TOWN OF BLUFFTON'S STORMWATER MANAGEMENT PROGRAM

AGENDA

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MS4 Program

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Comprehensive Drainage

Resiliency

Review

Agreements with Beaufort County

INTRODUCTION

The Town of Bluffton's Watershed Management Division, within the Department of Projects and Watershed Resilience, is directly responsible for developing, implementing, and promoting initiatives in support of the Town's Comprehensive Plan and Strategic Plan, specifically Focus Area:

The May River and Surrounding Rivers and Watersheds.

Division Mission:

To understand, strengthen, and preserve the relationships between our community and its watersheds. Our Vision is to establish Bluffton as a regionally- and nationally-recognized leader in watershed management through local actions.

MEET OUR WATERSHED TEAM

WILLIAM "BILL" BAUGHER
Division Manager

BETH LEWIS
Water Quality Program Manager

ANDREA MORENO
MS4 Program Manager

DAN RYBAK
Watershed Project Manager

CHRISTINA HURD
Stormwater Coordinator/Field Assistant

SAMANTHA "SAM" CROTTY
Stormwater Permit Administrator

JOSEPH "JOE" SEASE
Stormwater Inspector

NICOLE WRIGHT
Stormwater Technician

MS4 PROGRAM

ANDREA MORENO

WHAT IS AN MS4?

Municipal Separate Stormwater Sewer System (MS4) refers to a system of conveyances (man-made channels & ditches, curbs, underground storm drains, etc.) owned by a municipality, county, or other public entity that is used to collect & discharge stormwater to the waters of the U.S., such as streams, rivers, and estuaries.

WHY IS BLUFFTON DESIGNATED AN MS4?

In 1987, amendments to the Clean Water Act obligated the Environmental Protection Agency (EPA) to require urban areas to regulate stormwater. The census defines where these urban areas are, and in 2010 the Census revealed that the Town's population met the definition and thus the Town fell within the purview of these requirements. The Town received its permit in 2015.

WHAT DOES THIS MEAN?

The EPA and the South Carolina Department of Health & Environmental Control (SCDHEC) are responsible for oversight of all MS4 communities. The Town of Bluffton must comply with regulations set forth by these federal & state agencies. The Town's MS4 Stormwater Management Program must include six (6) minimum control measures (MCM's).

MINIMUM CONTROL MEASURES (MCM'S)

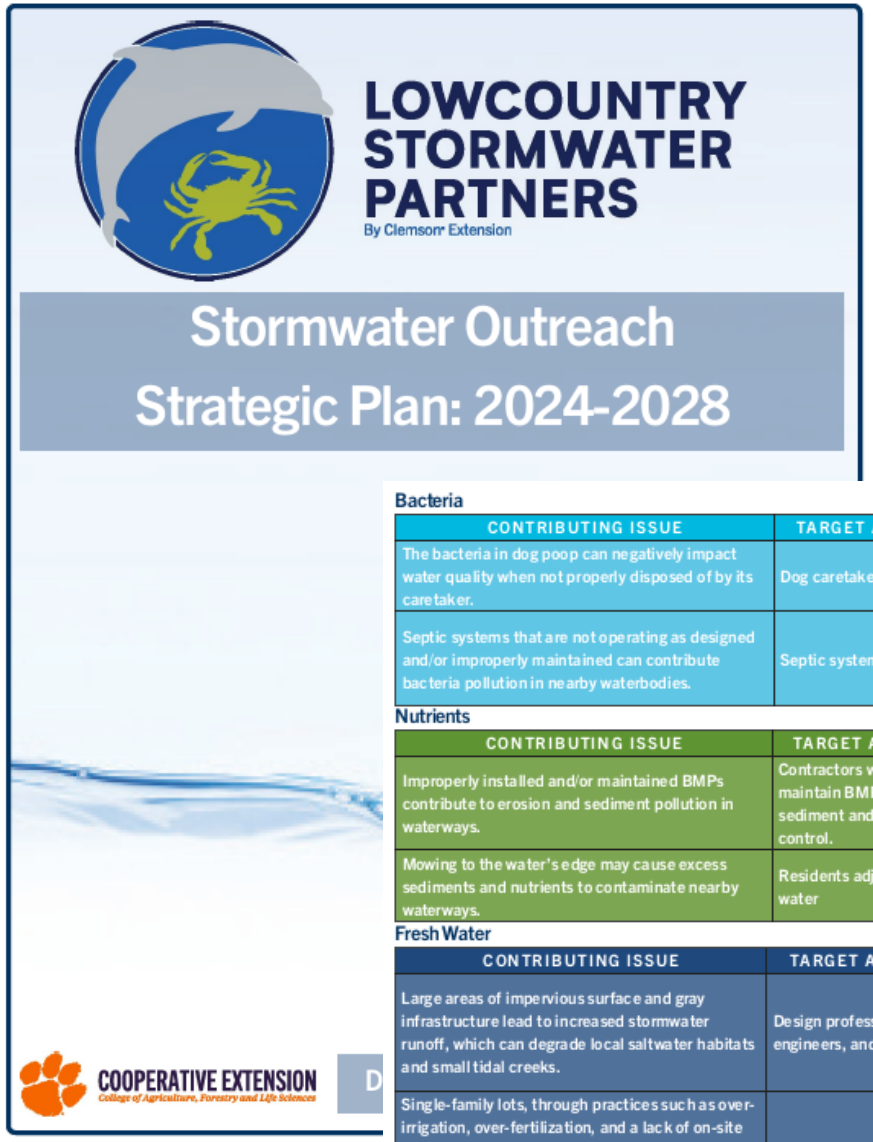
PUBLIC EDUCATION & OUTREACH

MCM#1 REQUIREMENTS

As an MS4, the Town is mandated to identify pollutant(s) of concern (POC) within its defined watershed area(s), identify target audience(s), and provide public education on these POC to the target audience(s).

LOWCOUNTRY STORMWATER PARTNERS

Clemson Extension, Beaufort County, the Town of Bluffton, the Town of Hilton Head Island, the City of Beaufort, and the Town of Port Royal have partnered alongside other organizations to form the Lowcountry Stormwater Partners consortium (LSP). LSP's purpose is to coordinate and implement a regional, watershed-scale education strategy, based on criteria identified in the LSP Stormwater Outreach Strategic Plan.



Bacteria

CONTRIBUTING ISSUE	TARGET AUDIENCE	TARGET ACTION
The bacteria in dog poop can negatively impact water quality when not properly disposed of by its caretaker.	Dog caretakers	Dog caretakers will pick up after their pets, both on walks and in the yard.
Septic systems that are not operating as designed and/or improperly maintained can contribute bacteria pollution in nearby waterbodies.	Septic systems users	Septic system users will use best management practices to properly operate and maintain their septic systems.

Nutrients

CONTRIBUTING ISSUE	TARGET AUDIENCE	TARGET ACTION
Improperly installed and/or maintained BMPs contribute to erosion and sediment pollution in waterways.	Contractors who install and maintain BMPs for sediment and erosion control.	Contractors will install and maintain sediment and erosion control BMPs properly.
Mowing to the water's edge may cause excess sediments and nutrients to contaminate nearby waterways.	Residents adjacent to water	Residents will let vegetated buffers grow or plant them along shorelines.

Fresh Water

CONTRIBUTING ISSUE	TARGET AUDIENCE	TARGET ACTION
Large areas of impervious surface and gray infrastructure lead to increased stormwater runoff, which can degrade local saltwater habitats and small tidal creeks.	Design professionals, engineers, and developers	Target audience will understand why low-impact development (LID) is important in coastal areas and include more LID in their projects.
Single-family lots, through practices such as over-irrigation, over-fertilization, and a lack of on-site stormwater best management practices (BMPs), can increase stormwater runoff and degrade local saltwater habitat and small tidal creeks.	Individual lot residents	Residents will install BMPs and/or maintain their landscapes in an environmentally sustainable manner.

LSP STRATEGIC PLAN

The 2024-2028 LSP Stormwater Outreach Strategic Plan is based on three (3) identified POC (bacteria, nutrients, and fresh water) and their associated contributing action, target audience, and target behavior (goal).

For example, a contributing action for bacteria is dog caregivers not picking up after their pets. In this example, the target audience is pet owners, and the target behavior is to increase the number of pet owners who properly dispose of pet waste.

Education strategies and timelines are outlined to include the message (ex. scoop the poop), the format and distribution of the message (ex. dog waste leash holders), resources (ex. Town staff), and an evaluation of the strategy (ex. Number of dog waste bags distributed).

PUBLIC INVOLVEMENT & PARTICIPATION

MCM#2 REQUIREMENTS

The Town is required to involve the public in the planning and implementation of various MS4 program activities. Specifically, the Town must create opportunities for citizens to participate in the implementation of stormwater controls (e.g., storm drain stenciling and river clean-ups).

TOWN PROGRAMS

To name just a few of the Town programs that focus on public involvement and participation, the Town of Bluffton holds two (2) annual litter clean-ups, has had volunteers mark infrastructure as part of the storm drain stenciling program, has worked with students and volunteers to build and deploy floating wetlands, and actively encourages citizens to utilize the Town's reporting app, SeeClickFix.

ILLICIT DISCHARGE DETECTION & ELIMINATION (IDDE)

MCM#3 REQUIREMENTS

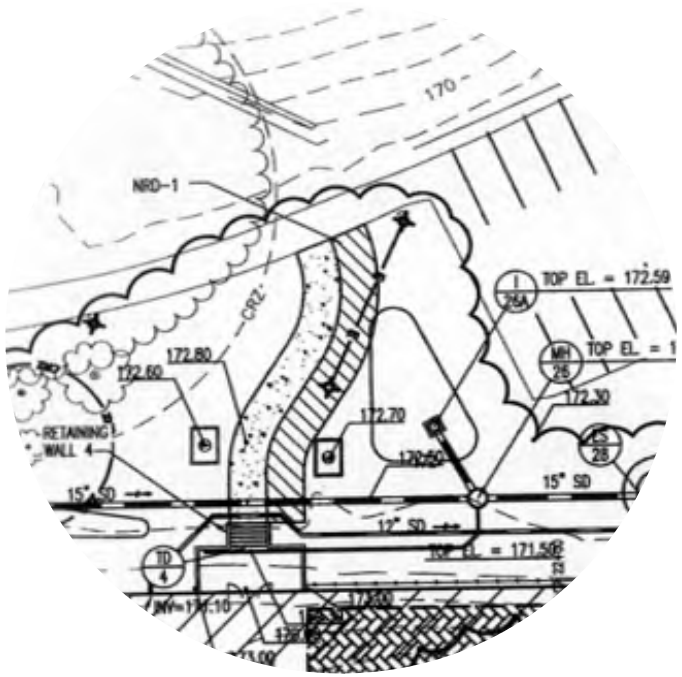
The Town is required to develop, implement, and enforce a program to detect and eliminate illicit (non-stormwater) discharges into the MS4.

DETECTION

This is accomplished through field screening, during both dry and wet weather events, and investigation and elimination, should an illicit discharge be identified. Steps to screen, identify, and report illicit discharges are outlined in the Town of Bluffton's IDDE Standard Operating Procedures (SOP).

ELIMINATION

The removal and enforcement of illicit discharges vary based on the type and the source, as outlined in the Town's IDDE Enforcement Response Plan (ERP).



CONSTRUCTION SITE RUNOFF CONTROL

MCM#4 REQUIREMENTS

The Town is required to develop, implement, and enforce a program to reduce pollutants in any stormwater runoff to the MS4 from construction activities that result in land disturbance of ≥1 acre or <1 acre if part of a larger common plan of development (LCP).

TOWN-SPECIFIC REQUIREMENTS

In addition to the MS4 requirements, the Town's Unified Development Ordinance (UDO) and 2021 Southern Lowcountry (SoLoCo) Stormwater Design Manual require that any development or redevelopment resulting in ≥ 5000 sqft. of impervious surface or ≥ 1 acre of disturbance or sites, regardless of size, that are part of an LCP meet the design standards as outlined in the SoLoCo Manual.

GRADING & DRAINAGE PLANS

Per the Town's UDO, grading/drainage plans are required to be submitted for any land-disturbing activity in excess of 5000 sqft. or an increase in impervious surface in excess of 2000 sqft.

CONSTRUCTION SITE RUNOFF CONTROL (CONT.)

STORMWATER REVIEW

After a Preliminary Development Plan has been submitted and approved, the applicant may then submit for a Stormwater Permit.

Grading/drainage plans and stormwater submittal documents for sites meeting UDO and SoLoCo applicability are reviewed for adherence to the provisions of both documents. Applicants are given an opportunity to meet with staff prior to submittal and then once a submittal is received, staff has 20 business days to review it.

Once the Town has completed review of the stormwater permit, MS4 conditional approval is sent to DHEC and DHEC then provides the final approval. The applicant may submit for their Final Development Plan once they have an approved/conditionally approved Stormwater Permit.

SOLOCO REQUIREMENTS

Projects subject to SoLoCo must demonstrate heightened design requirements such as achievement of Better Site Design principles, safe conveyance of the 100-yr storm event, on-site retention of the 95th percentile rain event (1.95 in), and the 10% rule analysis.

CONSTRUCTION SITE RUNOFF CONTROL (CONT.)

DELEGATED PLAN REVIEW

Grading/drainage plans and stormwater submittal documents for sites meeting UDO and SoLoCo applicability are reviewed for adherence to the provisions of both documents. For applicable sites, MS4 conditional approval is sent to DHEC and DHEC then provides the final approval.

S&EC INSPECTIONS

Routine erosion and sediment control (E&SC) inspections are conducted monthly by staff holding valid Certified Erosion Prevention and Sediment Control Inspectors (CEPSCI) certifications. These inspections follow procedures as outlined in the E&SC Inspection Standard Operating Procedures (SOP).

E&SC ENFORCEMENT

As described by the Town's E&SC Enforcement Response Plan (ERP), based on the severity of violations identified at the time of the inspection, the course of action differs specifically in terms of the allotted time frame for remediation as well as the proceeding enforcement actions, namely postage of a Stop Work Order and/or issuance of citation vs. immediate issuance of citation.

POST-CONSTRUCTION RUNOFF CONTROL

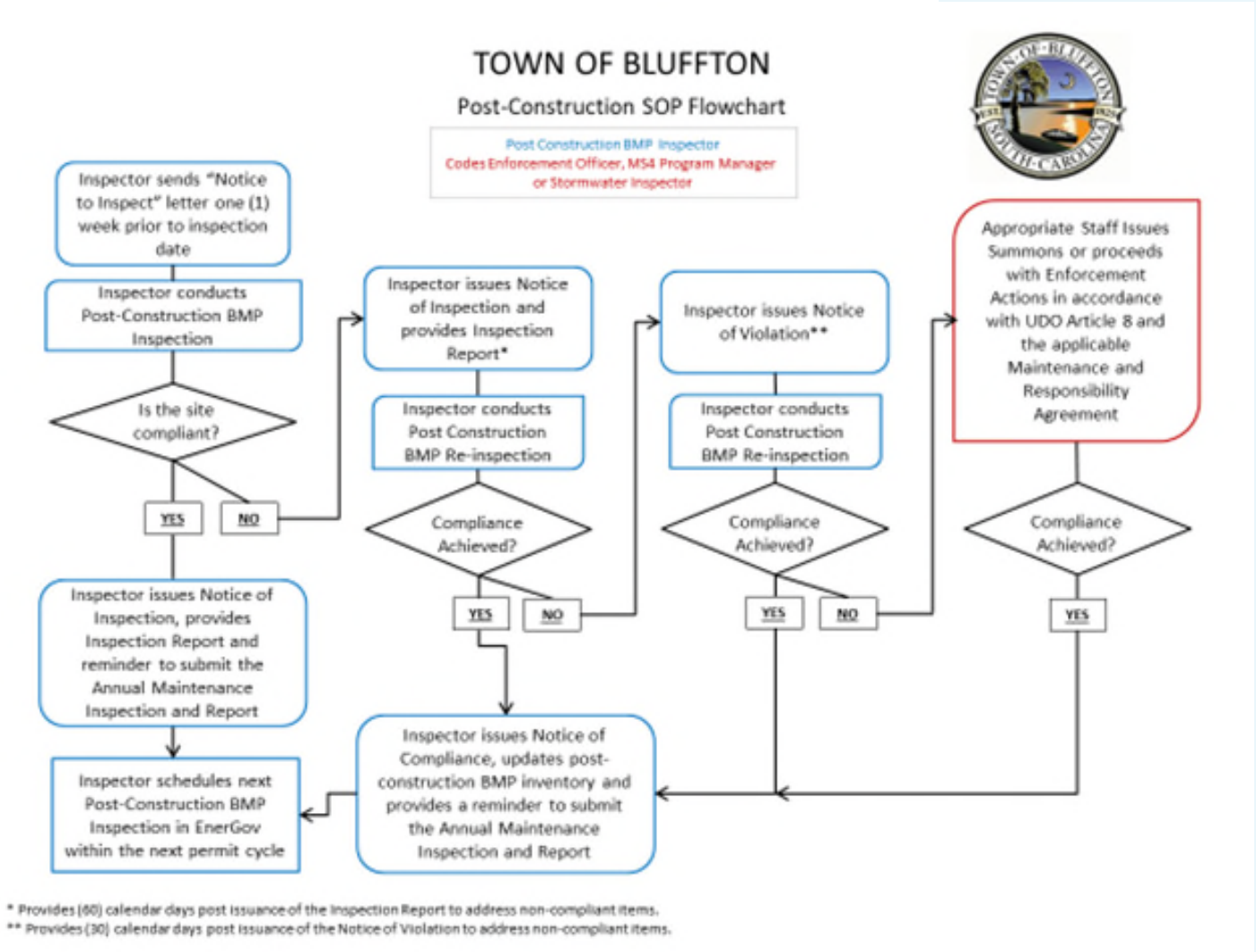
MCM#5 REQUIREMENTS

The Town is required to implement a program to ensure the long-term maintenance of structural stormwater controls installed to control stormwater discharges from new development/redeveloped sites that disturb at ≥1 acre (including projects that disturb <1 acre that are part of an LCP) that discharge into the MS4. Sites are to be inspected at least once during the MS4 permit term (5-year cycle).

TOWN-SPECIFIC REQUIREMENTS

Per the SoLoCo Manual, all sites meeting UDO/SoLoCo applicability are required to undergo a Notice of Termination (NOT) inspection prior to stormwater permit close-out and are then subject a post-construction inspection once every three (3) years.

Prior to project close-out, a best management practice (BMP) operation and maintenance agreement, outlining the specific maintenance tasks and frequency associated with each BMP, is required to be signed and recorded with the plat.



POST-CONSTRUCTION INSPECTIONS

To ensure that all stormwater BMPs are operating correctly and are being maintained as required consistent with its applicable operation and maintenance agreement, inspections are conducted by staff holding valid Post-Construction BMP Inspector certifications.

POST-CONSTRUCTION ENFORCEMENT

Per the Town's UDO and SoLoCo Stormwater Ordinance, owners who fail to ensure long-term maintenance of structural stormwater BMPs, are subject to enforcement actions including, but not limited to, citations.

POLLUTION PREVENTION / GOOD HOUSEKEEPING

MCM#6 REQUIREMENTS

The Town is required to develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

TOWN-OWNED OR OPERATED FACILITIES

Staff maintain an inventory of all Town-owned or operated facilities and their associated stormwater BMPs, if any. Each facility is inspected once per permit term (5-year cycle) and any deficiencies are provided via an inspection report to appropriate staff.

STAFF TRAINING

New Town hires are provided with educational materials on IDDE and Good Housekeeping as part of the Town's on-boarding process.

Applicable staff also undergo yearly training on pollution prevention practices.

WATER QUALITY MONITORING PROGRAMS

BETH LEWIS

TOWN MONITORING PROGRAMS

- May River Watershed Action Plan (MRWAP)
- Microbial Source Tracking (MST)
- MS4
- Additional Monitoring Efforts
  - Monthly Historic District Monitoring
  - Capital Improvement Projects (CIP)
  - Weather Stations & Rainfall
  - Harmful Algal Blooms (HAB's)
  - Tidal Elevation

MAY RIVER WATERSHED ACTION PLAN (MRWAP) MONITORING PROGRAM

BETH LEWIS

MRWAP WATER QUALITY MONITORING

Section 5.0 of the MRWAP Model Report included recommendations for the Town to improve upon the existing water quality monitoring program. These recommendations included changes to:

- Bacteria monitoring
- Continuous and intermittent flow data collection
- MST monitoring and source typing

MRWAP BACTERIA MONITORING

MODEL REPORT STUDY AREA

- Rose Dhu Creek
- Stoney Creek
- Palmetto Bluff
- Duck Pond

Grab Samples:

- Fecal coliform & E. coli bacteria collected two (2) times per month at fourteen (14) sites.
- Total Nitrogen (TN) & Total Phosphorus (TP) collected once (1) per month at eight (8) of these sites.

***In-Situ* Data:**

Utilize a handheld YSI ProDSS at all sampling sites. Monitors for:

- Water Temperature (ºC)
- Dissolved Oxygen (mg/L)
- pH
- Salinity (ppt)
- Specific Conductivity (mS/cm)
- Turbidity (NTU)

MRWAP FLOW MONITORING

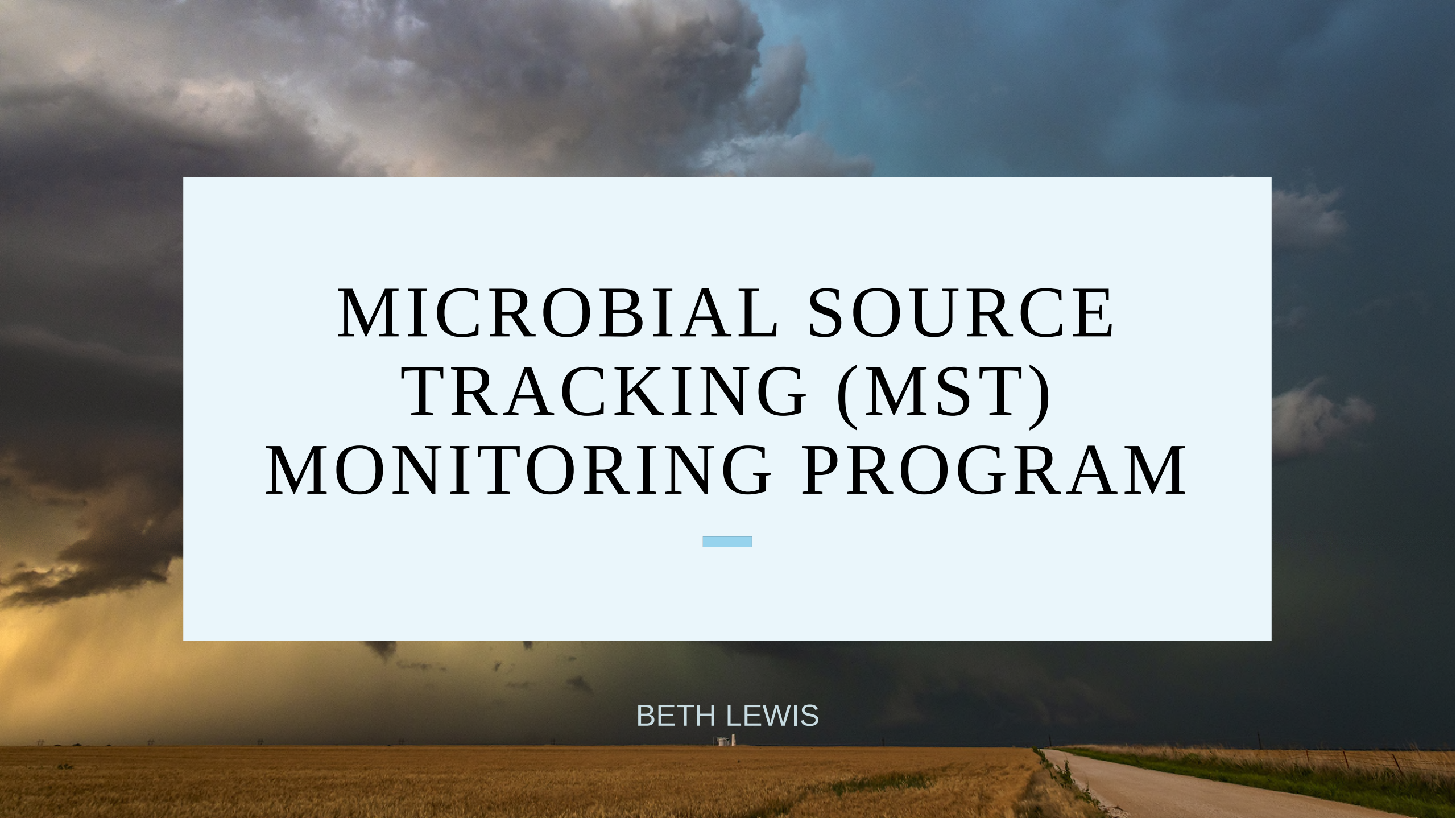
- Continuous flow utilizing three (3) SonTek IQ-Plus Instruments in the Model Report Study Area (Stoney Creek, Rose Dhu Creek, Palmetto Bluff).
- Water Environmental Consultants (WEC) providing data review.

MRWAP FLOW MONITORING

- Intermittent flow measurements at the time of MRWAP grab sampling.
- Utilize the FlowTracker2
- Collected two (2) times per month in conjunction with bacteria monitoring at six (6) MRWAP monitoring sites.

MRWAP DUCK POND

- Anticipate conducting a water elevation study in FY25 for the Duck Pond subwatershed.
- Confirm that the model geometry is correct (stream cross-sections, culvert sizes, and invert elevations, etc.).
- As there is no measured flow and water level data in this catchment for calibration, it is particularly important that the modeling team confirm that the input model geometry is correct.



MICROBIAL SOURCE TRACKING (MST) MONITORING PROGRAM

BETH LEWIS

MICROBIAL SOURCE TRACKING (MST) MONITORING

MAY RIVER SCDHEC STATIONS

- Coordinate monthly with the South Carolina Department of Health & Environmental Control (SCDHEC) to collect five (5) MST samples from the May River at the time of regulatory shellfish harvesting sampling

MS4 MONITORING

- MST sample collection at all MS4 quarterly sampling locations in the May River Watershed. Analyzed for the human genetic marker (HF183).

SCAT FECAL SAMPLE ANALYSIS

- HF183 and BacHum
- Scat fecal samples from:
  - Bird
  - Dog
  - Deer
  - Horse

MS4 MONITORING

BETH LEWIS

MS4 MONITORING

MAY RIVER WATERSHED

- E. coli, TN, TP, Total Suspended Solids (TSS), and MST (HF183) samples collected once per quarter at nine (9) sites.
- Intermittent flow collected at six (6) of these sites.

BEAUFORT COUNTY SHARED MONITORING

- New River – Fecal coliform, E. coli, Enterococcus, Mercury, TN, TP, and *in-situ*
- Colleton River – Fecal coliform, E. coli, TN, TP, *in-situ*
- Okatie River – Fecal coliform, E. coli, TN, TP, *in-situ*

IDDE INVESTIGATIONS

- Field kits for ammonia, detergents, and HAB's
- Tracing dyes
- Additional parameters as necessary through the USCB Water Quality Laboratory

ADDITIONAL MONITORING EFFORTS

BETH LEWIS

HISTORIC DISTRICT MONITORING

HISTORIC DISTRICT AREA

- Heyward Cove
- Huger Cove
- Verdier Cove

Grab Samples:

- Fecal coliform, E. coli bacteria, TN, and TP collected once per month at six (6) sites.

***In-Situ* Data:**

Utilize a handheld YSI ProDSS at all sampling sites. Monitors for:

- Water Temperature (ºC)
- Dissolved Oxygen (mg/L)
- pH
- Salinity (ppt)
- Specific Conductivity (mS/cm)
- Turbidity (NTU)

CIP/BRIDGE STREET MONITORING

BRIDGE STREET BMP'S

- A total of fourteen (14) BMP's installed to capture and improve water quality in the initial 1.95 inches of rainfall from impervious surface areas draining to each BMP

PRE-CONSTRUCTION

- Simulated rain event to provide an indication of amount of rainfall needed to produce stormwater discharge to Heyward Cove.

POST-CONSTRUCTION

- Two (2) automatic samplers deployed in the outfalls to Heyward Cove.
- Following 3.82 inches in four (4) hours, discharge occurred at the outfall. No discharge detected during smaller more frequent rain events.
- One (1) sample has been collected. Preliminary results indicate TN, TP, and TSS concentrations decreased significantly.

RAINFALL, HABS, AND TIDAL ELEVATION

WEATHER STATIONS

- Own, operate, and maintain two (2) weather stations in the May River Watershed.
  - Watershed Office – May River Road
  - Police Department – Progressive Street

HARMFUL ALGAL BLOOMS (HAB)

- New field kit for HAB toxin testing
- Clemson University for species identification

TIDAL ELEVATION

- Calhoun Street Dock
  - Recently established as a long-term tidal elevation site utilizing a HOBO U-20 Water Level Logger
- 4-week Tidal Elevation Study
  - Water Environmental Consultants (WEC) deployed two (2) HOBO U-20 Water Level Loggers at the Rose Dhu Creek and Stoney Creek stormwater model boundaries

COMPREHENSIVE DRAINAGE

BETH LEWIS

HEYWARD COVE

SUBWATERSHED DRAINAGE STUDY

- Heyward Cove is a 464-acre basin
- Purpose was to develop a stormwater infrastructure inventory assessment of the basin, conduct an existing conditions H&H stormwater model for system capacity analysis, and perform a proposed system capacity analysis based on stormwater systems found to be deficient.
- The goal is to provide a master plan of capital improvement projects that will bring stormwater systems' level of service to a standard that meets the Town's stormwater standards.
- Final report has been provided to the Town by its consultant. The H&H model was developed using PCSWMM 2022 Professional 2D software.
- Town staff will be meeting with County staff to discuss pertinent findings from this study.

CROOKED COVE

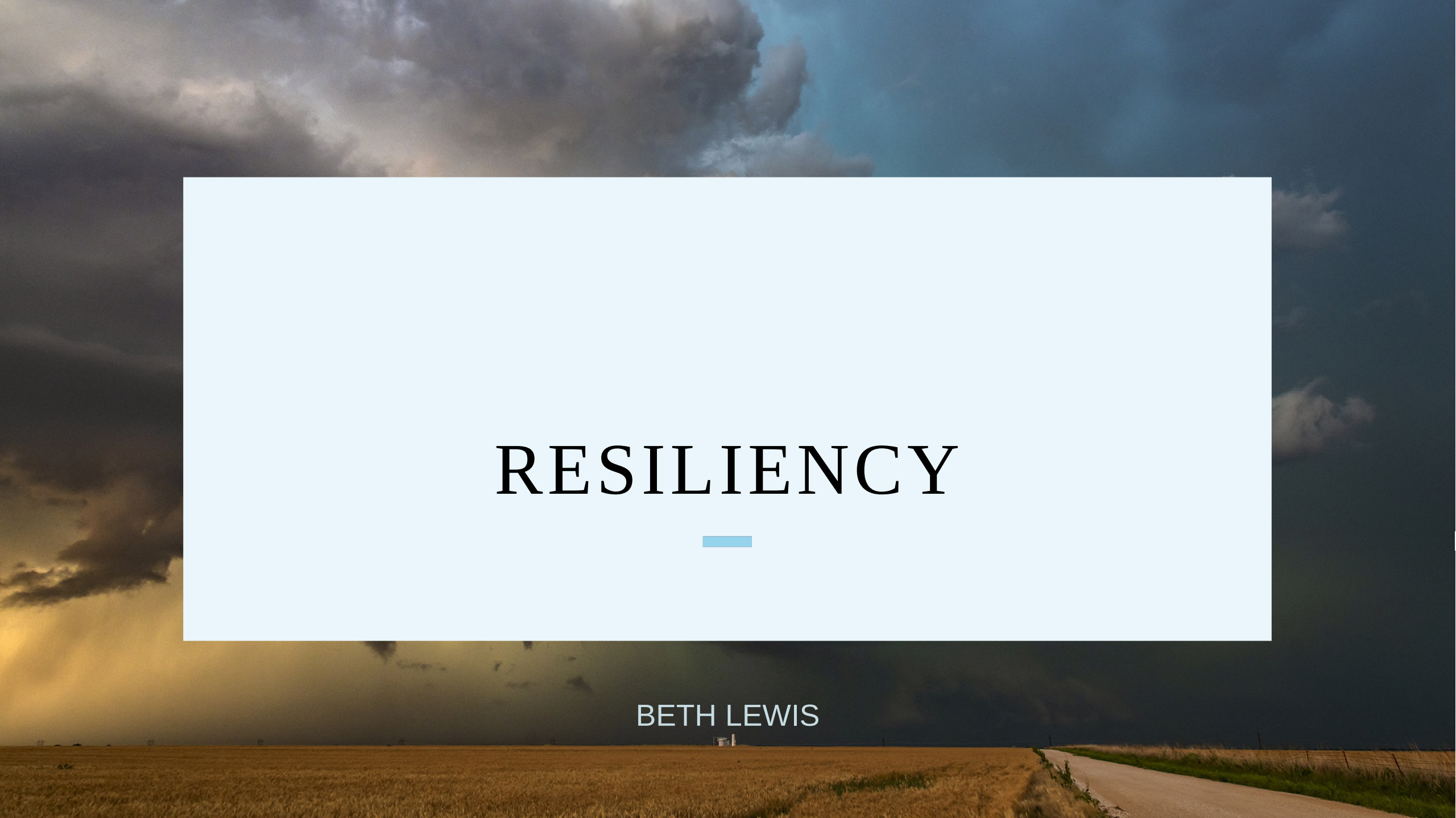
SUBWATERSHED DRAINAGE STUDY

- **Grab Samples:**
  - Fecal coliform & E. coli bacteria collected two (2) times per month at one (1) monitoring site
  - Total Nitrogen (TN) & Total Phosphorus (TP) collected once (1) per month at one (1) monitoring site
  - *In-situ* data also collected

- **Flow Monitoring:**
  - Continuous flow utilizing a SonTek IQ-Plus Instrument in drainage channel near Cahill's restaurant
  - Anticipated 6-month data collection period.

CROOKED COVE FLOW MONITORING

- Continuous flow utilizing the SonTek IQ-Plus Instrument in Crooked Cove.



RESILIENCY

BETH LEWIS

RESILIENCE REFERS TO A COMMUNITY'S ABILITY TO WITHSTAND AND RECOVER FROM ENVIRONMENTAL, ECONOMIC, AND SOCIETAL DISRUPTIONS.

TOWN PLANNING

- Blueprint Bluffton, the Town's Comprehensive Plan, adopted in November 2022 includes a new Chapter for Resiliency.
- Proposed Resiliency Items for Town Council's Consideration in the FY25-FY26 Strategic Plan

RESILIENCY

COLLEGE OF CHARLESTON AND SC SEA GRANT CONSORTIUM

- Included Resiliency Analysis in FY24 Budget
  - Finalizing proposed scope of work with contract execution anticipated prior to March 1.
  - Will include stakeholder engagement.

COMPREHENSIVE DRAINAGE

- Identifying stormwater storage areas
- Stormwater infrastructure needs

SC STATE OFFICE OF RESILIENCY

- Staff attended informational meeting
- Staff is exploring funding opportunities

REVIEW

BETH LEWIS

- MS4 Program
  - MS4 Plans and Reports
    - Stormwater Management Plan (SWMP)
    - MS4 Annual Reports to SCDHEC
  - Education and Public Participation
    - LSP Strategic Plan
    - Agreement with Beaufort County
  - Illicit Discharge Detection & Elimination (IDDE)
    - IDDE Standard Operating Procedure (SOP)
    - IDDE Enforcement Response Plan (ERP)
  - Sediment & Erosion Control
    - Sediment & Erosion Control SOP
    - Sediment & Erosion Control ERP
  - Post-Construction Control
    - Post-Construction BMP SOP
  - Good Housekeeping
    - Good Housekeeping Manual

- Asset Management
  - Cartegraph Software
- Southern Lowcountry (SoLoCo)
  - Unified Development Ordinance (UDO) – Stormwater Ordinance
  - SoLoCo Design Manual
  - Town Development Review Process and Citizen Self Service Portal
    - Fees, Checklist, Operation & Maintenance Agreements, Annual Post-Construction BMP Inspection Forms, Notice of Termination (NOT) Applications, and As-Built Requirements.

- Water Quality Monitoring
  - MS4 Permit
    - TMDL Monitoring Plan for the Okatie River
  - May River Watershed Action Plan Model Report
  - Staff Field Sampling Guidelines Manual
    - SOP’s for field collection and equipment use and maintenance; post-collection procedures; data management
  - Agreements with USCB
  - Studies
    - Currently conducting an Update to the 2004 May River Baseline Assessment
- Engagement
  - WAPAC
  - Two (2) Annual Litter Cleanups – Nine (9) partnerships with businesses, organizations, and non-profits
  - Lowcountry Stormwater Partners (LSP)

- Capital Improvement Projects (CIP)
  - Septic to Sewer Conversion Policy and Program
  - May River Watershed Action Plan Update Project Implementation
  - Comprehensive Drainage
  - Water quality & quantity are components in all Town CIP projects
- Resiliency
  - FY24 Resiliency Analysis

AGREEMENTS WITH BEAUFORT COUNTY

BETH LEWIS

CURRENT AGREEMENTS

- Stormwater Management and Utility
  - Establishes terms and conditions in a county-wide stormwater utility, operated by the County.
  - Establishes rates, use of revenue, acquisition of existing stormwater infrastructure, construction of new infrastructure, maintenance of infrastructure, operation of infrastructure, regulation & use of infrastructure, and enhancement of water quality.
- Lowcountry Stormwater Partners (LSP) and Carolina Clear
  - County holds contract with Clemson's Carolina Clear.
  - Town and County agreement is to cost-share for these services.
- MS4 Shared Responsibilities
  - Right to Jointly Support Town/County Stormwater Ordinance
    - Right of Entry
    - Notifications and Documentation
  - Joint Monitoring
    - Share water quality monitoring data

PREVIOUS AGREEMENTS

- SoLoCo
  - Identified the need for a consistent stormwater ordinance and design standards to help protect regional water resources and quality of life.
  - Shared costs for private services and materials related to development of the SoLoCo ordinance and design standards.

THANK YOU

TOWN OF BLUFFTON’S WATERSHED MANAGEMENT DIVISION