KENNESAW STATE UNIVERSITY STORMWATER MANAGEMENT PROGRAM (SWMP)

May 2022

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ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practices
CWA	Clean Water Act
EHS	Environmental Health and Safety
EPA	Environmental Protection Agency
GA EPD	Georgia Environmental Protection Division
IDD&E	Illicit Discharge Detection and Elimination
KSU	Kennesaw State University
MS4	Municipal Separate Storm Sewer System
MCM	Minimum Control Measure
NPDES	National Pollution Discharge Elimination System
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
RM	Risk Management

1.0 INTRODUCTION

Kennesaw State University (KSU) has developed this Storm Water Management Program and Storm Water Management Plan (SWMP) to monitor and improve the quality of storm water runoff from its Kennesaw and Marietta, Georgia campuses. KSU has selected Best Management Practices (BMP's) for each control measure designed to accomplish the goal of reducing pollution from storm water runoff to the maximum extent practicable. The University has identified implementation dates for each BMP, targeted completion dates for each BMP, measurable goals, and responsible persons for each action. This is a living document and should be updated periodically to capture changes to the campus that could substantively affect the quality or quantity of storm water flow.

2.0 PURPOSE

The purpose of this SWMP is to prevent and minimize release of pollutants to the public water ways. The best management practices and various programs set forth in this SWMP are intended to;

- Prevent storm water pollution by eliminating pathways from potential pollutant sources,
- Protect surface water and other environmental media by capturing significant releases and reducing routine small impacts,
- Separate wastewater discharges from storm water,
- Provide education and awareness to all campus stakeholders to improve recognition and prevention of storm water pollution,
- Where possible and as appropriate, furnish permanent structural solutions to mitigate impacts to storm water that could result from the activities identified in this SWMP.

3.0 QUALIFYING STATE OR LOCAL PROGRAM

Section 405 of the Federal Water Quality Control Act of 1987 amended Section 402 of the Federal Clean Water Act (CWA), requiring the Environmental Protection Agency (EPA) to establish regulations setting forth National Pollutant Discharge Elimination System (NPDES) permit application requirements for storm water discharges. Phase I of the U.S. Environmental Protection Agency's (EPA) storm water program was promulgated in 1990 under the CWA. Phase I relies on NPDES permit coverage to address storm water runoff from: (1) medium and large municipal separate storm sewer systems (MS4s) generally serving populations of 100,000 or greater, (2) construction activity disturbing 5 acres of land or greater, and (3) eleven categories of industrial activity.

On December 8, 1999 EPA published the Storm Water Phase II Final Rule, which expands the Phase I program by requiring additional operators of small MS4s and operators of small construction sites (1 to 5 acres) to be covered by NPDES permits and to implement programs and practices to control polluted storm water runoff. Under Phase II, NPDES permit applications for storm water discharges are required for discharges from certain State and Federal facilities, also considered to be Small MS4s. The Georgia Environmental Protection Division (GA EPD) has been delegated the NPDES program, and is therefore responsible for implementation of a program to control storm water discharges.

Cobb County has obtained a MS4 storm water permit and developed a Stormwater Management Program. The Cobb County program indicates that storm water conveyance systems and management facilities (i.e. pipes, ponds, dams, open channels) that are located on private property (this includes the systems within KSU's campuses) are the property owner's responsibility and will not be maintained by the county.

At the time this SWMP was developed, GA EPD does not regulate colleges and universities through an MS4 permit. However, as a best management practice, KSU has developed a Stormwater Management Program for it's campuses in an effort to prevent and minimize release of pollutants to the Cobb County MS4 system.

4.0 STORM WATER POLLUTION PREVENTION

The KSU Kennesaw and Marietta campuses have many activities and operations that could result in impacts to storm water and thus to public water ways. KSU has developed this SWMP to help prevent pollution to storm water as a result of activities such as, but not limited to, these listed below.

- Fuel Dispensing
- Aboveground storage of liquid materials
- Solid waste storage areas, containers, and compactors
- Exterior storage of bulk materials
- Material transfer areas and loading docks
- Equipment and Vehicle Washing
- High-Use Vehicle Parking Areas and Decks
- Landscaping and Maintenance Areas

The KSU Kennesaw campus has identified sixteen (16) outfalls which discharge within the Etowah River Watershed, to Noonday Creek within the Coosa River Basin. Noonday Creek is listed on Georgia's 2020 305(b)/ 303(d) list as an impaired water of the state for fish communities (Bio F). A TMDL for Bio F

was completed in 2009. A photo log depicting each of the identified outfalls on campus is included in **Appendix J**.

The KSU Marietta campus has identified twenty-one (21) outfalls which discharge to Rottenwood Creek located within the Chattahoochee Watershed and Chattahoochee River Basin. Rottenwood Creek is listed on Georgia's 2020 305(b)/ 303(d) list as an impaired water of the state for macroinvertebrate community (Bio M). A TMDL for FC was completed in 2003 and for Bio M was completed in 2018. A photo log depicting each of the identified outfalls on the Marietta campus is provided in **Appendix K**.

5.0 SHARING RESPONSIBILITY

KSU will have the responsibility to implement measures within this SWMP. Concerted efforts will be made to involve various facets of the university including administration, faculty, facility maintenance, and both resident and non-resident students. The individuals responsible for related SWMP elements are listed and collectively presented within **Table 5-1**.

Table 5-1: Storm Water Program Contacts

Program Element	Name	Title	Contact Number
Overall Program	Vanessa Biggers	Sr. Environmental Programs Manager	470-578-2415
Stormwater BMP's	Jeffrey Bernard	Environmental Programs Specialist	470-578-5023
Storm Water System Design	Richard Rhodes	Director, Design and Construction	470-578-3046
Facilities Maintenance and Operation	Donald Spencer	Preventative Maintenance Manager	470-578-7943
Ground Keeping Operations	John Hofelich	Grounds Superintendent	470-578-6224
Waste Management	Fola Teru	Director of Building Services	470-578-6224
Commercial Kitchen Operations	Jenifer Duggan	Executive Director, University Dining	470-578-2981
Vehicle/equipment Maintenance	Aimee Wiederhold	Fleet Services Coordinator	470-578-6224
Covered Vehicle Parking	Dr. Tyrone Smiley	Director of Parking Operations	470-578-6506

6.0 REVIEWING AND UPDATING THE SWMP

KSU will review the SWMP each year and evaluate the implementation status of the SWMP components, as well as the effectiveness of each BMP or combination of BMPs. Physical modifications to the storm water conveyance systems for each campus will be reviewed to determine if additional outfalls have been added to the system or if there have been any changes to existing outfalls resulting in a substantive change in the quality or quantity of the storm water being discharged.

7.0 MINIMUM CONTROL MEASURES

The SWMP includes management practices; control techniques and system design and engineering methods; and other provisions for the control of storm water pollutants. The SWMP is built around the six federal Minimum Control Measures (MCMs) described in 40 CFR Part 122.34(b) and Best Management Practices (BMPs) that will be implemented for each of these six MCMs. Federal minimum control measures are as follows:

1) Public education and outreach on storm water impacts
2) Public involvement and participation
3) Illicit discharge detection and elimination
4) Construction site storm water runoff
5) Post-construction storm water management in new development and redevelopment
6) Pollution prevention and good housekeeping

Measurable goals for each MCM have been developed and are provided in **Appendix A**. Each MCM has action items designed to achieve a related goal. A person or group has been assigned to each action item goal to facilitate implementation. In addition to these measurable goals, a list of Action Items is provided as **Appendix B** to facilitate execution of routine MCM events. These action items are intended to provide KSU with an outline of activities and the frequency that they are completed in order to assure the SWMP is being utilized and maintained to its greatest potential.

7.1 MCM #1: PUBLIC EDUCATION AND OUTREACH

KSU will implement a public education program to distribute educational materials or conduct equivalent outreach activities about the impact of storm water discharges on water bodies and the steps that can be taken to reduce pollutants in storm water runoff. The following section summarizes how MCM #1 requirements will be completed. KSU has developed a public education plan as part of this SWMP,

which includes use of intranet and internet websites, communication to both campus residents and commuting students, and periodic information sessions open to the public.

The KSU target audience for public education and outreach primarily consists of students (resident and non-resident), staff, faculty, administrators, contractors, and visitors. In order to reach this target audience, KSU will utilize various tools, such as intranet and internet websites, community newsletters, information booths, and distribution of various informational items such as posters, flyers, and leaflets.

KSU maintains a public outreach log for MCM #1 that was developed to track outreach events/activities. This public outreach log is provided as **Appendix C** and will be updated quarterly. KSU will retain information on how often content pertaining to storm water is posted on the KSU intranet and internet websites and through email notifications (i.e. KSU Today, Department memo's, etc.). KSU posts new information to the website at least annually. KSU will issue the pamphlets "when it rains, it drains" to the KSU residence coordinator for distribution to all on campus residences at both campus locations. These pamphlets will be distributed annually.

7.1.1 Target Audience Awareness and Education

Target audience groups will be provided informational materials that have been specifically prepared and developed on storm water education. KSU will make information available to the public and to KSU target audiences, which will raise awareness of actions that have storm water impact. KSU will periodically place posters on storm water pollution prevention throughout the Kennesaw and Marietta campuses. KSU will annually verify that paper and/ or digital copies of storm water materials are available for distribution. The installation has a process to place awareness markers at the storm drains indicating that discharged materials end up in public water ways. The following section provides details on the specific public education and outreach programs that are in place, and **Table 7-1** lists all required action items.

7.1.2 Advertising in the Campus Digital Newsletter

KSU distributes a daily campus digital newsletter utilizing KSU Today that is meant to pass along information to all KSU target audience groups. This newsletter will be used to periodically publish articles on environmental activities that have taken place or are actively being pursued. A specific section will be set aside for storm water activity information including education and awareness items. This newsletter is made available to the entire KSU community.

7.1.3 Information Sessions

The KSU SWMP contacts will facilitate information sessions at least twice a year (at the beginning of each semester) to provide the campuses target audiences information on various environmental issues including storm water programs. Handouts will be provided at the information sessions focusing on fertilizing, car washing, oil slicks, and pet waste. The information sessions will either be part of other functions or set up as a separate stand alone activity.

7.1.4 Storm Drain Markers/Placards

The KSU staff has instituted a program to place storm drain markers on storm water drainage inlets. The installation of these markers provides a highly visible and effective method to increase public awareness of the intentional and unintentional release of pollutants to storm water systems and thus into public water bodies. This action is discussed further under MCM#3.

7.1.5 Maintain Stormwater Website Links

The KSU intranet website contains information on storm water best management practices with mechanisms to monitor/measure how much web traffic (hits) is occurring. This counter can be used to measure the number of page viewings that take place in order to gauge public interest in KSU environmental/storm water affairs or follow the "Cobb County Environmental Information" link off the Cobb County website (https://www.cobbcounty.org/water/stormwater-management/programs).

KSU routinely verifies that the links and information content on its intranet and internet websites are active and current. KSU will check all internal and external links at least monthly. This verification check will be documented, such as by issuing a note to the environmental files.

Table 7-1: Protocol MCM#1 Action Items

MCM #1 Action Items	Frequency
Verify that website hyperlinks are active and current	Monthly
Update Public Involvement Tracking Log **(Appendix C)**	Quarterly
Hold public information sessions, utilize posters and resources	Semi-annually
Post new information and content to the websites	Annually
Distribute “when it rains, it drains” pamphlets to residents and staff	Annually
Run articles on environmental activities in KSU Today newsletter	Quarterly
Storm drain identification and marking/stenciling	As needed

7.2 MCM #2: PUBLIC INVOLVEMENT/PARTICIPATION

KSU will involve its target audience by holding meetings on one or both campuses. The meetings would serve as a forum where the stakeholders can express their concerns regarding storm water impacts and other campus related environmental concerns. KSU will make an effort to communicate the hazards associated with illegal discharges or improper disposal of waste.

The following types of waste water are allowed to be discharged under the state general NPDES permit; however, these discharges will be periodically assessed since they are considered potential contributors of pollutants to the storm water system. Should any of these discharges be determined to be releasing pollutants that are harmful to public waters, KSU will identify applicable and reasonable corrective actions.

- Water line flushing
- Landscape irrigation
- Air conditioning condensation
- Irrigation water
- Water from crawl space pumps
- Lawn watering
- Individual residential car washing
- Dechlorinated swimming pool discharges
- Street wash water
- Uncontaminated pumped ground water
- Discharges from portable water sources
- Foundation drains
- Flows from firefighting activities

The KSU Public Involvement and Participation activities include many of the required federal MCM#2 elements, but several have not been implemented due to the fact the MS4 system is very small and is not a public residential area. **Table 7-2** lists all required action items that have been identified under this Protocol. KSU will evaluate the Public Involvement and Participation program annually to ensure that it meets the needs of the campus community.

7.2.1 Public Involvement and Participation Plan

KSU will maintain the public involvement and participation log **(Appendix C)** developed to track outreach events/activities that take place, including the MCMs related to the activity. This log will be updated at least quarterly. KSU will maintain a mailing list, which includes both individuals and groups located internally and externally of KSU including a list of community groups. This stakeholder list will be routinely updated and will serve as the official stakeholder list used for this SWMP.

7.2.2 Stakeholder and Volunteer Information

KSU will document any activities that rely upon or use any volunteers, including student and faculty groups. This information will include identifying the volunteer coordination process and any limitations on using volunteers to assist with SWMP activities. All volunteers will be placed on a mailing list, so that these parties can be contacted as needed and facilitate future communications. If volunteers (e.g. students) are used to complete storm water outfall assessments, these persons will be properly trained to complete the field work correctly and safely.

7.2.3 Plan and Conduct Public Meetings on Program

KSU will facilitate a semi-annual information booth to disseminate environmental information to on-site stakeholders and to receive comments, feedback, and questions. Where KSU elects to have an open meeting, stakeholder input will be accepted as appropriate. The follow-up actions that are taken after a meeting includes; dissemination of requested information, providing handouts or copies of materials presented, and answering questions that were received and were not able to be answered at the time of the public meeting.

7.2.4 Volunteer Program

The size of the storm water system is such that the KSU staff is able to coordinate all outfall inspections and the illicit discharge and detection assessment activities. Staff may be utilized from other KSU departments, including the facilities maintenance group to provide support as needed. In some situations, volunteers or students may be used to help complete outfall water quality assessments. If a formal volunteer program is established, KSU will utilize available resources provided by the university to support this program and will designate an administrative/faculty staff member to act as overall point of contact for this volunteer program.

Table 7-2: Protocol MCM#2 Action Items

MCM #2 Action Items	Frequency
Update Public Involvement Log **(Appendix C)**	Quarterly
Set up information booth to disseminate environmental information and storm water best practices	Semi-annually
Update SWMP stakeholder and volunteer list	Annually
Update list of community groups maintained	Annually
Evaluate the Public Involvement and Participation program to ensure that it meets the needs of the campus community	Annually

7.3 MCM #3: ILLICIT DISCHARGE DETECTION AND ELIMINATION

A storm water system site map has been prepared for the Kennesaw campus (**Exhibits 2 and 3)** and Marietta campus **(Exhibit 5)** identifying prominent storm water management features, and areas with higher priority for spills and releases. These site maps will be incorporated into a Master Drainage Plan for each campus and will be reviewed at least annually to verify outfall and drainage system accuracy. **Exhibits 2, 3** and **5** show the storm water conveyance system and the locations of all storm water outfalls for the Kennesaw and Marietta campuses, respectively. **Exhibits 1 and 4** show topography and general vicinity of each campus in Cobb County. A KSU Geographical Information System layer showing the locations of the current stormwater structures and infrastructure has been completed for the Marietta campus and is currently in development for the Kennesaw campus. Efforts will continue to develop this information for the Kennesaw campus. The outfalls have been assigned unique identification numbers for easy reference. If additional outfalls are created or discovered, identification numbering will be assigned following a sequential order.

Kennesaw Campus

On January 20, 2022, a visual inspection of all sixteen (16) outfalls located on the Kennesaw campus was completed to evaluate which specific locations are considered to be a priority outfall based on the known operations and activities associated with each associated drainage basin. Subsequent evaluations will be performed annually to re-assess its priority status. Outfalls SW-K01, SW-K02, SW-K03, SW-K04, SW-K06, SW-K08, SW-K09, SW-K12, and SW-K13 have been designated priority outfalls due to the areas of campus which they serve and the potential storm water flow. The methodology used to identify and address priority areas at the KSU Kennesaw Campus storm water system is summarized in the following considerations and **Table 7-3a**.

Although the KSU Kennesaw campus residential population is fairly large, the potential impact upon storm water runoff is not expected to result in significant levels of pollutants. Therefore, these areas, represented by outfalls SW-K05, SW-K07, SW-K10, SW-K11, and SW-K14 through SW-K16, are not considered priority areas. KSU believes the activities/locations identified in **Table 7-3a** are more likely sources of storm water pollutant releases than the residential areas and administrative buildings, and will be focused upon because KSU has direct control over them. These activities and locations primarily drain to Outfalls SW-K01 through SW-K04, SW-K08 through SW-K9, and SW-K12 through SW-K13. The storm water volume that is conveyed through these outfalls represents the majority of runoff generated from the campus. These outfalls also receive storm water that has been in contact with either campus maintenance operations, food waste storage locations, outside fuel storage, and large parking decks where oil and grease drips from parked cars can become significant. These priority outfalls are designated as such based on both storm water quantity and quality concerns.

Table 7-3a: Elevated Spill Risk Activities and Locations (Kennesaw)

Activity	Location	Amount	Pollutant	Potential Release Area	Outfall
Parking Deck	Social Sciences/West Deck	Spills and Drips	Petroleum Products	Internal drains to detention structure	SW-K04
Parking Deck	East Parking Lot	Spills and Drips	Petroleum Products	Internal drains to detention structure	SW-K09
Parking Deck	Central Parking Deck	Spills and Drips	Petroleum Products	Internal drains to detention structure	SW-K08
Parking Deck	North Parking Deck	Spills and Drips	Petroleum Products	Internal drains to outfall	SW-K06
Bowen Building	Building 1150	Runoff	Petroleum Products	Stormwater Drain	SW-K01
Commons Dining Hall	Commons Building	Runoff	Food Grease, Organic debris	Runoff to storm drains	SW-K03
Parking Lot and Storage	Surplus Building and Shuttle Lot	Spills and Drips and Runoff	Petroleum Products and runoff from outdoor storage	Runoff to storm drains to stormwater pond	SW-K12
Athletic Fields	Frey Road and Chastain Road	Runoff	Excess lawn chemicals and vegetative debris	Overland surface water runoff	SW-K09
Athletic Fields	Big Shanty Road/ Sports and Entertainment Park	Runoff	Excess lawn chemicals and vegetative debris	Overland surface water runoff	SW – K13

Storage Tank AST-003	West Parking Lot	Spills	Gasoline	Spills during filling, West toward parking lot storm drain	SW-K02
Storage Tank AST-004	West Parking Lot	Spills	Diesel	Spills during filling, West toward parking lot storm drain	SW-K02

Marietta Campus

On January 20, 2022, a visual inspection of the KSU Marietta campus was completed which identified twenty-one (21) outfall locations on campus. Of the 21 total outfalls, 7 have been identified as priority outfalls. However, the remaining outfalls were identified as supporting outfalls for the purpose of evaluating segments of the stormwater infrastructure where illicit discharges may be detected before leaving the property. **Exhibit 5** depicts the location of all twenty-one outfalls identified.

During the inspection specific locations were considered to be priority outfalls based on the known operations and activities associated with each associated drainage basin. Subsequent evaluations will be performed annually to re-assess their priority status. Outfalls SW-M03, SW-M05, SW-M06, SW-M08, SW-M11, SW-M15 and SW-M17 have been designated priority outfalls due to the areas of campus which they serve and the potential storm water flow. The methodology used to identify and address priority areas at the KSU Marietta campus is summarized in the following considerations and **Table 7-3b**.

Similar to the Kennesaw campus, the potential impact upon storm water runoff from the residential population on campus is not expected to result in significant levels of pollutants. Additionally, a number of buildings on site do not appear to store materials outdoors which would be exposed to storm water and are not expected to result in significant levels of pollutants. Therefore, these areas, represented by outfalls SW-M02, SW-M04, SW-M07, SW-M09, SW-M10, SW-M12 through SW-M14, SW-M16, and SW-M18 though SW-M21, are not considered priority areas.

KSU believes the activities/locations identified in **Table 7-3b** are more likely sources of storm water pollutant releases than the residential areas and buildings with no exposed storage materials, and will be focused upon because KSU has direct control over them. These activities and locations primarily drain to Outfalls SW-M01, SW-M03, SW-M05 through SW-M08, SW-M11, SW-M-15 and SW-M17. The storm water volume that is conveyed through these outfalls represents the majority of runoff generated from the campus. These outfalls also receive storm water that has been in contact with either campus maintenance operations, food waste storage locations, outside fuel storage, and large parking decks where oil and

grease drips from parked cars can become significant. These priority outfalls are designated as such based on both storm water quantity and quality concerns. In addition, the outfalls on site mainly discharge to Rottenwood Creek which runs through the campus. The main discharge of Rottenwood Creek offsite is located 33.93375º N and -84.52235ºW which is the approximate location where Rottenwood Creek leaves the KSU property located in an undeveloped portion of the campus property.

Table 7-3b: Elevated Spill Risk Activities and Locations (Marietta)

Activity	Location	Amount	Pollutant	Potential Release Area	Outfall
Parking Lot	Lot P35, near Student Center	Spills and Drips	Petroleum Products	Internal drains to Cobb County MS4	SW-M01
Parking Lot	Lot P38, near Recreation and Wellness Center	Spills and Drips	Petroleum Products	Internal drains to detention structure	SW-M15
Parking Lot	Parking Deck (P60)	Spills and Drips	Petroleum Products	Internal drains to detention pond	SW-M03
Parking Lot	Lot P22, near Student Competition Team Building	Spills and Drips	Petroleum Products	Overland surface water runoff to storm drains	SW-M11
Stingers Dining Hall	Stingers Dining Hall	Runoff	Food Grease, Organic debris	Internal drains to detention pond	SW-M08
Facilities Maintenance	Facilities Ground and Vehicle Shop	Runoff	Scrap metal, debris, maintenance equipment (i.e. mowers, tractors, etc.), used oil	Internal drains	SW-M17
Athletic Fields	Sports fields along Koger Drive	Runoff	Excess lawn chemicals and vegetative debris	Overland surface water runoff to storm drains	SW – M05 and SW-M06
Storage Tank AST #1	Facilities Ground and Vehicle Shop	Spills	Gasoline	Spills during filling, north toward Facilities Admin Building and storm drains	SW-M17
Storage Tank AST #2	Facilities Ground and Vehicle Shop	Spills	Diesel	Spills during filling, north toward Facilities Admin Building and storm drains	SW-M17

7.3.1 Storm Drain Markers/Placards

As previously discussed, the KSU staff have implemented a program to place storm drain markers on storm water drainage inlets. The storm drains on the Kennesaw campus have been marked with placards, however, the drains on the Marietta campus have not. KSU will itemize the location of each storm water structure on the Marietta campus to enable a comprehensive approach to labeling. The first round of markers that will be installed will be in conspicuous locations, and remaining storm drain inlets will be marked periodically as resources become available, with a goal of having all drains marked by the end of 2025.

7.3.2 Monitoring

KSU will conduct field screening and identify source(s) of illicit discharges using the quarterly dry weather inspection sheet provided in this SWMP. A total of 16 outfalls have been identified within the KSU Kennesaw Campus and 21 outfalls within the Marietta Campus storm water systems varying in drainage size from small single outlets to large flow and conveyance piping systems. Outfalls SW-K01 and SW-K13 on the Kennesaw campus receive water from off-site, including storm water flow from a portion of an adjacent private golf course and from neighborhoods and office buildings that are not located on KSU property. Outfall SW-M15 on the Marietta campus also receives water from off-site, including storm water flow from South Marietta Parkway and adjacent businesses. KSU will not attempt to police these outfalls for illicit discharges that may result from non-KSU operations. However, KSU will proceed with the following course of action when seeking to detect and eliminate illicit discharges.

1. If an illicit discharge is observed in an outfall that receives water from off-site, the facility will record the event.
2. KSU will immediately conduct a catch basin inspection of each KSU storm water drain immediately upstream of the outfall to assess if the illicit discharge is a result of KSU controllable activities.
3. If no illicit discharges are found within the KSU system and the illicit discharge is determined to still be present, then the upstream entities will be contacted and notified of the observed illicit discharge and the actions which KSU has taken. These communications will be documented.
4. If after review, the upstream entities determine they are not the source of the illicit discharge, then KSU must decide if the discharge warrants notification to Cobb County. If so, KSU will document the notification and subsequent actions required by Cobb County

A quarterly report documenting wet weather observations for each of the KSU outfalls identified on the Kennesaw and Marietta campuses will be completed using the inspection form provided in **Appendix D**. The identified priority outfalls (Table 7-3a and 7-3b) in the storm water systems at each campus will be physically observed at least quarterly for illicit discharges during dry weather, and these observations will be documented on the KSU inspection form provided in **Appendix E**. KSU will complete inspections of the identified non-residential areas/activities that pose an elevated risk of storm water contamination. A BMP based checklist form has been developed (**Appendix F**) to complete these inspections, which will be completed and used to document observed releases, housekeeping issues, or practices that may result in storm water contamination. The inspection form provides a section to note corrective actions or suggested follow-up activities to promote continual improvement.

Table 7-4: Protocol MCM#3 Action Items

MCM #3 Action Items	Frequency
Storm drain identification and marking/stenciling	Annually
Complete BMP screening of high priority activities or areas.	Quarterly
Complete observation of Priority Outfalls in dry weather to assure that there have not been any releases or illicit discharges.	Quarterly
Observe outfalls for any evidence of illicit discharges after precipitation events.	Quarterly
Complete and review and update of the storm water system map.	Annually
Review list of designated high priority areas that are likely to have illicit discharges to determine if they are still present or if others should be added.	Annually
Provide education to the employees and the public of problems caused by illicit connections and illegal dumping (MCM #1)	Annually

7.4 MCM #4: CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

KSU will compile a list of, and document on a quarterly basis, erosion control inspections that have been completed, primarily for construction projects with more than 1 acre of disturbance. Contractors shall complete weekly and/or rain day inspection events for construction projects in accordance with applicable project scope of work and state issued construction storm water permit. KSU staff will document any random inspections communicating observations to the contractor that is responsible for construction site storm water management. Contractors responsible for construction storm water oversight will be required to provide copies of the construction Storm Water Pollution Prevention Plan (SWPPP) and completed inspection logs to the KSU construction project manager.

Since KSU is a not a municipality and does not use ordinances, other policies are in place including delegating this responsibility to the construction project general contractor for larger projects to oversee that all sub-contractors are complying with to the construction storm water permit requirements. The KSU project manager may take responsibility for smaller scale projects, however, this will be communicated during the pre-dig meeting held between KSU and the contractor. Both the KSU Kennesaw and Marietta campuses are located in Cobb County, which has obtained a MS4 NPDES storm water permit and has developed a Storm Water Management Plan, components of which are provided in **Appendix G**. Cobb County does have ordinances in place as required by the federal minimum control measure that would apply to any construction activities taking place on the KSU campuses.

In Georgia, two regulatory programs are in place for addressing storm water runoff from earth disturbance activities (hereinafter referred to as "construction"): (1) the Erosion and Sediment Control Program under the Georgia Erosion and Sedimentation Act (O.C.G.A. 12-7-1 et seq.), and (2) the National Pollution Discharge Elimination System (NPDES) Stormwater Construction Permit Program. The Erosion and Sediment Control Program requires an Erosion and Sediment Control Plan for any construction equal to or greater than 1.1 acres. Storm water runoff from construction is addressed through Erosion and Sediment Plans or NPDES permits based upon project size. Every project is reviewed and required to have consistent language including any BMPs. Generally speaking, an NPDES Stormwater Construction Permit is required for construction activities where: (1) the construction disturbs five acres or more, or (2) there is a discharge from a site to the MS4, where earth disturbance is one acre or more. The Cobb County Erosion & Sediment Control Division implements these two programs for sites in Cobb County. By requiring review and approval of Erosion and Sediment Control Plans (and proof of NPDES Stormwater Construction Permits, where required), and by coordinating the building permit and other land development permits or approvals with Cobb County, KSU meets the MS4 permit requirements for these components of the Minimum Control Measures.

7.4.1 Site Developer Education

To fulfill the permit requirements associated with this component of the construction storm water runoff management MCM, KSU will distribute educational materials to construction contractors on the impacts of storm water runoff and construction site storm water management requirements during project scoping, planning or management meetings. Documentation of these meetings and the information provided to the construction contractors will be retained by KSU.

7.5 MCM #5: POST CONSTRUCTION STORMWATER MANAGEMENT

KSU is a not a municipality and does not use ordinances to implement and enforce storm water control. As a standard matter of practice, KSU will delegate responsibility for post-construction BMP review and approval to the general project contractor, who will abide by the applicable state and local requirements. In accordance with an issued NPDES Construction Permit, responsibility to ensure that post-construction controls will meet state water quality requirements will be assigned to the project general contractor.

7.5.1 Operation and Maintenance of Post-Construction BMPs

The construction project general contractor shall be responsible for assuring BMPs are followed, and shall monitor implementation of such by project contractor and sub-contractors. Contractors will monitor BMPs in accordance with the Cobb County and state regulations, especially where a construction storm water permit has been issued. Some structural BMPs will require maintenance after initial construction to be effective. Operation and maintenance activities will be the responsibility of KSU. Additional information on long-term operation and maintenance is covered under MCM #6.

Table 7-5: Protocol MCM #4 and #5 Action Items

MCM #4/5 Action Items	Frequency
Document the distribution of educational materials during project scope meetings.	Every Construction Project with potential for soil erosion
Obtain copies of Construction SWPPP and required inspection logs. Retain information in project files.	Every Construction Project with potential for soil erosion
Compile and document, erosion control inspections (MCM 4 and MCM 5) that have been completed by KSU as available.	Quarterly
Verify that copies of the developer/contractor storm water literature are still available and are being distributed.	Annually

7.6 MCM #6: POLLUTION PREVENTION/GOOD HOUSEKEEPING

The scope of the pollution prevention activities primarily focuses on maintenance of the storm sewer system and other storm water management facilities, vehicle operations and employee training. The KSU SWMP is developed to ensure that operations, maintenance, and processes prevent any unlawful discharges to the state waters and address the MCM#6 (Pollution Prevention and Good Housekeeping for Municipal Operations and Maintenance) required elements. This section identifies multiple BMPs based on well-established practices to improve storm water quality. Cobb County BMPs are not directly incorporated into this document, but may be used as part of KSU reference material for public education and outreach measures. Standard Operating Procedures (SOPs) for the maintenance of the underground

stormwater systems utilized on the KSU campuses have been developed to assist in the regular upkeep of the BMP systems utilized by KSU and are included in **Appendix I.**

The Building Services department is composed of the following groups: Custodial Services, Special Services, and Pest Management. Though many of the activities that Building Services engages in are performed indoors, some of them may still have the potential to affect the sanitary sewer and storm water drainage systems. Grounds and Waste Management maintains campus grounds and landscaping, provides moving and trucking service, and manages waste and recycling collection. The employees of this department conduct a large portion of their work outdoors and they will be watchful of all potential storm water concerns related to their activities.

The Parking and Transportation Department manages and maintains all parking lots and parking decks on the KSU campuses. Due to the heavy use of the parking areas across both campuses it is believed these areas have the potential to impact stormwater runoff and result in significant levels of pollutants from vehicle leaks and drips. The employees of this department will be watchful of all potential storm water concerns related to parking activities and report them to the EHS department.

Facilities Maintenance provides KSU with the resources, skills, equipment, and knowledge of a full service contractor and will be responsible for completing the designated inspections of the various physical structures associated with the storm water systems. The department is comprised of various shops and work locations. Because many of the activities conducted by these divisions are performed outside, employees in these groups will be attentive to any actions that may affect the storm water drainage system. These groups will follow the BMPs established within **Appendix H** of this SWMP in order to assure that their work activities minimize impacts to storm water. The Best Management Practices identified in **Appendix H** will be followed to promote pollution prevention and good housekeeping. KSU staff/ departments with the potential to impact stormwater water and staff responsible for inspecting and implementing BMPs will receive annual training to prevent and reduce stormwater pollution. Training topics may include, but are not limited to:

- Good housekeeping;
- Illicit discharge detection;
- Green infrastructure.

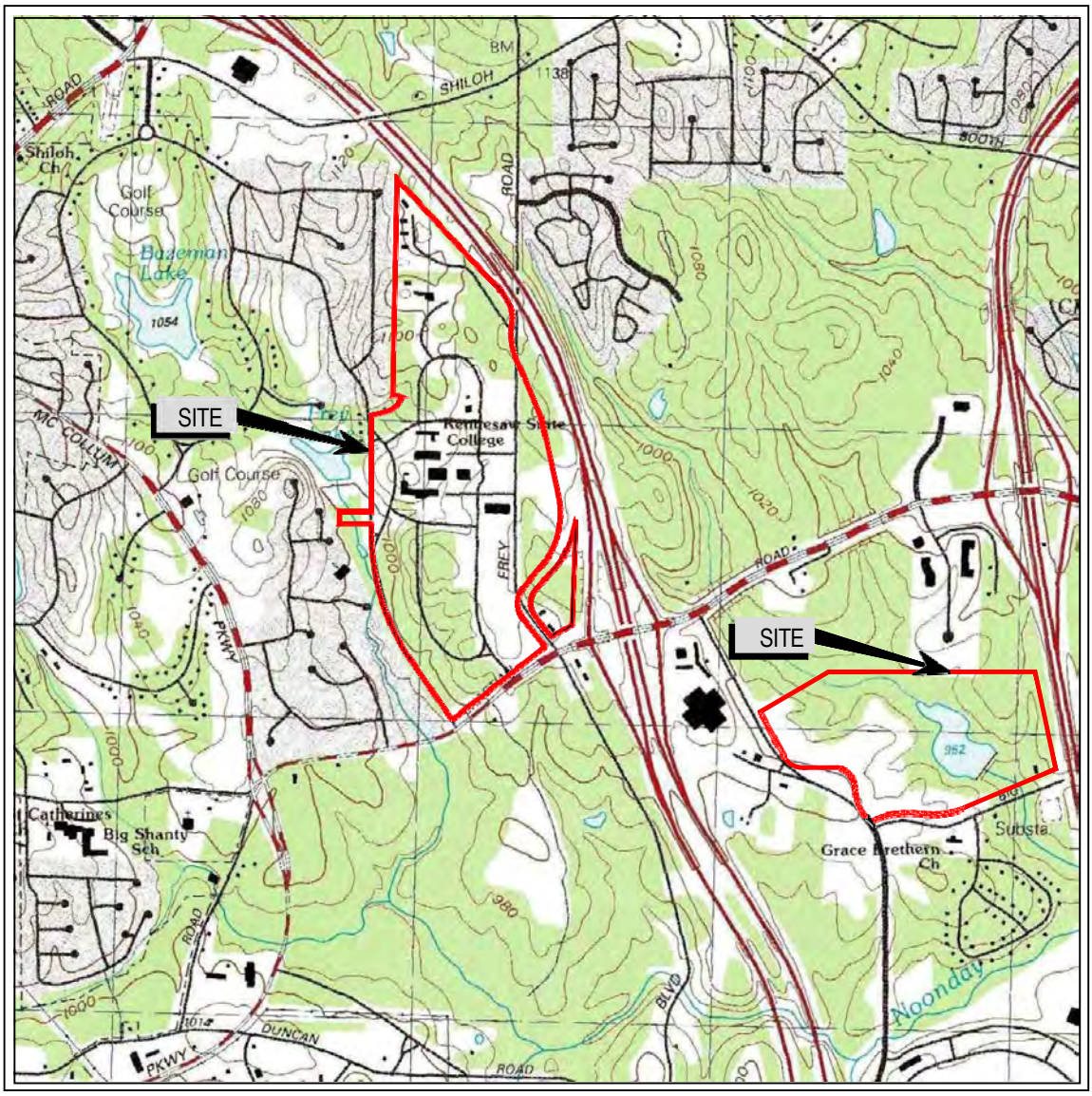
Documentation of education activities will be maintained. KSU considers charitable car wash events or non-commercial events to be insignificant contributors to storm water pollution.

Table 7-6: Protocol MCM#6 Action Items

MCM #6 Action Items	Frequency
Inspect parking lots and parking decks for spilled materials or debris and assured spill material is properly cleaned.	During daily operations
Complete BMP inspections of identified high priority activities or areas (Table 7-3a and 7-3b).	Quarterly
Inspect subsurface storm water structures to evaluate if additional cleaning and/ or maintenance is needed.	Annually
Employee training to prevent and reduce storm water pollution.	Annually

EXHIBITS

UNITED STATES – DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY



SCALE 1:24 000

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1000 0 METERS 1000 2000

1 .5 0 1

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10 000

FEET

CONTOUR INTERVAL 20 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

N

QUADRANGLE

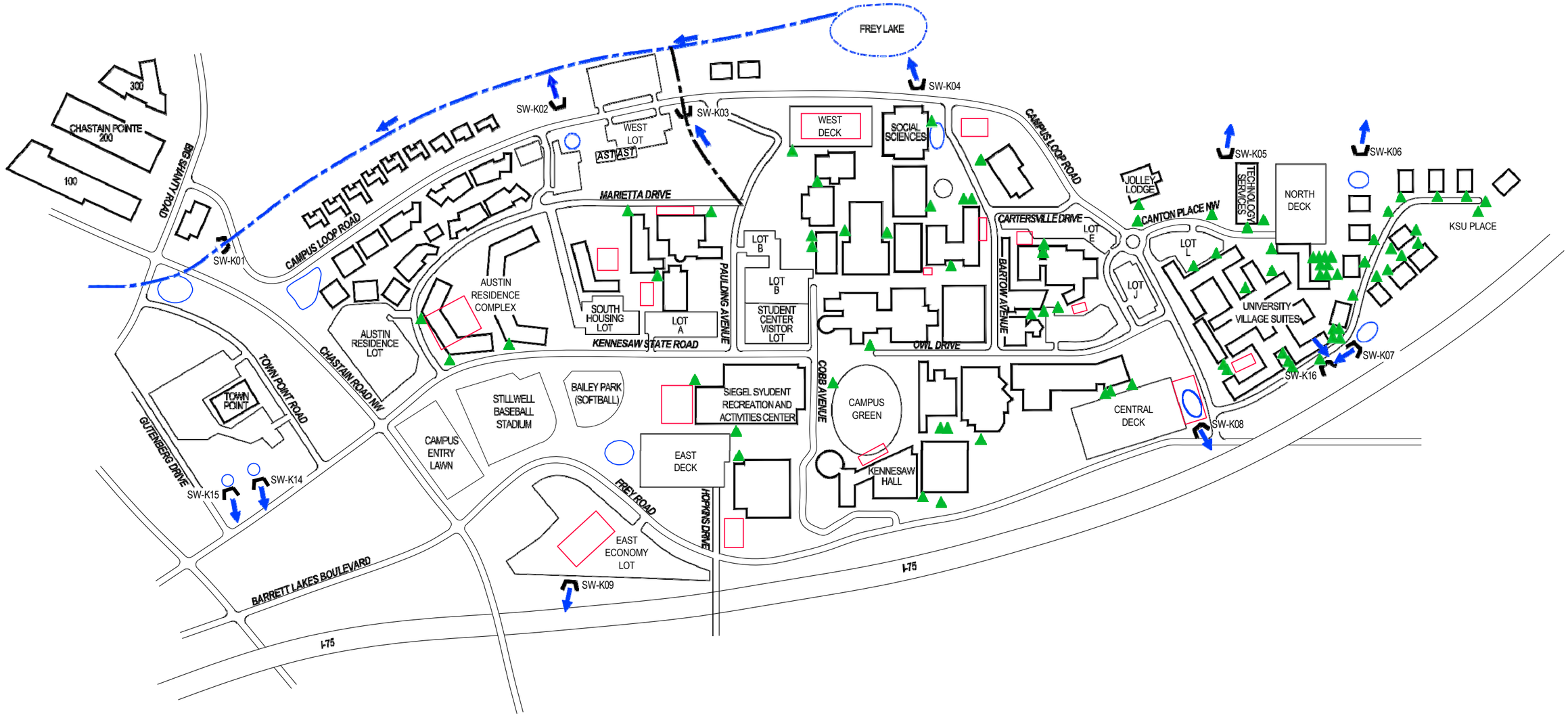
KENNESAW, GA

1992

7.5 MINUTE SERIES (TOPOGRAPHIC)

*INDICATES WHICH MAP SITE IS LOCATED ON

Project Mngr: CH	Project No. EJ217021	Terracon Consulting Engineers and Scientists	TOPOGRAPHIC VICINITY MAP	EXHIBIT
Drawn By: RLW	Scale: AS SHOWN		STORMWATER MANAGEMENT PLAN	
Checked By: CH/MRF	File No. EJ217021-1	2105 Newpoint Place, Ste. 600 Lawrenceville, GA 30043	KSU	1
Approved By: CH	Date: MARCH 2022	(770) 623-0755 (770) 623-9628	1000 CHASTAIN ROAD KENNESAW, GA	



LEGEND

SW-K09 — OUTFALL

ABOVEGROUND DETENTION POND

UNDERGROUND DETENTION VAULT

STORMWATER DRAINAGE

ABOVEGROUND STORAGE TANK

FLOW

TRANSFORMERS

N

0 460

Approximate Scale (Feet)

THIS DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mngr:	CH
Drawn By:	RLW
Checked By:	CH/MRF
Approved By:	CH
Project No.	EJ217021
Scale:	AS SHOWN
File No.	EJ217021-2
Date:	MARCH 2022

Terracon
Consulting Engineers and Scientists
2105 Newpoint Place, Ste. 600 Lawrenceville, GA 30043
(770) 623-0755 (770) 623-9628

MS4 STORMWATER OUTFALLS - KENNESAW CAMPUS

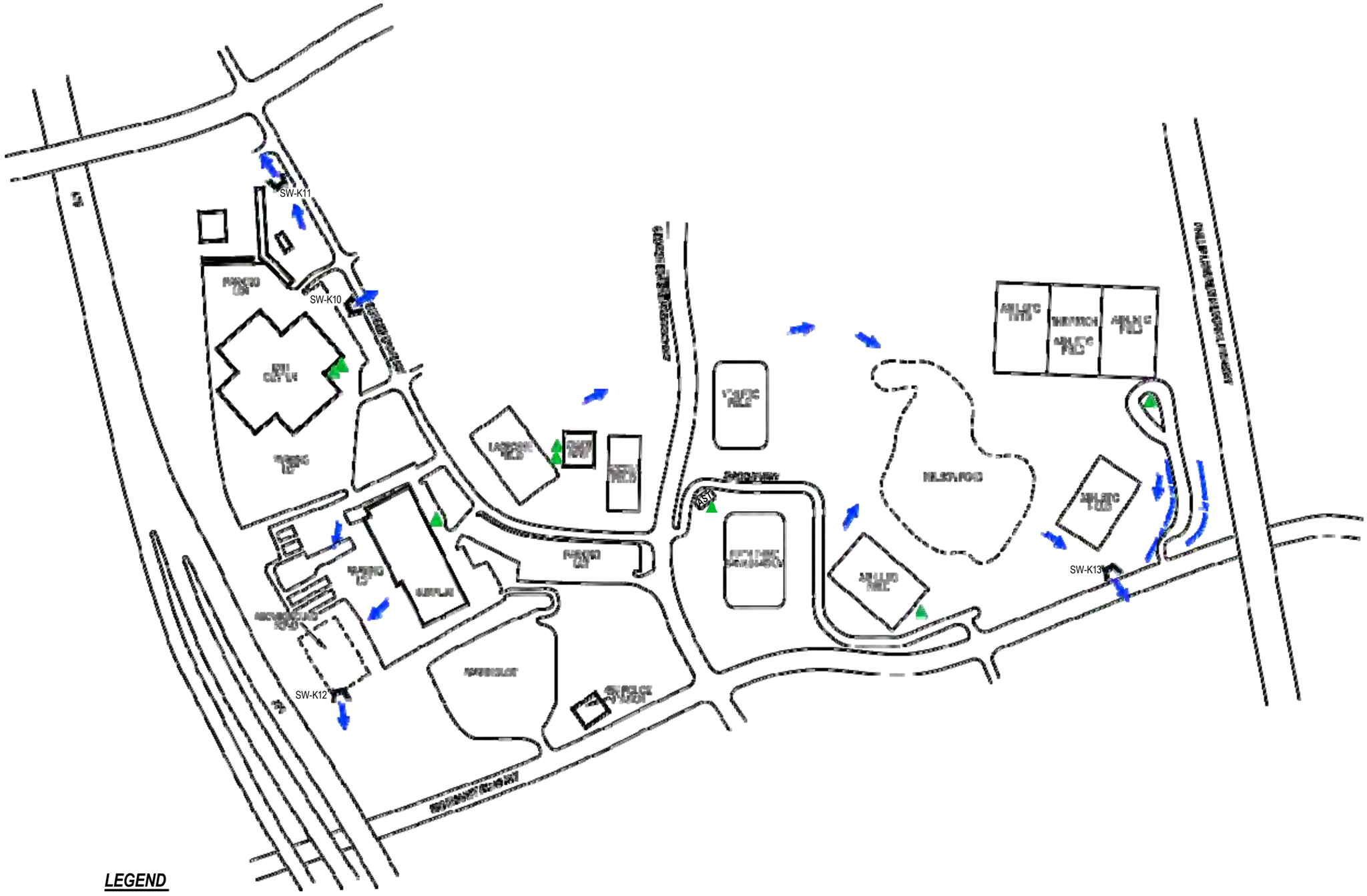
STORMWATER MANAGEMENT PLAN

KSU

1000 CHASTAIN ROAD

KENNESAW, GA

EXHIBIT 2



N

0 420

Approximate Scale (Feet)

LEGEND

SW-K09 OUTFALL

STORMWATER DRAINAGE

AST ABOVEGROUND STORAGE TANK

FLOW

TRANSFORMERS

THIS DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mngr:	CH
Drawn By:	RLW
Checked By:	CH/MRF
Approved By:	CH

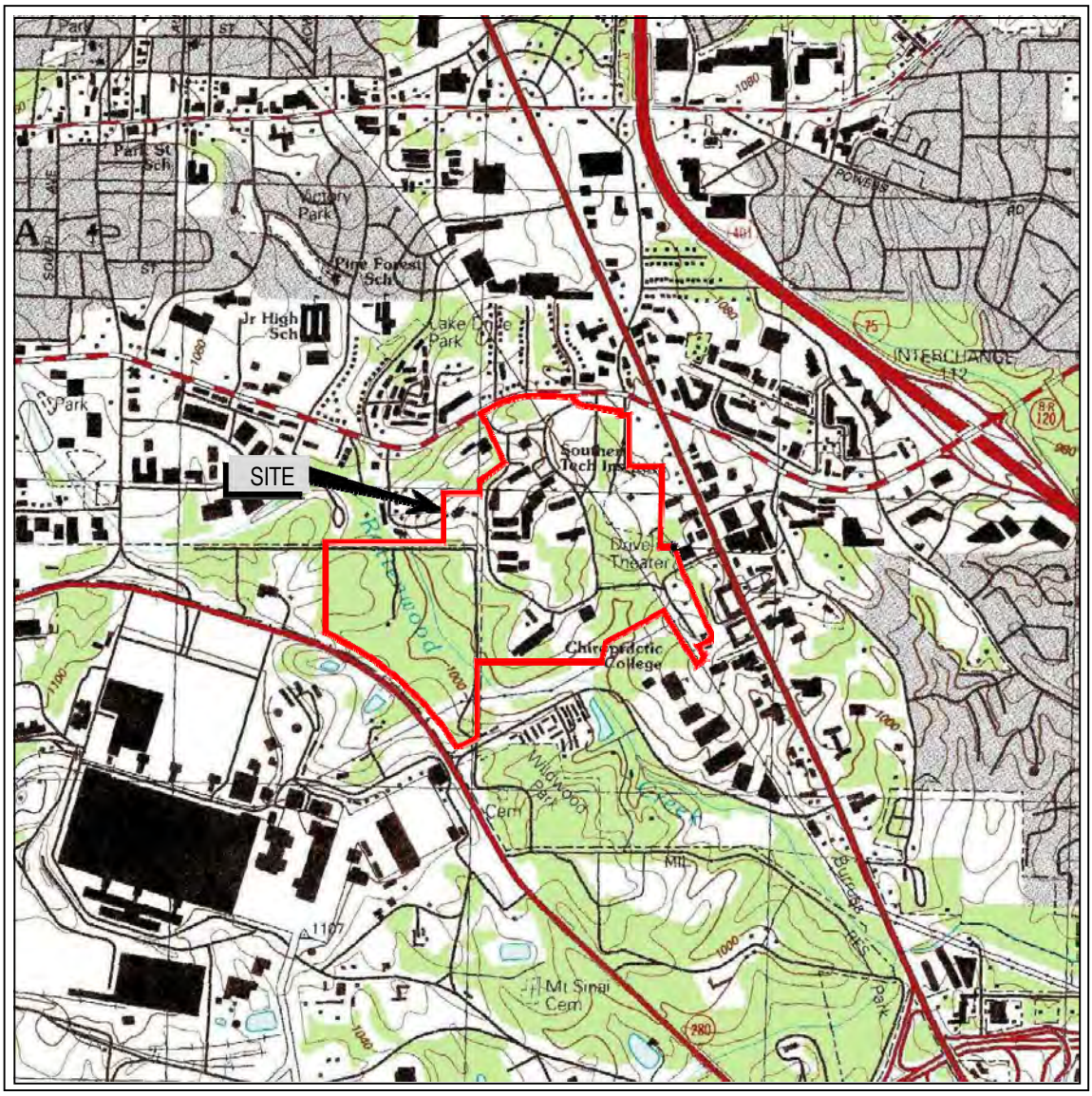
Project No.	EJ217021
Scale:	AS SHOWN
File No.	EJ217021-3
Date:	MARCH 2022

Terracon
Consulting Engineers and Scientists
2105 Newpoint Place, Ste. 600 Lawrenceville, GA 30043
(770) 623-0755 (770) 623-9628

MS4 STORMWATER OUTFALLS - KENNESAW CAMPUS - KSU CENTER & SPORTS PARK
STORMWATER MANAGEMENT PLAN
KSU
1000 CHASTAIN ROAD
KENNESAW, GA

EXHIBIT
3

UNITED STATES – DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY



SCALE 1:24 000

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1000 0 METERS 1000 2000

1 .5 0 1

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10 000

FEET

CONTOUR INTERVAL 20 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

N

QUADRANGLE

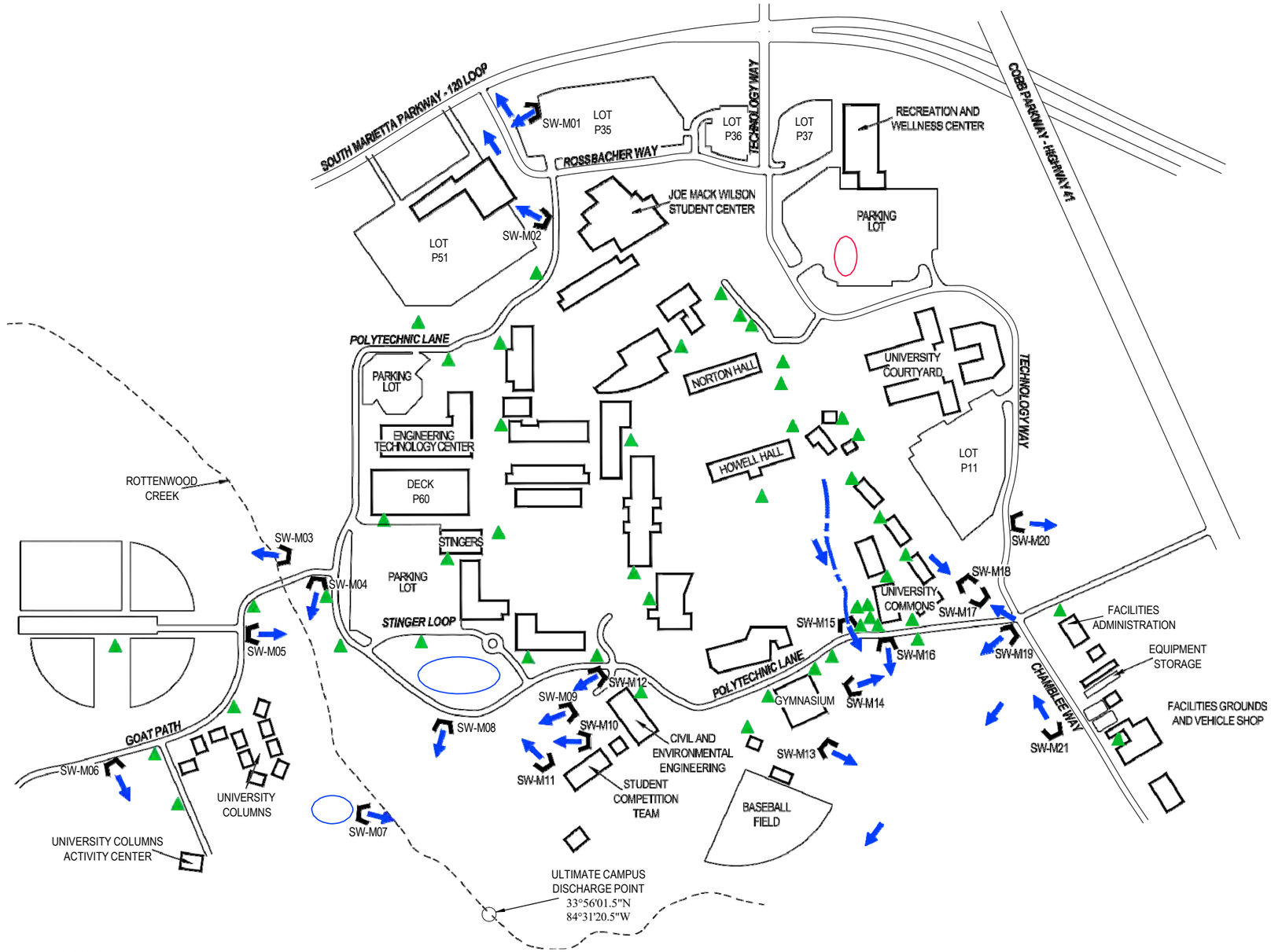
KENNESAW, GA

1992

7.5 MINUTE SERIES (TOPOGRAPHIC)

*INDICATES WHICH MAP SITE IS LOCATED ON

Project Mngr: CH	Project No. EJ217021	Terracon Consulting Engineers and Scientists	TOPOGRAPHIC VICINITY MAP	EXHIBIT
Drawn By: RLW	Scale: AS SHOWN		STORMWATER MANAGEMENT PLAN	
Checked By: CH/MRF	File No. EJ217021-1		KSU	4
Approved By: CH	Date: MARCH 2022	2105 Newpoint Place, Ste. 600 Lawrenceville, GA 30043 (770) 623-0755 (770) 623-9628	1000 CHASTAIN ROAD KENNESAW, GA	



N

0 460

Approximate Scale (Feet)

LEGEND

SW-M01 OUTFALL

ABOVEGROUND DETENTION POND

UNDERGROUND DETENTION VAULT

STORMWATER DRAINAGE

ABOVEGROUND STORAGE TANK

FLOW

TRANSFORMERS

THIS DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mngr:	CH
Drawn By:	RLW
Checked By:	CH/MRF
Approved By:	CH
Project No.	EJ217021
Scale:	AS SHOWN
File No.	EJ217021-5
Date:	MARCH 2022

Terracon
Consulting Engineers and Scientists
2105 Newpoint Place, Ste. 600 Lawrenceville, GA 30043
(770) 623-0755 (770) 623-9628

MS4 STORMWATER OUTFALLS - MARIETTA CAMPUS

STORMWATER MANAGEMENT PLAN

KSU

1100 SOUTH MARIETTA PKWY SE

MARIETTA, GA

EXHIBIT 5

APPENDIX A

KENNESAW STATE UNIVERSITY
MINIMUM CONTROL MEASURE ACTIONS
AND MEASURABLE GOALS

MCM#1 - PUBLIC EDUCATION AND OUTREACH ON STORMWATER IMPACTS

Action	Measurable Goal(s)	Responsibility	Start Date	Target Date for Achievement / Implementation
Collect brochures, fact sheets, and other educational materials from federal, state, and local agencies or other MS4 web sites.	University staff will collect educational materials from agencies through website searches, phone calls, etc.. Storm water informational materials will be documented to track the quantity of items available			
Distribute information to the university employees, students, and vendors utilizing KSU Today and Department memo's	Copies of the materials used and number of individuals targeted for each publication are documented. KSU's Public Outreach Log, documenting distribution of information, will be updated quarterly.			
Outreach will be conducted by a variety of methods that may include in-service training programs, distribution of brochures, and newspaper articles.	The Sustainability department will conduct informational meetings or deliver materials. The date and purpose of these programs will be documented and tracked each calendar year.			
Respond to public inquiries, comments and concerns regarding illicit discharges of wastes and information requests	The university's EHS Department will communicate with the Facilities Department to review the requests and will provide a written response after reviewing the information and observing any visual evidence. The number of inquiries received (i.e. by the EHS, Facilities, and non-emergency police departments) and the issues addressed will be recorded.			

MCM#2 - PUBLIC INVOLVELMENT AND PARTICIPATION

Action	Measurable Goal(s)	Responsibility	Start Date	Target Date for Achievement / Implementation
Sustainability Group to develop activities and events for students, faculty, and staff to complete clean-up activities around campus.	The university's Sustainability Group will hold a minimum of one storm water activity/event per year. The dates and participants for each activity will be documented.			
Sustainability Group to develop a campus volunteer program to encourage participation and involvement in pollution prevention, campus cleanup, and stream clean-up programs. Identify existing clubs or school groups that would be appropriate to work with (e.g. community outreach, nature/science clubs, and fraternal organizations).	Document all the clubs, school groups, and organizations that are active on campus and could be solicited to be involved in a storm water pollution prevention program. Update this list as new clubs/ organizations are formed. Hold periodic campus wide meetings to reach out to the identified groups and discuss ongoing storm water and environmental impacts. Document the number of clubs/groups/organizations that are participating in events compared to the number of groups identified.			
Place the KSU SWMP on the university intranet for public viewing.	The date of publication and the URL for the posting are documented. A web counter is activated to count the number of times the document is viewed and/or downloaded. Review the number of hits on the website each calendar quarter.			
Post events/activities on the KSU Today daily notification email.	Document the number of events that are published through KSU Today each calendar quarter.			

Action	Measurable Goal(s)	Responsibility	Start Date	Target Date for Achievement / Implementation
Respond to public inquiries, comments and concerns regarding illicit discharges of wastes and information requests	The university's EHS Department will communicate with the Facilities Department to review the requests and will provide a written response after reviewing the information and observing any visual evidence. The number of inquiries received by the EHS, Facilities, and non-emergency police departments and the issues addressed will be recorded.			

MCM#3 – ILLICIT DISCHARGE DECTECTION AND ELIMINATION

Action	Measurable Goal(s)	Responsibility	Start Date	Target Date for Achievement / Implementation
The university will develop a Master Drainage Plan for the purpose of documenting required drainage repair and system upgrades.	Complete Master Drainage Plan Document the review and update of the Master Drainage Plan. Updates should be completed annually.	EHS and Facilities Department		Marietta Campus: 2021 Kennesaw Campus: by the end of 2025
Develop a comprehensive storm water system map identifying all catch basin and drains and the system outfalls	The number of inlets and outfalls will be documented and updated monthly until the system has been fully documented.	EHS and Facilities Department		Marietta Campus: 2021 Kennesaw Campus: by the end of 2025
Quarterly wet weather observations will be made of all identified outfalls to observe for any illicit discharges	Observations will be documented and a list of identified problems will be compiled annually. 100% of all outfalls will be screened and observed each year.			
Quarterly dry weather observations will be made of high priority outfalls on both campuses where there is increased likelihood of release of pollutants	Observations will be documented and a list of identified problems and corrective actions will be compiled annually.			

Action	Measurable Goal(s)	Responsibility	Start Date	Target Date for Achievement / Implementation
IDD&E observations will be performed by university staff, whom have been trained, to inspect/screen discharge outfalls for illicit discharges.	Observations will be documented and a list of identified problems and corrective actions will be compiled annually.			
Routine training of stakeholders will be offered to reinforce the concerns of storm water pollution and the best management practices that should be followed.	A record of the date/type of training courses offered shall be retained along with the name and work area for those who participated in the training. Trainings will be offered at least twice a year. Once at the beginning of the fall and spring semesters.			
Information on prohibited discharges will be placed around stormwater inlets at the Marietta campus	Mark stormwater inlets at the Marietta campus with stenciling/ placards, and/or medallions for discharge awareness.			By the end of 2025
KSU will install a new wash bay at the new Facilities location to prevent vehicle wash water from being released.	Generate design for new wash bay when Facilities moves to their new location. Track progress on construction and completion of construction After construction, document the number of wash cycles used.			

MCM#4 – CONSTRUCTION AND STORM WATER RUNOFF CONTROL

Action	Measurable Goal(s)	Responsibility	Start Date	Target Date for Achievement / Implementation
University staff will inform applicable contractors and operators of the construction Storm water Permit and SWPPP requirements during project planning and pre-bid meetings.	Document the date and identity of each construction project that is taking place. Hold pre-dig meeting with contractors and KSU project managers before each project to discuss potential stormwater concerns for the project. Indicate the date/event when the storm water BMPs and permit requirements are covered.			

Action	Measurable Goal(s)	Responsibility	Start Date	Target Date for Achievement / Implementation
Erosion control requirements established under the general construction storm water permit and/ pre-dig meeting (for projects under one acre of disturbance) will be followed and periodically monitored by KSU staff	Document the date and project locations when erosion control measures are inspected by KSU staff (for projects less than one acre) and/ or contractors (for projects greater than one acre). Copies of weekly construction SWPPP BMP inspections are retained in the project files.			
KSU staff will complete a contractor performance review following completion of each construction project.	Develop contractor performance review criteria/ checklist. Document that this evaluation was completed with the contractor after work has been completed for the project.			

MCM#5 – POST CONSTRUCTION STORM WATER MANAGEMENT

Action	Measurable Goal(s)	Responsibility	Start Date	Target Date for Achievement / Implementation
University staff will inform applicable contractors and operators of the construction Storm water Permit and SWPPP requirements during project planning and pre-bid meetings.	Document the date and identity of each construction project that is taking place. Hold pre-dig meeting with contractors and KSU project manager before construction to discuss potential stormwater concerns for the project. Indicate the date/event when the storm water BMPs and permit requirements are covered.			
Erosion control requirements established under the general construction storm water permit and/ pre-dig meeting (for projects under one acre of disturbance) will be followed and periodically monitored by KSU staff	Document the date and project locations when any erosion control measures are inspected by KSU staff and/ or contractors. Copies of weekly construction SWPPP BMP inspections are retained in the project files			

MCM#6 –POLLUTION PREVENTION AND GOOD HOUSEKEEPING

Action	Measurable Goal(s)	Responsibility	Start Date	Target Date for Achievement / Implementation
The University will develop a Master Drainage Plan for the purpose of documenting required drainage repair and system upgrades. (BMP #1-4)	Complete Master Drainage Plan Document the review and update of the Master Drainage Plan. Updates should be completed annually.	EHS and Facilities Department		Marietta Campus: 2021 Kennesaw Campus: by the end of 2025
University grounds keeping and maintenance will be asked to assess drainage basins during routine operations for presence of oil, grease, odors, algae growth and trash and to report information on problem areas to EHS&RM department. (BMP #5,6,29)	Weekly BMP inspections will be completed in conjunction with other activities and documented by either a checklist or log book. Develop a process for documenting BMP inspections.			
Campus parking decks and parking lots will be monitored for oil and grease staining and runoff. (BMP #30)	BMP inspections will be completed by the Parking Department in conjunction with other activities and reported to EHS. EHS will document each inspection/ report from the Parking Department by either a checklist or log book.			
Identified parking deck water pollution control devices (e.g. oil/water separators and retention ponds) will be inspected and maintained. (BMP #30)	Annual maintenance inspections will be completed and documented with either a checklist or log book.			
KSU will store materials to avoid pollutants leaking or leaching from containers and stockpiles onto the ground and eventually into surface water. (BMP #15)	Weekly inspections will be completed at all outdoor storage areas to prevent escaped materials from washing into storm water.			
KSU will maintain areas surrounding the dining facility including storage areas, loading docks, and street. (BMP #20)	Weekly inspections and clean-up of trash/debris will be completed and documented with either a checklist or log book.			
KSU will complete regular and proper maintenance of storm water management systems, including repairing or replacing damaged or defective structural components. (BMP #28)	Inspections will be completed twice per year to check for and remove excess sediment and debris from outfall control devices. Annual structural inspections will be completed of the entire system			

APPENDIX B

KSU ROUTINE PROTOCOL ACTION ITEMS

Frequency	MCM	Routine Protocol Action Items
During Daily Operations	**6**	Inspect parking lots and parking decks for spilled materials or debris and assured spill material is properly cleaned.
Every Construction Project	**4/5**	Document the distribution of educational materials by KSU during initial planning and project scope meetings to developers
Every Construction Project	**4/5**	KSU Project Manager must obtain copies of Construction SWPPP and all required inspection logs and retain in project files.
Monthly	**1**	Verify that all website hyperlinks are active and accurate
Quarterly	**1/2**	Update Public Involvement Tracking Log provided in **Appendix C**
Quarterly	**1**	Run articles on environmental activities in campus newspaper
Quarterly	**3**	Complete BMP screening of high priority activities or areas.
Quarterly	**3**	Complete observations of Priority Outfalls in dry weather to assure that there have not been any releases or illicit discharges.
Quarterly	**3**	Complete inspections of outfalls after precipitation events to observed for any evidence of illicit discharges
Quarterly	**4/5**	Compile a list of, and document, erosion control inspections that have been completed by KSU as available
Quarterly	**6**	Complete BMP inspections of all identified high priority activities or areas
Semi-Annually	**1**	Hold public information sessions, utilize posters and resources
Semi-Annually	**2**	Set up information booth to disseminate environmental information and storm water best practices
Annually	**1**	Post new information and content to the websites
Annually	**1**	Distribute “when it rains, it drains” pamphlets to residents and staff
Annually	**1**	Verify that the developer/contractor fact sheets are still available and are being distributed
Annually	**2**	Update SWMP stakeholder and volunteer list

Annually	**2**	Update list of community groups maintained
Annually	**2**	Evaluate the Public Involvement and Participation program to ensure that it meets the needs of the campus community
Annually	**2/3**	Storm drain identification and marking/stenciling
Annually	**3**	Complete and review and update of the storm water system map.
Annually	**3**	Review list of designated high priority areas that are likely to have illicit discharges to determine if they are still present or if others should be added.
Annually	**3**	Provide education to the employees and the public of problems caused by illicit connections and illegal dumping.
Annually	**6**	Inspect subsurface storm water structures to evaluate if additional cleaning and/ or maintenance is needed.
Annually	**6**	Employee training to prevent and reduce storm water pollution.

APPENDIX C

PUBLIC INVOLVEMENT AND PARTICIPATION TRACKING LOG

Public Involvement and Participation Activities

Date	MCM #	Target Audience	Activity/Materials	Comments

APPENDIX D

IDD&E INSPECTION FORM

KSU ILLICIT DISCHARGE SCREENING PROGRAM

Data Collection Form

OUTFALL #: _____ **Date:** _____ **Time:** _____

TIME SINCE LAST RAIN: ≥72 hours <72 hours
QUANTITY OF LAST RAIN: ≥0.1 inches <0.1 inches
INSPECTION TEAM: _____
_____

SITE DESCRIPTION:
LOCATION (Narrative Description): _____
_____

STRUCTURE TYPE: OPEN CHANNEL MANHOLE OUTFALL OTHER: _____

DOMINANT WATERSHED LAND USES: INDUSTRIAL COMMERCIAL RESIDENTIAL UNKNOWN

OTHER: _____

FLOW ESTIMATION:
WAS FLOW OBSERVED? NO YES IF YES, PLEASE ANSWER a. - d. BELOW.

a. WIDTH OF WATER SURFACE (feet): _____
b. APPROXIMATE DEPTH OF WATER (feet): _____
c. APPROXIMATE FLOW VELOCITY (feet per second): _____
d. FLOW RATE (cubic feet per second) = a x b x c = _____

VISUAL OBSERVATIONS:

WAS A PHOTO TAKEN? NO YES

ODOR: NONE MUSTY SEWAGE ROTTEN EGGS SOUR MILK OTHER: _____

COLOR: CLEAR RED YELLOW BROWN GREEN GREY OTHER: _____

CLARITY: CLEAR CLOUDY OPAQUE

FLOATABLES: NONE OILY SHEEN GARBAGE/SEWAGE OTHER: _____

DEPOSITS/STAINS: NONE SEDIMENTS OILY OTHER: _____

VEGETATION CONDITION: NONE NORMAL EXCESSIVE GROWTH INHIBITED GROWTH

STRUCTURAL CONDITION: NORMAL CONCRETE CRACKING METAL CORROSION OTHER:

BIOLOGICAL: MOSQUITO LARVAE BACTERIA/ALGAE OTHER: _____

FIELD ANALYSIS:

WATER TEMP: _____ °F / °C
pH: _____
PHENOL: _____ mg/l
CHLORINE (Total): _____ mg/l
COPPER: _____ mg/l
DETERGENTS: _____ mg/l

WAS A LABORATORY SAMPLE COLLECTED? NO YES
(if yes attach copy of chain-of-custody record)

COMMENTS: _____
_____

DATA SHEET FILLED OUT BY: (signature): _____ DATE: _____
(print name): _____

APPENDIX E

IDD&E FIELD INVESTIGATION FORM

Illicit Discharge Inspection Quarterly Summary Report
(Dry Weather)

Location: _____

Contact Name:_____

Reporting Period: January – March April – June July – September October – December

Year: 20

I. Field Activities

1. *Describe field surveys.*	Industrial Areas	Commercial Areas	Residential Areas	Other (describe)
Number of screening points				
Channel Miles				

2. *List how many discharges were identified by the following methods*. Include only discharges that could have been prevented by BMPs. Do not include fluid releases associated with minor traffic accidents.

a. During field surveys at defined screening points:

_____ identified by maintenance crews

_____ identified by illicit discharge inspectors

b. Calls from:

_____ maintenance crews

_____ other agencies

_____ public

3. *List the number of times the following materials were identified*.

___ Paint

___ Concrete

___ Construction Debris

___ Medical Wastes

___ Food Wastes

___ Industrial Wastes (solvents, metals, corrosives, cooling tower blowdown, etc.)

___ Other (describe): _____

___Concrete Cutting Slurry/Washwaters

___Vehicle Cleaning Washwaters

___Building/Sidewalk Washwaters

___Other Washwaters

___Sewage

____Automotive Fluids (antifreeze, used motor oil, fuels)

II. Follow-up Activities

1. *Describe whether sources of discharges were identified*.

____ Number of sources that were identified

____ Number of incidents when source of discharge was not identified

2. *Describe whether discharges were abated*.

____ Number of discharge incidents that were abated.

____ Number of new discharge incidents where discharge is continuing, as of the end of the reporting period. (ATTACH INSPECTION REPORT)

____ Number of continuing discharges that have already been reported in previous quarter(s).

APPENDIX F

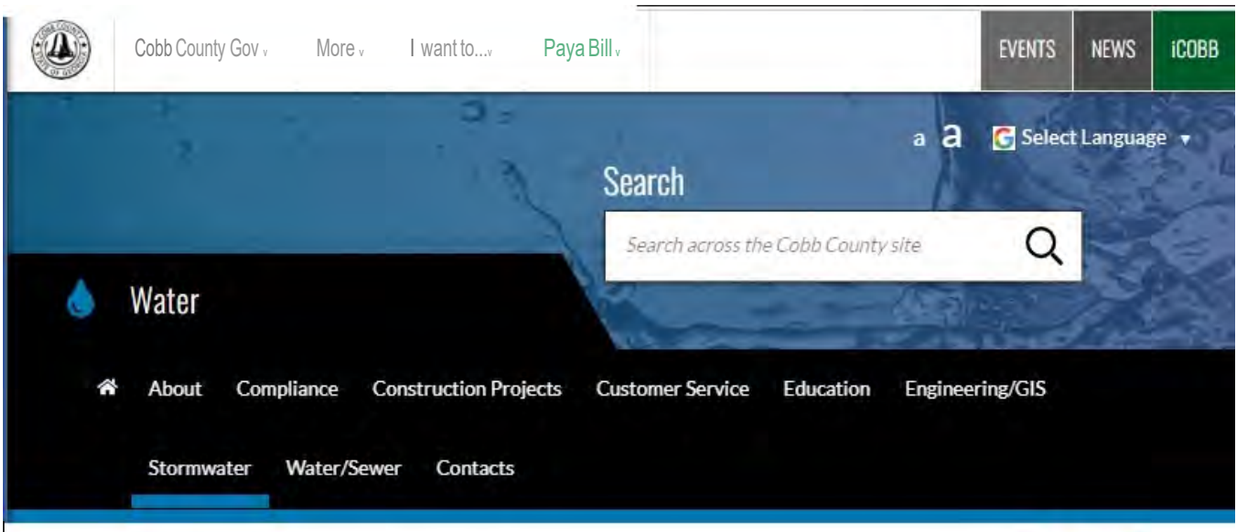
MS4 BMP INSPECTION FORM

KSU MS4 SWMP Inspection Checklist

Location (Bldg):	Activity:
Date of Inspection:	
MS4 SWMP Best Management Practices Inspection Items	
Are there signs or evidence of spilled substances on the ground?	
Describe the locations of the nearest storm water drain(s).	
Are there signs or evidence of spilled materials flowing into nearby storm water drains?	
Are liquid products, fuels, oils, or other items stored outside which could release to storm water?	
If items are stored outside, have provisions been put in place to control drips, spills to prevent discharges?	
Spill and Overfill Response Supplies: Are sufficient items and materials on hand to properly respond to spilled substances?	
Have applicable BMP's identified in Appendix H of the MS4 SWMP been implemented?	
Is storm water pollution prevention information posted in the area?	
Are operation/area personnel aware of storm water pollution prevention techniques?	
Visual Observations/Notes:	

APPENDIX G

COBB COUNTY STORM WATER MANAGEMENT PROGRAM



Stormwater Management Programs

Programs

- Basinwide Study Program (by "Priority Areas")
- Storm Drainage Infrastructure Maintenance Program
- Floodplain Mapping Update Program
- FEMA Community RatingSystem(CRS) Program
- Flood Storage Volume Purchase Program (i.e.existing dam retrofit)
- Floodplain Acquisition Program
- Total Maximum Daily Load (TMDL) Implementation PlanProgram
- National Pollutant Discharge Elimination System(NPDES) Program
- Stormwater Pond Program

Stream Monitoring Program

- Non-point Source pollutants

- Total Maximum Daily Load [TMDL) Implementation Plan Program
- National Pollutant Discharge Elimination System (NPDES) Program
- Stormwater Pond Program

Stream Monitoring Program

- Non-point Source pollutants
- Biological Monitoring
- West Nile Vector Control Program

Flood Hazard Mitigation (GEMA Grants) Floodplain Property Buyouts

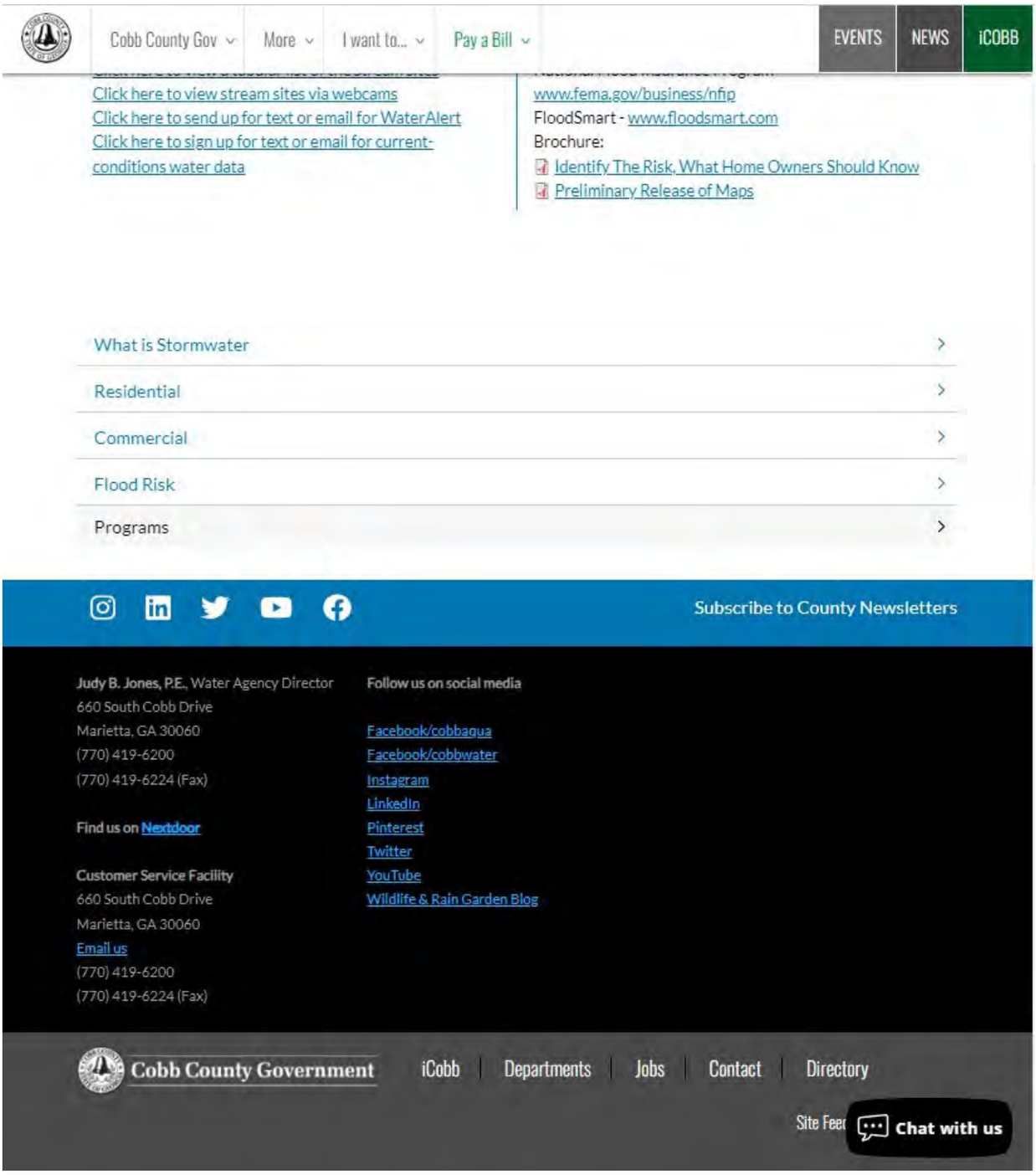
- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA) Grants
- Disaster Relief Grants (DR1554) and (DR1560)
- Hazard Mitigation Grant Program (HMGP 1686-0005)
- Hazard Mitigation Grant Program (HMGP 1858-0013)
- Hazard Mitigation Grant Program (HMGP 1858-0014)

Helpful Links

Below are links to the USGS website & NWIS Web mapper program that display streamflows around Cobb County in *real time*.

Click here to view streamflow monitoring g2g§
Click here to view a tabular list of the streamsites
Click here to view streamsites via webcams
Click here to send Q for text or email for Water Alert
Click here to sifill..l!Q for text or email for current-conditions water data

FEMA · w.w..fema.gov
National Flood Insurance Program - www.fema.gov/business/nfiQ
FloodSmart · www.floodsmart.com
Brochure:
!;|| IdentifY. The Risk, What Home Owners Should Know
!;|| PreliminaIY. Release of Ma1:1s



Note: For a description of each program refer to the Cobb County Stormwater Management Programs page at the following web address: https://www.cobbcounty.org/water/stormwater-management/programs

Due to the setup of the County's webpage, the program descriptions were not able to be included in these screenshots.

APPENDIX H

KENNESAW STATE UNIVERSITY
STORM WATER MANAGEMENT PROGRAM
BEST MANAGEMENT PRACTICES

Storm Water Management Program

Best Management Practices (BMPs)

Activity/Operation Area	*Best Management Practices (BMPs)*
Designing Storm Water Management System *New development or significant redevelopment on KSU property should have a stormwater management system designed to reduce the impact of post-construction stormwater runoff, from such development, on the receiving watershed.* *The appropriate design strategy to be adopted should be guided by regulatory requirements, physical site constrains, costs, community acceptance and wildlife habitat, etc. At the very minimum, each new development should meet the minimum performance standard prescribed in Georgia's Stormwater Management Manual.*	***BMP#1: Maximize Use of Site Design and Non-structural Method to Reduce Runoff Generation.*** • Use better site design practices to reduce impervious surfaces by preserving the natural drainage and treatment systems to the fullest extent possible. ***BMP#2: Use Structural Stormwater Controls to Manage and Treat Stormwater Runoff.*** • Determine the required treatment capability (TSS or nutrient removal and peak flow control), based on the applicable regulatory requirements. Current minimum requirement in State of Georgia is 80% reduction in average annual post-development Total Suspended Solids (TSS). • Determine potential structural controls that can meet the desired/required treatment capability. • Select the most appropriate structural control based on the site characteristics, costs, maintenance efforts, community acceptance and wildlife habitat etc. ***BMP#3: Use Structural and Non-structural Stormwater Controls to Protect Stream Channel and Overbank Flooding.*** • Provide appropriate detention storage to ensure stream channel protection • Provide erosion prevention measures such as energy dissipation and velocity control • Ensure preservation of the applicable stream buffer. • Provide appropriate control for peak discharge rate to ensure downstream overbank flood protection ***BMP#4: Design for Extreme Flood Protection*** • Provide for controlling and/or safely conveying the 100-yr, 24 hours return frequency storm event such that flooding is not exacerbated • Preserve existing and future floodplain areas, as much as

	possible
Waste Handling Procedures *Solid waste (trash) containers can be significant source of pollutants especially when the waste contains liquids such as oil. Proper handling of waste is critical to ensuring water quality standards.*	***BMP #5: Ensure proper location of solid waste storage areas*** • Solid waste receptacles (dumpster cans) should be placed on a paved area. • Dumpsters and garbage cans for food waste from the dining facilities should be stored in a covered area to prevent precipitation from coming into contact with the containers. • Dumpsters and garbage cans for non-food waste should be leak-proof, have lids and remain covered. ***BMP #6: Conduct Regular inspection and cleaning*** • Grounds around the trash containers should be inspected and cleaned on a weekly basis to ensure no spilled material get into the storm water system.
Ground-Keeping Operations *If improperly conducted, ground-keeping operations including application of pesticides, herbicides, fertilizer and mulching has the potential to cause significant harm to the environment by introducing water pollutants such as nutrients, pesticides and organic matters. Excess fertilizers can wash into water ways stimulating nuisance weed and algae growth, while pesticide can harm people and other organisms.*	***BMP #7: Proper Landscaping Design & Installation*** • Landscaping design should reduce surface runoff and encourage natural infiltration e.g. minimize impervious areas. Bare soil should not be allowed in landscaping. • Whenever possible, incorporate existing native vegetation into the landscape design and use plants best adapted to local climate, soil and growing conditions. • Protect streams and waterways and reduce erosion by leaving an undisturbed vegetative buffer zone along the stream banks. • Schedule grading and excavation project during dry weather whenever possible. • Mulch or seed areas that lies idle after land disturbing activities. • During hydro-seeding, ensure material does not enter the storm water system. ***BMP #8: Judicious Application of Fertilizers, Herbicide and Pesticides*** • Test the soil before apply fertilizer to ensure the proper type and amount of fertilizer needed for particular need is being used. • Phosphorous is a pollutant of concern, therefore KSU crew should avoid use of phosphorous containing fertilizers unless specifically recommended based on soil testing. • Only apply the amount of fertilizer that the turf/plant requires. • Use slow-release fertilizers on sandy soil to avoid leaching of

	high concentration of nutrients. • Use fast-release fertilizers on heavy clay or compacted soil to avoid granules remaining undissolved for an extended period. • Minimize amount of fertilizer applied on non-target areas e.g. by closing spreader when passing over paved surfaces. • If using liquid fertilizer, avoid over-spray and drift. • If fertilizer is spilled or lands on paved surfaces promptly sweep it up and apply to the lawn. **Pesticides** • Adopt Integrated Pest Management program as an approach to minimize use of synthetic chemical pesticides. • Pesticides should be used only as a last resort and in ways that maximizes their effectiveness and minimizes damage to the environment. • Read pesticide labels before you handle and apply it. • Store pesticides only in KSU designated pesticide storage areas which are designed to completely contain leaks and spills. • Apply pesticides only to the problem areas. • Ensure application equipment is properly calibrated and be aware of weather condition that can cause wind drift. • Mix pesticides where spill cannot soak into the ground or enter a storm drain. • Keep application equipment free of leaks • Always ensure access to adequate spill response material and know what to do in the event of a spill as outlined in KSU's spill response procedures. • Immediately clean application equipment after use by triple or pressure rinsing. Do not allow rinse water into the storm water system. • Dispose pesticide containers in accordance with KSU pesticide management procedures. ***BMP #9: Keep Storm Water Drainage free of Mulch, Grass Clippings and Leaves.*** • Care should be taken to avoid allowing mulch to enter into storm water drainage system. • Don't blow, sweep or dump mulch, grass clipping, or leaves into the paved surfaces, down storm drain or drainage ditches. • Recycle/compost grass clipping and leaves as a form of

	fertilizer.
Large Scale Cleaning Operations *Large scale cleaning operation such as carpet/upholstery cleaning, outdoor window washing, parking deck cleaning can generate large amount of contaminated water which should never be discharged into the ground or into storm water system.*	***BMP #10: Ensure Proper Disposal of Wastewater from Cleaning Operations*** • Wastewater from large scale cleaning activities including carpet cleaning and parking deck cleaning should be collected separately and disposed of appropriately. • Contact EHS&RM department in advance whenever large scale cleaning operations are planned for an evaluation of the wastewater disposal options.
Material and Waste Storage *Improper storage of materials and waste can lead to pollutants leaking or leaching from containers and stockpiles onto the ground and eventually into surface water.*	***BMP #11: Avoid Unnecessary Accumulation of Materials and Waste*** • Excess, unused or waste material should be promptly disposed of to avoid accumulation. ***BMP #12: Use Suitable Containers to Store Material and Waste*** • Storage containers should be in good condition, leak-proof, and compatible with the material being store in them. • Containers used for outdoor storage should be water-tight, rodent-proof and secured from tampering. • Keep product in their original containers whenever possible otherwise, clearly label all containers with content. ***BMP #13: Store Materials and Waste in an Appropriate Location*** • Always store potential pollutant indoor unless such storage would increase risk to health and safety for KSU personnel. • Hazardous waste material should never be stored outdoors • Material or waste stored outdoor should be stored in paved, covered areas, to prevent precipitation from coming into contact with storage containers. • Stockpiles should be stored in a covered area or placed on a paved surface and covered with plastic sheeting when not in use. ***BMP #14: Provide Appropriate Secondary Containment*** • Containers for liquid storage should be provided with appropriate secondary containment with adequate capacity. • Outdoor storage areas should be designed to contain leaks and spills. ***BMP #15: Perform Period Inspection and Clean-up***

	• Periodically (weekly) inspect and clean-up storage areas to prevent escaped materials from washing into storm water.
Vehicle and Equipment Washing *Vehicle and equipment washing activities can generate significant amount of runoff containing pollutants such as detergents oil, grease, heavy metals, sediment and organic matters. Vehicle and equipment wash water should therefore not be allow to soak into the ground or enter storm water systems.*	***BMP #16: Wash Vehicle and Equipment only in Designated Areas and properly dispose of the wastewater.*** • KSU vehicles and equipment should be washed only in the designated wash area located at Chastain Point Bld-100. The wash area is designed to properly manage wastewater. • Wash water from the designated wash area should be discharged only into a sanitary sewer.
Commercial Kitchen Operations (Dining Facility)	***BMP #17: Ensure Appropriate Cleaning and Properly Disposal of Washwater from Kitchen Operations*** • Never clean equipment outdoors or areas where water may flow into the street or storm drain. Instead, clean equipment in designated indoor areas such as kitchen and janitorial sinks. • Clean floormats, filters and garbage cans in a mop sink or over an internal floor drain connected to sanitary sewer. • Never pour washwater onto parking lot, loading area, sidewalk or street. Washwater should be poured into janitorial or mob sinks. ***BMP #18: Collect, Properly Store and Recycle Food Waste and Grease.*** • Do not pour grease into sink, floor drain, storm drain, parking lot or street. • Collect and properly store grease and oil for recycling. • Waste grease should be stored in a covered, paved area which is located such that spilled grease cannot reach storm water. • Containers for waste-grease storage should be provided with appropriate secondary containment with adequate capacity • Dumpsters and garbage cans for food waste should be stored in a covered area to prevent precipitation from coming into contact with the containers. • Food waste destined for composting should be in a covered, paved area and managed to avoid disease vectors. ***BMP #19: Ensure Prompt Spill Response and Clean-up*** • Maintain adequate spill response material and know what to

	do in the event of a spill as outlined in KSU's spill response procedures. • Employ dry methods to cleanup spill. Do not hose down the spill. • Do not use bleach or disinfectants if there are possibilities of water getting into storm water system. ***BMP #20: Perform Period Inspection and Clean-up*** • Periodically (weekly) inspect and clean-up areas surrounding the dining facility including storage areas, loading dock, and street and sweep up trash and debris to prevent it from washing into storm water.
Vehicle & Equipment Maintenance *Equipment and vehicle maintenance operations can introduce oil, grit, coolants, heavy metals and other pollutants from dirty and leaky equipment/vehicle into the storm water system if not properly managed. Additionally, spills can result from these operations.*	***BMP #21: Perform Maintenance Only in Designated Areas*** • Maintenance of KSU equipment and vehicles should only be conducted indoor at the Maintenance Shop located at Building 100 – Chastain Point. • If maintenance activity must take place outdoor, it should be in an area designed to contain leaks and is clearly marked. • No maintenance area should be located within a floodplain. • Do not conduct regular cleaning near a storm-drain ***BMP #22: Keep Maintenance Area Clean and Free of Leaks*** • Regularly inspect equipment and vehicles for leak and promptly repair and clean-up any leaks that are found. • Stop vehicle/equipment leaks before parking them. • Wrecked, leaking vehicle should be drained immediately. • Place drip pad underneath vehicle/equipment to absorb leaks/spills. • If an equipment or vehicle is to be place in seasonal or long-term storage, drain all the fluids before placing on storage. ***BMP #23: Collect, Properly Store, Recycle and Appropriately Dispose Waste.*** • Store and dispose of waste properly. • Use containers that are in good condition, clearly labeled, covered, secure and are away from water to hold waste. • Recycle motor oil, oil filter, lead-acid batteries, and scrap tires. Contact EHS&RM department to arrange for pick-up of these materials. • Drain used oil filter for at least 24hrs then recycle both the oil and the filter.

	• If oil filter cannot be recycled, ensure they are crashed/punctured and properly drained before being disposed of with regular trash. • Do not pour liquid waste into floor drains, sinks, outdoor storm drain inlets, or other storm drains. ***BMP #24: Keep Maintenance Area Clean, Prevent Spill and Promptly Clean-up.*** • Place a drip pan underneath vehicles to contain leaks. • Sweep shop floor instead of hosing down. • If floor is wet moped, dispose wash water into a sanitary sewer. Never discharge floor wash water outside workshop area or into storm drain. • Keep drip pans and appropriate type of absorbent materials readily available. • Promptly clean up spills by applying appropriate absorbent material. Clean-up the absorbent material bag it and place in an appropriate container for waste pick up. Absorbent should be applied and removed within 30 minutes. ***BMP #25: Part Washing.*** • Cleaning parts with solvent should be conducted only in self-contained sinks/tanks that are not connected to the sanitary sewer. Washing fluid should be collected and disposed of as hazardous waste. • Seek less toxic substances for part washing.
Fueling Activities *Gasoline and other types of fuels are toxic and highly flammable. There is increased risk of fuel spill occurring during transfer and fueling activities. Such spill can find its ways into storm water systems if not properly and promptly controlled.*	***BMP #26: Prevent Overfill of Tanks*** • Above ground fuel storage tanks (ASTs) should be equipped with overfill prevention controls. • Dispensing hoses should be equipped with functioning automatic shutoff valves. • Fueling/transfer Operator should never overfill gas tank ("topping up") or leave equipment unattended when being fueled. • Create awareness through training and posting signs. ***BMP #27: Prevent, Control and Clean-up Spills*** • Keep adequate appropriate spill response material readily available and know what to do in the event of a spill as outlined in KSU's spill response procedures.

	• Clean-up spill immediately using the appropriate materials. Small spills can be cleaned up with rags and larger spills can be cleaned with dry absorbent material such as kitty litter. • Avoid cleaning fueling areas with running water. Consider using a damp cloth on the pumps and a damp mop on the pavement rather than a hose. • Do not wash spill material into the storm drain.
Storm Water Management System Maintenance *Without regular and proper maintenance, even a well designed storm water management system will stop functioning properly and loose it ability to control flood and remove pollutants from storm water.*	***BMP #28: Maintain University's Retention and Detention Systems*** • Native vegetation should be maintained around the ponds to slow and filter storm water before it enter the pond. • Twice a year, Facilities personnel will check and remove accumulated sediment and debris especially around outfall control devices • KSU will conduct annual inspection of the entire system and repair or replace damaged or defective structural components. ***BMP #29: Ensure Proper Maintenance of Catch Basins*** • All KSU catch basins should be marked with the message – "No Waste Dumping: Drains to Streams". • Regularly inspect and remove debris from storm drain grates to prevent blockage which can lead to localized flooding. • Clean catch basin storage area before is half full. Cleaning should be done in spring after first heavy rain, in fall after trees shed leaves and additionally if warranted.
Covered Vehicle Parking Areas *Parking structures can present potential surface water pollution by introducing oil, grease, coolants, and other pollutants release from vehicle in parking.*	***BMP #30: Ensure Regular Inspection and Maintenance*** • Parking structures should be routinely inspected for signs of any spill substances that should be cleaned and to ensure drains and debris traps have no blockage which could lead to misdirection of storm water flow. • Clean parking deck annually to remove accumulated pollutants. • Wastewater from parking deck cleaning activities should never be allowed to drain into the storm drain. Instead it should be collected separately and disposed of appropriately.

APPENDIX I

STANDARD OPERATION PROCEDURES FOR STORM WATER STRUCTURES

Underground Stormwater Vaults – Standard Operating Procedure

A.) Underground Stormwater Vault/ Basin Description

Underground Stormwater Vaults or Basins are commonly utilized on sites with insufficient area to infiltrate runoff or build an at-grade facility, such as a detention pond. The detention vault/ basin manages the quantity of stormwater runoff flowing to nearby surface waters and helps to prevent flooding and erosion in downstream streams and rivers. The system is designed to release stormwater at a controlled rate to mimic pre-developed conditions. In addition, they can improve water quality by removing heavy amounts of sediment.

B.) Underground Stormwater Vaults/ Basins Onsite

There are nineteen (19) underground stormwater vaults/ basins located across KSU. Seventeen are located on the Kennesaw Campus and include:

- One located at the Visual Arts Building
- Two located at the English Building
- Two located at the Science Laboratory Addition
- One located 462 Wilson Annex
- One located at Kennesaw Hall
- One located at the Zuckerman Museum
- One located at Austin Residence Complex
- One located at University Village Suite Apartments
- One located at KSU Place Apartments
- One located at West Parking Deck
- Two located at Central Parking Deck
- One located at East Parking Lot
- One located at East Parking Deck
- One located at the Student Recreation and Activity Center (SRAC)

Additionally, two underground stormwater vaults/ basins are located on the Marietta Campus.

C.) Underground Stormwater Vaults/ Basins Maintenance / Inspection

KSU is responsible for 100% of the maintenance requirements for the underground stormwater vaults/ basins. Maintenance of the units shall include routine inspection and maintenance activities as detailed in Table 1 below. It is recommended that the underground stormwater vaults/ basins units be inspected and maintained by a company with experience maintaining these types of structures. An example of an inspection checklist has been provided in the following pages and may be used to document inspection / maintenance activities associated with the units.

i. Compliance Schedule

Table 1
Routine Maintenance Activities for Underground Stormwater Vaults/ Basins

No.	Maintenance Task	Frequency	Documentation	Responsibility	Basis for Completion
1	Inspect underground detention vaults/ basins for trash, debris, sediment, oil accumulation. Inspect inlets and outlets for loose connections.	Annually	Underground Detention Inspection Checklist	KSU to oversee work to be performed by experienced contractor	BMP
2	Clean out vaults with vacuum or boom trucks. Clean sediment or oil chambers.	Annually, or as needed.	Underground Detention Inspection Checklist	KSU to oversee work to be performed by experienced contractor	BMP
3	Clean underground detention if hazardous or foreign substances are spilled in the contributing drainage area; Perform structural repairs to inlet and outlets	As needed	Underground Detention Inspection Checklist	KSU to oversee work to be performed by experienced contractor	BMP

ii. Recordkeeping/ Reporting of Maintenance

All records of stormwater related inspection and maintenance activities should be retained on site for a minimum of 3 years unless otherwise noted by a regulatory requirement. Records should also be kept describing incidents such as spills or other discharges that can affect stormwater quality.

iii. Reporting of Spills

Spills or leaks occurring on the KSU campuses must be reported to the KSU Facilities mainline at 470-578-6224, the campus non-emergency police at 470-578-6206 and/ or the Environmental Health and Safety Department at 470-578-3321.

KSU must report spills or leaks that may pose risk to human health or the environment. Clean up spills and leaks promptly using spill response equipment to prevent the discharge of pollutants. Environmental regulations require that all releases of hazardous substances exceeding reportable quantities be reported to the National Response Center at **(800) 424-8802**. Make sure to report these items within 15 minutes of identification.

Any spill over 25 gallons must be reported to the Spill Response Center. Contact the National Response Center 24-hour spill reporting hotline at (800) 424-8802, the Region 4 (Southeast) 24-hour spill reporting number at (404) 562-8700 OR Georgia's Environmental Agency at (404) 657-5947.

D.) RESTRICTIONS

KSU and OSHA confined space safety procedures must be followed by authorized contractors when entering this structure.

E.) FORMS/ CHECKLISTS

Example Inspection and Maintenance Checklists associated with the underground stormwater vaults/ basins on site are provided in the following pages.

Underground Detention					
Maintenance Item	Condition				Comment
	Good	Marginal	Poor	N/A*	
General Inspection					
Access to the site is adequately maintained for inspection and maintenance.					
Area is clean (trash, debris, grass clippings, etc. removed).					
Inlet Structure and Pretreatment					
Drainage ways (overland flow or pipes) to the practice are free of trash, debris, large branches, etc.					
Inlet structure is in good condition. No signs of cracks or leaks.					
Diversion structure (high flow bypass structure or other) is free of trash, debris, or sediment. Comment on overall condition of diversion structure and list type.					
Inlet pipe fits tightly to the underground detention.					
Inlet has protection to prevent clogging with leaves or other debris and has fine mesh for mosquito control.					
Main Treatment					
Main treatment area is free of trash, debris, and sediment.					
Structure seems to be working properly. No signs of settling, leaking, or cracking. Comment on overall condition of structure.					
Emergency Overflow and Outlet Structure					
Area is free of trash, debris, and sediment.					
Overflow valve appears to be in good condition and show no signs of leaking.					
Results					
Overall condition of Underground Detention:					
Additional Comments					
Notes: *If a specific maintenance item was not checked, please explain why in the appropriate comment box.					

Stormceptor – Standard Operating Procedure

A.) Stormceptor Description

The Stormceptor treatment structure is an oil and grit separator that effectively removes pollutants, suspended solids, and free oils from stormwater and snowmelt runoff. According to the manufacturer, the ideal uses of the Stormceptor include:

- Sediment (TSS) removal
- Spill Control
- Debris and small floatables capture
- Pretreatment for filtration, detention/ retention systems, ponds, wetlands, Low Impact Development (LID), green infrastructure and water sensitive urban design.

B.) Stormceptor System Onsite

There are three (3) Stormceptor structures at KSU. They are located within the East Parking Lot on the Kennesaw Campus.

C.) Stormceptor Maintenance / Inspection

KSU is responsible for 100% of the maintenance requirements for the Stormceptor units. Maintenance of the units shall include routine inspection and maintenance activities as detailed in Table 1 below. It is recommended that the Stormceptor units be inspected and maintained by a company with experience maintaining these types of structures. An example of an inspection checklist has been provided in the following pages and may be used to document inspection / maintenance activities associated with the units.

i. Compliance Schedule

Table 1
Routine Maintenance Activities for Stormceptor

No.	Maintenance Task	Frequency	Documentation	Responsibility	Basis for Completion
1	Measure the amount of sediment accumulation within the unit by inserting a dipstick through the riser pipe.	At least annually	Vortech Inspection & Maintenance Log	KSU to complete inspection or oversee work to be performed by experienced contractor	BMP
2	Inspect for evidence of structural damage to wall or bottom of chamber	Annually	Vortech Inspection & Maintenance Log	KSU to oversee work to be performed by experienced contractor	BMP
3	Remove accumulated sediment and/ or oils/ floatables reaching a pre-determined dept, as specified by the manufacture guidelines, by a vacuum truck and disposed of properly.	As needed per manufacturer's specifications	Vortech Inspection & Maintenance Log	KSU to oversee work to be performed by experienced contractor	BMP

4	For manufactured Stormceptors, follow manufacturer's guidelines for maintenance and part replacement	As per manufacturer's specifications	Vortech Inspection & Maintenance Log	KSU to oversee work to be performed by experienced contractor	BMP

ii. Recordkeeping/ Reporting of Maintenance

All records of stormwater related inspection and maintenance activities should be retained on site for a minimum of 3 years unless otherwise noted by a regulatory requirement. Records should also be kept describing incidents such as spills or other discharges that can affect stormwater quality.

iii. Reporting of Spills

Spills or leaks occurring on the KSU campuses must be reported to the KSU Facilities mainline at 470-578-6224, the campus non-emergency police at 470-578-6206 and/ or the Environmental Health and Safety Department at 470-578-3321.

KSU must report spills or leaks that may pose risk to human health or the environment. Clean up spills and leaks promptly using spill response equipment to prevent the discharge of pollutants. Environmental regulations require that all releases of hazardous substances exceeding reportable quantities be reported to the National Response Center at **(800) 424-8802**. Make sure to report these items within 15 minutes of identification.

Any spill over 25 gallons must be reported to the Spill Response Center. Contact the National Response Center 24-hour spill reporting hotline at (800) 424-8802, the Region 4 (Southeast) 24-hour spill reporting number at (404) 562-8700 OR Georgia's Environmental Agency at (404) 657-5947.

D.) RESTRICTIONS

KSU confined space safety procedures must be followed by authorized contractors when entering these structures.

E.) FORMS/ CHECKLISTS

Inspection and Maintenance Checklists associated with the Stormceptor units on site are provided in the following pages.

Vortechs Inspection & Maintenance Log

Vortech Model: _____ **Location:** _____

Date	Water depth to sediment	Floatable layer thickness	Describe maintenance performed	Maintenance personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than eighteen inches the system should be cleaned out. Note: To avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.
2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

Crystal Stream – Standard Operating Procedure

A.) Crystal Stream Description

The Crystal Stream structures are stormwater treatment devices manufactured by Crystal Stream Technologies. Each device targets the most common pollutants in urban stormwater including sediment, oil & other hydrocarbons, trash and debris, and BOD causing nutrients. The structures consist of a baffle system and configuration which controls flow velocities and organizes flow patterns to achieve sediment removal as well as treating other pollutants with specific media panels.

Incoming storm water flows through a fine mesh in the trash basket within the unit, capturing floating debris and vegetative matter. The water proceeds around baffles slowing and spreading the flow and ensuring that any oil gathers at the top. As the water level rises, the oil flows over the edge of a reservoir and the water flows under it to the outflow pipe. As the water rises out of the unit in the back chamber it passes through a coconut fiber filter, designed to remove smaller floating or suspended materials.

B.) Crystal Stream Structures Onsite

There are twelve (12) Crystal Stream structures located across KSU. They are located at the Kennesaw Campus and include:

- 7 Crystal Stream structures located at 5/3 Bank Stadium
- 4 Crystal Stream structures located at Austin Residence Complex
- 1 Crystal Stream structure located at the Central Parking Deck

C.) Crystal Stream Maintenance / Inspection

The cleaning of the unit is the essential element to the operational success of the Crystal Stream Device. The pollutant removal capacity of the device will eventually cause the equipment to fail without proper maintenance and additionally not achieve the goals of the installation. The cleaning cycle is dependent on a number of factors including pollutant load, rainfall, time of year, basin changes, upstream mitigation tactics and installation.

KSU is responsible for 100% of the maintenance requirements for the Crystal Stream units. Maintenance of the units shall include routine inspection and maintenance activities as detailed in Table 1 below. It is recommended that the Crystal Stream units be inspected and maintained by a company with experience maintaining these types of structures. An example of an inspection checklist has been provided in the following pages and may be used to document inspection / maintenance activities associated with the units. A copy of the Crystal Stream Installation, Operation, Inspection, Maintenance and Cleaning Manual has been provided as an attachment to this SOP for reference.

i. Compliance Schedule

Table 1
Routine Maintenance Activities for Crystal Stream Structures

No.	Maintenance Task	Frequency	Documentation	Responsibility	Basis for Completion
1	Visually inspect the unit from the surface to determine the integrity of access points. Look for broken hinges or broken or missing handles. A qualified welder should repair any broken hinges immediately. Inspect bolts on lid angle iron and look for loose red heads on angle iron. Replace red heads as needed. Re-paint the lid, with a rust resistant paint as necessary	Quarterly	Crystal Stream Operations Inspections Checklist	KSU to complete inspection or oversee work to be performed by experienced contractor	BMP
2	Visually inspect the trash basket at the front of the unit to determine capacity and type of material trapped.	Quarterly	Crystal Stream Operations Inspections Checklist	KSU to complete inspection or oversee work to be performed by experienced contractor	BMP
3	Visually inspect the water surface in the front of the unit to determine oil sheen or blanket. A visual inspection should be made of the oil and hydrocarbon reservoir to determine amount of oil/water trapped and the historical high-water level in the unit.	Quarterly	Crystal Stream Operations Inspections Checklist	KSU to complete inspection or oversee work to be performed by experienced contractor	BMP
4	Visually inspect the aluminum mesh in the trash basket and the basket frame for cracks or damage. Inspect oil reservoir and riser/ concrete walls for cracks and damage. Repair and or replace as needed.	Quarterly	Crystal Stream Operations Inspections Checklist	KSU to complete inspection or oversee work to be performed by experienced contractor	BMP
5	A professional service provider should thoroughly inspect the units using the checklist provided in Section E.	Annually	Crystal Stream Operations Inspections Checklist	KSU to oversee work to be performed by experienced contractor	BMP
6	Remove accumulated sediment, trash/ debris and/ or oils from unit and filter media and dispose of properly. Replace coconut fiber in unit.	As needed per manufacturer's specifications	Crystal Stream Maintenance Cleaning Checklist	KSU to oversee work to be performed by experienced contractor	BMP
7	For manufactured Crystal Stream structures, follow manufacturer's guidelines for maintenance and part replacement	As per manufacturer's specifications	Crystal Stream Maintenance Cleaning Checklist	KSU to oversee work to be performed by experienced contractor	BMP

* The quarterly visual inspections are intended to be completed from the surface.

ii. Recordkeeping/ Reporting of Maintenance

All records of stormwater related inspection and maintenance activities should be retained on site for a minimum of 3 years unless otherwise noted by a regulatory requirement. Records should also be kept describing incidents such as spills or other discharges that can affect stormwater quality.

iii. Reporting of Spills

Spills or leaks occurring on the KSU campuses must be reported to the KSU Facilities mainline at 470-578-6224, the campus non-emergency police at 470-578-6206 and/ or the Environmental Health and Safety Department at 470-578-3321.

KSU must report spills or leaks that may pose risk to human health or the environment. Clean up spills and leaks promptly using spill response equipment to prevent the discharge of pollutants. Environmental regulations require that all releases of hazardous substances exceeding reportable quantities be reported to the National Response Center at **(800) 424-8802**. Make sure to report these items within 15 minutes of identification.

Any spill over 25 gallons must be reported to the Spill Response Center. Contact the National Response Center 24-hour spill reporting hotline at (800) 424-8802, the Region 4 (Southeast) 24-hour spill reporting number at (404) 562-8700 OR Georgia's Environmental Agency at (404) 657-5947.

D.) RESTRICTIONS

KSU and OSHA confined space safety procedures must be followed by authorized contractors when entering this structure.

E.) FORMS/ CHECKLISTS

Example Inspection and Maintenance Checklists associated with the Crystal Stream structures on site are provided in the following pages.

APPENDIX 2

Inspection Date _____ Job Number _____ Traffic ☐
Job Name _____ Hatch ☐
Job Address _____
_____ Size
Inspector's Name _____

Operations Inspections Checklist

Water Level	Oil Bucket Level	Sediment Level	Trash Conditions
☐ low ☐ normal ☐ above outlet	☐ low ☐ typical ☐ high	☐ little ☐ typical ☐ excessive	☐ minimal ☐ typical ☐ unacceptably high
Recommendations: This unit appears to need maintenance on a shorter / longer / unchanged schedule.			

This report is a complete and accurate description of conditions found at the time of inspection and all work performed on this device.

Inspector's Signature:	**Date:**

Inspection Data

Sediment: inlet side	Inches
Sediment: outlet side	Inches

Water in unit at inspection	Inches
Fluid in bucket at inspection	Inches

Items Inspected

Items Inspected	Comments
Lid: inspect bolts, eyehooks, hinges	
Trash Rack: inspect aluminum mesh	
Baffle Plates: inspect for damage	
Oil Bucket: Leaks / Sheen	
Surroundings: check grass/plantings	
Construction Phase	

Additional Comments

APPENDIX 3

Maintenance Cleaning Checklist

Inspector Name		Inspection Date	
Device Location		Serial Number	

Item	Cleaned	Repaired	Replaced	Comments
Lid: inspect bolts, eyehooks, hinges				
Lid: inspect paint				
Inlet Side: measure water depth				
Inlet Side: measure sediment depth				
Inlet Side: take water sample				
Inlet Side: take sediment sample				
Inlet Side: vacuum out sediment				
Trash Rack: remove trash				
Trash Rack: inspect hardware cloth				
Trash Rack: inspect aluminum mesh				
Baffle Plates: inspect for damage				
Oil Blanket: pump off oil				
Oil Bucket: measure depth				
Oil Bucket: pump out as necessary				
Outlet Side: remove any trash				
Outlet Side: measure sediment depth				
Outlet Side: vacuum out sediment				
Surroundings: check grass/plantings				

Sampling			
Sediment sample number		Water sample number	

Device Summary	
Depth of sediment: inlet side	Inches
Depth of sediment: outlet side	Inches
Depth of water in unit at inspection	Inches
Depth of fluid in bucket at inspection	Inches

Crew Summary	
Time of Arrival	
Time of Departure	
Total Time on Device	Hours
Disposal Fees (if any)	

Water Level	Oil Bucket Level	Sediment Level	Trash Conditions
☐ low ☐ normal ☐ above outlet	☐ low ☐ typical ☐ high	☐ little ☐ typical ☐ excessive	☐ minimal ☐ typical ☐ unacceptably high
Recommendations: This unit appears to need maintenance on a shorter / longer / unchanged schedule.			

This report is a complete and accurate description of conditions found at the time of inspection and all work performed on this device.

Inspector's Signature:	**Date:**

Additional Comments

Attachment

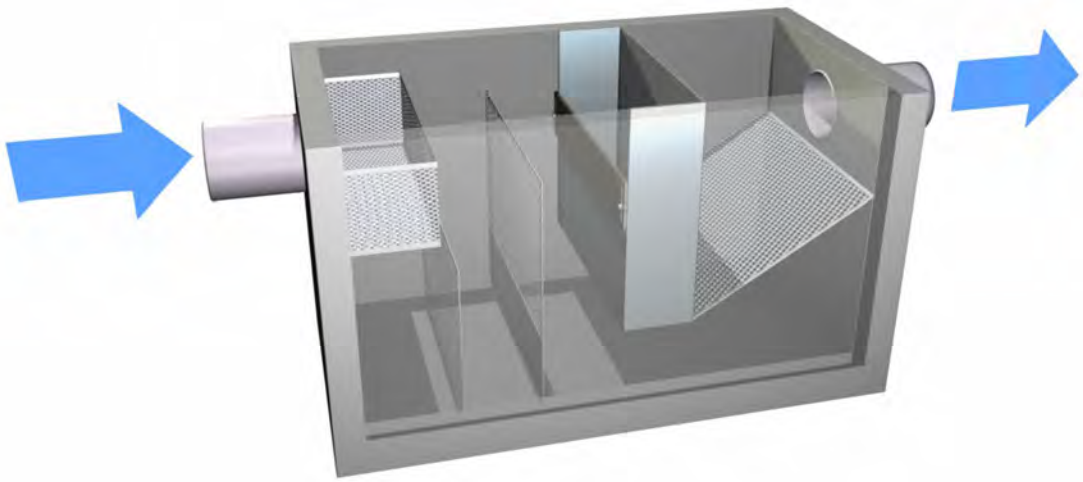
Crystal Stream Installation, Operation, Inspection, Maintenance and Cleaning Manual

Installation, Operation, Inspection, Maintenance and Cleaning Manual

(Models 646, 946, 956, 1056, 1266, 1856, 2056, & 2466)

CrystalStream™ Technologies

Stormwater Treatment Device



CrystalStream Technologies

CrystalStream Technologies 2090 Sugarloaf Parkway. Suite 135 Lawrenceville, GA 30045

READ THE FOLLOWING INFORMATION, INSTRUCTIONS AND WARNINGS CAREFULLY BEFORE INSPECTING, PERFORMING MAINTENANCE OR CLEANING THIS DEVICE

This manual is intended to explain the specifics of our system, and to review the common aspects of the existing regulations and safety procedures. It is the responsibility of all personnel to familiarize themselves with, understand, and comply with all applicable local, state and federal laws, before attempting to inspect, maintain, or clean the CrystalStream unit.

Table of Contents

All precautions and procedures in this manual are current at the time of printing and are subject to change based on new processes and procedures. CrystalStream Technologies takes no responsibility and will be held harmless for any injuries, fines, penalties or other losses that occur involving any procedures in this manual or other non-addressed actions. The unit's performance is based on the procedures being followed and lack of performance due to non-compliance with these measures will be the responsibility of the owner.

1.1 General Purpose

The CrystalStream storm water treatment device is designed to treat the gross pollutants found in urban storm water run-off and protect downstream waterways from these pollutants. Additionally the CrystalStream unit provides spill protection for oil and other hydrocarbon products.

1.2 Unit Description

The base unit is a pre-cast concrete rectangular structure constructed in various dimensions based on the model purchased. The base unit is poured with walls of 6'' reinforced concrete tested to 4,000 psi. A riser of the same construction is used if needed to bring the top of the unit to grade. The internal components will vary based on the application and pollutants targeted. At most the unit will have components consisting of a trash basket, mesh lining, baffles, oil & hydrocarbon reservoir, adjustable weir plate and fiber mesh screen. All of these components are constructed out of aluminum. The fiber mesh screen itself is ¾" coconut fiber. The internal placement of the components will vary based on the individual nature of the site and hydrology but the basic configuration is shown on the cover of this manual. This is also a standard cut sheet drawing included in Appendix 1. The top of the unit can be either a tread plate double access lid or aluminum hatch in non-traffic applications or a standard grate and frame/ring and cover in traffic areas.

1.3 Unit Operation

The unit is installed with all components in place to operate and based on proper installation; the owner has no responsibilities to make the unit operational. Due to the nature of construction THE UNIT MUST BE INSPECTED WHEN THE SITE IS TURNED OVER TO THE OWNER/END-USER. (See Section 3.1 through Section 3.3 for inspections) IF IT IS NOT CLEAN AT THAT TIME, IT MUST BE CLEANED AND LEFT UNDAMAGED AND READY TO OPERATE. (See Section 4.1 for cleaning.) Please read this entire manual before any inspection or cleaning operations. Your personal safety is important. **Call CrystalStream at 1-800-748-6945 if you are unsure about any procedure.**

Prior to the site being turned over to the owner, CrystalStream Technologies recommends that the pipe system leading to the unit be flushed and jetted, to make certain that any residual sediment is cleaned from the pipes. When sediment is allowed to accumulate in the pipes, it slowly moves to the unit during rainfall events. The larger the rainfall event, the more sediment is moved. The CrystalStream storm water treatment device is extremely effective at trapping sediment. When sediment is left in the pipes and moves to the unit, it can necessitate a shorter than average cleaning schedule which translates into higher cleaning costs for the owner. Cleaning and jetting the pipes assures the owner that the unit he receives is in proper working order, and free of sediment. If the site is

under a maintenance agreement with CST, CST personnel will inspect the unit and the pipe system prior to the unit being transferred to the owner.

1.4 Installation

The unit is installed during the construction phase with the excavation, pipe attachment, and backfill completed by the contractor on site. A stable roadway must be provided for delivery of the CrystalStream unit. CrystalStream Technologies (CST) will provide the contractor with the measurements he will need to excavate the hole. A 6"depth of crushed stone should be placed under the unit to assist in leveling and to provide uniform base support. CST will have the unit delivered to the site and placed in the hole with our equipment in most cases. After placement, the contractor will backfill the device as necessary and attach the pipes. Proper construction methods during the backfill and pipe attachment are essential to the operation and cleaning of the CrystalStream unit.

Contractors Please Note:

Call CrystalStream at 1-800-748-6945 if you are unsure about any procedure.

- The pipes must be placed at the correct invert for the unit to achieve the proper removal rates.

- The pipes must be installed flush with the interior walls of the unit to provide for proper cleaning access.

- The pipes must be mudded in on both the inlet and outlet connections. Failure to properly mud the pipes can result in the water undermining the soil surrounding the unit.

- When a tread Plate lid is used on the Model 646, CST also provides a set of hooks to be used to hold the lids open during maintenance and cleaning procedures except in traffic areas. These hooks should also be turned over to the property owner when all construction has been completed.

- A stable roadway must be maintained to facilitate inspection and cleaning of this unit. This roadway must be, at a minimum, constructed of gravel or crushed stone on a stable base, and must be capable of supporting a cleaning truck weight of approximately 15,000 pounds.

2.1 Safety Overview

The CrystalStream unit is designed to be cleaned and maintained in an efficient safe manner by qualified professionals trained to service in-ground vaults and to handle the equipment necessary for removing the pollutants targeted.

The CrystalStream unit can be cleaned using common equipment and methods including cleaning from the surface using a vacuum truck and trash netting system. Although this method will be addressed, in our experience with these types of devices, a confined space entry cleaning yields a quicker, more thorough and less cost intensive result.

This manual is intended to explain the specifics of our system, and to review the common aspects of the existing regulations and safety procedures. It is the responsibility of all personnel to familiarize themselves with, understand, and comply with all applicable local, state and federal laws, before attempting to inspect, maintain, or clean the CrystalStream unit.

ALWAYS FOLLOW ALL OSHA REQUIREMENTS WHEN ENTERING A CONFINED SPACE. CRYSTALSTREAM TECHNOLOGIES RECOMMENDS THAT CLEANING BE ACCOMPLISHED BY A "BUDDY SYSTEM "AND THAT BOTH WORKMEN BE CONFINED SPACE ENTRY RESCUE AND CONFINED SPACE AWARENESS TRAINED.

CAUTION! Any inspection or maintenance work performed in a traffic area must meet the DOT guidelines for roadway work and additional safety procedure will be necessary.

2.2 OSHA Requirements

Definition of A Confined space

A confined space has limited or restricted means of entry or exit. It is large enough for an employee to enter and perform assigned work. The confined space is not designed for continuous occupancy. Confined space openings are limited primarily by size or location. The atmosphere in a confined space may be hazardous due to low oxygen levels, flammable or explosive concentrations of gases, vapors or dusts, or toxic levels of gases and vapors.

NOTE: Never enter a CrystalStream unit when there has been an obvious gasoline spill or other flammable/hazardous material. This manual is for routine cleaning of storm water debris and any unusual occurrences should be left to properly trained and equipped individuals.

Entry without permit/attendant

Confined spaces may be entered without the need for a written permit or attendant provided that the space can be maintained in a safe condition for entry by mechanical ventilation alone. All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. Any employee required or permitted to pre-check or enter an enclosed/confined space shall have successfully completed, as a minimum, the training as required.

Testing the Atmosphere

Before entering a confined space, testing should be completed for oxygen, then for flammable or combustible gases and vapors and finally for toxic gases and vapors. Some gases and vapors are heavier than air and will settle to the bottom of a confined space. Other gases are lighter than air and will be found around the top of the confined space. Testing should be done in all areas (top, middle, bottom) with testing instruments that are calibrated in accordance with the manufacturer's recommendations to determine what atmospheric conditions are present.

NOTE: The test for oxygen is performed first because most combustible gas meters are oxygen dependent and will not provide reliable reading in an oxygen deficient atmosphere. Testing for combustible gases are tested for next because the threat of fire or explosion is both more immediate and more life threatening than exposure to toxic gases and vapors. If testing reveals oxygen deficiency or the presence of toxic gases or vapors, the space must be ventilated and retested before the worker may enter.

Detector tubes, alarm only gas monitors and explosion meters are examples of monitoring equipment that may be used. If there are no non-atmospheric hazards present and if the pre-entry tests show there are no dangerous air contamination and/or oxygen deficiency within the space and there is no reason to believe that any is likely to develop, entry into and work within may proceed.

Ventilation

Ventilation by a blower or fan may be necessary to remove harmful gases and vapors from a confined space. We recommend that a ventilating hose run to the bottom of the unit to blow out all harmful gases or vapors. The air intake should be place in an area that will draw in fresh air only. Ventilation should be continuous where possible because in many confined spaces the hazardous atmosphere will accumulate again when the flow of air is stopped. Periodic testing must be conducted to ensure that the atmosphere inside the confined space is safe.

Respirators

Respirators are devices that protect workers from breathing unsafe levels of toxic particles, gases and vapors. Two basic types of respirators are air purifying, which filter dangerous substances from the air and air –supplying which deliver a supply of safe breathing air from a tank or an uncontaminated area nearby.

Manholes

CrystalStream devices located in traffic areas use a manhole as the point of entry into the unit. Manholes may present a variety of hazards if proper care is not taken. When covers are removed manholes can become a trap into which workers can fall. It can also become a hazard to others if the manhole cover is not replaced when the work has been completed

2.3 Inspection Safety

Always place cones around the CrystalStream unit and the vehicle to keep people out of the working zone.

In traffic areas, follow all DOT regulations for roadwork.

Follow all OSHA requirements if entering the unit.

The tread plate lids can be very heavy. Follow appropriate safety measures when lifting the lid to avoid back injury.

Remember, snakes and other creatures like dark, cool spaces. Use appropriate caution to remove creatures from the unit.

Always lock all non-traffic lids, using the locking bar and locks provided.

Always replace the manhole cover and the metal grating when completing the inspection.

Follow all procedures outlined in Section 3.2.

2.4 Cleaning & Maintenance Safety

Always place cones around the CrystalStream unit and the vehicle to keep people out of the working zone.

In traffic areas, follow all DOT regulations for roadwork.

Follow all OSHA requirements if entering the unit.

The tread plate lids can be very heavy. Follow appropriate safety measures when lifting the lid to avoid back injury.

Always lock all non-traffic lids, using the locking bar and locks provided.

Always replace the manhole cover and the metal grating when completing the inspection.

Remember, snakes and other creatures like dark, cool spaces. Use appropriate caution to remove creatures from the unit.

Follow all procedures outlined in Section 3.3.

2.5 Public Safety

Before inspecting or cleaning the unit, clear the zone of unnecessary personnel. Put up cones and warning tape to keep people out of the working area. Use of physical barriers is important to protect both the workers and the public from injury.

Follow all Department of Transportation requirements when working in traffic areas. Consult your local DOT guidelines to determine what precautions are required.

Always replace the manhole cover when inspection or maintenance is performed on the CrystalStream unit with a traffic lid.

3.1 Inspection Overview

The unit is designed and specified in most applications to comply with the non-point source mandates of the Clean Water Act and the NPDES regulations. These regulations state that any BMP (Best Management Practice) needs to be inspected every 90 days and cleaned and maintained as needed. Many local regulations have similar requirements and all federal, state and local requirements must be met. CrystalStream Technologies recommends visual inspection on a 30-day cycle as well as sediment depth inspection, during the construction phase. The unit inspection is done to determine the operational status of the unit and determine if a cleaning cycle is necessary as well as to meet any jurisdictional ordinance requirements. All inspections must be documented (Appendix 2). When construction has been completed and the site has stabilized, the CST unit should be inspected every 90 days and cleaned when there is 1” of sediment in front of the oil reservoir.

3.2 Inspection Procedures

As per the following:

3.2.1 The unit should be visually inspected from the surface to determine the integrity of access points. Look for broken hinges or broken or missing handles. A qualified welder should repair any broken hinges immediately. Inspect bolts on lid angle iron and look for loose red heads on angle iron. Replace red heads as needed. Re-paint the lid, with a rust resistant paint as necessary.

3.2.2 The access should be opened and secured properly.

3.2.3 A visual inspection should be made of the trash basket at the front of the unit to determine capacity and type of material trapped.

3.2.4 A visual inspection should be made of the water surface in the front of the unit to determine oil sheen or blanket.

3.2.5 A visual inspection should be made of the oil and hydrocarbon reservoir to determine amount of oil/water trapped and the historical high-water level in the unit.

3.2.6 A visual inspection of the water surface in the rear of the unit should be made and any pollutants noted.

3.2.7 Inspect the aluminum mesh in the trash basket. Replace as needed.

3.2.8 Inspect the basket frame for cracks or damage. Repair as needed.
A visual inspection should be made of the pipe connections to the unit and any material decay or improper installation noted. Pipes should be cut flush with the interior wall of the unit and properly mudded in. **If upon inspection it is noted that the pipes are not cut flush, or are not mudded in, contact the contractor and require that he correct this immediately**.

3.2.9 Inspect baffles to ensure that they are properly seated into the brackets. Also note if there is any damage to baffles (bowing). Reseat baffles if necessary.

3.2.10 Inspect oil reservoir for cracks or damage. Check the welds around the oil reservoir for wear or damage and note any repair work necessary. A qualified welder must perform all repair work to the welds on the oil reservoir during the routine cleaning.

3.2.11 Inspect the riser for cracks in the concrete walls. Repair as required during the routine cleaning.

3.2.12 A silt gauge should be used to determine sediment depth as shown in Appendix 1. Check the silt/sediment level behind the trash basket and in front of the oil reservoir

3.2.13 The access for cleaning should be evaluated and documented. The truck cleaning these units requires a stable roadway capable of withstanding 15,000 pounds.

3.2.14 Any changes in the area tributary that are evident should be noted.

3.2.15 Replace the access point covers carefully.

3.2.16 Note the condition of the area surrounding the unit on the inspection report. (Example: grass, dirt, rocks, sink holes) Report any hazardous conditions to the appropriate supervisor.

3.2.17 An inspection report should be completed, with a copy staying on site and a copy being sent to the local jurisdiction.

The inspection procedures for the traffic units are similar to those for the non- traffic units with the exception of the sediment depth evaluations as shown in Appendix 1 and an inspection of the grate and Frame and Ring and Cover. Also proper precautions should be taken in Traffic situations as specified in the Safety section of this manual.

NOTE: When there has been an obvious gasoline spill or other flammable/hazardous material in the unit, immediate notification should be given to the owner and jurisdictional authorities. This manual is for routine cleaning of storm water debris and any unusual occurrences should be left to properly trained and equipped individuals.

4.1 Cleaning Overview

The cleaning of the unit is the essential element to the operational success of the CrystalStream Device. The pollutant removal capacity of the device will eventually cause the equipment to fail without proper maintenance and additionally not achieve the goals of the installation. The cleaning cycle is dependant on a number of factors including pollutant load, rainfall, time of year, basin changes, upstream mitigation tactics and installation. Based on the variety of factors, a cleaning schedule can be consistent or vary widely on the same device. This highlights the importance of the inspection process in the overall maintenance and integrity of the unit. The cleaning is generally done with a two-person crew and a vacuum pump system. The duration of the maintenance will depend on a number of factors but can typically be done in about 2.5 hours with properly trained individuals.

4.2 Cleaning Procedures – Surface Cleaning

If the cleaning of the unit is to be preformed from the surface, the operator should expect a longer cleaning time and the potential for additional disposal charges. The front chamber of the unit will contain the trash and debris in the trash basket, any floating hydrocarbons that have not been skimmed into the oil/hydrocarbon reservoir and accumulated sediment on the bottom of the unit.

Cleaning procedures are as per the following:

4.2.1 The unit should be visually inspected from the surface to determine the integrity of the tread plate lid, Aluminum Hatch or other access.

4.2.2 A visual inspection of the unit should be done to evaluate structural integrity and determine if any impacted material is present in the device. If there has been a hazardous spill see Section 4.6

NOTE: When there has been an obvious gasoline spill or other flammable/hazardous material in the unit, immediate notification should be given to the owner and jurisdictional authorities. This manual is for routine cleaning of storm water debris and any unusual occurrences should be left to properly trained and equipped individuals.

4.2.3 The Trash Basket should be cleaned by either using a trash netting system or vacuum truck. If cleaning using a netting system, this material can be disposed of in trash bags in the normal manner.

4.2.4 The surface oil/hydrocarbon separation zone in the front chamber should be removed either with sorbants or with a vacuum truck.

4.2.5 The stormwater contained in the area between the surface water and the sediment accumulation can be decanted to minimize the amount of disposal required. Any downstream discharge needs to be after the surface cleaning and only down to the level of the bottom of the oil/hydrocarbon reservoir or the top of the sediment accumulation. Any pollutants discharged downstream are the responsibility of the cleaning operator.

4.2.6 The oil/hydrocarbon reservoir needs to be evacuated by the vacuum equipment.

4.2.7 The sediment accumulated in the front and rear chamber can be removed by the vacuum equipment.

4.2.8 The unit should be pressure washed down to remove any pollution attached to the baffles, walls or hydrocarbon reservoir.

4.2.9 All parts should be inspected for wear and tear and documented.

4.2.10 A maintenance report (Appendix 3) should be completed, with a copy staying on site and a copy being sent to the local jurisdiction.

4.3 Cleaning Procedures – Confined Space Entry

The cleaning procedures are similar for confined space entries except that the OSHA guideline apply and need to be followed. The confined space entry allows the crew to do a better job of cleaning the unit and allows for the time needed and disposal cost to be reduced.

CAUTION! Any inspection done in a traffic area must meet the DOT guidelines for roadway work and additional safety procedure will be necessary.

CAUTION ! All OSHA confined space requirements should be met while cleaning this unit.

4.3.1 The unit should be visually inspected from the surface to determine the integrity of the tread plate lid.

4.3.2 A visual inspection of the unit should be done to evaluate structural integrity and determine if any impacted material is present in the device. If there has been a hazardous spill see section 4.6

NOTE: When there has been an obvious gasoline spill or other flammable/hazardous material in the unit, immediate notification should be given to the owner and jurisdictional authorities. This manual is for routine cleaning of storm water debris and any unusual occurrences should be left to properly trained and equipped individuals.

4.3.3 A ladder should be inserted on the front side of the unit between the baffles and a sorbant blanket laid on the surface of the water to collect any free oil floating on the surface.

4.3.4 In most units, the trash basket and baffles can be removed to allow easier access to the bottom of the unit.

4.3.5 Inspect the aluminum mesh in the trash basket. Replace as needed.

4.3.6 The Trash Basket should be cleaned and directly disposed of in garbage bags.

4.3.7 The stormwater contained in the area between the surface water and the sediment accumulation can be decanted to minimize the amount of disposal required. Any downstream discharge needs to be after the surface cleaning and only down to the level of the bottom of the oil/hydrocarbon reservoir or the top of the sediment accumulation. Any pollutants discharged downstream are the responsibility of the cleaning operator.

4.3.8 The unit should be pressure washed down to remove any pollution attached to the baffles, walls or hydrocarbon reservoir.

4.3.9 The ladder can be used to get on to the unit floor and remove the rest of the water and sediment from the bottom of the unit.

4.3.10 The walls should be wiped down in the front with a sorbant blanket

4.3.11 The fresh coconut fiber mesh should be replaced in the frame and the frame assembly returned to the unit.

4.3.12 All parts should be inspected for wear and tear and documented.

4.3.13 Remove all equipment from the unit. Replace the manhole cover and the grate in the concrete lid.

4.3.14 A maintenance report (Appendix 3) should be completed, with a copy staying on site and a copy being sent to the local jurisdiction.

Cleaning Equipment

The equipment needed to clean the CrystalStream unit is:

- Vacuum truck 750 gallon
- Pressure Washer
- Submersible Pump
- Generator
- Sorbant Pads (Mycelx™)
- 16-25 Ft. Ladder
- Gloves
- Coconut Fiber Mesh (Rolanka Industries)
- Trash Bags

- CrystalStream Lid Hooks
- Sediment/Silt Gauge
- Rubber boots
- Testing equipment to meet OSHA confined space entry requirements
- Cones
- Barricades
- Caution Tape
- Hardhat
- Waterproof silicon caulk
- Aluminum mesh (for trash basket)
- Flat shovel
- 20' electrical cord
- 5 gallon bucket w/rope
- First Aid kit containing eye wash
- Tripod safety harness recovery apparatus

Call CrystalStream at 1-800-748-6945 if you need supplies or parts.

Documentation and Disposal

The cleaning of the unit should be documented and the contents of the unit estimated and recorded in a log for inspections. This documentation should meet Federal, State and Local Guidelines.

The disposal of the trash, debris, water and sediment should be done at an approved facility and the proper permits should be obtained to transport the material. Sediment and water should be disposed of in accordance with all applicable state and local regulations. Sediment should be removed to a landfill and liquids to a decanting facility.

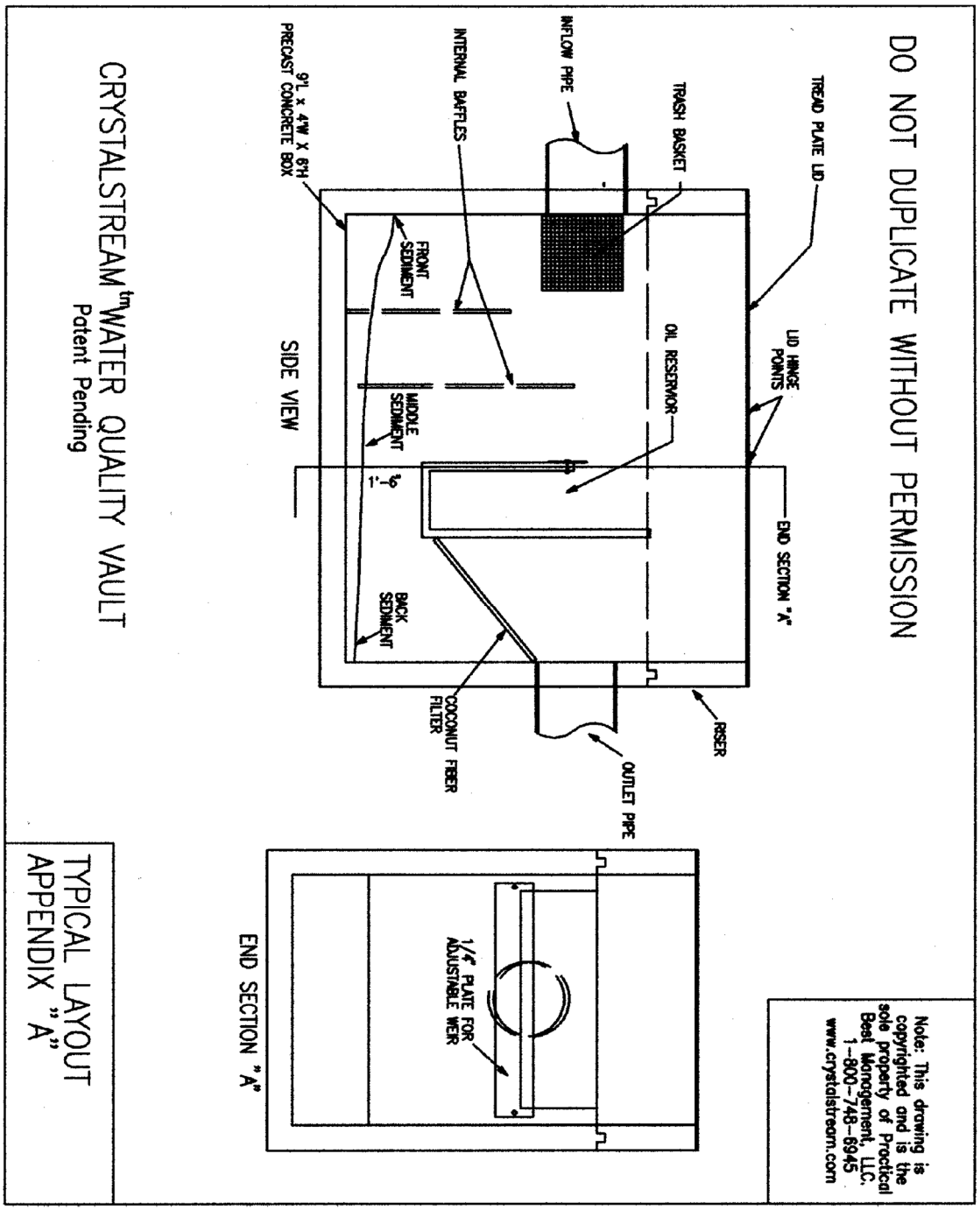
Hazardous Waste Procedure

The presence of any hazardous material inside the unit should prompt an immediate call to the jurisdiction and an appropriate hazardous response team. This material is not part of the standard cleaning of the device and should be treated with the proper care afforded such spills as per Federal, State and Local guidelines.

5.1 Maintenance Overview

All of the components in the unit should be inspected at every cleaning to determine wear or damage. If any components are damaged, please contact CrystalStream Technologies for an evaluation of the damage and a maintenance estimate.

APPENDIX 1


DO NOT DUPLICATE WITHOUT PERMISSION
CRYSTALSTREAM™ WATER QUALITY VAULT
Patent Pending
TYPICAL LAYOUT
APPENDIX "A"
SIDE VIEW
END SECTION "A"
TREAD PLATE LID
INFLOW PIPE
TRASH BASKET
INTERNAL BAFFLES
9'L x 4'W x 6'H PRECAST CONCRETE BOX
FRONT SEDIMENT
MIDDLE SEDIMENT
BACK SEDIMENT
1'-6"
OIL RESERVOIR
LID HINGE POINTS
END SECTION "A"
COCONUT FIBER FILTER
OUTLET PIPE
RISER
1/4" PLATE FOR ADJUSTABLE WEIR
Note: This drawing is copyrighted and is the sole property of Practical Best Management, LLC.
1-800-748-6945
www.crystalstream.com

APPENDIX 2

Inspection Date _____ Job Number _____ Traffic ☐
Job Name _____ Hatch ☐
Job Address _____
_____ Size
Inspector's Name _____

Operations Inspections Checklist

Water Level	Oil Bucket Level	Sediment Level	Trash Conditions
☐ low ☐ normal ☐ above outlet	☐ low ☐ typical ☐ high	☐ little ☐ typical ☐ excessive	☐ minimal ☐ typical ☐ unacceptably high
Recommendations: This unit appears to need maintenance on a shorter / longer / unchanged schedule.			

This report is a complete and accurate description of conditions found at the time of inspection and all work performed on this device.

Inspector's Signature:	**Date:**

Inspection Data

Sediment: inlet side	Inches
Sediment: outlet side	Inches

Water in unit at inspection	Inches
Fluid in bucket at inspection	Inches

Items Inspected

Items Inspected	Comments
Lid: inspect bolts, eyehooks, hinges	
Trash Rack: inspect aluminum mesh	
Baffle Plates: inspect for damage	
Oil Bucket: Leaks / Sheen	
Surroundings: check grass/plantings	
Construction Phase	

Additional Comments

APPENDIX 3

Maintenance Cleaning Checklist

Inspector Name		Inspection Date	
Device Location		Serial Number	

Item	Cleaned	Repaired	Replaced	Comments
Lid: inspect bolts, eyehooks, hinges				
Lid: inspect paint				
Inlet Side: measure water depth				
Inlet Side: measure sediment depth				
Inlet Side: take water sample				
Inlet Side: take sediment sample				
Inlet Side: vacuum out sediment				
Trash Rack: remove trash				
Trash Rack: inspect hardware cloth				
Trash Rack: inspect aluminum mesh				
Baffle Plates: inspect for damage				
Oil Blanket: pump off oil				
Oil Bucket: measure depth				
Oil Bucket: pump out as necessary				
Outlet Side: remove any trash				
Outlet Side: measure sediment depth				
Outlet Side: vacuum out sediment				
Surroundings: check grass/plantings				

Sampling			
Sediment sample number		Water sample number	

Device Summary	
Depth of sediment: inlet side	Inches
Depth of sediment: outlet side	Inches
Depth of water in unit at inspection	Inches
Depth of fluid in bucket at inspection	Inches

Crew Summary	
Time of Arrival	
Time of Departure	
Total Time on Device	Hours
Disposal Fees (if any)	

Water Level	Oil Bucket Level	Sediment Level	Trash Conditions
☐ low ☐ normal ☐ above outlet	☐ low ☐ typical ☐ high	☐ little ☐ typical ☐ excessive	☐ minimal ☐ typical ☐ unacceptably high
Recommendations: This unit appears to need maintenance on a shorter / longer / unchanged schedule.			

This report is a complete and accurate description of conditions found at the time of inspection and all work performed on this device.

Inspector's Signature:	**Date:**

Additional Comments

APPENDIX J

PHOTO LOG:
KENNESAW CAMPUS OUTFALL

Photo 1: View of SW-K01 located behind Bowen Building, discharging under Campus Loop Road.

Photo 2: View of SW-K02 west of the Austin Residence Lot handicap parking area.

Photo 3: View of SW-K03, located north of West Parking Lot.

Photo 4: View of SW-K04, located west of the Social Sciences building.

Photo 5: View of SW-K05, located near the Technology Services building.

Photo 6: View of SW-K06 located north of the North Parking Deck.

Photo 7: View of detention basin near the North Parking Deck which discharges to SW-K06.

Photo 8: View of headwall (HW05) and detention area discharging to outfall SW-K07.

Photo 9: View detention area and outfall SW-K07 located south of KSU Place Apartments.

Photo 10: View of outfall SW-K08 located within pond near Central Deck.

Photo 11: View of outfall SW-K09 located east at the East Parking Lot.

Photo 12: View of outfall SW-K10 located along Busbee Drive near KSU Center.

Photo 13: View of outfall SW-K11 located along Busbee Drive near former hotel.

Photo 14: View of SW-K12 (outlet control structure) and southern portion of stormwater pond located near the Surplus building/ Shuttle Lot.

Photo 15: View of headwalls located on northern portion of stormwater pond near the Surplus building/ Shuttle Lot.

Photo 16: View of outlet control structure located on southern portion of Nelson Pond.

Photo 17: View discharge from outlet control structure within Nelson Pond, located on south side of the Category1 dam.

Photo 18: View of concrete channel located on southern portion of Nelson Pond emergency spillway.

Photo 19: View of concrete pipe discharging into concrete channel located on southern portion of Nelson Pond emergency spillway.

Photo 20: View of wier inlet located in the south side of the Perch entrance drive. Discharges to SW-K13.

Photo 21: View of SW-K13, along Big Shanty Road, which serves as the main discharge point for stadium area.

Photo 22: View of Outfall SW-K14 (outlet control structure) in detention pond located on southeast portion of Town Point.

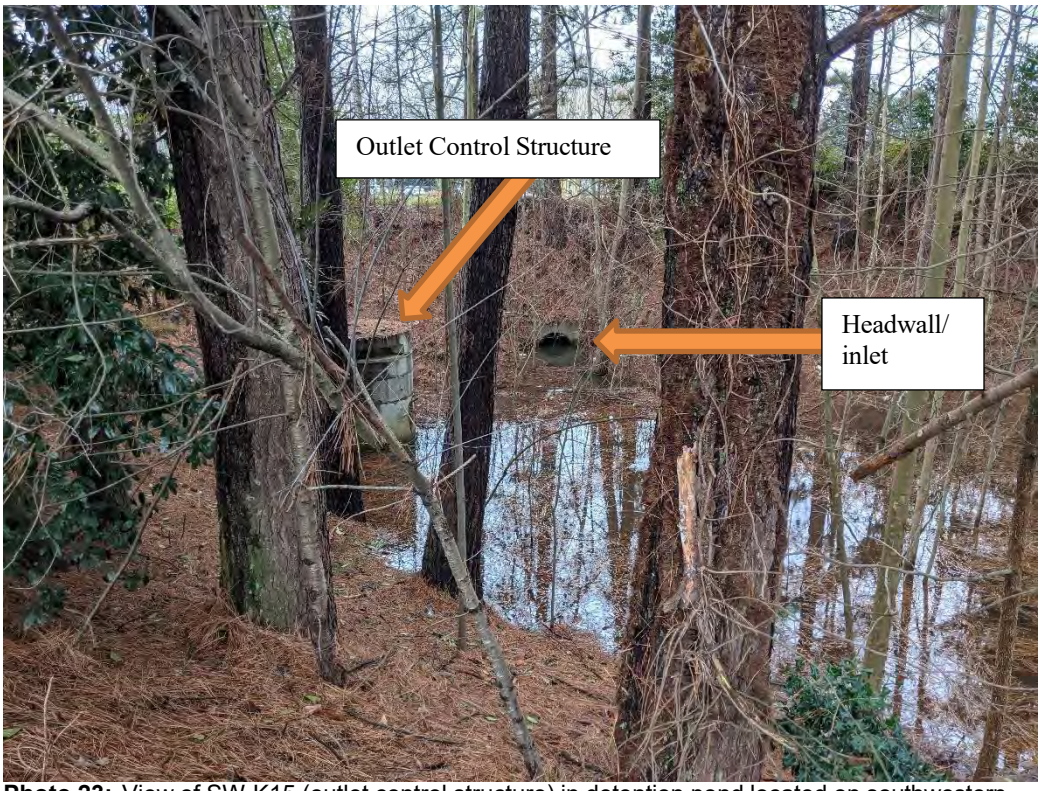


Photo 23: View of SW-K15 (outlet control structure) in detention pond located on southwestern portion of Town Point.

Photo 24: SW-K16 located east of University Village Suites.

APPENDIX K

PHOTO LOG:
MARIETTA CAMPUS OUTFALLS

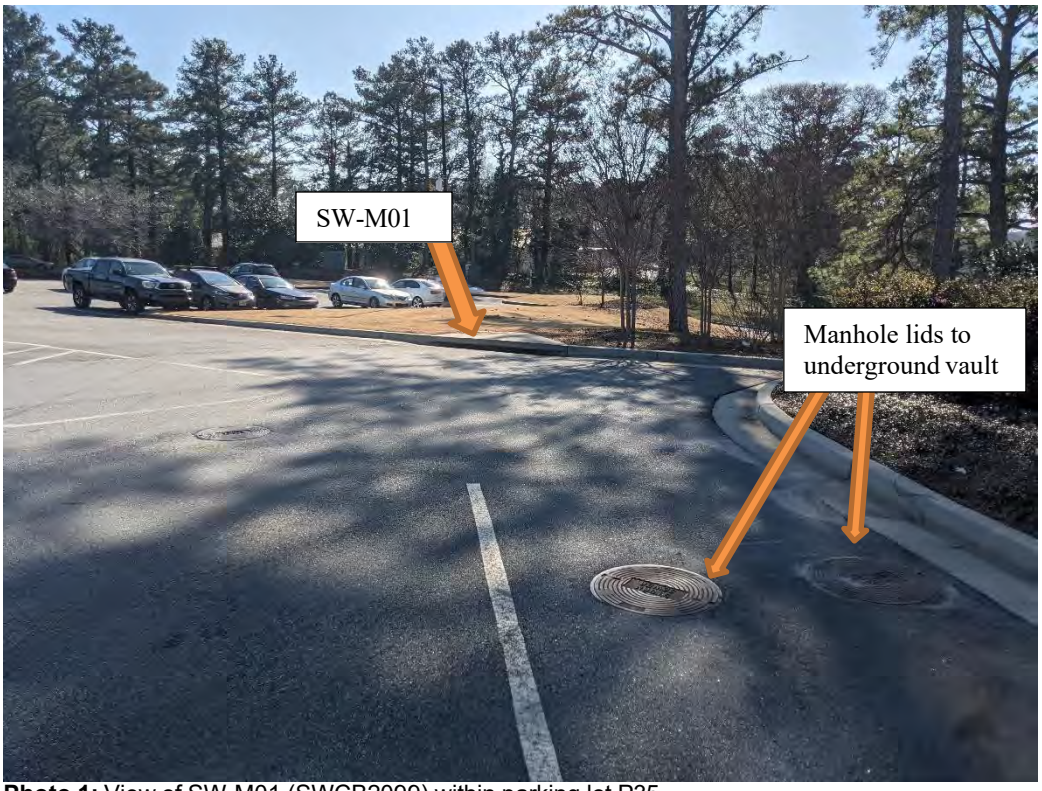


Photo 1: View of SW-M01 (SWCB2099) within parking lot P35.

Photo 2: View of SW-M02 near parking lot P51.

Photo 3: View of SW-M03 (headwall) located southwest of West Parking Deck P60.

Photo 4: View of pond and outlet control structure (OCS2941) directly upstream of SW-M03.

Photo 5: View of SW-M04 located at the southern corner of Polytechnic Lane and Alumni Drive, which discharges sheet flow from Polytechnic Lane.

Photo 6: View of SW-M05 located near the intersection of Koger Drive and Alumni Drive.

Photo 7: View of SW-M06 located along Alumni Drive, south of the softball fields and Lot P40.

Photo 8: View of SW-M07 (OCS4921) located near University Columns apartments on southwest corner of campus.

Photo 9: View of SW-M08 located adjacent to the large stormwater pond near Hornet Village.

Photo 10: View of large stormwater pond and outlet control structure (OCS2539) near Hornet Village that discharges to SW-M08.

Photo 11: View of SW-M09 located off northwest corner of lot P23 near the Civil and Environmental Engineering building.

Photo 12: View of SW-M10 (for sheet flow) off the northeast corner of the Student Competition Team Building.

Photo 13: View of SW-M11 located on the southwest corner of the Student Competition Team building.

Photo 14: View of SW-M12 (outlet pipe) at the corner of Arnston Drive and Polytechnic Lane (entrance drive to Civil and Environmnetal Engineering building).

Photo 15: View of SW-M13 (headwall) located south of the Gymnasium and Lot P21.

Photo 16: View of detention pond and outlet control structure (OCS19) discharging to SW-M13.

Photo 17: View of outfall SW-M14 (OCS15) located east of the Gymnasium.

Photo 18: View of outfall SW-M15 (the end of the concrete channel) located on the west side of University Commons.

Photo 19: View of SW-M16 (JB-19) located south of University Commons.

Photo 20: View of SW-M17 (OCS1982) located south of Lot P13.

Photo 21: View of SW-M18 (JB-13) located south of Lot P13.

Photo 22: View of SW-M19 on southeast portion of campus, adjacent to the Facilitates Administration Building.

Photo 23: View of SW-M20 (headwall) east of Technology way and south of Lot P11.

Photo 24: View of SW-M21 (headwall) located near Facilities building.

Photo 25: View of detention pond and outlet control structure (OCS8053) discharging to SW-M21 located near Facilities building.