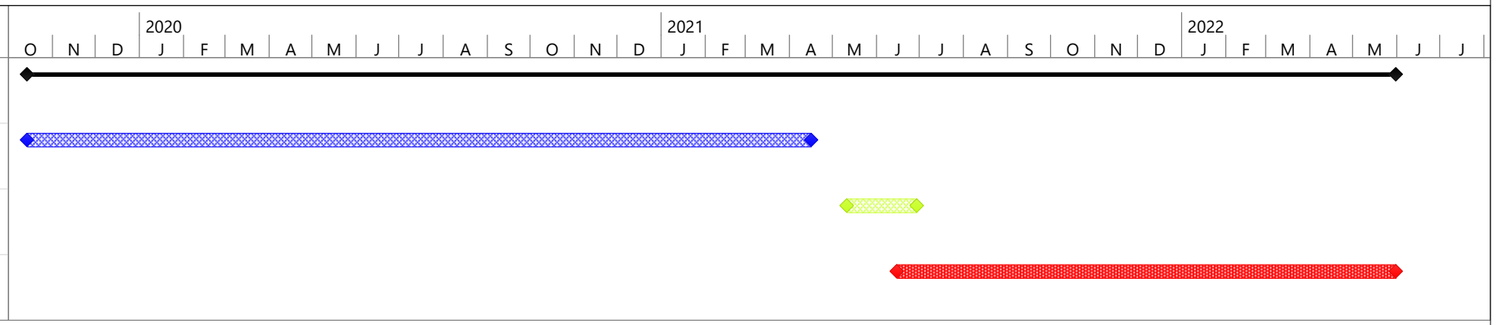



Project: 00055
Date: Tue 1/5/21

Miletstone
Critical Task
Task
Project Duration
Planning and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisition
Bidding and Contracts
Construction

# OYSTER FACTORY PARK
## PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **Oyster Factory Park** | **686 days** | **Mon 10/14/19** | **Mon 5/30/22** |
| 2 | **Planning and Conceptual Design** | **394 days** | **Mon 10/14/19** | **Thu 4/15/21** |
| 11 | **Easement and Land Acquisition** | **35 days** | **Tue 5/11/21** | **Mon 6/28/21** |
| 13 | **Construction** | **250 days** | **Tue 6/15/21** | **Mon 5/30/22** |

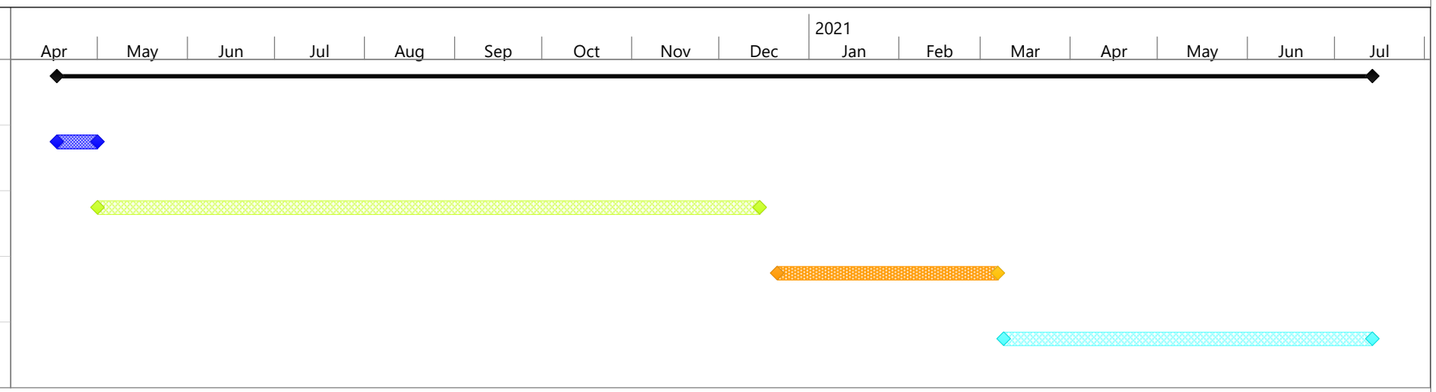



Project: 00059
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planning and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisition
Bidding and Contracts
Construction

SQUIRE POPE CARRIAGE HOSUE
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **Squire Pope Carriage House** | **323 days** | **Fri 4/17/20** | **Tue 7/13/21** |
| 2 | **Planning and Conceptual Design** | **10 days** | **Fri 4/17/20** | **Thu 4/30/20** |
| 5 | **Final Design and Construction Documents** | **162 days** | **Fri 5/1/20** | **Mon 12/14/20** |
| 10 | **Permitting** | **55 days** | **Mon 12/21/20** | **Sun 3/7/21** |
| 13 | **Bidding and Contracts** | **91 days** | **Tue 3/9/21** | **Tue 7/13/21** |

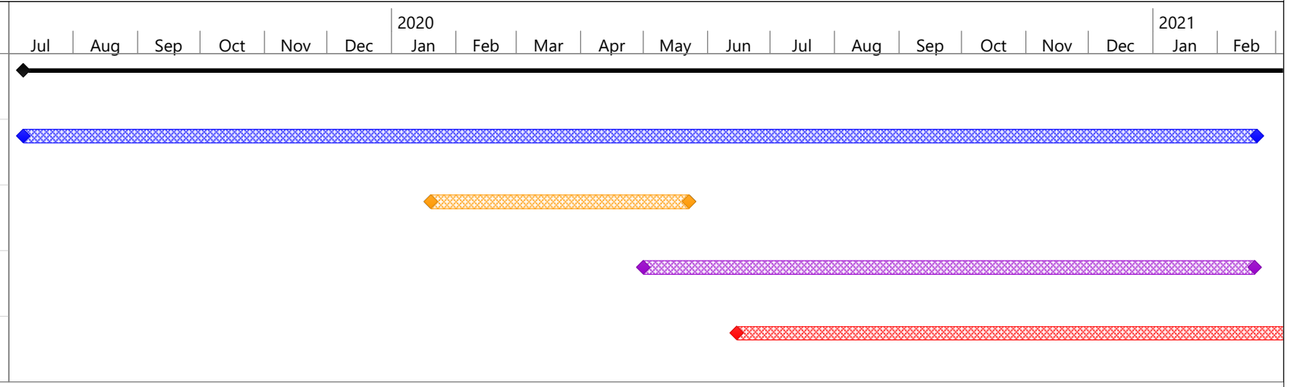



Project: 00067
Date: Wed 1/27/21

Milestone
Critical Task
Task
Project Duration
Planing and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisitions
Bidding and Contracts
Construction

BOUNDARY STREET LIGHTING
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **BOUNDARY STREET LIGHTING PHASE 2** | **451 days** | **Mon 7/8/19** | **Mon 3/29/21** |
| 2 | **Planning and Conceptual Design** | **425 days** | **Mon 7/8/19** | **Fri 2/19/21** |
| 13 | **Permitting** | **90 days** | **Mon 1/20/20** | **Fri 5/22/20** |
| 15 | **Easements and Land Acquisition** | **210 days** | **Fri 5/1/20** | **Thu 2/18/21** |
| 18 | **Construction** | **206 days** | **Mon 6/15/20** | **Mon 3/29/21** |

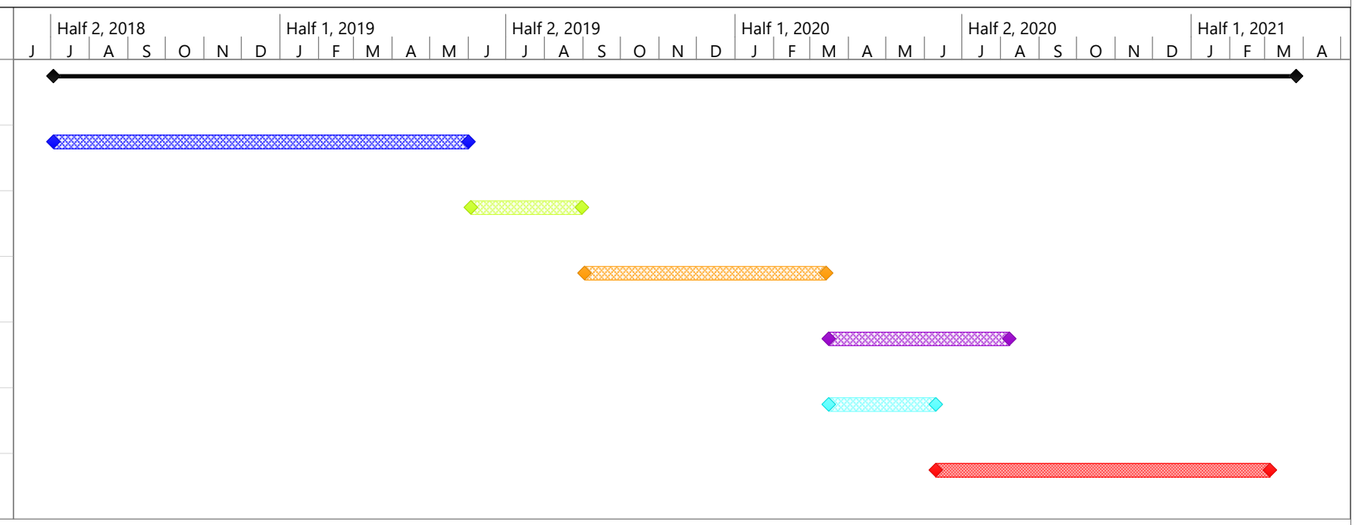



Project: 00069
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planning and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisition
Bidding and Contract
Construction

HISTORIC DISTRICT SANITARY SEWER EXTENSION PHASE 1
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **PHASE 1** | **713 days** | **Tue 7/3/18** | **Thu 3/25/21** |
| 2 | **Planning and Conceptual Design** | **239 days** | **Tue 7/3/18** | **Fri 5/31/19** |
| 9 | **Final Design and Construction Documents** | **65 days** | **Mon 6/3/19** | **Fri 8/30/19** |
| 11 | **Permitting** | **140 days** | **Mon 9/2/19** | **Fri 3/13/20** |
| 14 | **Easements and Land Acquisition** | **105 days** | **Mon 3/16/20** | **Fri 8/7/20** |
| 17 | **Bidding and Contracts** | **62 days** | **Mon 3/16/20** | **Tue 6/9/20** |
| 22 | **Construction** | **192 days** | **Wed 6/10/20** | **Thu 3/4/21** |

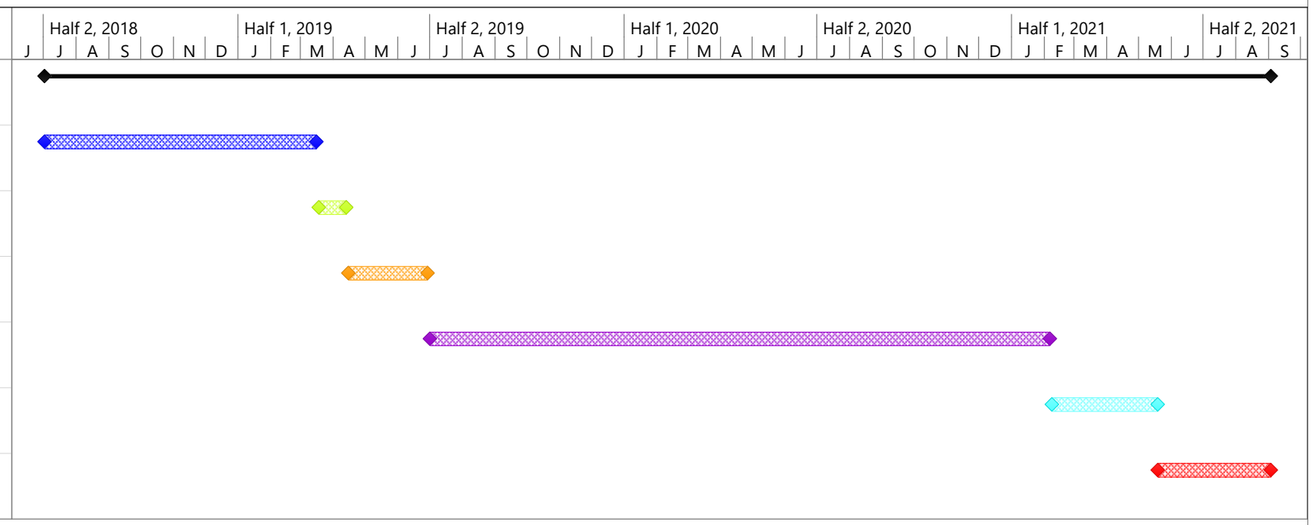



Project: 00070
Date: Wed 1/27/21

Milestone
Critical Task
Task
Project Duration
Planing and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisitions
Bidding and Contracts
Construction

HISTORIC DISTRICT SANITARY SEWER EXTENSION PHASE 2
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **PHASE 2** | **829 days** | **Mon 7/2/18** | **Thu 9/2/21** |
| 2 | **Planning and Conceptual Design** | **185 days** | **Mon 7/2/18** | **Fri 3/15/19** |
| 10 | **Final Design and Construction Documents** | **20 days** | **Mon 3/18/19** | **Fri 4/12/19** |
| 12 | **Permitting** | **55 days** | **Mon 4/15/19** | **Fri 6/28/19** |
| 15 | **Easements and Land Acquisition** | **420 days** | **Mon 7/1/19** | **Fri 2/5/21** |
| 17 | **Bidding and Contracts** | **72 days** | **Mon 2/8/21** | **Tue 5/18/21** |
| 22 | **Construction** | **77 days** | **Wed 5/19/21** | **Thu 9/2/21** |

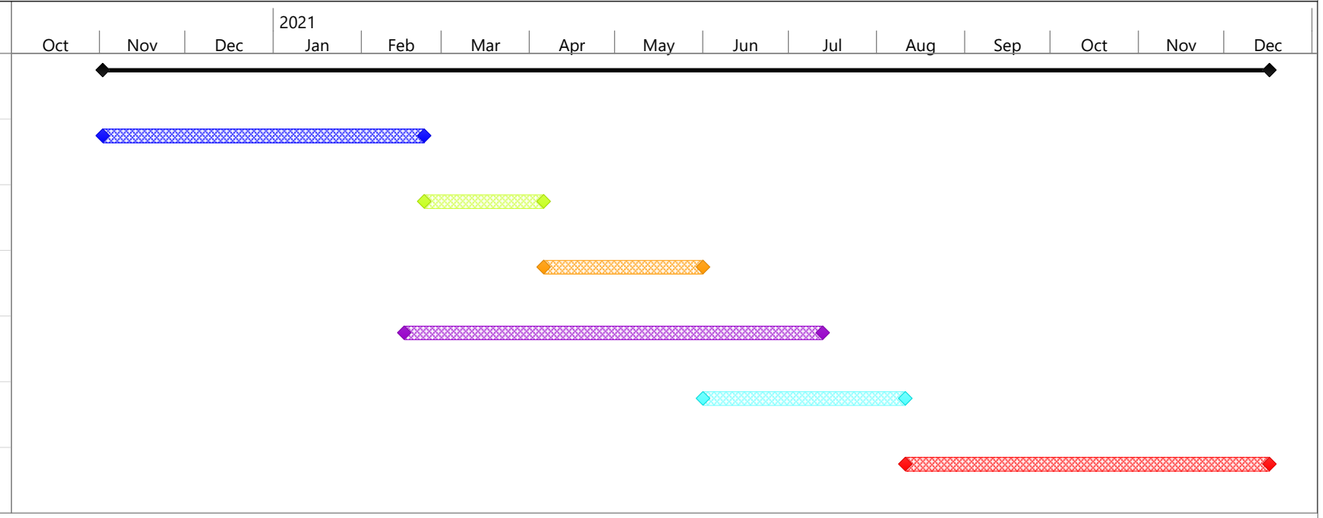



Project: 00071
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planing and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisitions
Bidding and Contracts
Construction

HISTORIC DISTRICT SANITARY SEWER EXTENSION PHASE 3
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **PHASE 3** | **294 days** | **Mon 11/2/20** | **Thu 12/16/21** |
| 2 | **Planning and Conceptual Design** | **81 days** | **Mon 11/2/20** | **Mon 2/22/21** |
| 9 | **Final Design and Construction Documents** | **30 days** | **Tue 2/23/21** | **Mon 4/5/21** |
| 11 | **Permitting** | **40 days** | **Tue 4/6/21** | **Mon 5/31/21** |
| 14 | **Easements and Land Acquisition** | **105 days** | **Tue 2/16/21** | **Mon 7/12/21** |
| 17 | **Bidding and Contracts** | **51 days** | **Tue 6/1/21** | **Tue 8/10/21** |
| 22 | **Construction** | **92 days** | **Wed 8/11/21** | **Thu 12/16/21** |

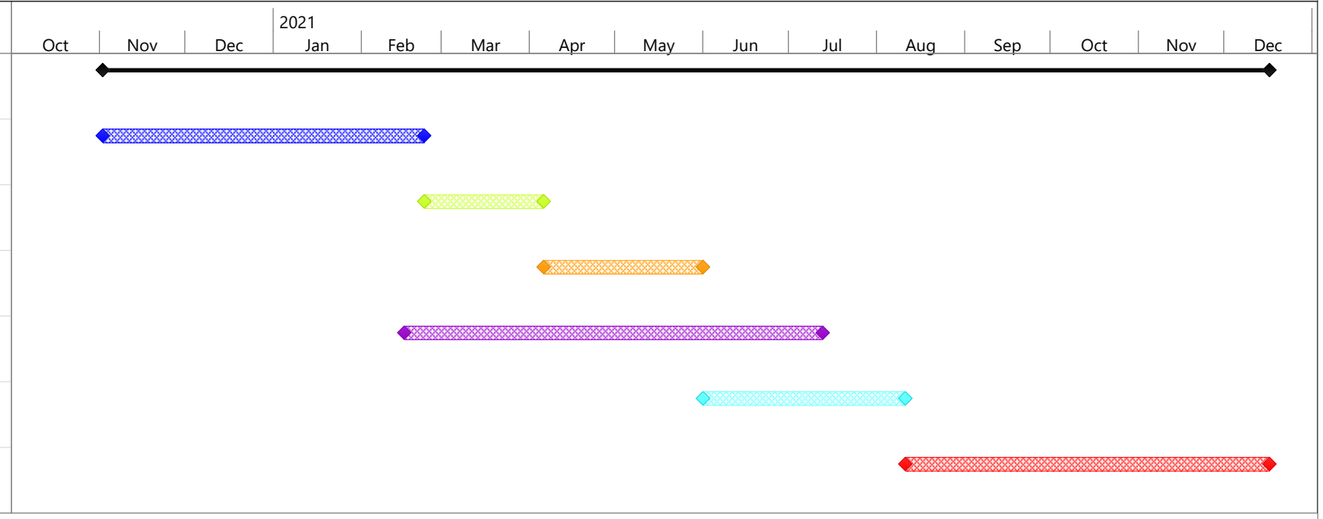



Project: 00072
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planing and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisitions
Bidding and Contracts
Construction

HISTORIC DISTRICT SANITARY SEWER EXTENSION PHASE 4
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **PHASE 4** | **294 days** | **Mon 11/2/20** | **Thu 12/16/21** |
| 2 | **Planning and Conceptual Design** | **81 days** | **Mon 11/2/20** | **Mon 2/22/21** |
| 9 | **Final Design and Construction Documents** | **30 days** | **Tue 2/23/21** | **Mon 4/5/21** |
| 11 | **Permitting** | **40 days** | **Tue 4/6/21** | **Mon 5/31/21** |
| 14 | **Easements and Land Acquisition** | **105 days** | **Tue 2/16/21** | **Mon 7/12/21** |
| 17 | **Bidding and Contracts** | **51 days** | **Tue 6/1/21** | **Tue 8/10/21** |
| 22 | **Construction** | **92 days** | **Wed 8/11/21** | **Thu 12/16/21** |

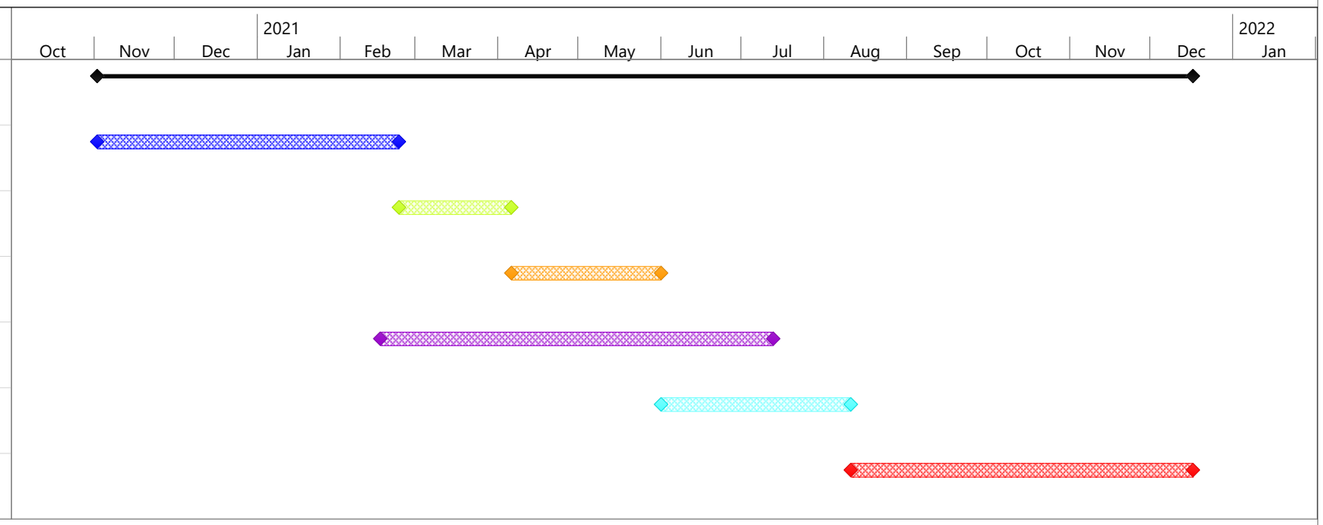



Project: 00073
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planing and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisitions
Bidding and Contracts
Construction

HISTORIC DISTRICT SANITARY SEWER EXTENSION PHASE 5
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **PHASE 5** | **294 days** | **Mon 11/2/20** | **Thu 12/16/21** |
| 2 | **Planning and Conceptual Design** | **81 days** | **Mon 11/2/20** | **Mon 2/22/21** |
| 9 | **Final Design and Construction Documents** | **30 days** | **Tue 2/23/21** | **Mon 4/5/21** |
| 11 | **Permitting** | **40 days** | **Tue 4/6/21** | **Mon 5/31/21** |
| 14 | **Easements and Land Acquisition** | **105 days** | **Tue 2/16/21** | **Mon 7/12/21** |
| 17 | **Bidding and Contracts** | **51 days** | **Tue 6/1/21** | **Tue 8/10/21** |
| 22 | **Construction** | **92 days** | **Wed 8/11/21** | **Thu 12/16/21** |

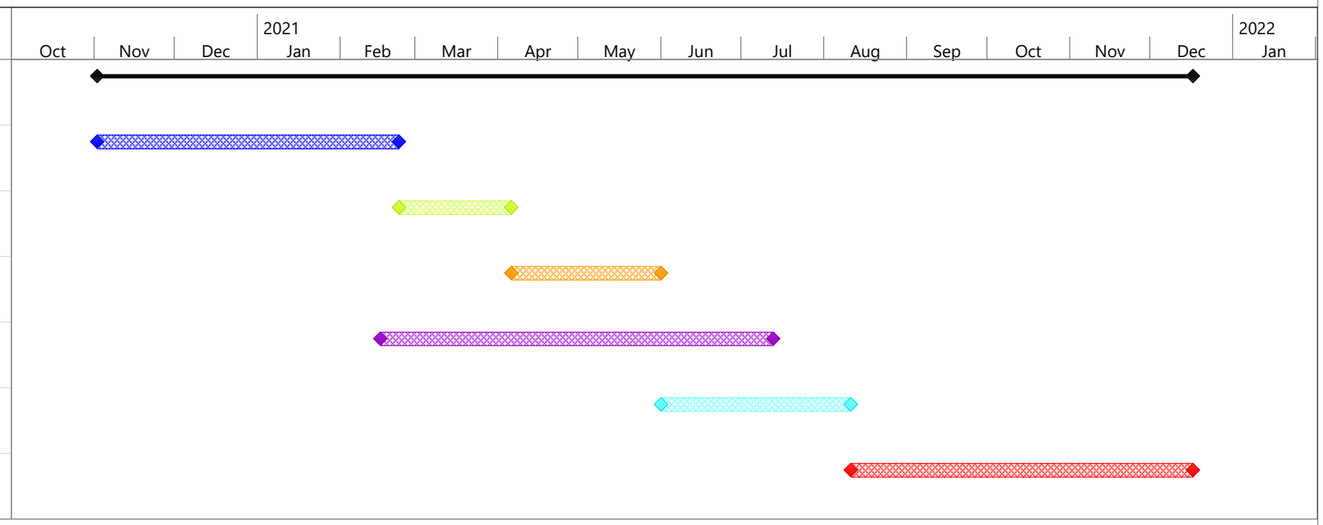



Project: 00074
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planing and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisitions
Bidding and Contracts
Construction

HISTORIC DISTRICT SANITARY SEWER EXTENSION PHASE 6
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **PHASE 6** | **294 days** | **Mon 11/2/20** | **Thu 12/16/21** |
| 2 | **Planning and Conceptual Design** | **81 days** | **Mon 11/2/20** | **Mon 2/22/21** |
| 9 | **Final Design and Construction Documents** | **30 days** | **Tue 2/23/21** | **Mon 4/5/21** |
| 11 | **Permitting** | **40 days** | **Tue 4/6/21** | **Mon 5/31/21** |
| 14 | **Easements and Land Acquisition** | **105 days** | **Tue 2/16/21** | **Mon 7/12/21** |
| 17 | **Bidding and Contracts** | **51 days** | **Tue 6/1/21** | **Tue 8/10/21** |
| 22 | **Construction** | **92 days** | **Wed 8/11/21** | **Thu 12/16/21** |

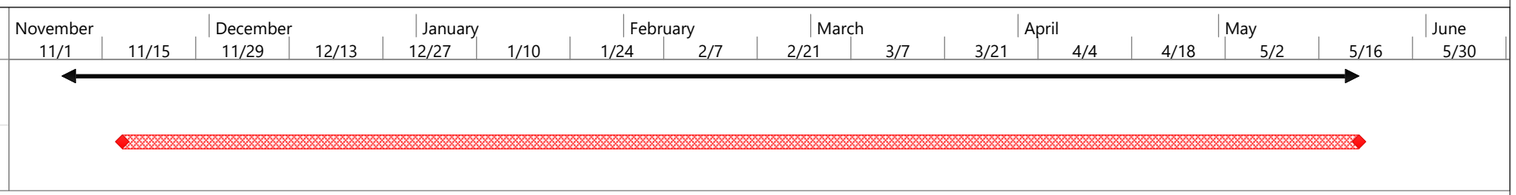



Project: 00075
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planing and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisitions
Bidding and Contracts
Construction

BUCKWALTER MULTI-COUNTY COMMERCE PARK
LEC EXPANSION - PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **LEC Expansion** | **140 days** | **Mon 11/9/20** | **Fri 5/21/21** |
| 2 | **Construction** | **133 days** | **Wed 11/18/20** | **Fri 5/21/21** |

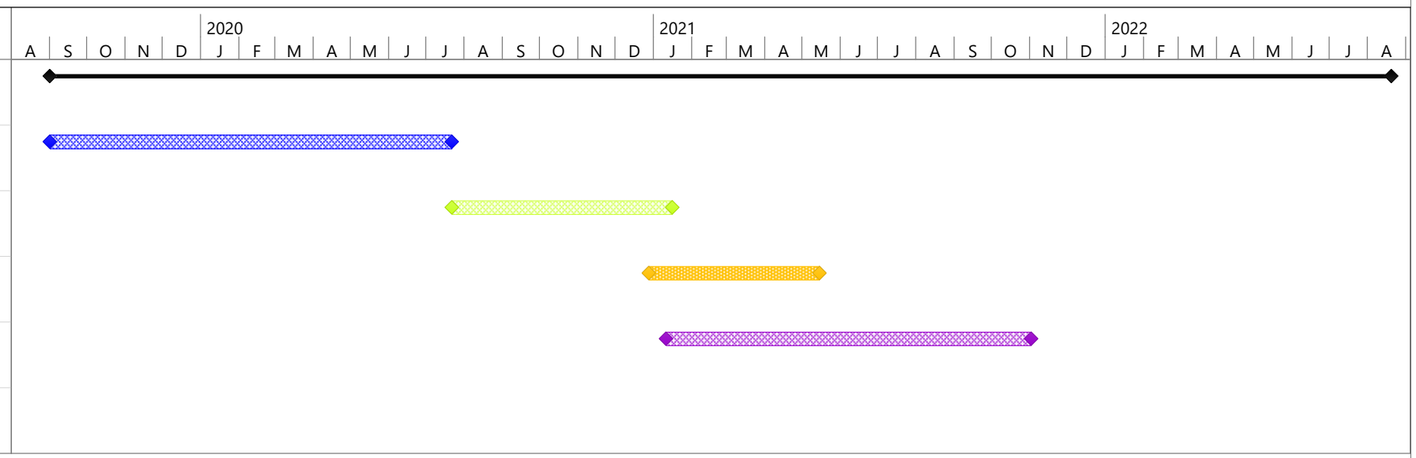



Project: 00077
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planning and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisition
Bidding and Contracts
Construction

BRIDGE STREET STREETSCAPE
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **BRIDGE STREET STREETSCAPE** | **776 days** | **Sun 9/1/19** | **Fri 8/19/22** |
| 2 | **Planning and Conceptual Design** | **232 days** | **Sun 9/1/19** | **Tue 7/21/20** |
| 17 | **Final Design and Construction Documents** | **128 days** | **Wed 7/22/20** | **Fri 1/15/21** |
| 22 | **Permitting** | **100 days** | **Mon 12/28/20** | **Fri 5/14/21** |
| 27 | **Easements and Land Acquisition** | **211 days?** | **Mon 1/11/21** | **Mon 11/1/21** |
| 37 | **Construction** | | | |

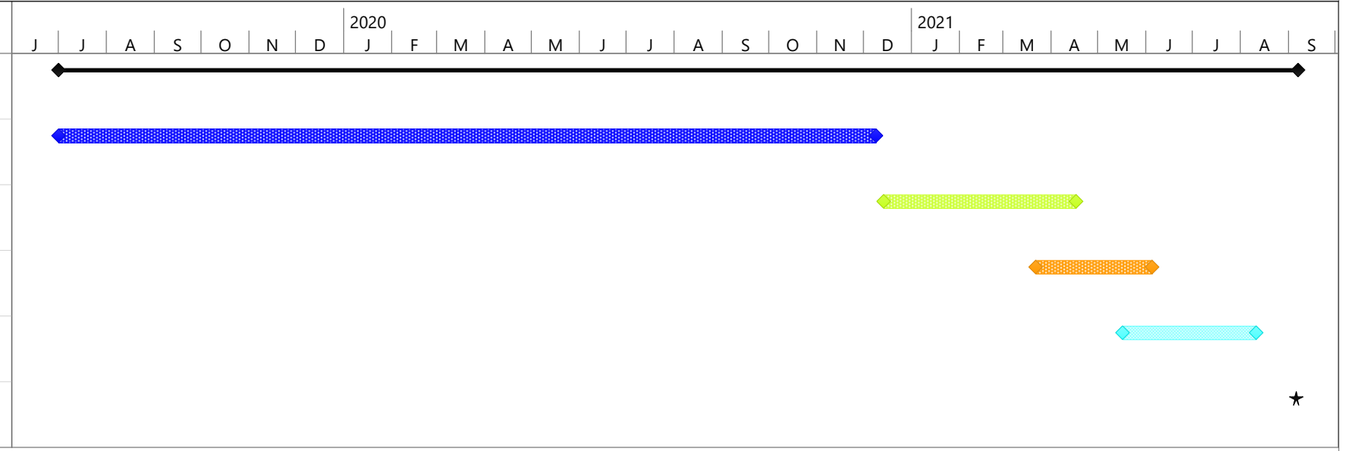



Project: 00082
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planning and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisition
Bidding and Contracts
Construction

NEW RIVERSIDE PARK/BARN SITE
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **NEW RIVERSIDE PARK/BARN SITE** | **571 days** | **Mon 7/1/19** | **Mon 9/6/21** |
| 2 | **Planning and Conceptual Master Plan** | **377 days** | **Mon 7/1/19** | **Tue 12/8/20** |
| 27 | **Final Design (Phase 1)** | **90 days** | **Mon 12/14/20** | **Fri 4/16/21** |
| 36 | **Permitting (Phase 1)** | **55 days** | **Mon 3/22/21** | **Fri 6/4/21** |
| 40 | **Bidding (Phase 1)** | **62 days** | **Mon 5/17/21** | **Tue 8/10/21** |
| 46 | **Construction Start** | **1 day** | **Mon 9/6/21** | **Mon 9/6/21** |

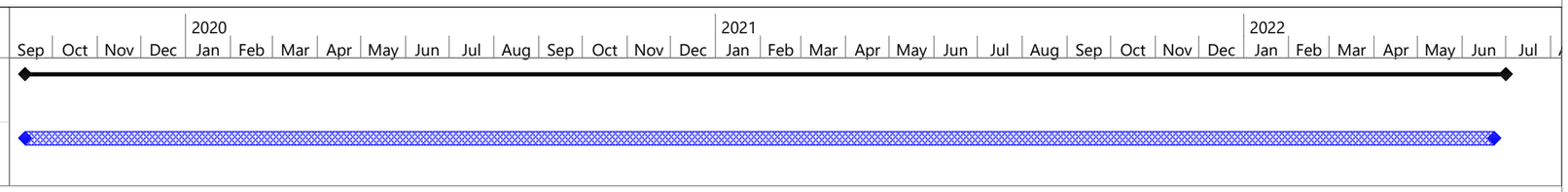



Project: 00085
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planning and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisition
Bidding and Contracts
Construction

GHOST ROADS
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **GHOST ROADS** | **731 days** | **Thu 9/12/19** | **Thu 6/30/22** |
| 2 | **Planning and Conceptual Design** | **731 days** | **Thu 9/12/19** | **Thu 6/30/22** |

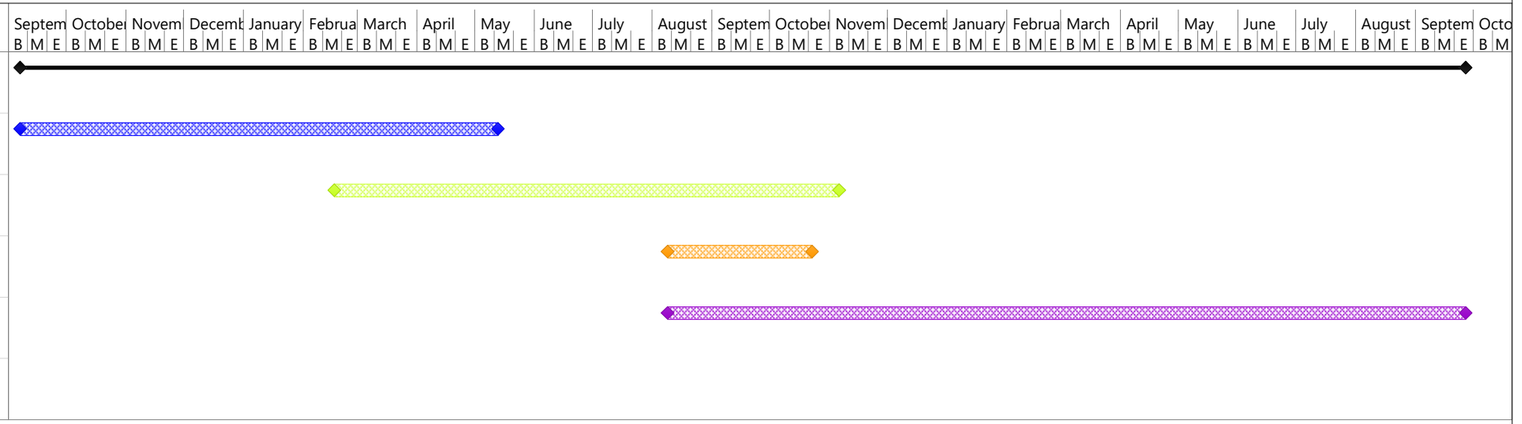



Project: 00093
Date: Tue 1/5/21

Milestone
Critical Task
Task
Project Duration
Planning and Conceptual Design
Final Design and Construction Documents
Permitting
Easements and Land Acquisition
Bidding and Contracts
Construction

BOUNDARY STREET STREETSCAPE
PROPOSED SCHEDULE

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **BOUNDARY STREET STREETSCAPE** | **536 days** | **Mon 9/7/20** | **Mon 9/26/22** |
| 2 | **Planning and Conceptual Design** | **178 days** | **Mon 9/7/20** | **Wed 5/12/21** |
| 13 | **Final Planning and Construction Documents** | **188 days** | **Wed 2/17/21** | **Fri 11/5/21** |
| 27 | **Permitting Phase** | **55 days** | **Mon 8/9/21** | **Fri 10/22/21** |
| 32 | **Easements and Land Acquisition** | **296 days** | **Mon 8/9/21** | **Mon 9/26/22** |
| 41 | **Construction** | | | |




Project: 00094
Date: Wed 1/27/21

Milestone
Critical Task
Task
Project Duration
Planning and Conceptual Design
Final Design and Construction Documents
Permitting
Bidding and Contract
Easements and Land Acquisitions
Construction

BEAUFORT COUNTY
STORMWATER MANAGEMENT UTILITY BOARD AGENDA
Wednesday, June 9th, 2021
2:00 p.m.
Executive Conference Room, Administration Building
Beaufort County Government Robert Smalls Complex
100 Ribaut Road, Beaufort, South Carolina
843.255.2805

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 – March 10th, 2021 (backup)

2. INTRODUCTIONS

3. PUBLIC COMMENT

4. REPORTS
   A. Utility Update – Katie Herrera (backup)
   B. Monitoring Update – Katie Herrera (backup)
   C. Stormwater Implementation Committee Report – Katie Herrera (backup)
   D. Stormwater Related Projects – Katie Herrera (backup)
   E. Upcoming Professional Contracts Report – Katie Herrera (backup)
   F. Regional Coordination – Katie Herrera (backup)
   G. Municipal Reports – Katie Herrera (backup)
   H. MS4 Update – Katie Herrera (backup)
   I. Maintenance Projects Report – Matthew Rausch (backup)

5. UNFINISHED BUSINESS
   A. 2021 SWUB Schedule

6. NEW BUSINESS
   A. Delinquent Accounts - Brittany Ward
   B. Shell Point Drainage Study - Cranston Engineering
   C. Cypress Wetlands Restoration - Town of Port Royal

7. PUBLIC COMMENT

8. NEXT MEETING AGENDA

   A. Wednesday, September 8th, 2021 (backup)

9. ADJOURNMENT