MUNICIPAL SEPARATE STORM SEWER SYSTEM PERMIT

2019 ANNUAL REPORT

FOR THE LEXINGTON CAMPUS OF THE

University of Kentucky®

General Permit Annual Compliance Report

Phase II MS4

Kentucky Division of Water

2019 GENERAL PERMIT ANNUAL COMPLIANCE REPORT

Phase II Stormwater MS4
Kentucky Division of Water

NOTE:

- In order to comply with KPDES sMS4 permits, annual reports must be submitted to the Kentucky Division of Water.
- Please type or print in ink.
- Please answer all questions **thoroughly** and return the form by the due date.
- Return this form and any required addenda to the KDOW MS4 Coordinator at the address listed in the box on the upper-right or through the eForms Portal.

https://dep.gateway.ky.gov/eForms/default.aspx?FormId=50

- eForms Portal submittals preferred.
- Due April 15, 2020.

For questions regarding this form, contact:
Lucas Hanks
ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
Division of Water
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601
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REPORTING YEAR (Check one)

- ☐ 2017
- ☐ 2018
- ☒ 2019

PART A: GENERAL INFORMATION–MS4 OPERATOR

1. Report Completed By: University of Kentucky
(MS4 Operator — i.e., name of permit holder)

2. Permit Number: **K Y G 2 0 0 0 5 2** **AI # 1104** **4. Population: 45,000** **(31,000 Students, 14,000 employees)**

5. Mailing Address
Street Address: 355 Cooper Drive

☐ City ☐ County ☒ Other	**Of:** Lexington, KY	Zip: 40506	County: Fayette

PART B: GENERAL INFORMATION–CONTACT PERSON

6. Contact Person Name (please print): Kevin Lewis

7. Contact Person Title: Water Quality Compliance Manager

8. Phone Number: 859-257-0093

9. Facsimile Number (if applicable): 859-323-6274

10.E-mail Address (if applicable): kevin.lewis@uky.edu

PART C: CONTROL MEASURE ACTIVITIES

11. For the following items, please provide a summary of control measure activities related to sMS4 performed during the previous year. List any updated measurable goals from the Stormwater Quality Management Plan (SWQMP), compliance activities, Best Management Practices (BMP) installed or initiated, and updated or developed regulatory mechanisms with effective dates.

A. Public Education and Outreach:

The following table includes all 2018 to 2023 Stormwater Quality Management Plan (SWQMP) information for Minimum Control Measure (MCM) 1:

2018 SWQMP Tasks	Measurable Goal	Evidence of Completion	Division(s) Responsible	Permit Year(s) Conducted	Target Completion Date
Public Education and Outreach					
1.A – Strengthen Education, Outreach and Participation Program	• Develop partnership with TFISE in year one	• Provide agreement between EMD and TFISE (MOU)	EMD, TFISE	1	4/30/2019
	• Develop MCM 1&2 budget in year one to determine operating constraints of program	• Provide copy of operational budget for MCM 1&2.	EMD, TFISE	1	4/30/2019
	• Develop MCM 1&2 program improvements in year one	• Provide detailed outline of program for MCM 1&2.	TFISE	1	4/30/2019
	• Hire interns to assist TFISE in education/outreach activities by year two	• Provide copies of intern final reports, presentations, data, etc.	EMD, TFISE	2,3,4,5	Annually starting in year 2020
1.B – Update and maintain stormwater website	• Website redesigned	• Updated website launched, documentation of regular updates, page traffic information	EMD, TFISE	2	4/30/2020
	• Website routinely updated		EMD, TFISE	2,3,4,5	Annually/as needed starting in 2020
	• Page visits are trackable/analytics package		EMD	2,3,4,5	Annually starting in 2020
1.B.1 – Develop interactive MS4 Map	• Create a map for inclusion on the website that provides detailed MS4 information above and beyond the existing 2D map. Examples of information to include: stormwater flow direction, watershed information, post construction bmp information (photos, descriptions, etc.)	• Provide link to published maps	EMD	2,3	4/30/2021
	• Develop interactive Story Map		TFISE	2,3	4/30/2021
1.B.2 – Develop illicit discharge reporting system	• Create mobile friendly illicit discharge reporting web feature that allows the user to take photos, provide comments, and send information to EMD with minimal effort.	• Provide link of operational website that includes access to reporting system • Provide the number of complaints through website and copies of the submitted reports	EMD	2	4/30/2020
1.B.3 – Develop educator resource page (in conjunction with task 1.C.3)	• Create a portion of the website to include stormwater resources for educators	• Provide link to resource page	TFISE	2,3	4/30/2021
	• Create content to include on the resource page	• Provide access to created educator resources	TFISE	3	4/30/2021
	• Develop notification of availability once completed		TFISE	3	4/30/2021
1.B.4 – Develop and maintain social media sites focused on UK stormwater	• Begin utilizing existing social media accounts (Facebook, Twitter, etc.) to promote UK stormwater	• Provide links to social media accounts	TFISE	2	4/30/2020
	• Add account links to UK Stormwater page		EMD, TFISE	2	4/30/2020
	• Regularly update sites to keep information relevant		TFISE	2,3,4,5	As needed
1.C – Develop and distribute public (faculty, staff, students, visitors) specific educational materials	• Create education materials that specifically address how UK's public impacts and can protect stormwater.	• Provide a copy of the created materials, numbers distributed	TFISE	2,3,4,5	Annually starting in 2020
1.C.1 – Extend program focus to visitors	• Identify ways in which visitors can impact stormwater and develop an awareness campaign to target those actions	• Provide a copy of awareness program items (pamphlets, signage, etc.)	TFISE	3	4/30/2021
1.C.1.a – Develop awareness materials to address illicit discharge prevention from tailgater RV's (No dumping of gray/black water holding tanks) – Coordinate with Task 8.A	• Develop awareness materials and coordinate distribution with annual parking pass/ticket sales.	• Provide copy of awareness materials and number distributed	TFISE, Athletics, EMD, Transportation Services	3,4,5	4/30/2023
1.C.2 – Provide mechanism for incorporating students in stakeholder/planning process	• Create meeting/forum/platform for students to provide input in campus stormwater management decisions	• Provide meeting dates, sign in sheets, meeting minutes, agendas, etc.	EMD, Sustainability, TFISE	4	4/30/2022
1.C.3 - Focus on pollutants impairing local waterways	• Create awareness materials that specifically address pollutants identified in the 303d list impairing local waters as well as existing TMDL's.	• Provide copy of materials created as well as numbers distributed.	TFISE	4,5	4/30/2023
	• Specify how those on campus can help reduce these problems.		TFISE/EMD	4,5	4/30/2023
1.C.4 – Create stormwater education materials for staff/extension use	• Create curriculum that can be used to educate University public on their impacts to campus stormwater, MS4 requirements, and how they can help	• Provide any materials developed	TFISE	2,3,4,5	4/30/2023
1.D – Participate in and/or facilitate special events/activities/joint sponsored events to increase stormwater awareness	• Facilitate/Participate in one event per semester (minimum) that focuses on campus stormwater.	• Provide information on the events (dates, times, sign in sheets, photos, agendas, etc.)	TFISE	1,2,3,4,5	Each Semester
1.D.1 – Involve student organizations	• Work with student organizations to get participation in a minimum of one event/activity per year.	• Provide name of special event/activity, name of student organization, sign in sheet/attendance numbers per activity, and photos	TFISE	1,2,3,4,5	Annually
	• Devise incentive program to boost participation	• Provide description of incentive and names of qualifying groups	TFISE	1	4/30/2019

2018 SWQMP Tasks	Measurable Goal	Evidence of Completion	Division(s) Responsible	Permit Year(s) Conducted	Target Completion Date
Public Education and Outreach					
1.E – Create stormwater awareness articles/posts/podcasts/videos for campus wide distribution (e.g. UKNow/Website/Kernel/Social Media/News Letters)	• Develop and publish at least 1 article/post/podcast/ video per year	•Provide copy of created items	TFISE	2,3,4,5	Annually starting in 2020
1.F – Update staff IDDE training and create method to ensure training is conducted annually	• Update training to make more user friendly and relevant to campus activities	• Provide copy of training	EMD, TFISE	3	4/30/2021
	• Integrate training into online training programs and routine staff meetings	• Provide sign in sheets and online training records annually	EMD	3,4,5	4/30/2023
1.F.1 – Develop short promotional video on the most frequent illicit discharges and how to report them	• Develop video/videos that can be utilized to train staff as well as promote the illicit discharge program and stormwater protection to general campus audiences to be shared through targeted outreach, social media, and other outlets.	• Provide copy of the completed video/link to access video • Provide distribution list/number of viewings, etc	EMD, TFISE	4	4/30/2022
1.G – Update individual departmental stormwater training and improve delivery system/participation	• Work to improve/develop department specific (Facility Operations, Athletics, Utilities) stormwater training and include that training in online systems and in routine departmental trainings, minimum annually.	• Provide copy of/link to the developed training	EMD, TFISE, Facility Operations, Utilities, Athletics	3,4,5	4/30/2023
	• Expand training to areas such as grad students, outdoor labs, etc. that may impact stormwater		TFISE, EMD	3,4,5	4/30/2023
1.H – Update and conduct campus wide survey to determine effectiveness of the Outreach and Ed.program	• Determine if/which questions must be retained from previous survey, develop more campus relevant survey, and conduct survey of faculty, staff, and students to determine stormwater awareness and areas of program improvement.	• Provide copy of survey along with results and analysis	TFISE	2	4/30/2020
1.H.1. – Conduct follow up survey every 2-4 years	• Utilizing updated survey, conduct survey of faculty/staff/students on routine basis to determine program effectiveness and areas needing improvement	• Provide results and analysis of survey	TFISE	4	4/30/2022
1.I – Regularly meet with LFUCG MS4 Coordinator to coordinate programs and provide updates	• Set up meetings/calls (minimum quarterly) to discuss relevant issues from each MS4 that could benefit or impact the other.	• Provide dates of the meeting/calls along with a summary of the discussion	EMD	2,3,4,5	Quarterly starting in 2020
1.J – Develop a consortium of stormwater professionals targeting universities	• Develop a network of individuals	• Provide meeting date(s), attendees, and the agenda/list of topics discussed	TFISE	2	4/30/2020
	• Meet with stormwater professionals to discuss campus stormwater and share ideas at least once annually.		TFISE	2,3,4,5	Annually starting in 2020
1.K – Develop a stormwater steward certification program (StormCats) similar to the backyard stream steward certification process	• Develop program along with online modules that can be used to gain certification in stormwater protection. Center program around campus/MS4.	• Provide link to program and modules (e.g. Canvas)	TFISE	4	4/30/2022

Describe your public education/outreach efforts during 2019:

The majority of public education and outreach efforts in 2019 were completed by the members of the University of Kentucky (UK) Stormwater Stakeholder Advisory Committee that form the MCM 1 Subcommittee, which consists of staff from the Kentucky Water Resources Research Institute (KWRRI), Tracy Farmer Institute for Sustainability and the Environment (TFISE), UK Environmental Management Department (EMD), UK Cooperative Extension (Extension), and UK's Office of Sustainability (Sustainability). The primary goals of 2019 were to continue to improve and formalize the overall outreach and education program while continuing to create more educational opportunities for UK's public. This was accomplished by providing specific annual goals, creating new opportunities, and coordinating efforts between the various parties already providing outreach, education, and participation opportunities at UK.

The following efforts took place in 2019 to strengthen the education, outreach, and participation program.

1.A

- Hire interns to assist TFISE in education and outreach activities–During 2019, a graduate student was hired to assist with MCMs 1 and 2 efforts. His job description includes providing support in the implementation of MCM 1 and 2 activities related to UK's MS4 permit. Activities include, but are not limited to, development of GIS story maps, development of stormwater education materials, design and construction of stormwater educational aids, and assisting with stormwater educational outreach events.
- Development of partnership with TFISE–In 2018, the partnership between EMD and TFISE was developed and continued throughout much of 2019. However, organizational and personnel changes in and around TFISE led to complications and a need to review this management approach to UK's outreach and education efforts. As these changes were addressed, a draft Memorandum of Understanding (MOU) was created and discussed, with the ultimate decision being made to move forward without a MOU. Current efforts are being managed by the former head of TFISE's Water Working Group and EMD is in discussions with KWRRI regarding its formal management of the program. Additional options are also being considered. A decision on how to proceed must be developed by the end of year three if a formal outreach and education program is to be created and maintained. Moving forward, changes to the program will likely require the review and modification of the target completion dates for MCM's 1 and 2 related to SWQMP tasks.
- Budget Development–A budget for MCM's 1 and 2 was developed and approved (see the following and the discussion for MCM 2 for more information) in 2018. This budget includes funding for the establishment of internships (two for fall, two for spring, and two for the summer) to assist with accomplishing the Outreach, Education, and Participation program tasks.

The following efforts are related to the update and maintenance tasks associated with the Stormwater website.

1.B

- A portion of EMD's website is specifically devoted to stormwater management issues. Located at https://ehs.uky.edu/env/overview.php, this website continues to serve as a means of providing information

regarding UK's stormwater program. Originally completed in 2010, this website is due for significant updates which are currently scheduled to be completed by the end of Permit Year two. The format and layout of the website will be redesigned to be more user-friendly, fit with the flow of UK's website, and provide a large volume of useful information to users with the goal of becoming a central hub for program information. Work began in early 2019 by meeting with UK's Facilities Information Services (FIS) to discuss high-level requirements, determine website major components, evaluate specific needs of the website, and to develop a plan for implementation. This led to a review of other websites, creation of generic page mock-ups, and ultimately the development of a separate instance of the website. EMD has hired UK's FIS programmers as well as UK's Geospatial Team (GIS) to assist in the creation of the final website structure and formatting of the updated website content, including multiple interactive maps and databases. The following topics will be included: Program Information, Stormwater 101, Protecting Our Streams, Educational Resources, Getting Involved, Training, Illicit Discharges, Construction, Post-Construction BMPs, and Mapping. Each of these sections will have subsections full of information to educate the user as well as guide the user through UK's stormwater program. Due to the increased level of detailed information being provided, development of the new site is taking longer than expected. In order to aid development, site construction has been broken down into three phases. The first phase is scheduled to go online by the end of Permit Year two or sometime in the beginning of Permit Year three. SWQMP scheduling will be updated to reflect these changes. The developmental phase of the website can be viewed here: http://dib.uky.edu/env.

1.B.1

- Interactive MS4 Map Development
    - UK's GIS has been hired by EMD to assist in the development of this map for inclusion in the new website. The initial development of this map is included in Phase I and plans are to have it completed by the end of Permit Year two. Efforts completed thus far include the development of a naming convention for each of the stormwater assets to be displayed on the map as well as updates to the original two-dimensional map in order to keep the information displayed as current as possible.
    - The graduate student hired to assist with MCM's 1 and 2 has been working to complete basic story maps for UK's post-construction BMPs that can be used as educational materials that specifically address how UK's public impacts and can protect stormwater. An initial story map is being developed to highlight the FEMA project that was completed in 2018. The current progress is included in **Appendix A**. The story maps will be added to the new website as it becomes available.

1.B.2

- Similar to the existing website, the updated website will include a simple form for reporting illicit discharges within the MS4. Moving forward, EMD is working with UK GIS to develop a smart reporting tool that will allow the collection of additional data using features from smart devices including GPS location and the ability to attach photographic documentation. This task is currently slated to be completed in Permit Year two. A basic version of the reporting tool has been created and added to the developmental website. The effectiveness of this tool will be tracked through the number of reported instances and is expected to increase when the updated website becomes live. Additional Illicit Discharge Detection and Elimination (IDDE) efforts are further discussed in Section C.

1.B.4

- Social Media
    - New for 2019 is a more robust use of social media to promote UK's stormwater program. The primary accounts being used for this effort are the UK Bioenvironmental Facebook (UK Bioenvironmental) and Twitter Accounts (BAE XStream Team). Social media posts are scheduled and managed via Hootsuite and use the tags #UKStormCats and #stormwaterquality. A social media tracking spreadsheet has been developed to record these activities. It includes the posting date, text included in the post, and the number of likes and shares from each post. This spreadsheet is included in **Appendix A**. As part of UK's stormwater program branding efforts (see Stormwater Logo Competition), plans are to shift social media accounts to ones that create a singular identity for the stormwater program such as UKStormwater @ Facebook/UKStormwater@twitter rather than using existing accounts in the College of Agriculture. This transition is planned to take place in the near future.
    - In addition to the UK Bioenvironmental Facebook and Twitter accounts being used to post information, the UK Sustainability Facebook Page promotes various activities related to stormwater, such as the Urban Forest Initiative, Water Week, The Greg Page Sustainability Festival, UK's Anti-Litter Campaign, and UK's Pass on Plastic Campaign (one of the benefits is reducing aquatic pollution). The Sustainability Facebook Page can be located here: https://www.facebook.com/UKYSustainability/.

1.C
1.C.4 The following materials were developed and/or distributed in 2019.

- In an effort to engage UK staff, a member of the MCM1 Subcommittee met with an Extension Forester who teaches an Environmental Education Course through Natural Resources and Environmental Science. The

Extension Forester is interested in including more lessons on water and stormwater using Project WET curriculum. She is also interested in service opportunities, like the drain marking program, and the development of stormwater lesson plans for MS4 program. The subcommittee member provided an overview of UK MS4 goals to students and how lesson plans would fit into her curriculum. She also placed an order for 20 copies of the Project WET materials.

- EMD worked with the Urban Forest Initiative Coordinator who is interested in finding more explicit ways to link trees with stormwater. EMD discussed MS4's in Kentucky, permitting, and UK's SWQMP and provided copies of UK's 2018 SWQMP, Landscape Guidelines, Sustainability Strategic Plan, and MS4 Permit. EMD also arranged for him to attend the KSA Meeting on February 6, 2019.
- A Wards Stormwater Floodplain Model was purchased for outreach and education events. This model provides a visual and hands-on simulation of the role floodplains play in a watershed and the impact of human activity. This model is being made available for use in classrooms and various events.

1.D
1.D.1 The following events were hosted or supported by UK in 2019 in an effort to involve the public and engaged student groups.

- UK's Pick it Up (Litter Elimination) Campaign was continued throughout the year. Launched in 2014, the goal of this campaign is to eliminate litter on campus and prevent the action of littering as a whole. The Adopt-A-Spot program is a component of this campaign and is discussed in more detail in MCM 2.
- Two Green Infrastructure Tours were held on campus in 2019.
    - The first was conducted on April 11, 2019, in response to a request by a Landscape Architecture Assistant Professor interested in incorporating Green Infrastructure into her class. Led by EMD, Athletics, Grounds, and Faculty, the tour involved the LA 271 class (14 students) and included visits to the following areas around campus: Farm Road Rain Garden (bioretention), Kentucky Proud Park Baseball Stadium (curbless parking and bioswales), Jacobs Science (permeable pavement and cistern), Hospital (green roof), and Alumni and Garrigus Plaza (permeable pavement and green roof).
    - The second was conducted as part of the 4-H Teen Conference–Environmental Engineering Water Session, which was held on June 11 to 12 and involved 12 students plus three adult chaperones. On June 11, the students were introduced to stream restoration with a hands-on activity and tour of the UK FEMA Project. On June 12 they participated in the Green Infrastructure Tour that consisted of an hour of classroom instruction where an overview of stormwater and UK's stormwater program were provided followed by a tour of the Kentucky Proud Park Baseball Stadium, the Farm Road Rain Garden, the Gluck Pond Planting, Garrigus Plaza Green Roof and Pavers, and the Hospital Green Roof. The agenda for the two-day session is included in **Appendix A**.
- Participated in Lexington-Fayette Urban County Government (LFUCG) Nature Hop on September 8, 2019 from 11:00 AM to 6:00 PM by providing a tour of the Big Elm Fork Stream Restoration project. The agenda is included in **Appendix A**.
- A Sustainability Festival was held for residents of Greg Page on the Greg Page Lawn on September 4 from 6:30 PM to 8:00 PM. Vendors and tables included: Recycling, Garden Walk, Water Quality, Lexington Environmental Youth Outreach, 4-H, Forestry Extension, UK Transportation, UK Dining, UK Sustainability, UK Energy Conservation, UK Arboretum, Help UK POP, and the Student Sustainability Counsel. Stormwater information and swag was provided. Handouts for the event and booth tri-fold are included in **Appendix A**.

1.E The following Podcast and Articles were created for campus-wide distribution.

- KYH2O Podcast Series–Early in 2019, UK staff members launched a KYH2O podcast series. This series is about all things water in Kentucky and several of the podcasts connect with UK Stormwater. The podcast can be accessed at the KYH2O website (www.uky.edu/bae/kyh2o). At the end of each podcast, listeners are encouraged to learn more regarding topics through the Explore More section featuring publications, videos, and websites of interest. For more information see the following UK Now article: https://uknow.uky.edu/campus-news/kyh2o-podcast-entertaining-way-learn-about-water-resources. A promotional flyer is included in **Appendix A**.
- Article "Help UK 'Branch Out"–March 29, 2019–Discusses increasing the tree canopy on campus as well as the ecosystem benefits of trees.
    - Link: https://uknow.uky.edu/uk-happenings/help-uk-branch-out

- Article “UK stream restoration project to improve water quality, provide outdoor classroom for students”–August 19, 2019–Discusses the latest stream restoration project on campus and its benefits.
    - Link: https://news.ca.uky.edu/article/uk-stream-restoration-project-improve-water-quality-provide-outdoor-classroom-students
- Article “University of Kentucky Turning Campus Waste into Recyclable Material”–August 20, 2019–Discusses UK’s waste minimization efforts including reusing materials in the recent stream restoration project.
    - Link: https://spectrumnews1.com/ky/lexington/news/2019/08/19/uk-zero-waste#

1.H Outreach and Education Survey

- The MCM1 Subcommittee began discussions on the process for updating the campus-wide survey to determine the effectiveness of the Outreach and Education program. This effort is ongoing and is scheduled to be completed by the end of Permit Year two.

1.I LFUCG MS4 Program Coordination

- EMD staff continued regular meetings with the LFUCG MS4 Coordinator to coordinate programs and provide updates. This was achieved through regular attendance and participation with LFUCG Stormwater Stakeholder Advisory Committee Meetings held quarterly, as well as through participation in LFUCG Measurable Goal Workgroups that were held throughout the year. The latter were divided into groups based on the six MCMs. UK participated in the following workgroup meetings:
    - Public Education/Outreach and Public Involvement/Participation–May 17, 2019
    - IDDE Workgroup–May 20, 2019
    - Water Quality Monitoring–June 19, 2019
    - Construction–August 26, 2019
    - Post-Construction–August 28, 2019

1.J Stormwater Professional Consortium

- Consortium of Professionals Targeting Universities–UK staff has conducted initial meetings regarding the development of this group and is scheduled to begin by the end of Permit Year two and will continue to build as the program continues.

Additional Public Education and Outreach Efforts

- The UK MS4 boundary lies within the LFUCG MS4 boundary. The Kentucky Transportation Cabinet (KYTC) also has numerous state highway routes in the LFUCG jurisdiction. Both LFUCG and KYTC use multimedia campaigns as part of their MCM1 activities. Given that UK is within the Lexington, Kentucky media market, the students, faculty, and staff have access to these media campaigns and are regularly exposed to their content. The 2019 summary of ad play includes 62,906 radio spots, 8,153 television plays, and a total expenditure for the program of over $1.5 million. Documentation of KYTC’s education and outreach efforts from the 2019 Annual Report is included in **Appendix A**.

Are public education/outreach efforts targeted towards a pollutant of concern or local waterbody or a particular segment of the population?

Being a nontraditional MS4, UK’s “public” has a different demographic as compared to a typical municipality. UK’s “public” includes faculty, staff, students, and visitors. Based upon the activities of each on campus, it has been determined that staff have the greatest ability to impact stormwater. As a result, education and outreach efforts are typically focused on this group. Staff’s actions are primarily governed through UK’s policies and procedures and education is typically done through employee training. With that being said, since 2015, efforts have been made to develop stronger relationships with faculty and to begin educating and working with students regarding stormwater on campus. Plans are to rely heavily upon this effort as UK moves forward with the MCMs 1 and 2 program and its relationship with TFISE/KWRRI.

Having two streams on campus provides UK with outdoor classroom and hands-on training opportunities for UK’s students. The recently restored Big Elm Fork is already heavily used for these purposes. The recently awarded LFUCG Stormwater Infrastructure Grant and the restoration of the stream along Alumni Drive expand these opportunities. Outreach, education, and public participation were a planned part of the grant application and as a result are now a

requirement of the grant agreement. Several classes have already been involved in the project. More information is provided in MCM 2 as follows.

What is your budget for MCM #1?

MCM 1 efforts are completed with assistance from multiple UK departments. As a result, the budget to accomplish this measure exists within each individual department. The responsibility to manage the stormwater program falls under UK's EMD. EMD's overall budget is funded by an environmental service surcharge applicable to all UK departments. This surcharged-based funding creates a stable platform for program development. As a result, monies are allocated on an as-needed basis.

A specific budget has been created for MCM 1 to assist KWRRI/TFISE in the development of a more robust program. This estimated budget covers specific tasks and direct costs only. It will be assessed annually and adjusted as necessary. Additional funding can also be provided on an as-needed basis.

The current recurring annual budget for this program is $56,000 excluding one-time costs. Total MCM 1 implementation costs for the permit cycle have the potential to exceed $300,000. See the following chart for more details:

2018 - 2023 SWQMP Estimated Budget

Task (#)	Task/Expense Discription	Min Cost ($)	Task Max Cost ($)	Task Year	Reoccurrence	Number of Years Multiplier	Total Min Cost ($)	Total Max Cost ($)	Funding Department
1.A	**Development of Education, Outreach and Participation Program - Program administration costs, materials, interns**		**40000**	**Annual**	**Annual**	**5**	**200000**	**200000**	**EMD**
1.B	**Update and Maintain Stormwater Website - Website Redesign**	**500**	**15000**	**Two**	**One-Time**	**1**	**500**	**15000**	**EMD**
1.B.1	**Development of Interactive MS4 Map (part of website improvement)**	**2000**	**30000**	**Three**	**One-Time**	**1**	**2000**	**30000**	**EMD**
1.B.2	Development of Illicit discharge Web Reporting Feature	500	2000	Two	One-Time	1	500	2000	EMD
1.B.3	Development of Educator Resource Web Page		200	Three	One-Time	1	200	200	EMD
1.B.4	Development of Social Media Account Web Page		100	Two	One-Time	1	100	100	EMD
1.C	Development and Distribution of Public Education Materials		1000	Two	Annual	4	4000	4000	EMD
1.C.1	Extension of Outreach, Education, and Participation Program to Visitors		1000	Three	Annual	3	3000	3000	EMD
1.C.1.a	Development and Distribution of Tailgater RV Illicit Discharge Prevention Awareness Materials		500	Three	Annual	3	1500	1500	EMD
1.C.3	Development and Distribution of Local Water Quality Impairment Awareness Materials		500	Four	Annual	2	1000	1000	EMD
1.C.4	Development of Stormwater Curriculum and Education Materials		5000	Two	Annual	4	20000	20000	EMD
1.D	Participation in/Facilitation of Special Events for Stormwater Awareness		5000	Annual	Annual	5	25000	25000	EMD
1.D.1	Involvement of Student Organizations in the Stormwater Program - Activity Participation & Incentive Program		2000	Annual	Annual	5	10000	10000	EMD
1.F.1	Development of Illicit Discharge Identification and Reporting Video		500	Four	One-Time	1	1000	1000	EMD
1.H	Update and Conduct Campuswide Stormwater Survey		500	Two	One-Time	1	500	500	EMD
1.H.1	Conduct Follow-up Campuswide Stormwater Survey		500	Four	Every 2-4 years	1	500	500	EMD
1.J	Development of Stormwater Professional Consortium		1000	Two	Annual	4	4000	4000	EMD
1.K	Development of Stormwater Steward Certification Program (StormCats)		500	Four	One-Time	1	500	500	EMD

The following documentation of public education/outreach activities held in 2019 is included in Appendix A:

- Story Maps for UK's Post-Construction BMPs
- Social Media Tracker Spreadsheet
- 4-H Teen Conference Agenda
- LFUCG Nature Hop Agenda
- Greg Page Sustainability Festival Handouts
- Greg Page Sustainability Festival Tri-fold
- KYH2O Podcast Series Flyer
- KYTC's Education and Outreach Efforts

B. Public Involvement and Participation:

The following table includes all 2018 to 2023 SWQMP information for MCM 2:

2018 SWQMP Tasks	Measurable Goal	Evidence of Completion	Division(s) Responsible	Permit Year(s) Conducted	Target Completion Date
Public Involvement/Participation					
2.A – Update and Improve the stormdrain marking program	• Develop a redesign for the stormdrain marking program and plan in year two	• Provide progress update of efforts/changes completed each year	EMD, TFISE	2	4/30/2020
	• Coordinate the program and participation with the marked drain inventory and the interactive map completion.		EMD, TFISE	2,3,4,5	4/30/2023
2.A.1 – Update inventory of marked drains via intern program	• Develop an outline for intern job responsibilities	• Intern progress will be tracked via map/inventory system. Provide updates on progress via inventory/map versions and/or link.	EMD	2	4/30/2020
	• Begin/complete intern hiring process		EMD	2	4/30/2020
	• Work with FIS to create map/inventory for intern to document findings		EMD	2	4/30/2020
	• Assign duties to intern and train		EMD	2	4/30/2020
	• Continue with process annually until inventory is complete		EMD	2,3,4,5	4/30/2023
2.A.2 – Develop interactive map to show/track drain marking activity	• Work with FIS to develop interactive map to be added to webpage that indicates storm drain locations and which ones are marked/need to be marked.	• Map added to website, link provided	EMD	2	4/30/2020
2.A.3 – Develop advertising/awareness campaign to improve program participation	• Create various advertising materials	• Provide copy of marketing materials	TFISE	3	4/30/2021
	• Market program to faculty, staff, students, and visitors through various means to increase awareness and participation annually once completed.	• Provide # stormdrains marked annually • Provide # of participants annually	TFISE	3,4,5	Annually starting in 2021
2.B – Involve students, faculty, and staff in stormwater activities (e.g. drain marking, rain garden maintenance, new stream restoration project)	• Involve students in a minimum of two activities per year	• Provide list of activities, list of participants, and photos	TFISE	1,2,3,4,5	Annually
2.B.1 – Develop procedures for alerting public (Faculty, Staff, Students, etc.) of program participation opportunities and changes/updates	• Determine notification preferences, including how best to utilize the webpage (see task 2.B.2)	• Provide copy of notification methods and procedures/include in the Stormwater Operations Manual	TFISE	2	4/30/2020
	• Create procedures outlining when and how notifications are used	• Provide copies of any notifications	TFISE	2	4/30/2020
2.B.2 – Update webpage (see task 1.B) to include an events calendar or latest info	• Include public alerts, notifications, and updates on webpage/social media.	• Provide link to webpage & copies/dates of notifications	TFISE	2,3	4/30/2021
2.C. – Consider development of brief pre and post survey for activity participants	• Develop pre and post survey templates in year three and identify activities suitable to perform surveys	•Provide copy of templates	TFISE	3	4/30/2021
	• Conduct at least one survey activity in years 4 and 5 to gain feedback on the stormwater program and/or the activity.	• Provide a copy of any surveys conducted along with the results	TFISE	4,5	4/30/22 & 4/30/23

Describe any events or activities facilitated by or sponsored by the MS4 in 2019:

2.A
2.A.1
2.A.2

Storm Drain Marking Program

- As a part of the effort to update the Storm Drain Marking Program, work began on a Marking Database and Program Update. The updated approach uses Survey 123 and ArcGIS to create inspection reports and documentation though a mobile-based platform. Using this, participants can locate, document, and track marked storm drains. Through this effort, UK's Environmental Storm Drain Collector was created.
- The graduate student hired by the MS4 program is in the process of testing and modifying the program. Training materials are being developed for the marking application as well as medallion placement to allow further implementation of this tool, which will be added to updated stormwater website once it goes live in 2020.

2.B

The following activities involving students, faculty, and staff in stormwater activities occurred in 2019.

- Students from the College of Earth and Environmental Sciences, though Dr. Alan Fryar's Global Water Issues Class, completed a Storm Drain Marking Activity during the spring semester. A presentation was given on February 8, 2019, regarding general stormwater information, low-impact design, and provided instruction on a storm drain marking assignment. The 19 students in the class were given the chance to select a drain they wanted to mark, given supplies to complete the marking, and document their effort. In total, 34 drains were marked. The activity concluded on April 10, 2019. A presentation and example report from the effort is included in **Appendix B**.
- Part of the Pick It Up campaign, Adopt-A-Spot, encourages teams of three to seven individuals (with swag, prizes, and a celebration) to keep campus clean and prevent litter from reaching local waterways by adopting high litter areas of campus and conducting at least two monthly cleanups throughout the spring semester. A map of the adopted areas around campus can be found on the Sustainability Website: https://www.uky.edu/sustainability/pickitup. Campaign results are included in **Appendix B**.
- Farm Road Rain Garden (UK Cat's CATchment Cleanup)–The CATchment Raingarden is a living learning laboratory and demonstration site for sustainable stormwater management, located behind the Gluck Equine Research Center. A dedicated advisory group of UK faculty and staff, representing both academic and administrative departments across campus, oversees the management and specialized maintenance of the garden, outreach, and education. Cleanup events are typically held twice annually in early April and mid-October.

This year, cleanup events were held on: September 20 from 3 to 6 PM, September 21 from 11 AM to 2 PM, and November 1 from 1:30 to 4:30 PM. A flyer and sign-up sheets for the event are included in **Appendix B**.

- Gluck Pond Planting Outreach/Participation Activity (also doubles for MCM 6 activity–Goose Control Program)–Staff from the College of Agriculture and Grounds worked alongside Horticulture Club, and Volunteer Assistance to install plants around Gluck Pond. Grounds worked with the Horticulture Club to grow approximately 7,000 native plants for planting around the pond. Plants were installed on three dates: April 14 at 1 PM, April 17 at 3 PM, and April 26 at 3 PM, and an additional planting event held May 24 from 1 to 5 PM. A notification flyer and sign-up sheet are included in **Appendix B**. Additionally, a video of the Gluck Pond Restoration and Geese Abatement has been posted on YouTube: https://youtu.be/wQSE0ezj3-k.

- UK Stormwater Logo Competition–In an effort to brand the stormwater program and create a symbol that can be universally recognized across campus, the UK MS4 Stormwater Program has created a competition calling for students to develop a design for a logo that effectively illustrates the interplay between campus and stormwater management. The entries will be judged based on creativity and suitability for diverse uses, including website, apparel, and brochures. The Sustainability Counsel has provided funding ($500) to be used as an incentive for participants. The logo competition flyer is included in **Appendix B**. For more information see the following UK Now article: https://uknow.uky.edu/campus-news/uk-stormwater-student-design-competition-announced

- UK POP's (Pass On Plastics) Campaign–Launched in September 2018, UK Sustainability, Dining, and Recycling teamed up to reduce the impacts of single-use plastic items on campus by encouraging reuse and new habits. Learning that plastic pollution negatively impacts aquatic environments, wildlife, roadsides, human health, and economies in the Commonwealth of Kentucky and around the world, students and employees at UK receive reusable stainless-steel straws by pledging to "reduce plastic pollution by refusing single-use plastic items, replacing them with reusable options, recycling everything (they) can, and encouraging friends to do the same." Attached to the pledge is a survey which collects information on existing habits relative to reusable items. A follow-up survey is also planned one month after the pledge is taken. Survey results will be used in an undergraduate research project to determine which item helped reduce the most plastic usage. For more information see the following UK Now article: https://uknow.uky.edu/campus-news/uk-passes-plastic-new-campaign and the UK POP's pledge page: https://www.uky.edu/sustainability/content/uk-pops.

- A $19,871 grant was awarded in 2019 through UK's Sustainability Challenge Grant Program that is a follow-up to a $38,890 grant awarded in 2018 to the Urban Forest Initiative (UFI) working group for its project entitled "Roots to Branches." The UFI was created as an increased need for more urban forestry programming was recognized on campus. With less than 17 percent canopy cover and continued construction, an opportunity was seen to enhance the campus tree canopy and its associated benefits. UFI serves to champion the elevated perception, value, and function of the urban forest on campus and beyond.

  The "Roots to Branches" Project Abstract is included in the following:

  "Urban trees provide a key vehicle for addressing sustainability issues in cities, but only if people champion and build on those connections. UFI has successfully raised awareness of the connections between sustainability and urban trees through outreach, education, research, and service, working collaboratively with UK students, staff, and faculty to engage campus and Lexington communities. UFI's success is evident in signs that urban forestry is increasingly embedded on campus, including the development of student organizations, sustained collaborations through service learning events, and the incorporation of urban forestry content into UK courses. Here we propose three new projects that build on these successes with new, substantive, and potentially transformative programs:

  - *Re-envision UK as a living-laboratory by training students to serve on a Collegiate Arborist Team (TreeCATs) to conduct campus tree care and mapping, extended to local neighborhoods and a KY town, thus enhancing tree-based ecosystem services.*
  - *Extend the self-guided mindfulness tree walks into a series of in-person mindfulness programs in partnership with UK Integrative Medicine and Health (IMH) and Nursing for faculty, staff, students and patients on campus and K-12 schools.*
  - *Develop and replicate UFI tree campus models for successful urban forestry programming to college/university and K-12 campuses through development of a Tree Campus Toolkit coupled with direct collaboration with individual campuses.*

  Successes will be measured in direct involvement of UK students (TreeCATs) and community members (mindfulness programs), increased awareness of UK's Tree Campus USA status, and the replication of successful UFI programming by other campuses and communities."

(Mary Arthur, Nic Williamson, and Grace Coy, Forestry and Natural Resources; Lynne Rieske-Kinney, Entomology; Brianna Damron, Nursing; Ellen Crocker, Forest Health Resource and Education Center; Stacy Borden, PPD Grounds; Connie Jennings and Ann Powell, Integrative Medicine)

The 2019 grant will fund the training of a new cohort of TreeCATS to conduct campus tree mapping focused on the estimation of tree benefits.

- With the stream restoration project along Alumni Drive under construction in 2019, efforts are continuing toward the creation of education, involvement, and participation opportunities with various classes.
  Dr. Carmen Agouridis, former Extension Professor in and now Associate Dean for Instruction of the Department of Biosystems and Agricultural Engineering, has been diligently working to create interest in the project. The following classes are either involved or have expressed an interest in participating:
  - GEN 100–Issues in Agriculture, Food, and Environment: Four sections of GEN 100 (approximately 100 students total) were involved in brainstorming ideas for the outdoor classroom and community education portion of the stream restoration. Students visited the Arboretum for outdoor classroom and learning space inspiration before traveling to the project site to get an overview. Students were then required to sketch their ideas onto an enlarged areal image of the site and present their ideas in class. The lesson plan for this activity is provided in **Appendix B**.
  - BAE 532/CE 542–Introduction to Stream Restoration: A team was selected to develop a conceptual design for the project that focuses on the four main aspects outlined in the grant (stream restoration with an enhanced hyporheic area, bioswale, riparian area, and outdoor classroom). Class project presentations occurred on April 18, 2019. A flyer for this is included in **Appendix B**.
  - EES 585 Hydrology and Water Resources–Alan Fryar is exploring the idea of installing piezometers in the hyporheic zone once the project is constructed so his students can monitor groundwater flow. Ph.D. students from the College of Agriculture are testing piezometers in the floodplain of the Alumni Drive stream near softball. By installing a series of piezometer transects, they can evaluate the hyporheic zone of the stream prior to the restoration project.
- Dr. Carmen Agouridis visited the FOR 460 class of approximately 25 students and presented information including a Stormwater 101 overview including stormwater on campus, the FEMA basin project, and UK MS4 Program.
- Students from the College of Agriculture worked with Assistant Professor Chris Sass on the design development of a raingarden project at the corner of Rose Lane and Linden Walk. Warren Denny (Campus Architect) and Maureen Dreckman (Facilities Information Services) created design standards for the project to better fit within the context of campus. The Student Design, Plant List, and Standards Diagram are included in **Appendix B**.

2.B.1 Procedures for notifying students, faculty, and staff of stormwater activities

- To improve the communication with students and staff, the Outdoor Classroom Coordination Committee was formed. This committee includes member from CAFÉ, Grounds, Sustainability, EMD, and TFISE. The Committee's purpose is to promote use of outdoor spaces along with stormwater-focused opportunities around campus.
- The updated website design includes a section titled "Get Involved" that will provide resources for students, faculty, and staff to learn regarding ways to engage in stormwater activities. As a part of this, the creation of a separate media page is also being explored.

If applicable, describe any events or activities in which the public is involved in the development or review of your stormwater management program. Were any stormwater management related events or activities initiated by the public?

All the events, activities, and projects previously noted were initiated by students, faculty, and staff and were related to the continued development of UK's stormwater management program. Additionally, a group of students from Dr. Osborn's WRD 204 class were interested in meeting with EMD to discuss water and sustainability, specifically stormwater pollution and the effects of construction on campus. During this hour-long meeting, students expressed concern over the conditions of a grass swale near the Library and Mining and Minerals Building. More information on this is included in the IDDE and complaints section in the following.

How can the public find information about the SWQMP?

UK has a stakeholder group made up of 26 faculty and staff that assist in the implementation of the Stormwater Program. Each individual was responsible for the development and/or approval of the SWQMP and has been provided with a final copy of the plan as well as spreadsheets to track implementation progress. The SWQMP was also discussed and copies were made available at the Lexington Stormwater Stakeholder Advisory Committee Meeting held in December 2018. The SWQMP was also discussed in detail with Lexington's MS4 and Water Quality Section Manager. The remainder of UK's public can access information regarding UK's stormwater program through the Stormwater Website (http://ehs.uky.edu/env/storm_water_quality.php) and via request. More detailed information regarding UK's stormwater program will be made available on the new website in the following sections: Program Information, Stormwater 101, Protecting Our Streams, Educational Resources, Getting Involved, Training, Illicit Discharges, Construction, Post-Construction BMPs, and Mapping when it goes online in mid to late 2020.

What is your budget for MCM #2?

As mentioned in MCM 1, EMD has developed a partnership with KWRRI/TFISE and is in the process of developing a robust program with more direct oversight and coordination. A specific budget has been created for MCM 2 to assist KWRRI/TFISE in the development of a more robust program. This estimated budget covers specific tasks and direct costs only. It will be assessed annually and adjusted as necessary. Additional funding can also be provided on an as-needed basis. It should also be noted that because MCMs 1 and 2 are being managed together, a significant portion of the MCM 1 budget also benefits MCM 2. For example, two interns will be hired to assist in the implementation of MCMs 1 and 2 year-round.

The current recurring annual budget for the MCM 2 portion of this program is $6,000 excluding one-time costs. Total MCM 2 implementation costs for the permit cycle are estimated at a maximum of $37,000. Refer to the following chart for more details:

2018 - 2023 SWQMP Estimated Budget

Task (#)	Task/Expense Discription	Min Cost ($)	Task Max Cost ($)	Task Year	Reoccurrence	Number of Years Multiplier	Total Min Cost ($)	Total Max Cost ($)	Funding Department
2.A.1	Development of Marked Stormdrain Inventory - Intern and Tracking Mechanism		6000	Two	One-Time	1	6000	6000	EMD
2.A.2	Development of Interactive Stormdrain Marking Map and Webpage Integration		3000	Two	One-Time	1	3000	3000	EMD
2.A.3	Development of Stormdrain Marking Program Advertising/Awareness Campaign		1000	Three	Annual	3	3000	3000	EMD
2.B	Sponsorship/Creation of Public Stormwater Activity Participation Events		5000	Annual	Annual	5	25000	25000	EMD

The following documentation of public involvement/participation events held in 2019 is included in Appendix B:

- Global Water Issues Drain Making Map Presentation
- Global Water Issues Drain Making Worksheet
- Pick It Up Campaign Results
- Farm Road Rain Garden (UK Cat's CATchment Cleanup) Flyer
- Farm Road Rain Garden (UK Cat's CATchment Cleanup) Sign-in Sheets
- Gluck Pond Planting Event Flyer
- Gluck Pond Planting Event Sign-in Sheets
- Stormwater Logo Competition Flyer
- GEN 100 Class Lesson Plan
- BAE 532/CE 542 Class Project Presentation Flyer
- College of Agriculture Raingarden Project Student Design, Plant List, and Standards Diagram

C. Illicit Discharge Detection and Elimination:

The following table includes all 2018 to 2023 SWQMP information for MCM 3:

2018 SWQMP Tasks	Measurable Goal	Evidence of Completion	Division(s) Responsible	Permit Year(s) Conducted	Target Completion Date
Illicit Discharge Detection and Elimination					
3.A - Maintain and update MS4 and Utility Maps annually/as necessary	• Add recently installed bmp's, changes, and updates to MS4 system as they occur	• Utility map updated online	Utilities	1,2,3,4,5	Annually/as necessary
		• Latest version of MS4 map added to website	EMD	1,2,3,4,5	Annually/as necessary
3.A.1. - Update Utility map to include Bell 2017 assessment/mapping info	• Provide the survey information from Bell's assessment to FIS for inclusion on the Utility map	• Include the latest data on the utility map and provide the link	Utilities	1,2	4/30/2020
3.A.2 – Develop clear procedures for recording/reporting of MS4 boundary expansion and inclusion of new territory in MS4/University O&M and add to the Stormwater Operations Manual	• Determine steps and current procedures for adding property and notification to Utilities/Facility Operations/EMD in year two	• Provide list of current procedures	EMD, Facility Operations, Utilities, Real Estate	2	4/30/2020
	• Develop/amend current procedures and include documentation of notification in year two/three	• Provide list of procedures and notification documentation	EMD, Facility Operations, Utilities, Real Estate	2,3	4/30/2021
	• Add procedures to Stormwater Operations Manual	• Provide list/map of added properties (include link)	EMD	2,3	4/30/2021
3.B - Review IDDE Plan and update as necessary	• Bring the plan up to date	• Provide copy of updated plan	EMD	1	4/30/2019
	• Include the updated MS4 map and adjust any references to the map		EMD	1	4/30/2019
3.B.1 – Update to include the new permit requirements	• Compare contents of existing plan to the permit requirements	• Provide copy of updated plan	EMD	1	4/30/2019
	• Amend content as necessary		EMD	1	4/30/2019
3.B.2 – Develop SSO protocols and resolution timeframes	• Develop a Sanitary Sewer Overflow response policy/procedures/guidelines that include clean up requirements, reasonable timeframes for clean-up/correction, and notification procedures	• Provide copy of procedures	EMD, Facility Operations, Utilities	2	4/30/2020
	• Distribute protocols to those involved in SSO response, train as necessary	• Provide distribution list and/or training sign in sheet	Facility Operations, Utilities	2	4/30/2020
3.B.3 – Incorporate procedures/requirements into the Stormwater Operations Manual	• Add SSO section to the Stormwater Operations Manual	• Provide copy of the Stormwater Operations Manual once completed	EMD	2,3,4,5	4/30/2023
3.B.4 – Visually inspect outfalls from campus annually	• Inspect outfalls during dry weather based on IDDE Manual requirements	• Provide copy of outfall inspection reports	EMD	1,2,3,4,5	Annually
	• Input inspections into MS4 database		EMD	1,2,3,4,5	Annually
3.B.5 – Evaluate the assessment of dry weather flows in known areas of concern on campus	• Determine the need for dry weather flow assessment based on historical sampling data and outfall inspections	• Provide summary of determination, timetables, and a copy of the monitoring plan/QAPP if/when developed.	EMD	2	4/30/2020
	• Determine if resources are available this permit cycle for sampling efforts (time, budget)		EMD	2	4/30/2020
	• Develop/add to monitoring program as necessary		EMD	2,3,4,5	4/30/2020 & 4/30/2023
3.B.5.a – Evaluate assessment of UK based dry weather flows to the Manchester Street Culvert via confined space entry and sampling of E.coli, Ammonia, TSS, and other constituents	• Review LFUCG sampling data	• Provide summary of evaluation and any assessment findings (if applicable)	EMD	2	4/30/2020
	• Observe dry weather flows through system		EMD	2	4/30/2020
	• Discuss possibility of coordination with LFUCG		EMD	2	4/30/2020
	• Develop/add to monitoring program as necessary		EMD	2,3,4,5	4/30/2020 & 4/30/2023
3.C – Update website and complaint reporting mechanism (see tasks 1.B and 1.B.2)	• Develop a reporting mechanism that allows the user to quickly snap a photo of an issue and send directly to EMD.	• Provide link to reporting mechanism	EMD, TFISE	2	4/30/2020
3.D – Update staff training on illicit discharge identification and reporting (see task 1.F)	• Consolidate and update existing online staff training	• Provide copy of/link to training	EMD, TFISE, Facility Operations	3	4/30/2021
	• Develop staff protocols for reporting and include information on the new reporting mechanism	• Provide copy of protocols	EMD, TFISE, Facility Operations	3	4/30/2021
	• Add protocols to IDDE Manual/Stormwater Operations Manual		EMD	3	4/30/2021
3.D.1 – Integrate illicit discharge detection and prevention into routine staff duties	• Evaluate activities already being performed by staff where the inspection of storm drains and reporting of issues can be easily integrated.	• Provide list/description of activities where IDDE has been integrated	Facility Operations, Utilities, Athletics	4	4/30/2022
	• Add inspection of surrounding storm drains to SPCC monthly inspection list		Facility Operations, Utilities, Athletics	4	4/30/2022
	• Train grounds staff how to identify issues when mowing, etc.		Facility Operations	4	4/30/2022
3.D.2 – Include all information/procedures into a comprehensive Stormwater Operations Manual	• Integrate training and procedures developed into the Stormwater Operations Manual	• Provide copies of any/all procedure updates being included in manual or a copy of the created/updated Stormwater Operations Manual	EMD	1,2,3,4	4/30/2022
3.D.3 – Develop video on most frequent illicit discharges and how to report them (Task 1.F.1)	• Determine most frequent illicit discharges		EMD	4,5	4/30/2023
	• Develop video	• Provide distribution list and/or list of trainings/discussions where video is used	TFISE	4,5	4/30/2023
	• Distribute/utilize video	• Provide link to video	EMD, TFISE	4,5	4/30/2023
3.E – Update and maintain the illicit discharge tracking program as necessary	• Document all complaints and input into MS4 web as they occur	• Provide copy of complaint reports	EMD	1,2,3,4,5	As needed
3.F – Evaluate performing additional/routine Thermal Imaging scans to locate possible discharges and develop procedures as necessary	• Determine if additional/routine scans will be beneficial/economically viable	• Provide summary of determination	EMD, Utilities	2	4/30/2020
	• Determine protocols for how/when scans will be used.	• Provide copy of protocols/include in Stormwater Operations Manual	EMD, Utilities	2	4/30/2020
	• Plan for future scans as necessary	• Provide schedule of future scan (if applicable)	Utilities	2	4/30/2020
3.F.1 – Locate, prioritize, and minimize heating/cooling system leaks	• Investigate as necessary to determine source of leaks impacting the storm sewer system	• Provide list of annual investigation efforts/repairs made/maintenance costs	Utilities	1,2,3,4,5	Annually
	• Develop a prioritized repair list	• Provide prioritized repair list	Utilities	1	4/30/2019
	• Repair/maintain system as necessary to minimize leaks and impact to the storm sewer system		Utilities	1,2,3,4,5	Annually
3.G – Complete Greenhouse conversion to sanitary sewer	• Divert remaining greenhouse drains from storm to sanitary	• Provide evidence of completion (project as-builts/invoices)	Facility Operations	1	4/30/2019
3.H – Minimize cigarette butts entering storm drains	• Meet with UK Tobacco-free Taskforce to discuss cigarette butts entering storm drains, the impact on stormwater, and stormwater requirements.	• Provide sign-in sheet/meeting minutes/copy of invite	EMD, Facility Operations, Grounds, Athletics	3	4/30/2021
	• Develop/implement bmp's to prevent cigarette butts from entering storm drains	• Provide list/description of bmp's implemented	EMD, Facility Operations, Grounds, Athletics	3	4/30/2021
	• Coordinate with LFUCG at campus boundaries		EMD, Facility Operations, Grounds, Athletics	3	4/30/2021

Did you have any reported/discovered illicit discharges for 2019? If so, describe the incident and the elimination.

3.E The use of the MS4 Web software for IDDE tracking began in 2012 and is still being used. Stormwater-related complaints are also tracked with this tool. For the 2019 reporting period, there were a total of 14 illicit discharge or stormwater complaints reported and resolved. A detailed report of each is included in **Appendix C**.

How can the public notify the MS4 of spills or illicit discharges?

3.C UK has 24-Hour Spill Response Service. Illicit discharges are reported using the same contact methods. During work hours (8 AM to 5 PM) the public are encouraged to dial 859-323-6280. After hours 911 can be dialed from campus phones or the UK Police Department can be contacted at 257-UKPD. This information is provided on the EMD website, via the MS4 Stormwater Quality Management pamphlet, and via spill reporting cards that are handed out during special events. As previously discussed, implementation is currently underway to update the stormwater website and create an illicit discharge reporting mechanism that will allow mobile friendly notification of spills and other stormwater-related issues. This task is scheduled for completion by the end of Permit Year two.

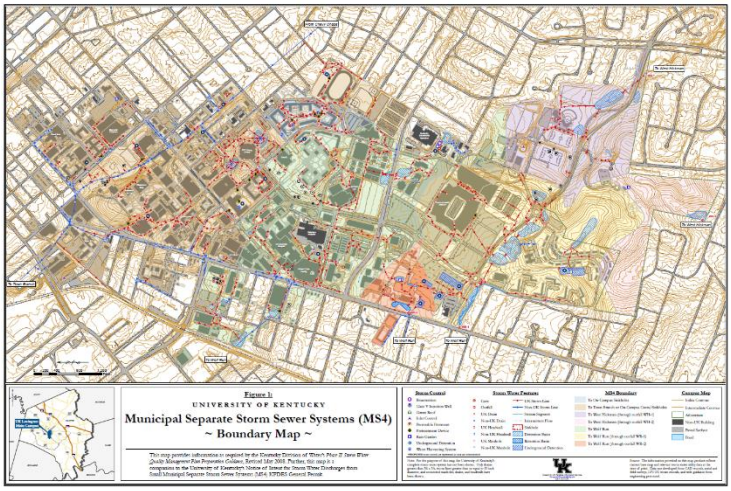
Do you have a <u>written</u> IDDE Plan in place?

3.B
3.B.1 EMD originally created its IDDE Field Protocol Plan in 2011 and updated the plan in March of 2015. The plan includes sections on Field Screening and Inspection, Identifying Illicit Discharges, Indicator Parameters, Steps to Remove Illicit Discharges, Enforcement Procedures, and Recordkeeping. The plan was reviewed in 2018 and updates are underway. This task is currently scheduled for completion by the end of Permit Year two. Refer to previous annual reports for a copy of the IDDE plan.

3.B.2 Work has begun on the development of a sanitary sewer overflow protocol document to supplement the IDDE plan. Following the review and finalization of this document, copies of the procedures with be distributed and training provided as needed. This is currently scheduled to be completed by the end of Permit Year two.

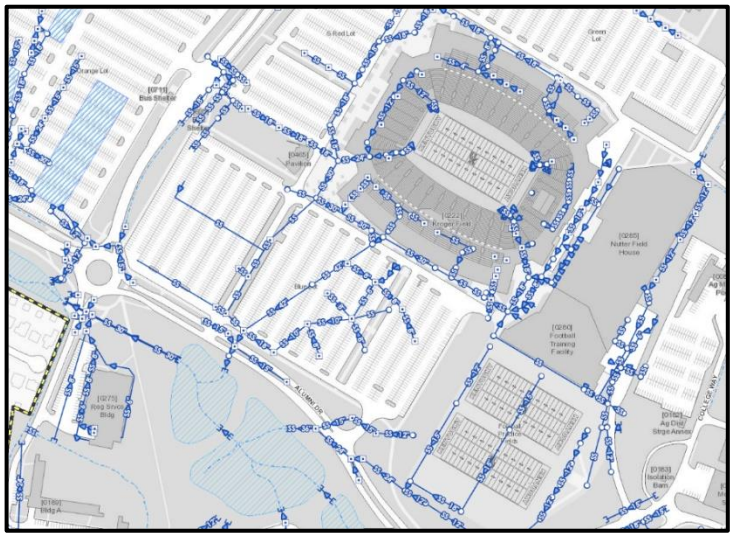
Have you completed the mapping of major outfalls? Have you begun to complete the new mapping requirement from the latest iteration of the Phase II General MS4 Permit? Approximately how much of this new mapping has been completed and how do you plan to accomplish this requirement by the end of the current permit term?

3.A This task was completed at the very outset of UK's submittal of its Notice of Intent and SWQMP in April 2010. A copy of this map is available on UK's website and is included in **Appendix D**. There are five outfalls that have been identified and noted as WR-1, WR-2, WR-3, WH-1, and WH-2 along with two stream segments (Big Elm Fork and an Unnamed Tributary to West Hickman). Both stream segments are located adjacent to Alumni Drive, one at the eastern end toward Tates Creek Road and the other at the western end toward Nicholasville Road.



Because of the unprecedented level of construction on campus in recent years, a major update to this map was completed in the fall of 2016. At that time a standing work order was created with UK's GIS department so the map could be updated on a more regular basis. The most recent round of updates occurred in fall 2019. Efforts are now made to update the map on an annual basis, as needed.

3.A.1 It should also be noted that a more comprehensive stormwater infrastructure map has also been developed by UK as part of its infrastructure masterplan. This map contains all UK stormwater infrastructure and will be updated regularly to include changes to the system as they occur. A major effort occurred in 2017 where information was collected to update the stormwater collection system. UK GIS has reviewed the data and identified that integration cannot be automated and will required effort beyond what was originally anticipated. It is currently developing a procedure to process the data and update the GIS mapping. The current schedule for completion of the integration of this information is the end of Permit Year two.



During 2019, efforts were also made to develop formal IDs for all stormwater structures. This map is located online at https://maps.uky.edu/utilities/ and is maintained for use by employees only due to the level of information provided. A snapshot of this map is included in this section.

Have you dry-screened any major outfalls during the current permit term? What is your plan for dry-screening all major outfalls during the current permit term?

3.B.4 Staff have routinely made efforts to inspect outfalls on an annual basis even though the previous SWQMP required once per permit term. The new SWQMP reflects this effort and now requires annual inspection of UK's major outfalls (Task 3.B.4). Inspections during 2019 are reflected in the following table:

Total Number of Major Outfalls	Major Outfalls Dry-Screened in 2019	Illicit Discharges Detected by Dry-Screening in 2019
5	5	0

Copies of the inspection reports are included in **Appendix E**.

3.B.5
3.B.5.a UK has hired Strand Associates, Inc.® (Strand) to determine the need for additional dry weather flow assessment of areas of concern on campus based on historical sampling data and outfall inspections. This will include the evaluation of the Manchester Street Culvert specifically. This evaluation is currently scheduled for completion by the end of Permit Year two.

What is your budget for MCM #3?

With the development of a new SWQMP and the associated program improvements, a budget for certain MCM 3 tasks has been developed. This budget covers the estimated expenses of tasks with direct costs. All other tasks and associated indirect costs will be absorbed by the division responsible for task completion.

The current recurring annual budget for this program is $53,500 excluding one-time costs. Total MCM 3 implementation costs for the permit cycle have the potential to exceed $278,000. Refer to the following chart for more details:

2018 - 2023 SWQMP Estimated Budget									
Task (#)	Task/Expense Discription	Min Cost ($)	Task Max Cost ($)	Task Year	Reoccurrence	Number of Years Multiplier	Total Min Cost ($)	Total Max Cost ($)	Funding Department
3.A	Regular Updating of the MS4 and Utility Maps		500	Annual	Annual	5	2500	2500	EMD/Utilities
3.A.1	Addition of the Bell 2017 Stormsewer Assessment to the Utility map		1000	Two	One-Time	1	1000	1000	Utilities
3.B.5	Assessment (sampling) of Dry Weather Flow In the Stormsewer System	5000	20000	Two	Annual	4	20000	80000	EMD
3.B.5.a	Assessment of the Manchester Street Culvert (Investigation and Sampling)	5000	20000	Two	Annual	4	20000	80000	EMD
3.E	Illicit discharge tracking program (MS4 Web License Fee)		3000	Annual	Annual	5	15000	15000	EMD
3.F	Conducting Thermal Imaging Scans of Campus for Illicit Discharge & Heating/Cooling Leak Detection		15000	Two	Every 2 years	2	0	30000	Utilities
3.F.1	Repair of Heating/Cooling System Leaks	5000	10000	Annual	Annual	5	25000	50000	Utilities
3.G	Connection of Remaining Greenhouses to Sanitary Sewer	10000	20000	One	One-Time	1	10000	20000	Facility Operations

Additional IDDE Efforts:

In addition to the efforts mentioned previously, UK also completed the following in 2019:

3.F Evaluate Thermal Imaging

- A thermal imaging scan was completed in 2017 with the goal of identifying heating and cooling leaks as well as sanitary sewer overflows. Since that time, Utilities has been using it to complete repairs around campus. Because the current data is still in use and applicable, the $45,000 cost to complete a campus scan is not justified at this time. Future scans will be performed on an as-needed basis and will likely employ the use of a drone for data collection in targeted areas around campus. This need will be re-evaluated in conjunction with future Utilities planning efforts.

3.F.1 Locate, Prioritize, and Minimize of Heating/Cooling System Leaks

- The UK Utility Infrastructure Master Plan was completed in 2016 and provided an assessment on the campus energy and utility systems. The purpose of the plan was to evaluate necessary improvements and provide a tool to prioritize and budget for large capital projects.
- Maintenance and repair of the system are completed on an as-needed basis with active leaks being addressed immediately. A list of the completed repairs is included in Sections E of this report.

3.G Divert Greenhouse Drains to the Sanitary Sewer

- UK Physical Plant Division (PPD) staff continued its work regarding Phase II of the greenhouse conversion to divert the drains from the storm sewer to sanitary sewer system. Project price quotes were received ($18,000) and plans were underway to complete construction in 2019.

Shawnee Town Collection System Investigation

- As a continuation of the 2017 investigation into sanitary sewer discharges into the storm system at Shawneetown, the remaining Shawneetown sanitary sewer collection system was televised. Several problems were identified, including separated, crushed, and collapsed lines. To date, all brick manholes in the Shawneetown area have been sealed and a contractor has begun repairs to the sewer lines.

The following documentation is attached in the appendices referenced above.

- **Appendix C**–Illicit Discharge and Stormwater Complaint Reports
- **Appendix D–**UK MS4 System and Boundary Map
- **Appendix E–**Major Outfall Inspection Reports

D. Construction Site Stormwater Run-off Control:

The following table includes all 2018 to 2023 SWQMP information for MCM 4:

2018 SWQMP Tasks	Measurable Goal	Evidence of Completion	Division(s) Responsible	Permit Year(s) Conducted	Target Completion Date
Construction Site Stormwater Runoff Control					
4.A. – Improve the project notification/review process, including timing of notification and inclusion of appropriate departments	• Update the Capital Projects Typical Projects Step List	• Provide copy of updated project steps list	CPMD	1	4/30/2019
	• Educate CPMD Project Managers on updated project steps	• Provide copy of presentation and/or meeting sign in sheet for PM training	CPMD	1	4/30/2019
	• Develop/verify Facility Operations procedures and update as necessary	• Provide copy of updated Facility Operations procedures	CPMD, Facility Operations	2	4/30/2020
4.B – Develop alternative to permit issuance as part of formal review process (i.e. – EMD Notification to Proceed)	• Create project step that requires approval of water quality measures by CPMD and EMD before a project can proceed	• Provide procedures for approval process	CPMD, EMD	1,2	4/30/2020
	• Create procedures for how step will be utilized and enforced		CPMD, EMD	1,2	4/30/2020
	• Integrate step into MS4 web and project manager project step list		CPMD, EMD	1,2	4/30/2020
4.C – Strengthen contract language requiring contractors to implement SWPPP controls, obtain stormwater permit coverage, and maintain compliance with stormwater requirements	• Update contract language to provide for better enforcement capability and correction of construction site stormwater deficiencies	• Provide copy of updated contract language	CPMD	1	4/30/2019
4.D – Perform audit inspections on construction sites monthly	• Inspect all active construction sites once per month minimum	• Provide number of inspections conducted as well as copies of the inspections/annual	CPMD	1,2,3,4,5	Monthly
4.D.1 – Update construction site inspection checklist as necessary	• Tailor existing checklist to better meet UK needs or develop new checklist	• Provide copy of updated checklist	CPMD, EMD	2	4/30/2020
	• Update MS4 web with any changes		EMD	2	4/30/2020
4.D.2 – Develop progressive/escalating enforcement policy and procedures for SWPPP/KYR10 violations	• In conjunction with contract language changes, develop enforcement policy and procedures for SWPPP violations.	• Provide copy of enforcement policy/procedures	CPMD, EMD	1,2	4/30/2020
	• Update design standards to clarify requirements and expectations of contractors	• Provide copy of updated design standards	CPMD, EMD	1,2	4/30/2020
4.D.2.a – Develop RFP for Stormwater Remediation and award contract	• Draft and post Stormwater Remediation RFP	• Provide selected contractor information and description of duties	CPMD	1,2	4/30/2020
	• Review proposals and select contractor	• Provide list of construction sites contractor has been hired to repair along with list of deficiencies corrected	CPMD	1,2	4/30/2020
	• Utilize contractor to repair stormwater deficiencies on active construction sites as needed		CPMD, EMD	2,3,4,5	As needed
4.D.3 – Update/maintain inspection and enforcement tracking mechanism as necessary	• MS4 Web regularly updated with inspection and compliance information	• Provide an up to date inspection report	CPMD, EMD	1,2,3,4,5	Annually
4.D.4 – Develop and implement an internal QC process to ensure site inspections are being performed and KYR 10 requirements are being met	• Develop procedures for the auditing of UK's construction site stormwater inspection program to ensure MS4 permit requirements are being met	• Provide copy of procedures	EMD	2	4/30/2020
	• Conduct audit of program annually	• Provide audit results/report	EMD	2,3,4,5	Annually starting in 2020
4.E – Review construction plans to ensure SWPPP measures are being incorporated for all projects disturbing 1 acre or more	• Review all applicable construction project plans to ensure stormwater requirements are being met	• Provide list of all construction projects reviewed annually	CPMD	1,2,3,4,5	Annually
	• Update MS4 web with review information		CPMD	1,2,3,4,5	Annually
4.E.1 – Continue to utilize LFUCG's most recent stormwater requirements, including their Stormwater Manual and LID guidelines	• Update contract/design standards as needed	• Provide copy of updated contract/design standards	CPMD, EMD	1,2,3,4,5	Annually - as needed
	• Review projects based on LFUCG guidelines	• Provide project review reports from MS4 web	CPMD, EMD	1,2,3,4,5	Annually
	• Update MS4 Web as needed		CPMD, EMD	1,2,3,4,5	Annually - as needed
4.E.2 – Update SWPPP review checklists	• Adopt the LFUCG Land Disturbance Permit Application and Sediment Control Plan Checklist for project review, tailor to fit UK needs, and integrate into MS4 web	• Provide copy of updated checklist(s)	CPMD, EMD	1,2	4/30/2020
	• Develop addition checklist for SWPPP requirement review based on KYR10 and integrate into MS4 Web		CPMD, EMD	1,2	4/30/2020
4.F – Have designated staff reviewing plans or performing inspections receive/maintain KEPSC Inspector Certification	• Require designated staff to maintain current certification	• Provide staff certification information	CPMD, EMD	1,2,3,4,5	2/28/2020
4.G – Develop training program to educate contractors and designers on stormwater requirements	• Create training program procedures, goals, and guidelines	• Provide copy of training procedures/goals/guidelines	CPMD, EMD	2	4/30/2020
4.G.1 – Develop UK construction process/requirement training	• Develop training in year two	• Provide training presentation/ information	CPMD	2	4/30/2020
	• Conduct training annually (minimum)	• Provide training schedule & sign in sheets	CPMD, Facility Operations	2,3,4,5	4/30 Annually
4.G.2 – Develop KYR10 Requirement training	• Develop training in year two/three	• Provide training presentation/ information	CPMD, EMD	2,3	4/30/2021
	• Conduct training with each project/annually (minimum)	• Provide training schedule & sign in sheets	CPMD	2,3,4,5	4/30 Annually starting in 2020/2021
4.G.3 – Develop SWPPP development/requirement training	• Develop training in year three	• Provide training presentation/ information	CPMD, EMD	3	4/30/2021
	• Conduct annually/as needed	• Provide training schedule & sign in sheets	CPMD	3,4,5	4/30 Annually, starting in 2021
4.G.4 – Work with the Kentucky Transportation Center to provide KEPSC Inspector Training on campus annually (minimum)	• Contact the Kentucky Transportation Center and discuss possibility of providing training on campus annually	• Provide summary of discussion	EMD	2	4/30/2020
	• Hold training annually (if possible)	• Provide training schedule (if applicable)	EMD, CPMD	2,3,4,5	Annually
4.G.5 – Develop stormwater site inspection review training to be provided for each project	• Develop training in year three to be provided during the preconstruction meeting of each project	• Provide copy of training • Provide list of projects and sign in/training acknowledgement sheet	CPMD, EMD	3,4,5	4/30/21, Annually thereafter
4.H – Develop formal policy/guidance/procedure for small construction projects (<1 acre)	• Create written procedures/policy for handling stormwater on small construction projects (review, approval, bmp selection, inspection, contractor training, etc.)	• Provide copy of developed policies/procedures	CPMD, Facility Operations	2	4/30/2020
	• Put policy in place for small construction projects (as appropriate)		Facility Operations	2	4/30/2020

Are you permitting land disturbances for one acre or larger, or smaller than one acre if part of a larger common plan of development or sale?

4.B As in the past, contractors are not issued a permit from UK because they are being directly employed by UK. This gives UK direct control of their actions. However, to encourage future compliance with all projects, UK has added task 4.B in the SWQMP. This task requires the development of an alternative to permit issuance as part of the project review process. In order to accomplish this task, a formal project step will be added that requires the approval of water quality measures by UK's Capital Projects Management Division (CPMD) and EMD before a project can proceed. Procedures will be created for how this step will be used and enforced. These efforts are scheduled to be completed in Permit Year two.

Contract language and UK Design Standards are used to create requirements that each contractor must follow. EMD and CPMD personnel examined and updated contract language as well as UK Design Standard requirements in 2018 and 2019.

Article 11.3 of the General Conditions of the Contract for Construction states that "The Contractor, on projects disturbing one acre or more, or projects less than one acre that are part of a large common development plan, including grading, clearing, excavation, material laydown, or other earth moving activities, shall assure full compliance with the requirements of the KYR10 and shall:

- 11.3.1–File a Notice of Intent (KPDES Form eNOI-SWCA with the Kentucky Division of Water and copy the UKCPM Project Manager and Water Quality Manager prior to the start of any excavation, grading, or site development work.
- 11.3.2–The permittee (contractor) shall develop a Stormwater Pollution Prevention Plan (SWPPP) based on the Erosion Prevention and Sediment Control Plan (EPSC as a minimum design standard. Ensure all requirements of KYR10 are fully addressed in the SWPPP. Once the SWPPP is written, forward a copy to the Capital Projects Project Manager and to the Water Quality Manager for approval. Work cannot begin until SWPPP is approved and permit coverage obtained."

The latest copy of Article 11.3 in its entirety can be found in **Appendix F** and at the following website address: https://www.uky.edu/cpmd/design-standards/division-00---procurement-and-contracting-requirements-group

The UK Design Standard 334000S01 provides additional stormwater requirements for consultants and contractors. The latest copy of these standards can be located here: http://www.uky.edu/cpmd/design-standards/divisions-30---39---site-and-infrastructure-subgroup and in **Appendix G**.

How many permits were issued by the MS4 in 2019?

While no permits were issued (see response to previous question), SWPPPs, Executive Summaries, and project plans were reviewed for the following 12 projects:

- Kappa Alpha Theta Project
- College Way Parking Phase 1
- College Way Parking Phase 2
- PS5 Expansion and Winslow Project
- Alumni Stream Restoration
- Chem and Phys Remodel (Preliminary Review)
- Memorial Coliseum Remodel (Preliminary Review)
- Conn Terrace Parking Lot
- Phi Kappa Tau
- Kirwan-Blanding Demolition
- Student Center Expansion (Preliminary Review)
- Cooper Drive Tunnel Enhancements

Does the MS4 or its designee perform plan reviews for land disturbances of one acre or larger, or smaller than one acre if part of a larger common plan of development or sale? If not, who does? Is there a standardized form that is used to review plans?

4.A
4.E.1 UK personnel review all construction projects, regardless of size, and require EPSC Plans/SWPPP's when necessary. LFUCG stormwater requirements have been adopted by UK and as a result EPSC Plans, Project Narratives, New Development or Redevelopment Executive Summaries, and SWPPPs are required for most projects. Each item is reviewed by Capital Projects and EMD staff. As such, EMD and CPMD staff continually engage in workshops and trainings on changes being considered by LFUCG as noted in the following. Checklists are available for use in the review process and are included in **Appendix H**.

4.E.2 EMD and CMPD staff are working together to update SWPPP review checklists. Plans are to adopt the LFUCG Land Disturbance Permit Application and Sediment Control Plan Checklist, tailor it to meet UK needs, and integrate it into the MS4 project database. This task is currently scheduled for completion by the end of Permit Year two. The LFUCG Checklist is included in **Appendix H**.

Kentucky Erosion Prevention & Sediment Control (KEPSC)

4.F
- KEPSC Certification–EMD and CMPD staff responsible for reviewing SWPPP's are required to maintain KEPSC certification. More information training attendees is included in subsequent sections of this report.

4.G.4
- Kentucky Transportation Center KEPSC Training–EMD discussed the need for updated KEPSC training with KWRRI and the president of the Kentucky Stormwater Association. All agreed that the training is outdated and there are opportunities to both update and improved the training offerings. In a subsequent conversation, EMD learned that there is also a push to get KTC to hold trainings more often, throughout the state, and to provide better notification of those trainings.

4.H Formal Procedures for Small Construction Projects

- PPD staff have begun the development of written procedures for handling stormwater on small construction projects. This includes the development of a project submittal checklist that provides EMD with the opportunity to review and comment on project before construction. This task is scheduled for completion by the end of Permit Year two.

- Additionally, a training presentation was sent to PPD construction managers regarding the Updated University Design Standards and General Conditions for incorporation into smaller construction project contracts.

How many plan reviews were conducted in 2019?

4.E As noted previously, SWPPPs, Executive Summaries, and project plans were reviewed for 12 projects. Information from these plan reviews was uploaded and organized in MS4 Web.

At what frequency are inspections occurring at active construction sites? How many inspections were conducted in 2019?

4.D Inspections at active construction sites typically occur on a monthly basis; however, more frequent visits often take place. As part of an annual evaluation of the inspection and enforcement tracking mechanism, UK Construction Site Inspectors elected to continue to use MS4 Web for tracking inspections during 2019. Inspections are recorded in the MS4 Web database. A list of all inspections that occurred in 2019 and an example inspection is provided in **Appendix I**.

4.D.1
4.D.3 Also, during 2019, EMD began the implementation of a new compliance tracking software. Cority, a computer-based compliance management system, will be used to track permit compliance and complete inspection forms. Scheduled to begin use in March 2020, the Construction Site Inspection checklist will be reviewed and modified, as needed, to fit the format of the new system.

4.D.4 Internal QC of Inspection Process

- The development of an annual audit process is currently underway for the construction site inspection program. This audit will review the construction site inspection program for compliance with the MS4 permit requirements. This program is scheduled to be developed by the end of Permit Year two.

How many inspections in 2019 resulted in enforcement actions? Fines collected?

4.D.2 No construction site inspections resulted in enforcement actions. UK relies on contract language and design standards to direct the actions of contractors performing work. This escalating enforcement policy allows UK to hire a third party to remediate all BMP deficiencies and pass the cost onto the permittee of the KPDES Permit. Procedures for implementation are being developed and are scheduled to be completed in Permit Year two.

The latest Design Standards and contract language can be seen in **Appendices F** and **G**.

4.D.2.a Develop Stormwater Remediation RFP–The above-mentioned Design Standards and contract language include provisions for the use of existing unit-price contractors and, as such, there was no need to prepare and RFP to complete this work. No further action is required to complete this task.

Describe any training given to operators/contractors in 2019? How often is training for operators/contractors conducted?

At the beginning of each project CPMD and EMD staff meet with designers to walk through the project stormwater design standard requirements based on the project parameters. This typically includes the submittal of an EPSC Plan, SWPPP, and Executive Summary/Project Narrative. Before construction begins, CPMD staff attend a preconstruction meeting where stormwater requirements are discussed with the contractors. CPMD also provides compliance assistance and guidance during each of its site visits.

Many contractors working at UK have several ongoing projects on campus and have varying degrees of familiarity with and their demonstrated understanding of UK's stormwater requirements. The level of instruction they require differs from contractors who may not work with UK as often. In response to this, EMD and CMPD staff make themselves available for questions that may arise during projects. In addition to project and site meetings, e-mail instruction is regularly provided. The following is a summary of e-mails that were sent to contractors.

- January 3, 2019–Instruction provided to contractors regarding Student Center culvert inspection needs.
- March 7, 2019–Instruction provided to demolition contractors regarding UK Design Standards, Stormwater Inspections, and SWPPP development for the PS5 Expansion project.
- March 25, 2019–Instruction provided to construction contractors regarding the UK Design Standards, Stormwater Inspections, and SWPPP development for the PS5 Expansion project.
- May 25, 2019–Instruction provided to contractor regarding SWPPP development and construction site inspection procedures.
- June 4, 2019–Instruction provided to contractor regarding construction stormwater requirements and contractor responsibilities for the Alumni Stream Restoration project.
- June 13, 2019–Instruction provided to designer regarding construction stormwater requirements and UK Design Standards for the Phi Kappa Tau project.
- June 20, 2019–Instruction provided to designer regarding certification requirements for site inspectors for the PS5 Expansion project.
- June 20, 2019–Instruction provided to contractor regarding weekly site inspection reports and SWPPP updates for the PS5 Expansion project.

A training was developed by CMPD regarding stormwater design requirements for the Greek Park development. The purpose of the presentation was to communicate the need for stormwater management and to communicate the required development criteria. This was provided to UK Auxiliary Services as guided training. A copy of the presentation is included in **Appendix J**.

In regard to specific training for contractors, UK has adopted LFUCG stormwater standards. Each year, LFUCG provides training for area contractors on its stormwater requirements and any updates that may have taken place. This year's Construction Industry Workshop took place on December 13 from 8:30 AM until 12:00 PM. The agenda is included in **Appendix K**.

4.G
4.G.1
4.G.2 More formal training will be developed and incorporated into the updated website. This will include the development of a training program to educate contractors and designers on stormwater requirements and UK review process, KYR 10 requirements, SWPPP development and requirements, and site inspection requirements. These tasks are currently scheduled to be completed in Permit Years two and three with annual training occurring in subsequent years.

What is your budget for MCM #4?

As previously stated, UK's stormwater program is part of the EMD's overall budget, which is funded by an environmental service surcharge applicable to all UK departments. For this reason, funding for the program is very stable. A current budget is not specified for this MCM as monies are allocated on an as-needed basis. This MCM also uses a portion of UK's Capitol Projects Management Division's budget as the Construction Stormwater Inspector and individual Project Managers are funded through this department and are involved (directly or indirectly) in the management of stormwater on construction sites.

The following documentation is included in the appendices:

Appendix F–Contract General Conditions Article 11.3

Appendix G–UK Design Standard 334000S01

Appendix H–EPSC Detailed Construction Plan Checklist

LFUCG Land Disturbance Permit Application and Erosion and Sediment Control Plan Checklist

Appendix I–Example UK Construction Site Inspection

Appendix J–Greek Park Training Presentation

Appendix K–Construction Industry Workshop Agenda

E. Post-construction Stormwater Management in New Development and Redevelopment:

The following table includes all 2018 to 2023 SWQMP information for MCM 5:

2018 SWQMP Tasks	Measurable Goal	Evidence of Completion	Division(s) Responsible	Permit Year(s) Conducted	Target Completion Date
Post Construction Stormwater Management					
5.A – Continue the adoption of LFUCG Post Construction Requirements for New/Redevelopment	• Require the submittal of a narrative and Executive Summary for new or re-development for all applicable projects	• Maintain submitted information for each project	CPMD, EMD	1,2,3,4,5	Annually
	• Review projects based on latest LFUCG standards	• Provide copy of updated design and construction standards if applicable	CPMD, EMD	1,2,3,4,5	Annually
	• Update design and construction standards with any changes to post construction stormwater quality requirements as necessary	• Provide list of approved projects/ MS4 web report	CPMD, EMD	1,2,3,4,5	Annually
	• Update MS4 web with project information and approvals		CMPD, EMD	1,2,3,4,5	Annually
5.A.1 – Review possibility of finalizing LFUCG Memorandum of Understanding	• Begin discussions with UK and LFUCG regarding the completion of a MOU between the two MS4's	• Provide summary of the determination and/or copy of the completed/signed MOU	EMD	3	4/30/2021
	• Complete and sign the MOU if applicable		EMD	3	4/30/2021
5.A.2 – Evaluate the development of a Stormwater Masterplan for UK's main campus	• Meet with applicable stakeholders to determine the need for a masterplan, it's components, and development	• Provide meeting minutes/summary, sign in sheet, and copy of masterplan or schedule (if applicable)	EMD, CPMD, Sustainability, Facility Operations, Utilities	2,3,4	4/30/2022
	• Begin development of masterplan or schedule development of masterplan as needed	• Provide copy of post construction BMP selection standards	EMD, CPMD, Sustainability, Facility Operations, Utilities	2,3,4	4/30/2022
	• Create UK standards for stormwater post construction BMP selection (consider local water quality impairments)	• Provide update on Landscape Guidelines as policy determination along with procedures for enforcement of policy if applicable	EMD, CPMD, Sustainability, Facility Operations, Utilities	2,3,4	4/30/2022
	• Evaluate adopting the UK Landscape Guidelines as policy and enforcement of the policy	• Provide procedures for SITES review process (or equivalent)	EMD, CPMD, Sustainability, Facility Operations, Utilities	2,3,4	4/30/2022
	• Incorporate into work flow and utilize the SITES review process (or equivalent) on all construction projects	• Provide documentation of review processes use on new construction sites (score cards, etc)	EMD, CPMD, Sustainability, Facility Operations, Utilities	2,3,4	4/30/2022
5.B – Review plans to ensure post-construction stormwater quality treatment has been addressed	• Review plans in accordance with latest LFUCG requirements	• Provide report of reviewed projects	CPMD, EMD	1,2,3,4,5	Annually
	• Document review of plans in MS4 Web		CPMD, EMD	1,2,3,4,5	Annually
5.B.1 – Have those employees responsible attend training regarding plan review and post construction BMP's when available	• Attend training when available	• Provide training information (dates, attendees, etc)	CPMD/EMD	1,2,3,4,5	When available
5.B.2 – Adopt the LFUCG Land Disturbance Permit Application and Sediment Control Plan Checklist for project review and tailor to fit UK's needs. (Task 4.E.2.a)	• Checklist adopted, tailored to fit UK needs, and updated to include additional components for post construction requirements	• Provide copy of updated checklist	CPMD, EMD	2	4/30/2020
	• Update MS4 Web with new checklist	• Provide MS4 web report and/or copies of completed project review checklists	EMD	2	4/30/2020
	• Begin using new checklist for project review		CPMD, EMD	2	4/30/2020
5.C – Conduct inspections to ensure measures are being installed correctly	• Conduct punch list walkthrough and/or NOT inspection for all new construction projects upon project completion	• Provide list of completed inspections	CPMD	1,2,3,4,5	Annually
	• Document inspection in MS4 web		CPMD	1,2,3,4,5	Annually
5.D – Revise long-term post-construction stormwater quality BMP inspection program	• Inspect 20% of above ground post construction BMPs annually	• Provide report/list of all inspected bmp's along with findings	EMD	1,2,3,4,5	4/30 Annually
	• Inspect 100% of underground BMP's annually	• Provide preventative maintenance program procedures/ guidelines	Utilities	1,2,3,4,5	4/30 Annually
	• Develop preventative maintenance program for all UK owned post construction BMP's in year two	• Provide copy of pm cost assessment	Facility Operations, EMD, Utilities	2	4/30/2020
	• Develop tracking system to assess long term pm cost for bmp's in conjunction with PM program	• Provide list of all maintenance performed on BMP's	Facility Operations, Utilities	2,3	4/30/2021
	• Assist EDR with development of PM program for EDR owned bmp's in year two	• Provide copy of EDR PM plan	EMD, Utilities	2	4/30/2020
	• Document all inspections and maintenance in MS4 web or effective equivalent		EMD	1,2,3,4,5	4/30 Annually
5.E – Incorporate all relevant post-construction information into new Stormwater Operations Manual	• Include all inspection, bmp maintenance procedures and schedules, site plan review/post construction processes, etc. in new Stormwater Operations Manual	• Provide copy of Stormwater Operations Manual/Procedures	CPMD, EMD, Facility Operations, Utilities	2,3,4	4/30/2022
5.F – Advise administrative staff on the benefits of green infrastructure and the costs of construction and maintenance as compared to that of gray infrastructure. Do this prior to/in conjunction with tasks 5.A.2	• Develop comparison of green vs gray infrastructure to include costs and benefits	• Provide copy of report/presentation	EMD, CPMD, Facility Operations Grounds, Sustainability	2,3,4	4/30/2022
	• Provide information to administrative staff via report and/or presentation		EMD, CPMD, Facility Operations Grounds, Sustainability	2,3,4	4/30/2022
5.G – Incorporate Stormwater Program into Sustainability Strategic Plan	• Update Sustainability Strategic Plan to include water section	• Provide copy of updated Strategic Plan	EMD, Sustainability	1	4/30/2019

Describe how the MS4 is implementing the post-construction stormwater management in new development or redevelopment requirements in your MS4; including the 80% stormwater treatment standard and the process for project review, approval, and enforcement.

5.A UK has adopted the design standards used by LFUCG in its Stormwater Manual as the recommended standard for UK projects. The Stormwater Manual can be located at the following web address: https://www.lexingtonky.gov/new-development. LFUCG uses the 90th percentile storm event (see Chapter 10) as its water quality standard. UK has also adopted the use of LFUCG's Executive Summary–Stormwater Management Plan for Re-Development and New Development to be completed for each redevelopment and new development project (copies of which can be found at the previously provided website address). A predesign meeting is held for each UK project at which time the post-construction stormwater requirements are discussed.

5.B UK has established contract language for construction managers and general contractors that require them to incorporate post-construction stormwater quality treatment into their design plans for all construction projects disturbing one acre or more. Enforcing these requirements through contract stipulations can be accomplished in an escalated fashion in that there are amounts of retainage that UK can withhold from any monthly progress payment or nullify any progress payment in whole or in part as necessary.

5.B.2 As stated in the previous section, EMD and CMPD staff are working together to update SWPPP review checklists. Plans are to adopt the LFUCG Land Disturbance Permit Application and Sediment Control Plan Checklist, tailor it to meet UK needs, and integrate it into the MS4 project database. Work on these tasks has begun and is currently scheduled for completion by the end of Permit Year two. The LFUCG Checklist and Land Disturbance Permit is included in **Appendix H**.

The components of the post-construction stormwater quality control program include:

1. The requirement to address post-construction stormwater quality via the contract document
2. A review of the plans by trained UK staff
3. Inspection of the installation
4. A perpetual maintenance program that ensures that structural controls are being maintained and functioning as designed

The need for the development of a Stormwater Master Plan for campus was added as Task 1.1 of the UK Sustainability Strategic Plan and the potential scope is part of ongoing discussions. These discussions include working with Sustainability and Utilities about assessing UK's "water footprint" that will help inform the goals and objectives of the master plan. These ongoing discussions are anticipated to continue through Permit Years four.

How many and what types of projects were reviewed for new and redevelopment considerations in 2019? What types of BMPs were installed?

As noted in Part D above, SWPPPs, Executive Summaries, and project plans were reviewed for 12 projects. BMP types installed include, but are not limited to, the following.

- Pretreatment Devices–Hydrodynamic Separators, Catch Basin Inserts
- Underground Detention Systems
- Pervious Pavement Systems
- Bioretention Systems

MS4 staff must be trained in the fundamentals of long-term stormwater-quality treatment management practices and in how to review such practices on construction plans and how to inspect practices for long-term protection, operation and maintenance. Please describe the training of staff in 2019.

5.B.1 UK personnel competed the "KEPSC Inspector Qualification Training" provided by the Kentucky Transportation Center held on March 22, 2017. Three individuals gained certification.

UK Staff also attended and participated in the following:

- KSA Quarterly Meeting (February 6, 2019–4.0 hours)
- LFUCG Post-Construction Stormwater Management Workshop (March 8, 2019–3.0 hours)
- EPA Webinar: Developing Methods to Detect Toxicity in Water using Mayflies and Mussels (March 28, 2019–1.0 hour)
- KSA Quarterly Meeting (April 16, 2019–4.5 hours)
- PIE Webinar: Go Green with GASB 62 (April 25, 2019–1.0 hour)
- EPA Webinar: Harmful Algal Blooms and Algal Toxin Treatment (May 21, 2019–1.0 hour)
- LFUCG IDDE Training (June 11, 2019–3.5 hours)
- KSA Annual Conference (June 27, 2019–3.0 hours)
- KWRRI: Insights into Communicating with Stakeholders about Water and Climate in KY (August 27, 2019–1.0 hour)
- LFUCG Annual Erosion and Sediment Control Training Workshop for Construction Projects (October 17, 2019–1.0 hour)
- KSA Quarterly Meeting (October 22, 2019–4.0 hours)
- LFUCG Engineering, Development, and Construction Industry Workshop (December 13, 2019–3.0 hours)
- LFUCG Stormwater Stakeholder Advisory Committee Meetings (September 6, 2019–December 6, 2019)
- Webinar: How Trees Influence Urban Stormwater (May 8, 2019–1.25 hours)

Certificates, agendas, and meeting minutes for these activities, if available, are included in **Appendix L**.

Is the MS4 requiring long-term maintenance agreements for new development and redevelopment projects?

UK new and redevelopment BMPs are maintained by one of two entities on campus: Utilities or Grounds. All underground BMPs fall under the responsibility of Utilities while all above ground BMPs fall to Grounds. Utilities maintains BMPs on an as-needed basis while Grounds maintains many BMPs as part of routine campus maintenance. The FEMA project basins and associated stream restoration of Big Elm Fork is currently being maintained via contract with EcoGro. The annual report for the basin is included in **Appendix M**.

5.D Over the past several years, UK has developed a public-private partnership with Greystar in the building and maintaining of new campus residence halls. Part of this partnership is the agreement that Greystar build and maintain the storm sewer system related to each of its on-campus properties. Each project has been required to meet stormwater requirements and as a result, has post-construction stormwater BMPs that are the responsibility of Greystar to maintain. As previously discussed, UK is working on completing inspections for all post-construction BMPs on campus. Once this is complete, EMD will provide the necessary maintenance actions required, as well as work together to develop a preventative maintenance program for these BMPs. This task is scheduled for completion in Permit Year two.

Describe the process for annual post-construction BMP inspection. Keep in mind, this is with the goal of inspecting all such BMPs within the permit term. How many total post-construction BMPs are in the MS4? How many were inspected in 2019? Did any inspections discover a need for maintenance or repair by the owner? Did any enforcement actions result from these inspections? If your MS4 conducts a BMP owner self-inspection program, describe that program and how you maintain oversight.

5.C The post-construction inspection process begins with Notice of Terminations (NOT) Inspections that are completed as a part of the closeout process for each project. NOT Inspections were completed by EMD and CMPD staff for the following projects in 2019 and documented in MS4 Web.

- Beta Theta Pi
- Utility Spine Project
- Press Avenue Detention Basin
- College Way Parking Lot Phase 1
- College Way Parking Lot Phase 2
- Law
- AGR

5.D Wanting to further strengthen its maintenance of BMPs, UK developed the goal of inspecting of 20 percent of aboveground BMPs and 100 percent of belowground BMPs, annually. Additionally, EMD staff have begun work on developing a preventative maintenance program for all UK-owned BMPs. After reviewing the implementation approach of these combined goals, it was decided that in order to support the development of a preventative maintenance program, the condition of the entire system needed to be investigated. As such, the goal was modified to include the inspection of 100 percent of the aboveground BMPs during Permit Year two. To complete this effort, UK has partnered with Strand who completed the inspections shown in the following table. Additionally, updated inspection forms were created and integrated into MS4 Web that are BMP-specific to promote increased efficiency for field work. A sample Post-Construction Inspection Form is included in **Appendix N**.

Total Number of Post-Construction BMPs	Post-Construction BMPs Inspected in 2019	Number of Post-Construction BMPs Requiring Maintenance or Repair	Number of Resulting Enforcement Actions
142	83	56	0

While the number of BMPs requiring maintenance appears high, most were noted for routine annual maintenance to track the type of maintenance required and support the development of the preventative maintenance program. The balance of these inspections will be completed in 2020 and a reinspection policy will be developed in order to continue to meet the goal of inspecting 20 percent of the aboveground BMPs and 100 percent of the underground BMPs annually.

What is your budget for MCM #5?

Post-Construction Stormwater is primarily implemented and maintained by four UK Departments: EMD, CPMD, Grounds, and Utilities, with each having its own independent budgets. EMD provides services such as consultation and inspection to UK regarding Post-Construction through an environmental service surcharge that is applied to all UK departments. As a result of this surcharge, EMD's budget is relatively stable and is used to support Post-Construction activities on an as-needed basis.

CPMD is responsible for the installation of BMPs as part of new construction. The budget for this department is in the millions of dollars although only a small portion of that is dedicated to post-construction BMPs. Each project managed by CPMD has a specified budget that impacts the level of stormwater controls that can be installed for post-construction purposes. Once installed, maintenance of these BMPs is handled by Grounds or Utilities.

10.A Grounds is responsible for any aboveground BMPs, such as the FEMA detention basins, campus rain gardens, green roofs, or pervious pavement. Efforts are underway to increase the departmental budget including additional funding requests to administration and the seeking of alternative funding sources (grants). A request to fund a 2- to 3-person stormwater crew was not approved by the administration. However, the recently hired Grounds Manager also shifted department assets in order to dedicate more resources to stormwater and improve BMP maintenance practices on campus. As a result, a dedicated Stormwater Maintenance Position was created within Grounds. This position officially started on August 26, 2019.

Utilities is responsible for any BMPs below the surface, such as the multiple underground detention basins on campus or any manufactured treatment devices (hydrodynamic separators, snouts, or baffle boxes). A portion of this division's budget is dedicated to stormwater system maintenance, including post-construction BMPs. This portion is likely to increase as the previously mentioned preventative maintenance program is developed.

During the development of the SWQMP, two direct costs were factored into the budget for MCM 5. They include the following:

2018 - 2023 SWQMP Estimated Budget

Task (#)	Task/Expense Discription	Min Cost ($)	Task Max Cost ($)	Task Year	Reoccurrence	Number of Years Multiplier	Total Min Cost ($)	Total Max Cost ($)	Funding Department
5.A.2	Development of Stormwater Masterplan	10000	50000	Two, Three, Four	One-Time	1	10000	50000	CPMD
5.D	Conduction of Routine Underground BMP Inspections	10000	20000	Annual	Annual	5	50000	100000	EMD or Utilities
5.D	Operation of Preventative Maintenance Program for Post-Construction BMP's			Annual	Annual	5			Utilities/Grounds

Because the preventative maintenance program is still being developed, no cost has yet been assigned to this task.

The following documentation is included in the appendices:

Appendix H–LFUCG Land Disturbance Permit Application and Erosion and Sediment Control Plan Checklist

Appendix L–Training and Certification Documentation

Appendix M–EcoGro FEMA Basin Annual Maintenance Report

Appendix N–Sample Post-Construction BMP Inspection Form

F. Pollution Prevention and Good Housekeeping for Municipal Operations:

The following table includes all 2018 to 2023 SWQMP information for MCM 6:

2018 SWQMP Tasks	Measurable Goal	Evidence of Completion	Division(s) Responsible	Permit Year(s) Conducted	Target Completion Date
Pollution Prevention/Good Housekeeping for Municipal Operations					
6.A – Develop comprehensive UK Stormwater Operations Manual to include all policies/procedures/bmps utilized to meet permit requirements (all MCM's)	• Integrate all existing procedures/ departmental policies into new manual	• Provide completed Stormwater Operations Manual	EMD	2,3,4,5	4/30/2023
	• Update existing policies/procedures to improve permit compliance (Environmental Handbook, Factsheets, etc.)		Facility Operations, Utilities, Athletics, EMD	2,3,4,5	4/30/2023
	• Create new policies/procedures as necessary		Facility Operations, Utilities, Athletics, EMD	2,3,4,5	4/30/2023
	• Incorporate inventory of facilities, campus maintenance activities, and maintenance schedules		Facility Operations, Utilities, Athletics, EMD	2,3,4,5	4/30/2023
6.A.1 – Update BMP O&M Manual to include specific maintenance requirements, calendar of required activities, and responsibilities for each existing post construction BMP	• Compile all O&M Manuals for new and recently installed bmp's	• Provide copy of O&M manual including the activity calendar and responsibility assignments to	EMD, CPMD	2,3,4	4/30/2022
	• Create bmp specific requirements based on manufacturer's recommendations and existing O&M manual		EMD, Utilities, Facility Operations	2,3,4	4/30/2022
	• Create calendar for completing required maintenance activities for all bmp's		EMD, Utilities, Facility Operations	2,3,4	4/30/2022
	• Assign/Update responsibilities for maintenance of each bmp		EMD, Utilities, Facility Operations	2,3,4	4/30/2022
	• Incorporate/Coordinate with BMP inspection program (see task 5.D)		EMD, Utilities, Facility Operations	2,3,4	4/30/2022
6.A.1.a – Determine which activities will be contracted out (e.g. underground bmp annual inspections and maintenance, pervious pavement cleaning) and issue RFP as necessary (See task 5.D – Preventative Maintenance Program)	• Determine which activities require contractor assistance	• Provide inspection reports and maintenance invoices	Facility Operations, Utilities	2	4/30/2020
	• Draft and issue RFP		Facility Operations, Utilities	2	4/30/2020
	• Hire contractor		Facility Operations, Utilities	2	4/30/2020
	• Schedule and perform inspections and maintenance as needed		Facility Operations, Utilities	2,3,4,5	Annually
6.A.1.b – Incorporate maintenance calendar into SAP Plant Maintenance system and create scheduled work orders for all activities	• Provide completed O&M Manual and calendar to Facility Operations/Utilities	• Provide example reports of SAP data/work orders	EMD, Facility Operations, Utilities, Athletics	2,3,4	4/30/2022
	• Utilize information to create reoccurring work orders in PM system		Facility Operations, Utilities, Athletics	2,3,4	4/30/2022
6.A.2. – Evaluate incorporation of SPCC program into Stormwater Program	• Determine if/how the two programs can be combined	• Provide determination and integration plan (if available)	EMD	3	4/30/2021
	• Create plan to integrate two programs (as necessary)		EMD	3	4/30/2021
6.A.3 – Develop procedures for rainwater harvesting system monitoring and reporting	• Utilizing LFUCG requirements and manufacturers O&M manuals, develop departmental procedures for monitoring the use of harvesting systems.	• Provide water harvesting data for all systems	Facility Operations, EMD	1,2	4/30/2020
	• Record monthly/annual use and total water harvested		Facility Operations	2,3,4,5	4/30 Annually
6.A.4 – Create policy/procedures surrounding stormwater protection during emergency/unplanned events (water main breaks, etc.)	• Develop SOP for bmp implementation in response to emergencies/ unplanned events	• Provide copy of policy/ procedures	Facility Operations, Utilities, EMD	1,2	4/30/2020
6.A.5 – Create policy/procedures for unknown spill cleanup (dumpsters, custodial etc.)	• Create SOP for response, notification, & proper clean-up of unknown spills	• Provide copy of policy/ procedures	Facility Operations	1,2	4/30/2020
6.A.6 – Develop SOP's for all Athletics activities that impact stormwater	• Assess Athletics maintenance activities and determine which activities (e.g. irrigation, fertilization, materials storage, etc.) have the potential to impact stormwater	• Provide fact sheets/SOP's	Athletics, EMD	1,2,3	4/30/2021
	• Develop SOP's/BMP's for those activities		Athletics, EMD	1,2,3	4/30/2021
6.B – Update Employee Training Program	• Evaluate employee training participation/documentation and improve as needed	• Provide list of updated training	EMD, Utilities, Facility Operations, Athletics	1,2,3,4,5	4/30 Annually
	• Update/consolidate training as necessary	• Provide sign in sheets for any training conducted	EMD, Utilities, Facility Operations, Athletics	1,2,3,4,5	4/30 Annually
	• Train employees on new procedures developed during permit term	• Provide evidence of procedures that have been amended to alter employee behavior to protect stormwater	Utilities, Facility Operations, Athletics	1,2,3,4,5	4/30 Annually
	• Integrate training prescribed actions into departmental procedures & employee behaviors/actions		Utilities, Facility Operations, Athletics	1,2,3,4,5	4/30 Annually
6.C – Evaluate pollution prevention measures for coal stockpiles and upgrade, improve, or maintain as necessary	• Assess and improve coal pile discharge at Wildcat Court	• Provide assessment information and list of replacement bmp's installed	Utilities, EMD	1,2	4/30/2020
	• Evaluate remaining coal pile bmp's for effectiveness		EMD	2,3	4/30/2021
	• Determine alternate bmp's for ineffective bmps		Utilities, EMD	2,3	4/30/2021
	• Install new bmp's as necessary		Utilities	2,3,4	4/30/2022
6.D – Develop Waterfowl Management Program in response to local impairments (See task 8.C)	• Assess waterfowl impact on water quality	• Provide assessment results	Facility Operations, EMD	2,3,4	4/30/2022
	• Assess and move forward with alternative management techniques for Gluck Pond	• Provide description and photos of installed bmp's and measures put in place at Gluck Pond	Facility Operations	1,2	4/30/2020
	• Develop area specific Waterfowl Management Program for impacted areas of campus as needed	• Provide copy of management plan	Facility Operations	2,3,4	4/30/2022
6.E – Develop steam/chilled water infrastructure repair priority list (See task 3.F.1)	• Create list of required maintenance based on leak detection efforts	• Provide list of annual investigation efforts/repairs made/maintenance costs • Provide prioritized repair list	Utilities	1,2,3,4,5	4/30 Annually
6.F – Create procedures to address/repair stormwater issues/problems on campus once they are identified	• Create general procedures for notification, responsibility assignment, bmp installation (temporary and permanent), repair/resolution, timeframes, and reporting.	• Provide copy of procedures	EMD, Utilities, Facility Operations, Athletics	2,3,4	4/30/2022
	• Add procedures to the Stormwater Operations Manual		EMD	2,3,4	4/30/2022
6.G – Evaluate changes to administrative regulation 6:3 with regard to stormwater during upcoming review cycle in 2021	• During regular administrative regulation review cycle, determine if administrative regulation 6:3 needs to be amended based on stormwater program performance.	• Provide assessment summary and/or any administrative regulation updates	EMD	4	4/30/2022

The permittee must develop and implement an Operation and Maintenance (O & M) program that includes a training component with the goal of preventing or reducing pollutant runoff from municipal operations. Please describe the progress the Pollution Prevention/Good Housekeeping Program has made in 2019.

The following Pollution Prevention/Good Housekeeping Activities occurred in 2019.

O&M:

6.A.1.a
- Preventative Maintenance Program–As previously noted, beginning in Permit Year two, Strand has been hired to perform inspections of all post-construction BMP within the MS4 boundary. This effort will support the development of a preventative maintenance program and help to identify the need to issue an RFP to contract out these services. Additional determinations will be made following the completion of the inspections and through the development of the Preventative Maintenance Program.

6.A.3
- Rainwater Harvesting and Monitoring–Based on an initial assessment of the rainwater harvesting system O&M, it has been determined that this topic needs additional discussion and planning. These efforts will begin near the end of Permit Year two and will include informing and training on the O&M as well as the LFUCG requirements associated with their operation. The procedures for rainwater harvesting system monitoring and reporting will be developed and included in the Stormwater Operations Manual that EMD and Strand are in the process of developing.
- The Pick It Up campaign was continued once again. Developed to support the work Grounds performs daily, the goal of this program is to promote a litter-free campus.
- As previously mentioned, because of the complexity of the vegetation installed as part of the FEMA project and Big Elm Fork restoration, EcoGro was hired to maintain these areas. This partnership began in 2016 and continued through 2019. Maintenance takes place periodically throughout the year. EcoGro's annual report is included in **Appendix M**.
- EMD reviewed existing maintenance schedules and requested that the Research Building No. 2 and Student Center Oil/Water Separators be placed in the preventative maintenance system to continue to be inspected and maintained in accordance with manufacturer's requirements

6.E.3
- Steam and Chilled Water Infrastructure Priority List–As previously mentioned, the UK Utility Infrastructure Master Plan was completed in 2016 and evaluated necessary improvements to provide a tool to prioritize and budget for large capital projects. Maintenance and repair of the system are completed on an as-needed basis with active leaks being addressed immediately. Various Heating and Cooling System repairs in 2019 included:
    - WT Young Library–Steam and Condensate
    - College of Law–Chilled Water
    - Parking Structure 2–Steam and Condensate
    - Cooper Drive–Steam/Condensate
    - Nutter–Steam/Condensate
    - Tobacco Research–Steam Vault Condensate Leak
    - Hospital Drive–Steam/Condensate
- Additional stormwater-related infrastructure maintenance tasks completed in 2019 include the previously mentioned Shawneetown manhole lining and sanitary sewer repairs.
- Grounds hired a full-time staff person focused on stormwater maintenance. This person will be responsible for maintaining all aboveground post-construction BMPs as well as cleaning and inspecting all storm drains on campus with the goal of visiting each of the 1763 mapped storm drains on campus within the next two years. In order to monitor progress, Grounds has worked with GIS to develop a data collection system to track which inlets have been cleaned and the result of the inspection.
- Grounds created a Soil Profile Rebuilding Standard to improve vegetation establishment, increase tree growth rates, and increase soil permeability. This will be reviewed and approved before official adoption in the UK Design Standards.

Pollution Prevention:

6.A.5

- Policy for Unknown Spill Cleanup–The following tasks were completed in 2019.
    - EMD worked with Waste Management and Recycling departments to determine the location of all compactors on campus and where their drains connect. Using this information, BMPs were provided for proper inspection of compactors and surrounding areas. Spill kits were placed at all compactor locations with a drain and a spreadsheet was developed as a reference for this information. Training was provided on June 26 to Waste Management staff to share proper BMPs and spill kit usage. A table noting the locations of the compactors, drains, and spill kits is enclosed in **Appendix O**. This table will be updated as needed.
- UK has procedures in place whenever special events occur on campus. Event Services Coordinators from the Event Management Office contact staff from multiple UK departments in order to determine whether there are any issues, problems, concerns, or regulatory requirements that pertain to the event in question. In 2019 there was one event with the ability to impact stormwater that was addressed:
    1. The Paint U (Student Paint Fight) on July 29, 2019–In this instance the paint's safety data sheet was reviewed and the event was held in a grassed area away from storm drains.
- Street sweeping continued around campus. Purchased in 2017, and used on a limited basis, the sweeper is now being operated at five days for 40 hours per week. The unit is also being operated routinely around the coal piles in order to prevent coal fines from entering the storm sewer system.
- PPD staff continued its work regarding Phase II of the greenhouse conversion from storm to sanitary. Project price quotes were received ($18,000) and plans are underway to complete construction in in Permit Year two.
- Waterfowl Management Efforts were continued at Gluck Pond and in the surrounding area. The following occurred in 2019:
    - USDA Wildlife Services was hired to provide goose population reduction and control activities.
        - 13 active nests were removed
        - 62 eggs were removed
        - 7 aggressive nesting waterfowl were removed
        - 19 geese were trapped and removed during the molting season
        - Harassment techniques were employed to discourage geese from remaining on-site
        - The final report of services provided is included in **Appendix P**
    - Grounds introduced habitat manipulation in the Spring of 2019.
        - Over 7,000 native plants were installed around Gluck Pond to create an unfavorable habitat for geese.
        - Trees were planted to interrupt the flight path of the birds as they attempt to land on the pond.
- The UK Landscape Guidelines were updated and added to UK's Design Standards (323000S01) and include a policy for stormwater management. These standards can be found here: https://www.uky.edu/cpmd/323000s01-campus-landscape-guidelines
- Following a testing period at the beginning of the year, Grounds adopted a new chloride free entry deicer from Secure Winter Products. This product is used on the sidewalks directly associated with building entryways to combat icy conditions.
- Athletics is continuing to integrate stormwater protection into daily activities as well as accounting for BMPs already in place. In 2019, it completed an update of its Stormwater Policy that is under review and, once approved, will be incorporated into its departmental training. These changes also include the installation of spill kits that are being installed at key locations identified on the SPCC plan. A copy of the policy can be found in **Appendix Q**.
- Grounds began investigating, through an LFUCG Stormwater Class A&B Education Grant, the implementation of trial program to determine effectiveness of a pressured-steam weed control system to reduce chemical weed control on campus, especially around stormwater BMPs. The grant application goals were to demonstrate and develop education materials related to nonchemical weed management techniques.
- Following concerns raised by members of the Stormwater Stakeholder Committee, the impact of pet waste on campus is being investigated. Initial recommendations include education regarding waste pickup requirements for organizations that allow pets and installation of pet waste stations in Greystar buildings.

Good Housekeeping:

- Stormwater Stakeholder Meetings were held on January 1, May 10, July 12, and October 4. Meeting Information and Sign-in sheets are enclosed in **Appendix R**.
- SWQMP Implementation meetings were held to discuss department-specific tasks between EMD and the following department departments.
    1. Grounds–January 28–Kevin Lewis, Jerry Hart, and Don Crawford Attending
    2. Utilities—January 25–Kevin Lewis, Joe Graft, Graham Gray, Mike Duffy, and Jeff Zumwalt Attending
    3. Athletics–February 11–Kevin Lewis, Donnie Mefford, and Sam Cahill Attending
- Through an approximately $20,000 Sustainability Challenge Grant (see MCM 2 for more details), TreeCATs continue to conduct campus tree mapping focused on the estimation of tree benefits. This includes the continued use of the Treeplotter Inventory that can be accessed here: https://pg-cloud.com/UKY/. This work is in conjunction with the UK Arborist's continued efforts to update the campus tree inventory, including calculating the campus tree canopy and the impact of recent campus construction to the canopy.
    - The current tree canopy for campus is approximately 10 percent and decreasing.
    - The Student Center canopy prior to construction was approximately 22 percent, after construction, the canopy was reduced to approximately 5 percent.
- EMD assisted the UK Sustainability Advisory Committee Sustainability in the completion of the Tracking, Assessment & Rating System (STARS) self-assessment tool with regard to Rainwater Management. This tool is a transparent, self-reporting framework for colleges and universities to measure their sustainability performance.
- In an effort to obtain additional assistance in the completion of SWQMP tasks, EMD hired Strand Associates, Inc.® for Phase II Permit Compliance Assistance. This included the preparation and advertisement of a request for proposals, proposal review, and hiring during the middle of the year. Since that time, Strand has assisted in tasks including, but not limited to, the following.
    - Post-Construction BMP Inspection Reports
    - Outfall Inspection Reports
    - SWQMP Update and Schedule Modifications
    - IDDE Plan Update
    - Stormwater Operations Manual Development
    - Coal Pile Field Reviews
- As previously discussed in Section 4, EMD began the implementation of a new compliance tracking software. Cority, a computer-based compliance management system, was purchased for use in all areas of EMD. The purchase also includes access to RegScan, a program that can be utilized to review regulations, track regulatory changes, and determine regulation applicability with regards to University activities. Moving forward, it is the intention of EMD that Cority be used to conduct inspections and document compliance with permit requirements.
- An inspection was completed for the 96-inch culvert located underneath the Student Center. The purposed of this inspection, completed by S&ME, was to confirm the condition of newly connected pipe as well as the older pipe connections. Additionally, it confirmed that there were not illicit discharges as well as no structural damage to the culvert from the previously completed construction.
- As a part of an adjacent construction project, the detention basin at Hope Lodge was rehabilitated to improve the performance and maintainability of the basin. This included invasive species and sediment removal, regrading, and the installation of a natural stone trickle channel to promote positive drainage.
- Following the completion of the FEMA project, the basin immediately upstream from University Court was not draining properly. The water that it was holding was both a maintenance and safety concern. To address this issue, UK hired Bell to reassess the basin design and develop potential modifications. Suggested improvements include regrading the bottom of the basin, installing a stone channel, and modifying the outlet control structure and trash grate. Preliminary plans are available upon request.
- An inspection was completed for the 30-inch storm sewer line at Winslow Avenue as a part of Parking Structure 5 project. The 150-foot inspection along South Limestone Street was completed using CCTV equipment and evaluated the condition of the reinforced concrete pipe and the longitudinal cracks. The evaluation detected cracks in at least 11 locations ranging from good to fair condition. A report of this inspection is available upon request.

Has a comprehensive assessment of the pollutant discharge potential for all municipally-owned facilities been conducted? If not, indicate a status and planned completion date.

The following assessments have been completed to date regarding pollutant discharge potential.

- CEC was hired in 2010 to assess all campus buildings with floor drains for their potential to cause an illicit stormwater discharge. More than 200 UK buildings were identified to have floor drains. After screening out those that were not located within the MS4 boundaries and those that were known to be connected to sanitary sewer, the Hospital Cafeterias were excluded. Three priority buildings were identified that needed further investigation or repairs:
    - The greenhouses off Veterans and Hospital Drives
    - Cooling Plant No. 1
    - The College of Agriculture Motor Pool
- In October of 2011, the storm drains under Cooling Plant No.1 were rerouted to sanitary sewer. Around the same time frame, dye testing was conducted at the Ag Motor Pool and showed that the floor drains were already directed to the sanitary sewer. Further investigations found that the greenhouses were indeed directed to the storm sewer system. In 2016, construction was completed redirecting greenhouses 1, 3, 5, 7, 9, and 11 to the sanitary sewer system. The project to connect the remaining greenhouses was designed in 2017 and will be installed in 2018.
- An inventory of facilities and maintenance activities on campus was conducted in 2010. In 2012, this inventory was updated, and 57 facility inspections were conducted. An additional 11 facilities were inspected in 2013.
- In 2015, UK commissioned the creation of a Utility Infrastructure Master Plan. Completed in January 2016, the goals of this plan are to:
    - Identify existing energy and utility system capacities
    - Identify deficiencies and inefficiencies
    - Account for future growth over the next 20 years
    - Recommend improvements

  The campus energy and utility systems being included in this plan are: heating, cooling, electrical, domestic water, sanitary sewer, and stormwater. Primary objectives have been developed for each of these utilities. The primary objectives for stormwater include:
    - Completing a detailed condition analysis of the existing system
    - Building a hydraulic model and conducting a capacity analysis of the existing system
    - Identifying deficiencies in the system
    - Providing recommendations that can be used to determine where future growth can be best accommodated
- In 2017, Environmental Audits of all UK Utility Plants were performed in order to assess environmental compliance at each location. These audits included a thorough inspection to determine any potential impacts to stormwater.
- UK has individual Spill Prevention Control and Countermeasure plans to cover the five major operational areas of campus:
    - Physical Plant Division
    - Dining Services Division
    - Medical Center Physical Plant Division
    - Good Samaritan Hospital
    - Athletics

  Each area has been assessed for stormwater discharge potential related to petroleum products and is required to be inspected monthly and annually.
- The Peterson Garage floor drains were reassessed to confirm their connection to the sanitary sewer system, rather than storm sewer. Grounds had been instructed to not wash equipment and vehicles at the Peterson Garage after erroneously being told the drains were connected to storm. Further evaluation including a review of the record drawings confirmed the drains are connected to sanitary sewer.

- The Groundwater Protection Plan for campus was rewritten in 2019. As part of the update process, the regulated activities at UK with the potential to impact groundwater were assessed, the locations and activities inspected, and the plan updated to reflect current BMPs. A copy of the updated plan is included in **Appendix S**.

Is the Operation and Maintenance Program/Plan formalized or written? If it is not written, indicate a status and planned completion date.

- UK created an Environmental Protection Handbook in 2013 to serve the needs of main campus operations. Available for download on the EMD website (http://ehs.uky.edu/env/), this document contains specific Fact Sheets for a variety of campus activities that have the potential to impact stormwater. In addition to this handbook, UK has developed several additional policy manuals including:
    - Grounds Stormwater Policies and Procedures
    - PPD Contractor Handbook
    - Post-Construction BMP O&M Manual
    - UK Landscape Guidelines
    - PPD Dewatering Bag SOP
    - Stadium and Parking Garage Washdown SOPs

    These additional manuals are included in **Appendix N** of the 2017 Annual Report.
- O&M manuals are also required to be provided for each post-construction stormwater BMP installed with new construction.
- During the new permit term, UK will be developing a comprehensive Stormwater Operations Manual (Task 6.A) that will include all policies, procedures, and BMPs used to meet the MS4 permit requirements. As previously mentioned, there are various SOPs and policies that protect stormwater throughout campus. The goal of this task is to integrate all existing information into one singular manual, update that information, and create new policies and procedures to improve permit compliance.

    As part of this manual, the existing O&M manual will be updated to include specific maintenance requirements for each BMP on campus. Rather than generic requirements, manufacturer and designer-specific requirements will be included. These requirements will be translated into a calendar of required activities that will be integrated into the SAP Plant Maintenance system, UK's preventative maintenance program. This program will then automatically create work orders pertaining to each maintenance activity for staff to complete. This process will be coordinated with the development of UK's preventative maintenance program as certain maintenance tasks may be assigned to outside contractors for completion.

    These efforts will need the bulk of the permit term to complete and will require the assistance of an outside contractor.

Provide a general summary of how your Operations & Maintenance Plan provides for the inspection of structural and non-structural BMPs at municipal facilities (as described in KYG200000 section 2.2.6.3.) This summary should include the frequency of inspections, who is responsible for conducting the inspections, and what written documents are referenced for inspection criteria.

The plan for UK guiding inspections of facilities around campus is the Spill Prevention, Control, and Countermeasure (SPCC) plan. Although this document targets oil spills associated with facilities, stormwater inspections are now being conducted at each utility plant in conjunction with monthly SPCC inspections. If any type of impact to the storm sewer system is observed, EMD will be notified. Guidance on inspection protocol and report in included. A copy of the SPCC plan is available upon request. In addition to the regular monthly inspections, EMD completed additional inspections of all locations covered by an SPCC plan in 2019. Copies of these inspection are available on request.

As previously mentioned, the UK Groundwater Protection Plan was updated in 2019. This included inspection schedules, specifying the type of equipment and storage systems inspected, examples of general issues that may occur, and the required frequency of the inspections. A copy of the plan is included in **Appendix S**.

Describe any training presented to staff on pollution prevention/good housekeeping in 2019.

The following trainings were provided and completed relating to pollution prevention and good housekeeping in 2019.

- EMD continued to coordinate UK's SPCC program throughout 2019. Training was provided to each campus entity with an associated SPCC plan in 2018 and is scheduled to occur again in early 2020. These trainings included Campus PPD, Dining Services, Medical Center PPD, Good Samaritan, and the College of Agriculture. Athletics training occurred on January 15, 2019. Training topics included the following:
    - Part 1–General Awareness Topics
        - Topics and Objectives
        - What is an SPCC Plan and the Definition of Oil
        - Contents of the SPCC Plan
        - Updating Requirements
        - Applicable Laws and Regulations
    - Part 2–UK Specific Topics
        - Oil Handling Facilities at UK
        - Oil Spill Response Procedures
        - Understanding Spill Pathways
        - Operations and Maintenance Procedure Requirements
        - Inspection requirements
    - Part 3–Area Specific Topics
        - Discharge Control and Cleanup (area specific operating procedures, spill kits, notification requirements)
        - Details of Decision-Making and Reporting in Case of a Spill or Leak
        - Location and Quantities of Oil in the Area
        - Review of Spill Pathways in the Area

    The training presentation is attached in **Appendix T**.
- Training was provided in early 2019 to Grounds with instruction regarding its primary stormwater responsibilities along with copies of the Environmental Protection Handbook, UK O&M Manual, and LFUCG Low-Impact Design Guidance.
- EMD provided CPMD and PPD construction managers with the USEPA Concrete Washout Fact Sheet to provide to other project managers and contractors as needed. The information forwarded to included directives focused on both small and large projects.
- The Stormwater 101 and 201 Training Videos were provided to members of the UK Stormwater Stakeholders group to be used in direct training for applicable staff in their respective departments. Grounds specifically used these videos to provide stormwater training to approximately 17 new employees.
- Facilities provided several basic stormwater trainings to building operations staff focused on what is allowed to be discharged into the storm drains outside of their buildings. Sign-in sheets are included in **Appendix U**.
- EMD and CPMD staff attended LFUCG's Annual Erosion & Sediment Control Training on October 17, 2019.
- As previously mentioned, EMD worked with Waste Management and Recycling departments on June 26, 2019, to provide training on proper BMP and spill kit usage relating to the compactors and surrounding areas.

During the 2018 to 2023 permit cycle the following training improvements are planned:

- Task 1.F–Update staff IDDE training by year three and ensure training is conducted annually.
- Task 1.G–Update individual departmental stormwater training and improve the delivery system and participation by year five.
- Task 3.B.2–Develop sanitary sewer overflow protocols and train staff in year two.
- Task 3.D.2–Integrate training into the Stormwater Operations Manual by year five.
- Task 6.B–Update the employee training program during the permit period.
- Task 10.A- Develop a training budget for specialized BMP maintenance needs as needed.

What is your budget for MCM #6?

EMD provides consultation and services to UK regarding Pollution Prevention and Good Housekeeping through funding provided by an environmental service surcharge applicable to all UK departments. As a result of this surcharge, EMD's budget is relatively stable and is used to support O&M needs on an as-needed basis. Depending upon the activity, need, or project, additional funding sources from other UK departments (e.g., PPD, Athletics) may be used.

With the development of the 2018 to 2023 SWQMP, an estimated budget was created for those tasks with associated direct costs. The following chart provides the potential costs for several MCM 6 tasks:

2018 - 2023 SWQMP Estimated Budget									
Task (#)	Task/Expense Discription	Min Cost ($)	Task Max Cost ($)	Task Year	Reoccurrence	Number of Years Multiplier	Total Min Cost ($)	Total Max Cost ($)	Funding Department
6.A	Development of Stormwater Operations Manual		50,000	Year 5 completion	One-Time	1	50000	50000	EMD
6.A.1.b	Increased Recurring Maintenance Costs Based on Completed O&M Manual			Annual	Annual	5			Utilities/Grounds
6.C	Coal Pile Pollution Prevention Assessments and Upgrades	2000	15000	Four	One-Time	1	2000	15000	Utilities
6.D	Gluck Pond Alternative Management for Geese (Landscaping)		20000	Year 4 completion	One-Time	4	80000	80000	Grounds
6.D	Assessment of Waterfowl Impact and Management Program	4000	20000	Annually	Annually for permit term	5	20000	100000	Grounds

The following documentation is attached in the appendices referenced above.

Appendix M–EcoGro FEMA Basin Annual Maintenance Report

Appendix O–Compactor, Drain, and Spill Kit Location Table

Appendix P–Waterfowl Management Efforts

Appendix Q –2019 Athletics Stormwater Policy

Appendix R–Stormwater Stakeholder Meetings Sign-in Sheets

Appendix S–Groundwater Protection Plan

Appendix T–Athletics SPCC Training Presentation

Appendix U–Basic Stormwater Training Sign-in Sheets

PART D: MISCELLANEOUS INFORMATION

Provide any data regarding the following indicators (if applicable). Attach separate sheets as necessary, and indicate, as appropriate, the rationale behind not using a listed indicator.

a) One person responsible for permit implementation is to receive at least 12 hours of documented training annually, related to furthering MS4 goals and objectives. List the person that received this training in 2019 and attach documentation for the training they received.

Kevin Lewis–12+ hours of training as previously discussed in sections and included in **Appendix L**.

b) Number or percentage of citizens that aware of storm water quality issues

The number of faculty, staff, and students that are aware of stormwater quality issues has not been quantified by an on-campus survey since the original stormwater awareness survey was completed in 2013. An updated, campus-wide, survey is scheduled to be updated and conducted by the end of Permit Year two.

That being said, the Kentucky Transportation Cabinet (KYTC) provides statewide outreach and education efforts regarding stormwater. In 2017, KYTC conducted a Statewide Stormwater Survey. The results of this survey indicated that “the majority of respondents had a low level of knowledge about commonly known sources of stormwater pollution.” The results from this survey can be found here: https://transportation.ky.gov/Stormwater/Pages/StormwaterSurvey.aspx.

LFUCG also provides outreach and education to the citizens of Fayette County, many of which attend or are employed by UK. In 2018, LFUCG commissioned a Stormwater Survey and Focus groups to understand public perceptions and attitudes related to stormwater. The results of this survey indicate the level of knowledge on issues related to water quality could be improved. For example, greater than six in ten residents believe stormwater is cleaned at a water treatment plant and fewer than one in four know they live in a watershed. Information from this document will be used to assist in the UK survey development as well as to improve outreach.

c) Number and location of storm drains marked

Through outreach efforts with students and staff, an additional 34 storm drains were marked during 2019. As discussed in Section A, a graduate student began evaluating the marking program and developing an application allowing for updating the stormwater marking database. With the system now in place, tracking and updating will be an ongoing effort and the information will be integrated into the interactive mapping that is currently under development. Based on GIS’s tracking mechanism of the mapped storm drains, there are 435 drains that have been marked since the program began and 1328 drains that have yet to be labeled.

An addition to our construction design standards in 2016, UK adopted the LFUCG Storm Structure Standard Drawing that requires all storm drain grates be cast with the words “Dump No Waste, Drains to Waterways.” By enacting this requirement, UK has eliminated the need to label any newly installed storm drains. This will be reflected in the new assessment.

d) Number of, and amount of material collected from, hazardous household waste (HHW) collections

Given the unique aspect of UK’s operations as opposed to a city, town, or other municipal entity, the term “household hazardous waste” does not apply. However, EMD is charged with ensuring the safe and timely pickup and management of all hazardous waste and various other special waste streams generated at all on-campus locations including academic, research, health care, and other areas as requested. This waste is manifested as required and properly disposed of at approved sites. In 2019, 155,397 pounds of hazardous waste was collected and shipped. This information is reported to the Kentucky Division of Waste Management and the USEPA annually.

e) Number and location of citizen drop-off centers for automotive fluids

UK operates a number of locations that service vehicles and other equipment that use oils and other fluids. Each location has the capability, resources, and training necessary to collect and manage such fluids. Used oils are collected for recycling and other fluids are collected by EMD for off-site disposal and treatment. The location of the primary vehicle centers includes the College of Agriculture Motor Pool and Peterson Service Buildings located at 1505 College Way and 411 South Limestone, respectively.

f) Number or percentage of citizens that participate in HHW collections

Approximately 1,159 laboratories and other hazardous waste generating locations actively participate in UK's Hazardous Waste collection program.

g) Number of public informational requests received related to construction sites

There were no public information requests received by UK in 2019.

h) Estimated acreage or square footage of open space preserved and mapped in 2019.

No additional open space was preserved in 2019. All UK areas have been mapped. See the following for more details.

i) Estimated acreage or square footage of mapped pervious and impervious surfaces in 2019.

UK's Master Plan, which was completed in November of 2013 and updated in 2017, integrated the following strategies:

- Identification of areas for additional tree planting for wind protection and shade
- Reduction of hard surface areas to mitigate heat island effects
- An overall increase in pervious surface areas to improve groundwater recharge and stormwater management
- Creation of a new stormwater detention basin within the South Campus
- Integration of elements such as parking gardens, bioswales, and filter strips to capture and filter rainwater
- Protection and enhancement of habitats and natural systems

Over the last several years, the face of the campus has been in a constant state of flux due to unprecedented construction. Although winding down, major construction continues as UK seeks to improve its infrastructure and provide the best environment for faculty, staff, and students. As each of these projects is completed, the amount of pervious/impervious surface changes incrementally, leading UK toward projected goals. In 2019, UK's main campus boundary consisted of 824 acres with 416 acres or 50.5 percent of pervious surfaces. This is a reduction of 1.8 percent from the previous year's calculations. On an annual basis, GIS works to identify changes in pervious areas on main campus to create an up to date map. The latest Impervious Areas Map is included in **Appendix V**.

It should also be noted that UK pays LFUCG's stormwater fee, which is based on the amount of campus impervious surface. Currently, UK pays approximately $341,000. UK's impervious surfaces are assessed by the city every few years to ensure accuracy. The results are negotiated with UK based on our updated numbers due to construction and changes in infrastructure.

j) Estimated acreage or square footage and location where pesticides, herbicides, and fertilizers are applied by the MS4.

All green spaces contain landscape flora, including trees, shrubs, and lawns that receive application of pesticides and herbicides on an as-needed basis. Fertilizer is applied to lawn areas once annually. The total area where pesticides, herbicides, and fertilizers are applied is estimated to be approximately 127.5 acres.

k) Estimated linear feet or percentage and location of stormwater sewer cleaned or repaired in 2019.

A list of storm sewer locations cleaned or repaired in 2019 is provided in **Appendix W**. Approximately $27,350 was spent repairing, maintaining, and assessing the system.

l) Estimated linear feet or percentage and location of roadside shoulders and ditches stabilized in 2019.

No roadside shoulders or ditches required stabilizing in 2019.

m) Number and location of storm water outfall areas remediated from scouring conditions in 2019.

No outfall areas required remediation from scouring conditions.

n) Number and location of de-icing salt and sand storage areas covered or otherwise improved to minimize storm water exposure in 2019.

Deicing salt is stored at two locations on campus: Athletics stores salt in its shop, which is located adjacent to the Cliff Hagan baseball stadium; Grounds stores salt in a covered shed located at 455 Stadium View Drive. The roof of this shed was repaired in 2019 to eliminate a leak impacting the salt storage.

o) Estimated amount, in tons, of salt and sand used for snow and ice control in 2019.

Grounds and Athletics staff used approximately 280.5 tons of salt in 2019.

p) Estimated amount of material collected from catch basin, trash rack, or other structural BMP cleaning in 2019.

Approximately 8 yards of material was removed from routine maintenance activities of the storm system in 2019.

q) Estimated amount of material collected from street sweeping in 2019.

Street sweeping was performed as regular preventative maintenance throughout the year and occurred for five days at 40 hours per week. Approximately 60 yards of material was collected via this activity.

r) Number and location of canine parks within the MS4 that are less than 150 feet from a surface water body.

UK maintains two areas that could be considered dog parks. One temporary location is the park reserved for service animals along Washington Avenue. While this park is not near a surface water body, it is adjacent surface inlets to the storm sewer system. The other location is the Arboretum, which is used by many as a place to walk their dogs on a routine basis. Waste bags are provided at each location.

s) Other

There was no response.

13. Stormwater Quality Management Plan

a.) Have there been any changes to the urbanized area covered by the MS4? If yes, is this reflected by updates to the SWQMP?

UK routinely acquires properties adjacent to the MS4 boundary that are subsequently absorbed into the MS4 area. These properties are typically older houses that are retained until such time as UK decides to develop them and are typically rented or remain vacant until that time. Contractors provide basic maintenance for these assets. As properties are acquired and sales are final, UK's Real Estate Services Division communicates the new acquisitions to GIS who updates the UK map. The main UK map can be found on the Facilities Management website: http://www.ppd.uky.edu/map/ and contains a base layer entitled "UK Owned" that displays the main campus boundary, including all the latest additions. The MS4 map is based on this boundary and is updated annually/as needed. Because of the routine incremental increase in the MS4 Boundary, the "UK Owned" map is the most up-to-date source of property information.

Recently added to the 2018 to 2023 SWQMP, Task 3.A.2 requires UK to develop clear procedures for recording and reporting MS4 boundary expansion and inclusion of the new territory in the O&M manual. The purpose of this task is to insure all property acquisitions expanding the main campus boundary are properly communicated to those departments that have the potential to impact stormwater (Grounds, Utilities, EMD, Facilities Services) and that those departments are extending stormwater requirements to these properties.

b) Are there any proposed changes to the goals or BMPs in the SWQMP?

The bulk of 2018 was spent assessing the previous SWQMP, strengths and weaknesses of UK's MS4 program, and developing a robust SWQMP to strengthen compliance with the permit, improve UK operations, and improve campus water quality. This includes a total of 106 tasks, 80 of them new for the permit cycle, and a total of 225 measurable goals.

During 2019, many of these new tasks were designated for implementation with significant progress being made on several of them. However, there were also many lessons learned on some of the difficulties encountered in implementing such an aggressive SWQMP. These include the realities of the time taken to complete tasks, existing workload of

stakeholders, and the impact of personnel changes. Each has an impact on the ability to complete these tasks to the high standard that UK is working to achieve and maintain.

Based on these realities, changes have been made to the target completion dates for the following tasks from the 2018 to 2023 SWQMP.

Task	Task Summary	Changes
1.B	Update and Maintain a Stormwater Website	Began in PY2, will extend to PY3
1.B.2	Develop and Illicit Discharge Reporting System	Will be updated along with the Stormwater Website
1.H	Update Campus-wide Survey to Assess Outreach Efforts	Rescheduled to be completed in PY3
3.A.1	Update Utility Map with Bell 2017 Assessment	Due to implementation issues, extended into PY3
3.B.2	Develop SSO Protocols and Resolution Time Frames	Began in PY2, will extend to PY3
3.B.5	Assessment of Dry Weather Flows on Campus	Began in PY2, will extend to PY3
3.C	Update Complaint Reporting Mechanism	Will be updated along with the Stormwater Website
4.A	Improve the Construction Project Notification/Review Process	Began in PY2, will extend to PY3
4.B	Develop Alternative Land Disturbance Permit Process	Began in PY2, will extend to PY3
4.D.2	Develop Escalating Enforcement Policy for KYR10 Violations	Began in PY2, will extend to PY3
4.G	Develop Contractor and Designer Training	Began in PY2, will extend to PY3
4.G.1	Develop Construction Process Training	Began in PY2, will extend to PY3
4.G.2	Develop KYR10 Training	Began in PY2, will extend to PY3
6.A.4	Create Procedures to Respond to Unplanned Stormwater Events	Began in PY2, will extend to PY3
6.A.5	Create Procedures for Unknown Spill Cleanup	Began in PY2, will extend to PY3

More information regarding the specifics of the measurable goal progress is available in the previous text and the updated SWQMP summary table included in **Appendix X**.

14. Discuss any problems encountered during this period (include any BMP changes in response to problems encountered).

Through the beginning of the implementation UK's aggressive SWQMP and the tasks scheduled to be completed by the end of permit year two, several difficulties have been identified that will result in extended time frames for the above-noted tasks to allow the full effort to be completed. As previously mentioned, these include lessons learned on the time taken to complete tasks, existing workload of stakeholders, and the impact of personnel changes.

In addition to this, modifications to the agreement between EMD and TFISE will likely occur during 2020. TFISE was originally engaged to assist in the management and completion of the majority of the tasks included in MCMs 1 and 2. Professors and extension staff on campus are already teaching and engaging students in stormwater related topics whether or not they discuss the specific goals of the UK MS4. Through engaging TFISE, EMD intended to leverage, coordinate, and expand on these efforts. However, several personnel changes, a reorganization, and an evaluation of the TFISE goals led to conversations regarding the future completion of the previously assigned tasks. Moving forward, in 2020 EMD will be evaluating potential modifications to the task assignments and look to engage additional resources, as needed, to continue to pursue the completion of the SWQMP tasks.

15. Identify any new funding source(s) for implementing this permit.

UK began looking into its eligibility with LFUCG's Stormwater Incentive Grant Program in 2016. In 2017 a grant application was submitted and subsequently awarded (officially awarded in 2018) for a proposal to restore UK's second only stream adjacent to Alumni Drive. This grant award provides an amount of $300,000 toward the project. In addition to the LFUCG Grant, stakeholders brought the project before the Student Sustainability Counsel and were awarded an additional $50,000. With the proposed cost share, funding for the project totals approximately $380,000. This project was completed in 2019.

An additional grant application was submitted to LFUCG's Stormwater Incentive Grant Program in 2018 related to stormwater harvesting for utility plant usage. While it was not selected in 2018 the project was resubmitted in 2019 and selected for funding providing $216,800 to implement the project. Plans are already underway to submit future applications for funding assistance with additional stormwater harvesting projects at several campus utility plants. These projects have the potential to reuse hundreds of thousands of gallons of stormwater annually.

UK also applied for and received LFUCG Stormwater Class A&B Education Grant for implementation of trial program to determine effectiveness of a pressured-steam weed control system to reduce chemical weed control on campus,

especially around stormwater BMPs. The grant application goals were to demonstrate and develop education materials related to nonchemical weed management techniques. The grant was partially funded at $21,646 requiring that alternatives be developed to reduce the budget and allow the project to begin.

16. Provide a summary of complaints received and the follow-up actions taken in reference to storm water quality issues.

The number of complaints received is discussed in Section C of this report and all complaints and illicit discharge reports from 2019 are included in **Appendix C**.

17. Implementation status:

a. Are the six minimum control measures being implemented within the compliance schedule and SWQMP timetables?

☐Yes ☒No*

* If no, submit revised compliance schedule and SWQMP Timetables.

As previously noted in questions 13 and 14, while a significant amount of work has been completed on tasks both in and outside the scope of the SWQMP, several tasks have implementation schedules that are being expanded allow for the full effort to be completed.

b. Do you foresee any problems which may affect full implementation of all the measures?

☒Yes ☐ No*

* If yes, explain:

The 2018 to 2023 SWQMP is comprehensive, ambitious, and requires assistance from multiple stakeholders to be completed. While every effort will be made to complete all assigned tasks and measurable goals within the assigned time frame, the possibility remains that tasks may not be completed by the goal specified in the plan. A tracking spreadsheet has been developed to monitor progress and routine update meetings will be held to assess efforts. Time frames will be adjusted annually as necessary.

18. Do you have any impaired streams? If so, impaired for what pollutant?

UK's MS4 permitted area drains to the tributaries of three different streams (Town Branch, Wolf Run, and West Hickman Creek) as well as two on-campus sinkholes. Town Branch and Wolf Run drain to South Elkhorn Creek. West Hickman Creek drains to the larger Hickman Creek watershed. All these streams are within the Kentucky River Basin (HUC 5100205).

UK's permitted area has been divided into six primary subwatersheds: two subwatersheds drain to West Hickman, two drain to Wolf Run, and two drain to campus sinkholes or Town Branch (see the included MS4 map in **Appendix D** for details). There are only two streams located within the MS4 boundary: Big Elm Fork (sometimes referred to as an Unnamed Tributary to Vaughn's Branch), which is a tributary to Wolf Run, and an unnamed tributary to West Hickman.

Based on the KDOW 2016 303(d) list, segments of all three of the above-mentioned streams (along with many of their tributaries) are impaired. The impairments are included in the following charts:

2016 303d List Town Branch Impairments:

Waterbody & Segment	Designated Use(s)	Pollutant	Suspected Sources
Town Branch 0.0 to 9.2	Warm Water Aquatic Habitat	Organic Enrichment (Sewage) Biological Indicators	Municipal Point Source Discharges
Town Branch 0.0 to 9.2	Warm Water Aquatic Habitat	Specific Conductance	Agriculture, Municipal Point Source Discharges, Urban Runoff/Storm Sewers
Town Branch 0.0 to 9.2	Warm Water Aquatic Habitat	Nutrient/Eutrophication Biological Indicators	Agriculture, Municipal Point Source Discharges, Urban Runoff/Storm Sewers
Town Branch 9.2 to 10.8	Warm Water Aquatic Habitat	Nutrient/Eutrophication Biological Indicators	Loss of Riparian Habitat, Municipal (Urbanized High Density Area), Municipal Point Source Discharges, Urban Runoff/Storm Sewers
Town Branch 9.2 to 10.8	Warm Water Aquatic Habitat	Organic Enrichment (Sewage) Biological Indicators	Loss of Riparian Habitat, Municipal Point Source Discharges, Urban Runoff/Storm Sewers
Town Branch 9.2 to 10.8	Warm Water Aquatic Habitat	Sedimentation/Siltation	Loss of Riparian Habitat, Municipal (Urbanized High Density Area)
Town Branch 9.2 to 10.8	Warm Water Aquatic Habitat	Specific Conductance	Loss of Riparian Habitat, Municipal (Urbanized High Density Area), Municipal Point Source Discharges
Town Branch 10.8 to 12.4	Warm Water Aquatic Habitat	Sedimentation/Siltation	Loss of Riparian Habitat, Municipal (Urbanized High Density Area), Non-Point Source
Town Branch 10.8 to 12.4	Warm Water Aquatic Habitat	Specific Conductance	Loss of Riparian Habitat, Municipal (Urbanized High Density Area), Non-Point Source
Town Branch 10.8 to 12.4	Warm Water Aquatic Habitat	Nutrient/Eutrophication Biological Indicators	Loss of Riparian Habitat, Municipal (Urbanized High Density Area), Non-Point Source

2016 303d List Wolf Run Impairments:

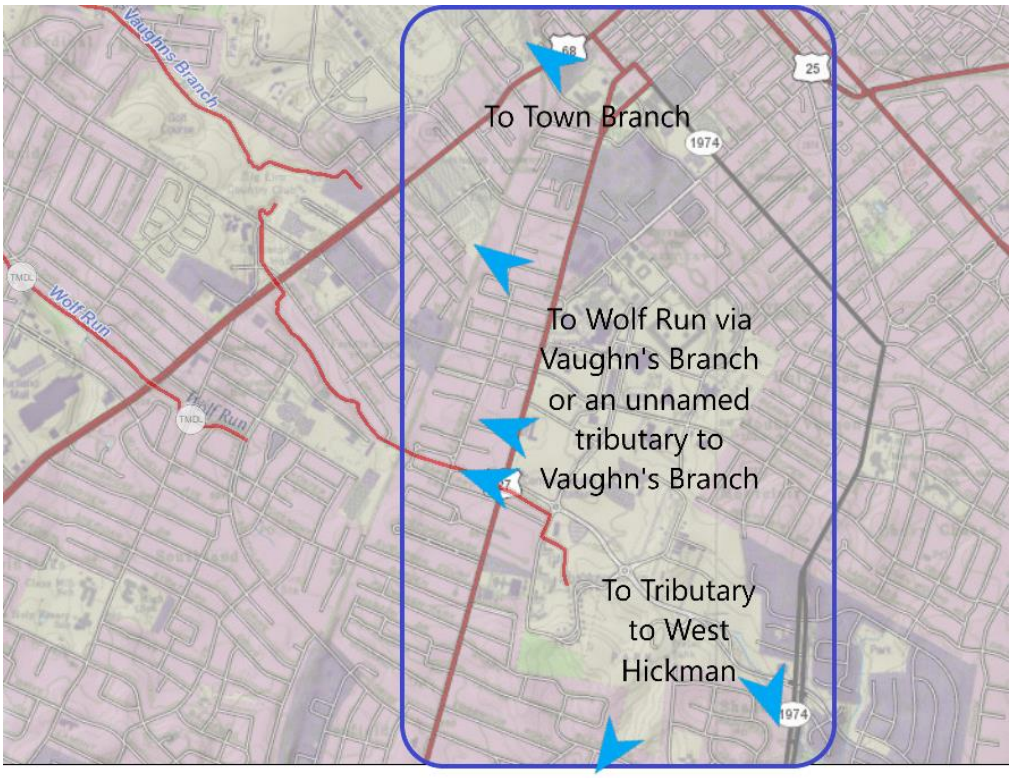
Waterbody & Segment	Designated Use(s)	Pollutant	Suspected Sources
Wolf Run 0.0 to 4.3	Warm Water Aquatic Habitat	Nutrient/Eutrophication Biological Indicators	Channelization, Loss of Riparian Habitat, Unspecified Urban Stormwater, Urban Runoff/Storm Sewers
Wolf Run 0.0 to 4.3	Warm Water Aquatic Habitat	Specific Conductance	Channelization, Unspecified Urban Stormwater, Urban Runoff/Storm Sewers, Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO)

2016 303d List West Hickman Impairments:

Waterbody & Segment	Designated Use(s)	Pollutant	Suspected Sources
West Hickman Creek 0.0 to 3.1	Warm Water Aquatic Habitat	Nutrient/Eutrophication Biological Indicators	Unspecified Urban Stormwater
West Hickman Creek 0.0 to 3.1	Warm Water Aquatic Habitat	Organic Enrichment (Sewage) Biological Indicators	Municipal Point Source Discharges, Unspecified Urban Stormwater
West Hickman Creek 0.0 to 3.1	Primary Contact Recreation Water	Fecal Coliform	Municipal Point Source Discharges, Unspecified Urban Stormwater
West Hickman Creek 3.1 to 8.4	Primary Contact Recreation	Fecal Coliform	Unspecified Urban Stormwater, Urban Runoff/Storm Sewers
West Hickman Creek 3.1 to 8.4	Warm Water Aquatic Habitat	Nutrient/Eutrophication Biological Indicators	Residential Districts, Unspecified Urban Stormwater
West Hickman Creek 3.1 to 8.4	Warm Water Aquatic Habitat	Organic Enrichment (Sewage) Biological Indicators	Residential Districts, Unspecified Urban Stormwater
West Hickman Creek 3.1 to 8.4	Warm Water Aquatic Habitat	Sedimentation/Siltation	Residential Districts
West Hickman Creek 3.1 to 8.4	Warm Water Aquatic Habitat	Specific Conductance	Residential Districts

None of these impaired stream segments or tributaries are within UK's boundary with the exception of Big Elm Fork (listed as an unnamed tributary to Vaughn's Branch). The following image from the Kentucky Water Health Portal has been amended to show UK's campus (surrounded in blue) and its discharge points, along with the impaired stream segments in the surrounding area (in red).

Impaired streams in or near University of Kentucky MS4



Newly listed in 2016, the section of Big Elm Fork that begins at the outlet of the Greg Page underground detention basin and continues to the WR-1 Outfall at the corner of Alumni Drive and Nicholasville Road does not support aquatic life and partially supports swimming, fishing, wading, and boating because of specific conductance, *E.coli*, and Fecal Coliform impairments. The data used to make this determination was collected in 2011 and 2012. Important to note is that since that time the entire watershed has undergone a major redesign due to the efforts of the FEMA Flood Mitigation Project as well as the rerouting and redesign of Alumni Drive. Also, in 2016, an illicit discharge to this watershed was discovered coming from a storm drain line in the Shawneetown area. Caused by wastewater intrusion from a nearby sewer line, the problem was identified and eliminated in 2017. Since that time, follow-up samples have shown a sharp decrease in *E.coli* concentrations. With remaining numbers still above the water quality standard, Investigation and remediation efforts in the area are still underway. Lines were televised in 2018 with several severe problems noted. Line repair and replacement and brick manhole lining to resolve these issues occurred in 2019 and will continue in 2020.

19. TMDL–Do you have a TMDL in your MS4? For which stream segments? What is the impairment?

There are two TMDLs associated with UK's MS4: The South Elkhorn Creek Fecal Coliform and *E. Coli* TMDL and the Kentucky Statewide TMDL for Bacteria Impaired Waters.

The South Elkhorn TMDL includes the following stream segments associated with UK: section 0.0 to 4.4 of Wolf Run Creek and section 10.8 to 12.1 of Town Branch Creek. These stream segments are not located within the boundary of UK's MS4; however, UK is located within the overall watershed represented by the TMDL.

In 2019, the Kentucky Division of Water has developed a new state-wide approach for addressing the numerous bacteria-impaired waterbodies found throughout Kentucky. Rather than creating a separate TMDL for the Unnamed Tributary of Vaughn's Branch 0.0 to 1.85, the impaired stream will be included under this TMDL.

Even though a TMDL has yet to be completed for Big Elm Fork (Unnamed Tributary of Vaughn's Branch), UK is addressing the impairment through tasks included in the SWQMP. Task 8A requires BMPs to be implemented in response to the recent impairment. These BMPs include sewer line evaluation and repair, sealing brick manholes, evaluating RV grey and blackwater discharge during tailgating events, monitoring, and waterfowl management to name a few.

20. What can the Division of Water do to assist you with program compliance?

During UK's stormwater audit, UK discussed the need for updated KEPSC training. In conversations with other entities around the state, all agreed the training is outdated and there are opportunities to both update and improved the training offerings. Also, UK believes that it is important that these trainings are held more often, throughout the state, and with better notification for people who need the training.

PART E: CERTIFICATION AND SIGNATURE

► The individual completing this report, listed in "PART A: GENERAL INFORMATION–MS4 OPERATOR" must sign the following certification statement:

"By signing this annual report, I hereby certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Type or Print Name: _____

Signature: _____ **Date:** _____
(mm/dd/year)

APPENDIX A

Public Education and Outreach

Included Documentation

Story Maps for UK's Post-Construction BMPs

Social Media Tracker Spreadsheet

4-H Teen Conference Agenda

LFUCG Nature Hop Agenda

Greg Page Sustainability Festival Handouts

Greg Page Sustainability Festival Tri-fold

KYH2O Podcast Series Flyer

KYTC's Education and Outreach Efforts

Stream Restoration and Stormwater Improvements on Big Elm Fork

University of Kentucky

In 2015, the University of Kentucky constructed a major stormwater management and stream restoration project after being awarded a $12,000,000 FEMA Hazard Mitigation Grant. The overall goals of the project were to reduce flooding and to provide an outdoor learning space along the fully restored reach of Big Elm Fork, a stream on UK's campus.

Big Elm Fork Watershed on UK's Campus

Flooding on Nicholasville Road

The shaded area depicts the watershed draining to Big Elm Fork, the stream running alongside Alumni Drive. All stormwater runoff within this watershed flows into Big Elm Fork before draining into a culvert under Nicholasville Road.

Before restoration, Big Elm Fork would often exceed this culvert's capacity and flood onto Nicholasville Rd. Image Source: Josh Karrick, Bell Engineering

Flooding, including one severe event that resulted in two fatalities, served as an impetus to redesign the watershed drainage system to slow runoff and prevent flooding.

What's in the watershed?

We rely on stormwater systems to remove excess runoff and prevent flooding. The system must be designed based on the characteristics of the watershed it drains. Watersheds that include developed areas experience more runoff because impervious surfaces like roads and buildings block precipitation from soaking into the ground.

Kroger Field (Commonwealth Stadium) and the surrounding parking lots are a major runoff-generating feature of this watershed. Image Source: UK Physical Plant.

The Big Elm Fork watershed includes significant impervious land areas, including the football stadium, Central Baptist Hospital, and many large parking lots. It also includes portions of multiple neighborhoods (single-family and multi-unit), a childcare center, and part of the Arboretum.

Excavating and Rebuilding Big Elm Fork

Before getting reconstructed, Big Elm Fork was confined to a narrow stream valley with minimal floodplain access. Floodplains dissipate excess energy associated with storm flows, so a stream will cut down into the channel if all of its energy is concentrated within the streambanks during a storm.

Before the stream was restored, it flowed down a narrow valley between an unused road and a neighborhood. Image Source: Carmen Agouridis, UK

First, the auxiliary road was removed and a wider valley excavated.

Image Source: Josh Karrick, Bell Engineering

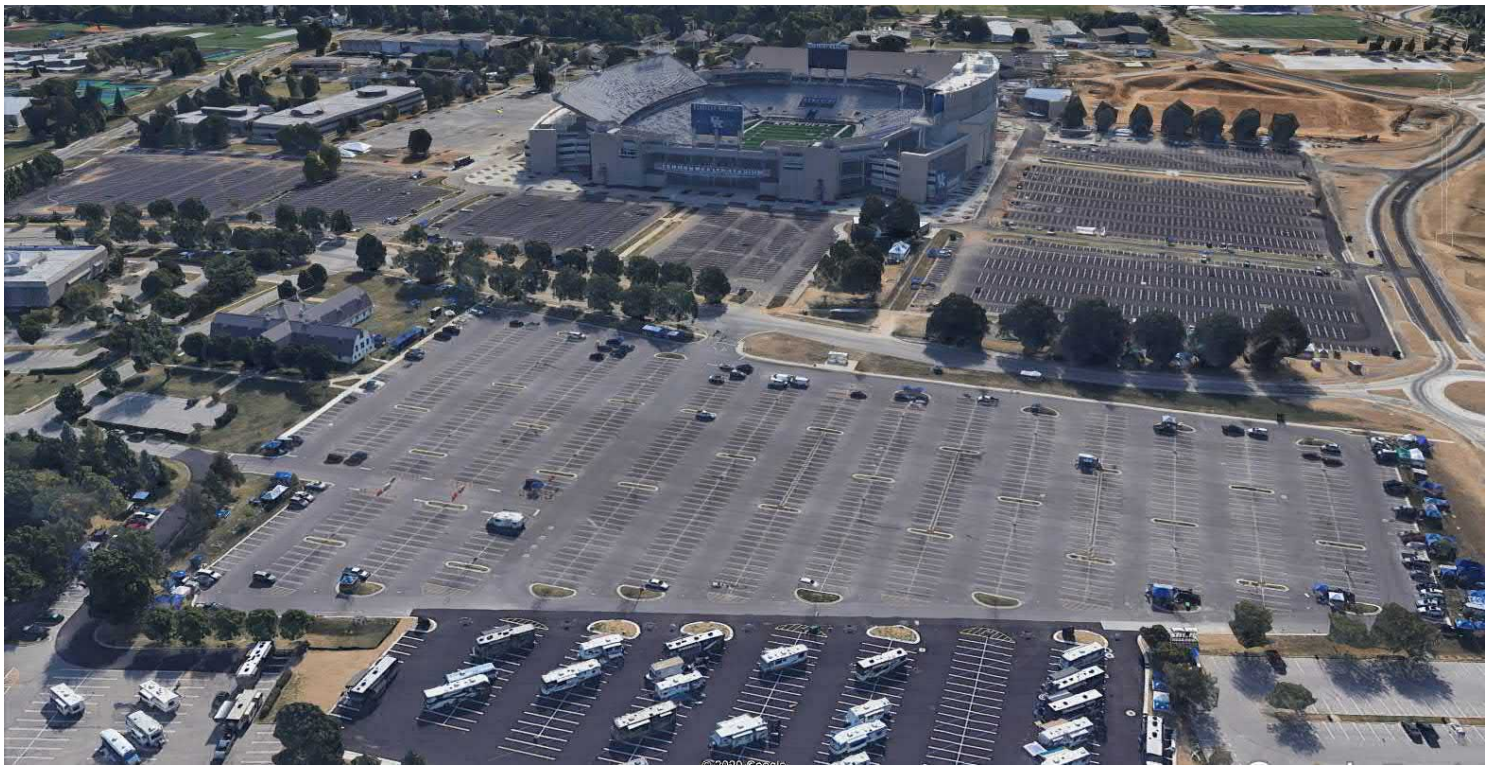
Rocks ranging from large boulders to pebbles were carefully placed to create a pool-dominant stream channel. The greater frequency of pools provides more storage, which helps slow stormwater runoff.

Image Source: Josh Karrick, Bell Engineering

After filling and grading the floodplain, sowing seed, planting new trees, and waiting four months, Big Elm Fork looks more like a natural stream and can spread out over a wider floodplain during storms.

In addition to the stream restoration project, parking was added to the already-expansive lots around the stadium. To offset the additional impervious area, storage tanks were constructed underneath the parking lots to temporarily store and slowly release runoff during storms. This reduced peak flows in Big Elm Fork and helped to prevent flooding.

Storing Excess Stormwater Underneath New Parking Lots



To slow stormwater runoff, 15,000 cubic yards of storage tanks were built underneath the parking lots between the stadium and Nicholasville Rd., and near the Greg Page Apartments.

Image Source: Josh Karrick, Bell Engineering

Image Source: Josh Karrick, Bell Engineering

Background image source: Google

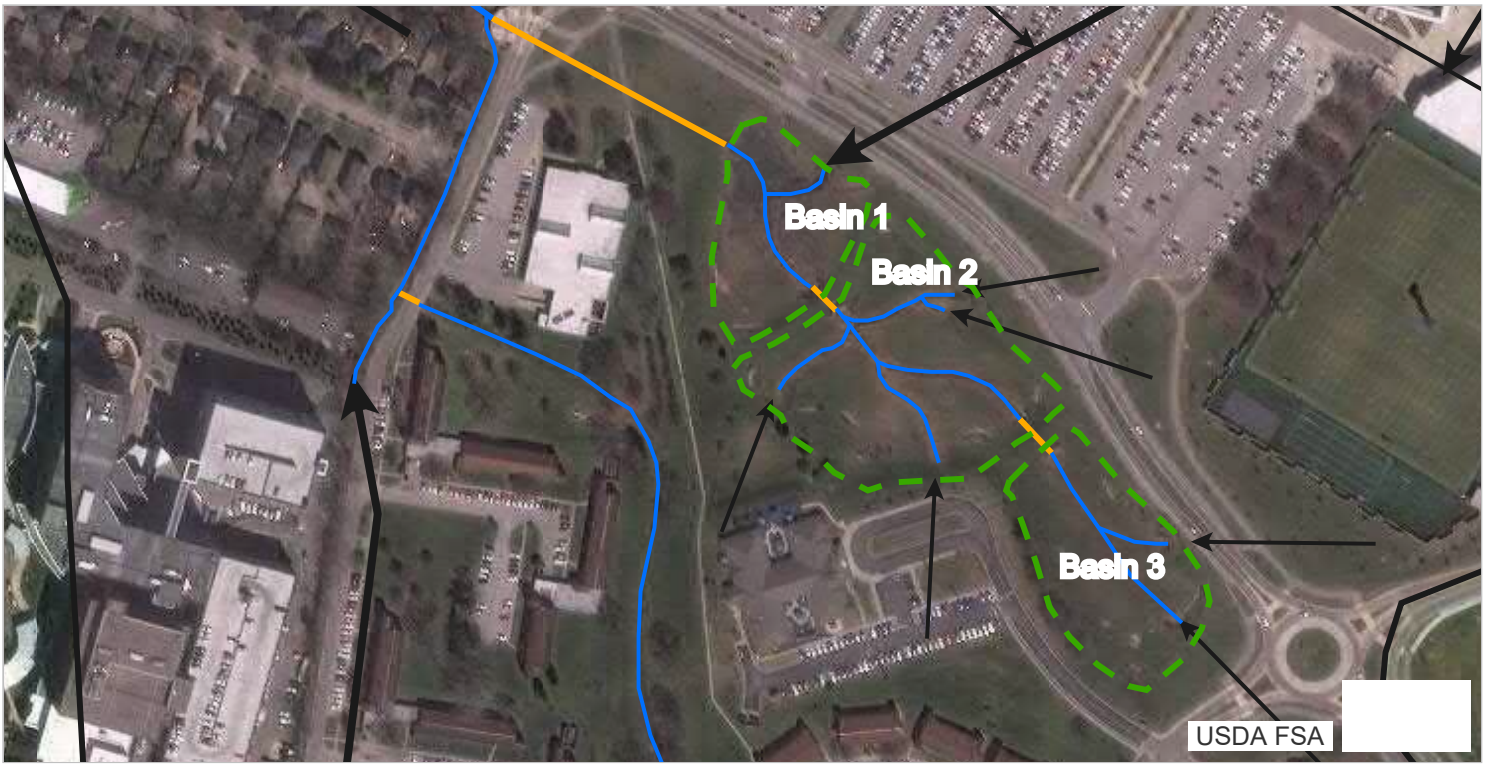
A More Detailed Look at the Stormwater System

The goal of this map is to show the overall stormwater system that drains into Big Elm Fork. The arrows roughly represent the direction of stormwater runoff.

Some runoff flows through parking lot drains into the underground storage tanks (yellow rectangles) before slowly filtering out and draining to Big Elm Fork. Much of it passes through culverts before entering the smaller channels that flow into Big Elm Fork.

Wherever it came from, everything passes through this culvert at the watershed outlet (purple star on the map) underneath Nicholasville Road.

A More Detailed Look at the Stormwater System: Detention Basins



In addition to the stream restoration and the construction of enormous storage tanks, a series of three detention basins were built to serve an indispensable role in slowing stormwater runoff.

Image Source: Cole Crankshaw, UK

In dry weather, the detention basins look almost parklike, but during storms they store water and slow runoff as it flows towards the watershed outlet.

Image Source: Cole Crankshaw, UK

Detention basins are good places to support native ecosystems by growing native trees, shrubs, and wildflowers. Hydraulic structures can also be adapted to add aesthetic touches that reflect the region.

Image Source: Cole Crankshaw, UK

Social Media Tracker 2019

Post Date	Text of Post	Likes	Shares
5/11/2019	Now that summer is here (or almost here), it's a great time to become a Certified Backyard Stream Steward. https://www.uky.edu/bae/backyardstreams #streamsteward #protectourwater University of Kentucky College of Agriculture, Food and Environment Kentucky Energy and Environment Cabinet Kentucky Environmental Education Council I Love KY Water Kentucky Geological Survey	3	1
5/15/2019	Developing new water resources training materials starts with input from you. We want to hear from Kentucky residents, 18 years and older, regarding their values, attitudes, and knowledge about water resources in the Commonwealth. http://go.uky.edu/3CY	5	26
5/22/2019	Join us this Friday to beautify campus and improve stormwater quality by planting native wildflowers at Gluck Pond. Sign up here: https://forms.gle/HLCDQVJQuEzxtvHR9. #UKStormCats #stormwaterquality	1	0
5/24/2019	As Memorial Day approaches, get in the spirit of service by joining us this afternoon to plant native wildflowers at UK's Gluck Pond. Sign up: https://forms.gle/HLCDQVJQuEzxtvHR9. #UKStormCats #stormwaterquality	0	0
5/24/2019	Thanks to the awesome volunteers who came out to plant today. Hundreds of newly planted wildflowers now call Gluck Pond home. #UKStormCats #stormwaterquality	11	0
5/28/2019	Ever wonder about the stream restoration project at Coldstream Park along the Legacy Trail? Eric Dawalt of Ridgewater joins us onsite to discuss the benefits of this project. Listen then Explore More. University of Kentucky College of Agriculture, Food and Environment Live Green Lexington I Love KY Water (Link: https://www.podbean.com/ew/pb-ymhvu-b0ce99)	8	4
6/3/2019	Ever wonder what it means to restore a stream? Eric Dawalt of the Ridgewater/EcoGro team provides insights. Link: https://www.podbean.com/ew/pb-vkq2a-b0d181	7	2
6/12/2019	Learning about stormwater management at UK's new baseball stadium and at UK's hospital with Kentucky 4-H as part of Teen Conference. #UKStormCats #stormwaterquality	5	0
6/14/2019	We're still accepting survey responses. Since we all use water everyday, this survey is applicable to all Kentuckians (18 years and older). Let us know what you think of Kentucky's water resources. http://go.uky.edu/3CY	1	2
6/20/2019	With all this rain, be on the lookout for new storm drain medallions that remind us where stormwater flows: our streams! #UKStormCats #stormwaterquality	7	2
6/20/2019	Big shout out to all the UK and Friends of Wolf Run volunteers who have and continue to improve water quality in the Wolf Run Watershed. Thanks to Live Green Lexington for the opportunity to describe some amazing projects on Lex Go Green on Radiolex 93.9 FM ENG . #UKStormCats #stormwaterquality	4	1

6/27/2019	Only three more days until until our survey on Kentucky's water resources closes. We want to hear from you. http://go.uky.edu/3CY	1	0
7/1/2019	Riparian (streamside) buffers are both beautiful and functional. Join us as we visit with Russ Turpin of EcoGro at the stream restoration project at Clays Mill Elementary in City of Lexington, Ky Southland Park to learn about riparian buffers. Visit the Explore More section for resources on how to establish and take care of your own riparian buffer. #stormwaterquality #UKStormCats Link: https://www.podbean.com/ew/pb-82dew-b0d6e1	9	5
7/2/2019	Thanks UK Sustainability for the amazing partnership to restore urban stream ecosystems and create outdoor learning spaces.	5	0
7/7/2019	Check out the new stream restoration project at the UK Ecological Research and Education Center. The restored stream corridor will provide salamander habitat while slowing stormwater and minimizing erosion. #UKStormCats #stormwaterquality	18	1
7/10/2019	Looking to get out and explore Kentucky's waterways? Gain a first hand perspective in this episode. Join County Judge Executive John Wilson and Amanda Gumbert as they paddle down Paint Lick Creek. https://www.podbean.com/ei/pb-wq2zf-b0d6e8	5	0
7/13/2019	Kicking off Sizzling Summer at the UK Children's Garden. Water has really cool properties. Stop by and learn about them through fun games. Can you make a paper clip float?	9	1
7/15/2019	We can all do our part to protect stormwater. In this episode, Jennifer Carey from City of Lexington, Ky provides great tips and insights. Ever wonder what the large tank near the Legacy Trail is for? Curious about how your neighborhood can apply for funds to help with stormwater education? Listen and find out. Live Green Lexington Link: https://www.podbean.com/ew/pb-many6-b7d5b1	5	1
7/16/2019	Not a bad day at work when you get to hike Floracliff Nature Sanctuary to record interviews for KYH2O podcast series. I love my job! 😸👏💧	12	0
7/18/2019	If you plant it, they will come! The new garden of native plants at Gluck Pond supports a diverse community of wildlife, like this Monarch butterfly caterpillar feeding on a Swamp Milkweed. #UKStormCats #stormwaterquality	6	0
7/23/2019	Trees are an important part of our urban landscape. In this episode we join UK's arborculturalist Stacy Borden to discuss the water-related benefits trees provide to campus and the surrounding communities. UK Sustainability #UKStormCats #stormwaterquality Link: https://www.podbean.com/ew/pb-qa8su-b0d6f0	6	4
7/29/2019	Great reminder that we are all connected by water. Video link: https://youtu.be/_bPnLrqzaH0	3	2
8/1/2019	Excited to watch this project mature over the years. Thanks to UK Grounds who were in installing the plants and will continue to maintain the area. #UKStormCats #stormwaterquality Video: https://youtu.be/wQSE0ezj3-k	3	0

8/6/2019	Reducing the size of the dead zone takes all of us. Learn what the Hypoxia Task Force is doing to protect water quality. Link: https://www.podbean.com/ew/pb-kgmck-b0d6f3	5	1
8/13/2019	Ever wonder about the benefits of rain gardens? They go beyond stormwater. Suzette Walling from University of Kentucky College of Agriculture, Food and Environment and students from Redwood Cooperative School explain how you can win with rain gardens on KYH2O. Link: https://www.podbean.com/ew/pb-9rw3p-b96c22	6	1
8/13/2019	Thanks to a grant from KWRRI, we learned a lot about Kentuckians' values, attitudes, and knowledge towards water resources and our climate. Get the inside scope in 60 minutes (online or in-person). Register at https://forms.gle/aNc2CMYGjTd3XGum7	2	0
8/20/2019	Excited about the new stream restoration project on the southern part of campus. https://bit.ly/30ka62P	1	0
8/27/2019	Colton Pugh, one of our grad students in BAE, is using a rainfall simulator to better understand stormwater runoff over different soil types. Very cool! #UKStormCats #stormwaterquality	12	0
8/28/2019	Just in time for the holiday weekend. Link: https://www.podbean.com/ew/pb-njwj7-b96eab	3	3
8/28/2019	Our friends at EcoGro are making major progress on the new Alumni Rd stream restoration project. Read more here: bit.ly/2MqzuAE #UKStormCats #stormwaterquality	8	0
9/4/2019	Come on out to the Sustainability Festival TODAY at Greg Page Lawn from 6:30PM - 8:00PM! #UKStormCats #stormwaterquality	2	0
9/16/2019	We'll be there. Come join us.	3	0
9/19/2019	Come on out for a great Fall Service Learning experience THIS Friday and Saturday, AND Friday 11/1 at our CATchment rain garden!! #UKStormCats #stormwaterquality	3	0
10/4/2019	https://youtu.be/0j6gHgXLT4Y	11	3
10/23/2019	Come on out on Friday Nov. 1st for our final CATchment Cleanup of the fall semester! #UKStormCats #stormwaterquality	1	0
10/31/2019	Stormwater doing what stormwater will do. When the sun comes out tomorrow, let's grab our pitchforks and mulch! #UKStormCats #stormwaterquality	5	1
11/11/2019	How does one maintain a lawn while protecting water resources? Learn about the history of lawns and turf management in KY with Gregg Munshaw of the University of Kentucky College of Agriculture, Food and Environment Link: https://www.podbean.com/ew/pb-smfke-c5f651	3	1
12/3/2019	We had a great time planting about 60 American elm, sycamore, and silver maple trees along the restored stream at UK's Ecological Research and Education Center. Trees benefit streams by providing shade, habitat, stability, and more. #UKStormCats #stormwaterquality	8	1

AGENDA

Environmental Engineering: Protecting Air, Water, Soil, and People

June 11, 2019
8:30 am – 11:45 pm

Instructor: Carmen Agouridis, Ph.D., P.E., M.P.P.

8:30 am – 9:30 am	**Introduction** What is environmental engineering? What's happening on UK's campus?	C.E. Barnhart Building, Room 236
9:30 am – 10:30 am	**Stream Restoration** What is stream restoration?	C.E. Barnhart Building, Room 236
10:30 am – 11:00 am	**Stream Restoration at UK** FEMA and new project overviews	C.E. Barnhart Building, Room 236
11:00 am – 11:45 am	**Stream Restoration Project Tour** FEMA project tour	In Field

Additional Instruction:

Please wear comfortable attire and dress for the weather. We will be outside for part of the workshop.

AGENDA

Environmental Engineering: Protecting Air, Water, Soil, and People

June 12, 2019
8:30 am – 11:45 pm

Instructor: Carmen Agouridis, Ph.D., P.E., M.P.P.

8:30 am – 9:15 am	**Stormwater** What is stormwater? What's happening on UK's campus?	C.E. Barnhart Building, Room 236
9:15 am – 10:00 am	**Permeable Surfaces and Vegetated Swales** What are strategies for infiltrating stormwater? What are methods for controlling the flow of stormwater?	Kentucky Proud Park Baseball Stadium
10:00 am – 10:30 am	**Rain Gardens and Native Plantings** What is a rain garden? How can rain gardens help with stormwater quality and quantity?	Farm Road and Gluck Pond
10:30 am – 11:00 am	**Permeable Surfaces and Buildings** What are strategies to improve the functionality of outdoor spaces while also improving stormwater quality?	Garrigus Plaza
11:00 am – 11:45 am	**Green roofs** What are green roofs? What benefits do they provide?	UK Hospital

Additional Instruction:

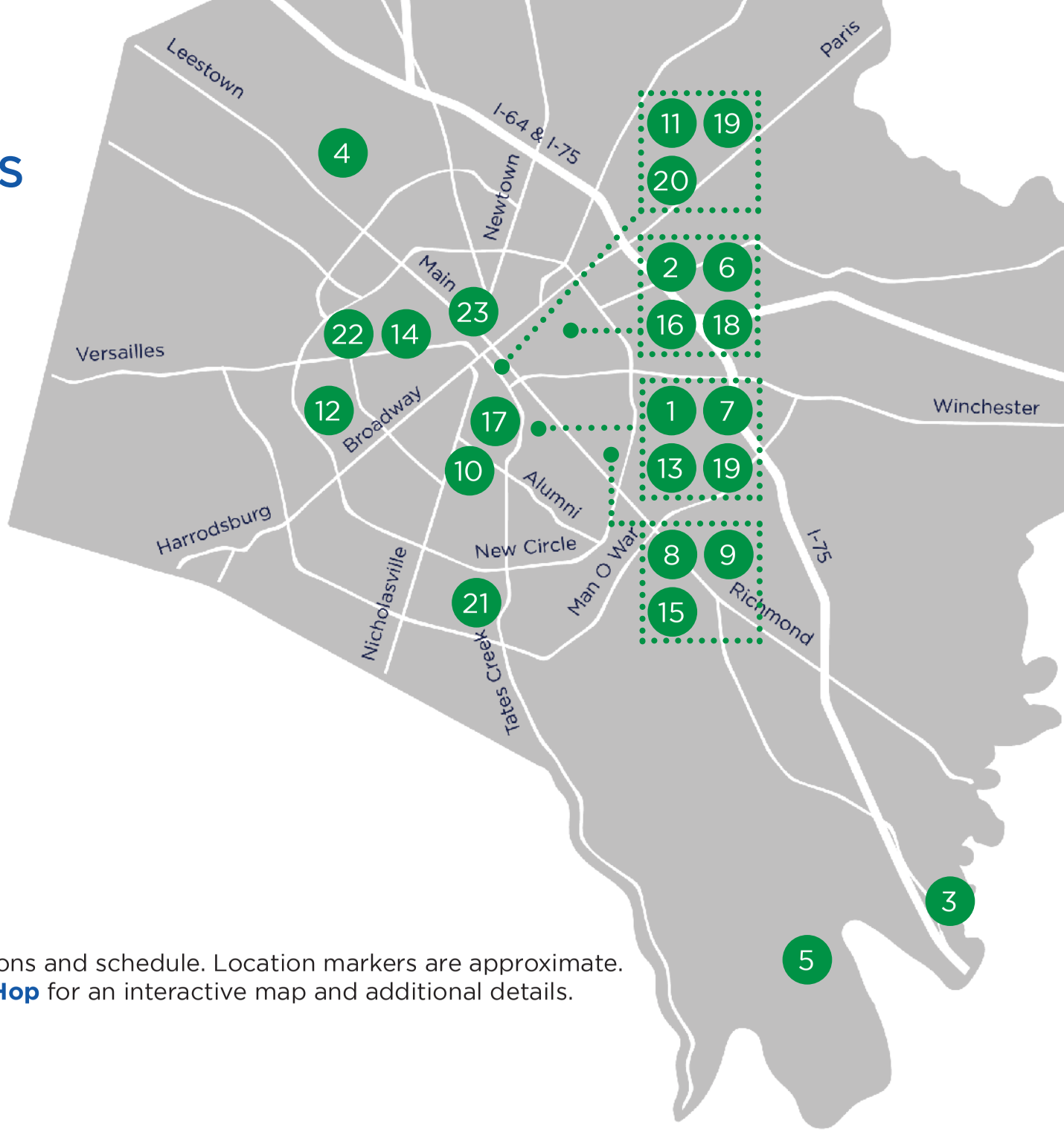
Please wear comfortable attire and dress for the weather. We will be outside for part of the workshop.

NATURE HOP EVENT LOCATIONS

Get outside! We want people to enjoy the variety of green spaces found throughout Fayette County and to experience these spaces in new ways over the course of one day with the second annual Nature Hop.

Nature Hop events take place from 11 a.m. to 4:30 p.m.; events start at 11 a.m., 12:30 p.m, 2 p.m. and 3:30 p.m., in order to allow participants to join in multiple activities. A Nature Hop Wrap-Up is held from 5 p.m. to 6 p.m. at the Lexington Public Library.

Participation in Nature Hop activities is free and open to the public.



See reverse for event descriptions and schedule. Location markers are approximate. Visit **LexingtonKY.gov/NatureHop** for an interactive map and additional details.

@LiveGreenLex

NATURE HOP SCHEDULE SUNDAY, SEPTEMBER 8TH

Participants are encouraged to bring water, dress for the weather and wear walking shoes. Nature Hop is a citizen-led program, supported in part by Environmental Services. Individual events are coordinated and carried out by the organizations or individuals listed at **LexingtonKY.gov/NatureHop**. Rain date Sunday, September 15th.

11:00 AM

1 | YOGA ON THE LAWN
Ashland, The Henry Clay Estate | 120 Sycamore Rd
All-levels yoga practice on the lawn under the trees. Please bring a mat or beach towel.

2 | GRACE GARDEN FOOD TOUR
Seedleaf Garden | 449 Race St
Tour Seedleaf's permaculture food forest, located in Lexington's East End. Get inspiration for your own fruit-bearing garden.

3 | BOONE CREEK GUIDED NATURE HIKE
Boone Creek Outdoors | 8291 Old Richmond Rd
Hike 2 miles through limestone palisades, old growth forest, and historic buildings. Moderately challenging. Feet will get wet. Lasts 1.5 - 2 hours.

4 | INTRO TO GEOCACHING
Masterson Station Park | 3051 Leestown Rd, Shelter #1
Geocaching is a real-world, outdoor adventure. No previous experience needed at this family-friendly event. Smart phone recommended.

5 | YOGA BENEATH THE LEAVES
Raven Run Nature Sanctuary | 3885 Raven Run Way
Practicing yoga outdoors enhances physical and mental wellness. All-levels. Meet at the Nature Center.

6 | THE ART OF SHARING FOOD
Seedleaf, London Ferrill Garden | 245 E Third St
Learn about the Old Episcopal Burying Grounds, and see how the space is used today with vegetables, a fruit orchard, and native flowers.

12:30 PM

7 | TREE STUMP STORY CIRCLE
Ashland, The Henry Clay Estate | 120 Sycamore Rd
Children (8 and under) will read stories focused on art and nature, then take a short walk. Walk includes uneven terrain.

8 | A WALK ALONG AN URBAN STREAM BED
Idle Hour Greenspace | 209 Saint Ann Dr
Attendees will learn to identify plants and hear about the benefits of an urban stream buffer. Closed toe shoes recommended.

9 | AR GAMING AND THE OUTDOORS
Idle Hour Park | 212 Saint Ann Dr
Learn about mobile augmented reality (AR) games at this meet up for all ages and experience levels. Will primarily cover Niantic games.

10 | URBAN STREAM ECOSYSTEMS
University of Kentucky | 158 Alumni Dr
Learn about the history, design, and use of the stream restoration project. Park in the Orange Lot. Closed toe shoes recommended.

11 | POCKET PARK
Corner of Limestone and Maxwell | 290 S Limestone Ave
Check out the transformation of this space into a living laboratory, complete with solar charging station.

12 | GARDENSIDE CREEK WALK
Gardenside Park | 1835 Yorktown Rd
Visit the pollinator garden, learn about restoration efforts and admire the art in the park. Carpooling recommended.

2:00 PM

13 | ASHLAND ART AND GROUNDS TOUR
Ashland, The Henry Clay Estate | 120 Sycamore Rd
History, art and science intertwine on this 45-minute walking tour. Meet at the front of the Mansion.

14 | BLUE HOLE RESTORATION TOUR
McConnell Springs | 416 Rebmann Ln
Tour this significant Lexington spot to learn about recent projects to protect and improve the springs. Meet at the picnic area.

15 | HOME GARDEN TOUR
Private residence | 124 Idle Hour Dr
A guided tour of this large private garden showcases the relationship between nature and an ornamental landscape.

16 | TREES OF AFRICAN CEMETERY NO. 2
African Cemetery No. 2 | 419 E Seventh St
Attendees will identify trees by looking at leaves, bark and fruit, as well as discuss the many benefits of urban trees.

17 | CARDBOARD PLAY DAY
Woodland Park | 601 E High St
All ages are welcome to build cardboard castles, forts, rocketships, boats and whatever else you can imagine!

18 | GARDEN ARTISTRY
Living Arts and Science Center | 362 N Martin Luther King Blvd
Explore the Living Arts and Science Center gardens and water feature while creating art inspired by native Kentucky flora.

3:30 PM

19 | #ArtAtAshland PHOTO TOUR
Ashland, The Henry Clay Estate | 120 Sycamore Rd
Bring your phone or camera with you to learn photo tips and tricks. Meet at the front of the Mansion.

20 | GRATZ PARK: A HISTORIC GREENSPACE
Gratz Park | 251 W Second St
Discover the history of this unique space in the heart of the city and the plants and trees that make it a part of nature in the city.

21 | MONARCH WAYSTATION TOUR
Tates Creek Library | 3628 Walden Dr
Learn more about butterflies, other pollinators, native perennials and how to select plants and tips for installing a way station.

22 | RESTAURACIÓN DE PRESTON'S CAVE SPRINGS
Preston's Cave Springs | 1939 Dunkirk Dr
Aprenda sobre la historia de Preston's Cave Springs: incluye manualidades para niños y caminatas en terrenos irregulares.

23 | BEGINNERS' BIRD WALK
Lexington Cemetery | 833 W Main St
On this guided walk, you'll learn basic binocular and birding skills. Attendees strongly encouraged to bring binoculars.

5:00 PM

24 | NATURE HOP WRAP-UP
Central Library | 140 E Main St
Discuss Nature Hop over art and light refreshments at the *Paint by Nature: Streetside* exhibit.

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Ecosystem Restoration

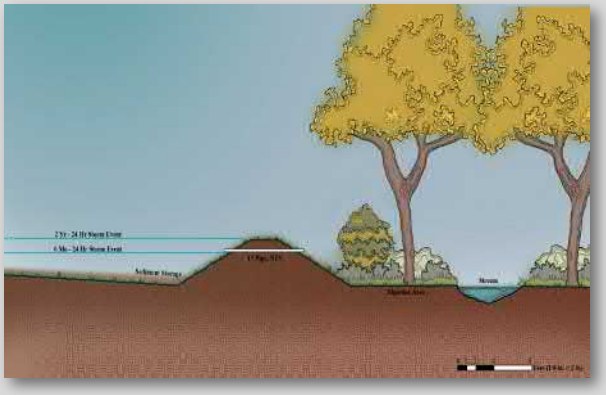
The University of Kentucky is actively involved in ecosystem restoration in on main campus and its research farms.

Soon, UK will undertake a second stream restoration project on the south-side of campus near the softball stadium. Be on the look out for this and other opportunities to help us create a more sustainable campus.

Through research, scholarship, and community engagement, UK is working to improve the health of ecosystems on campus and in the surrounding communities. Activities such as stream restoration, green infrastructure implementation, pollinator garden installation, and urban tree canopy development have multiple environmental and health benefits.

Natural Resource Conservation and Management

The University of Kentucky is involved in a large number of research and outreach efforts to protect our waters. Projects focus on …



… the development of effective and cost-efficient best management practices …

… workshops for design and regulatory professionals …

… stormwater management using low impact development techniques …

… youth education …

… vegetation management strategies to improve riparian soils ...

UNIVERSITY OF KENTUCKY

Stormwater

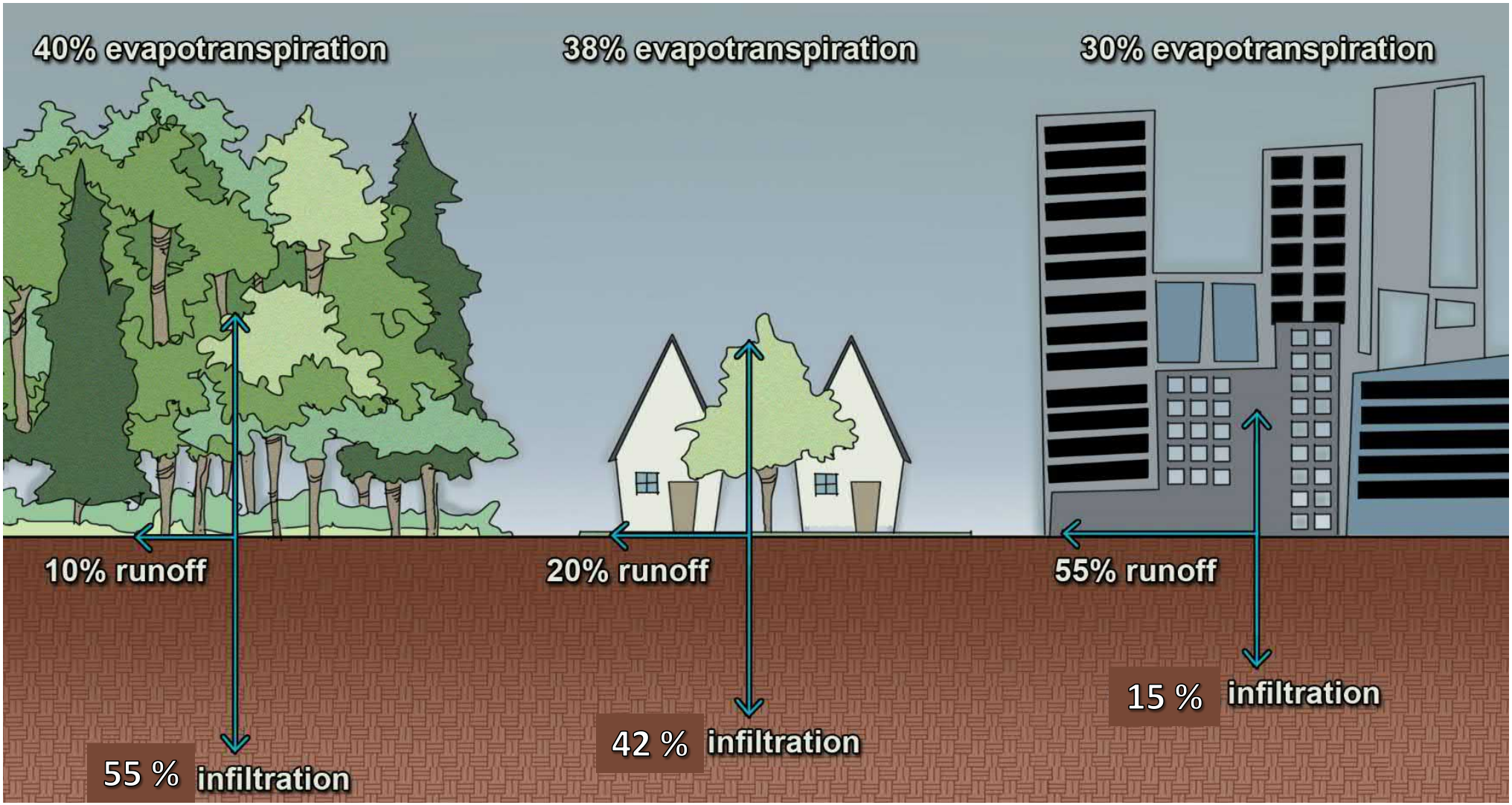
When rain or snowmelt flow over surfaces such as parking lots, rooftops, and sidewalks, it is called stormwater.

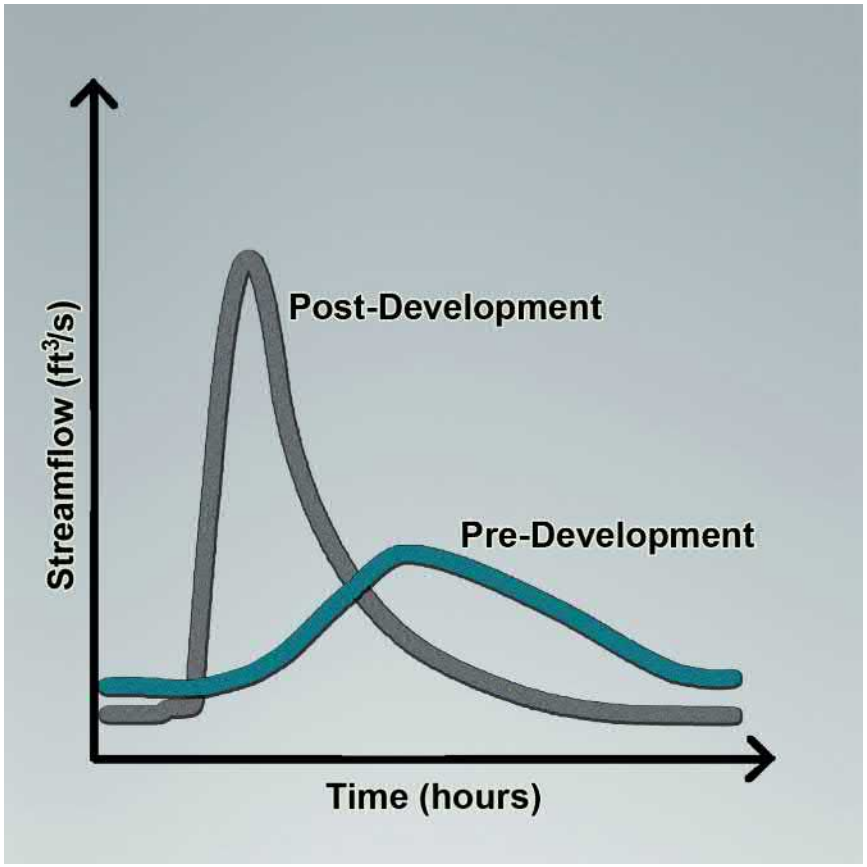
As stormwater moves across lawns and paved areas, it picks up bacteria, nutrients, sediments, and the like before traveling through the storm sewers to our water bodies. Because stormwater is not treated, it can create harmful conditions for environment and for us.

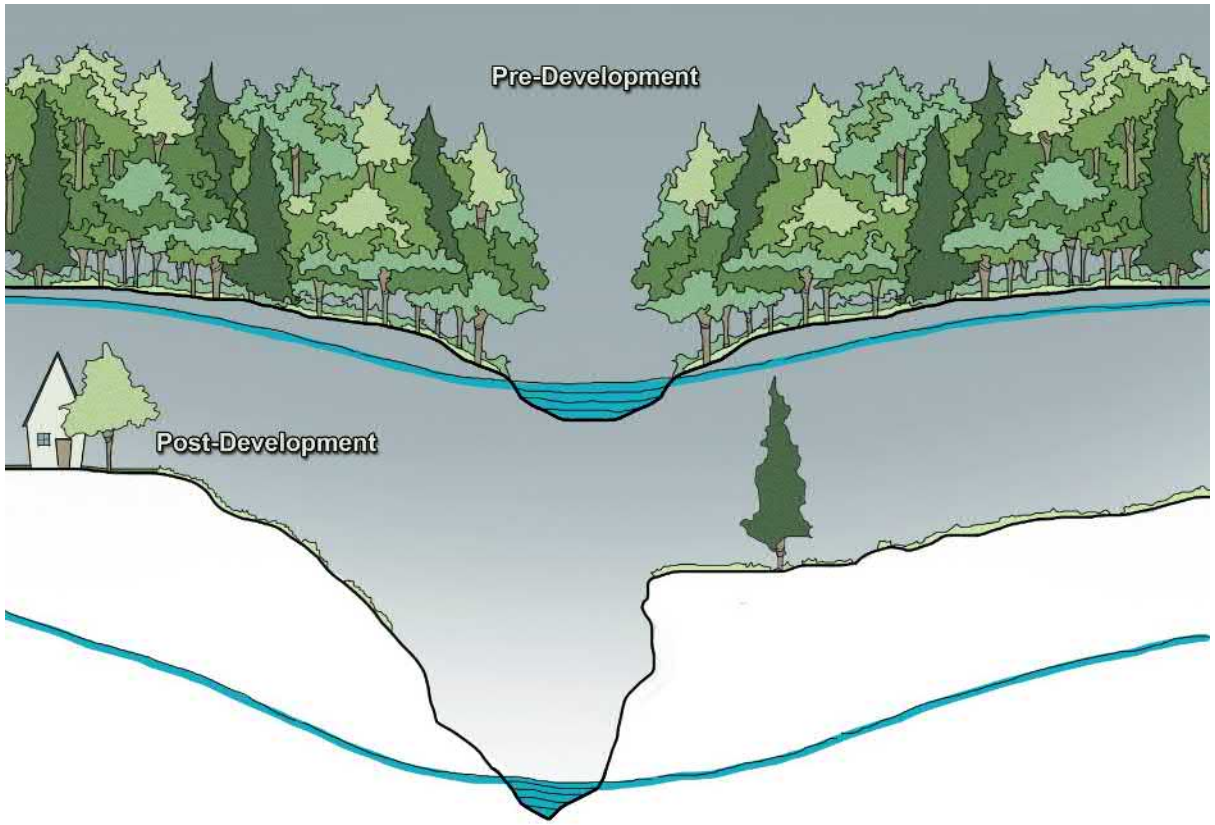
Do your part to reduce stormwater pollution.

- Don't litter
- Pick up after your pet
- Cover bare soil with straw or mulch to prevent soil erosion
- Walk, bike, or carpool so fewer pollutants are released into the air
- Plant trees and native plants

For more information contact Carmen Agouridis, Ph.D., P.E., M.P.P. at carmen.agouridis@uky.edu


40% evapotranspiration
38% evapotranspiration
30% evapotranspiration
10% runoff
20% runoff
55% runoff
55 % infiltration
42 % infiltration
15 % infiltration





Urbanization changes how water flows in a watershed. After development, we see greater runoff volumes and peaks. These changes negatively impact streams causing their beds and banks to erode.

University of Kentucky
College of Agriculture, Food and Environment

UNIVERSITY OF KENTUCKY

KYH2O

A podcast about all things water in Kentucky.

WWW.UKY.EDU/BAE/KYH2O

Hosted by: Drs. Carmen Agouridis and Amanda Gumbert
Produced by: Brian Volland

Listen then Explore More

11. For the following items, please provide a summary of control measure activities related to sMS4 performed during the previous year. List any updated measurable goals from the Stormwater Quality Management Plan (SWQMP), compliance activities, Best Management Practices (BMP) installed or initiated, and updated or developed regulatory mechanisms with effective dates.

A. Public Education and Outreach:

Describe your public education efforts for the last 12 months:

KYTC with our MS4 and partner communities utilize several approaches to public education. The most pronounced is a mass media play via radio and television. We also utilize a website tied in with the radio and television spots. KYTC in a combined effort with the MS4 communities manage the Adopt-A-Highway program. KYTC also utilizes our Kentucky Engineers Exposure Network (KEEN) to promote stormwater issues in community schools. During 2018 KYTC completed a Statewide Stormwater Survey. The Survey is on the KYTC Stormwater website.

Describe your method of outreach:

The KYTC Media Outreach Program (MOP), in conjunction with our partner MS4 communities, contracted with the Kentucky Broadcasters Association (KBA) to air a video spot and six audio spots in 2019. The 30 second spots have been aired statewide as a public education initiative to inform the general population about stormwater issues. The ads messages were developed after the statewide survey conducted in 2008 identified that half of the population is unaware that storm drains discharge directly to waters of the Commonwealth without treatment. The ads can be viewed on stormwater.ky.gov. The TV and radio plays combined totaled 71,059 plays statewide in 2019 for a total value of $1,507,170.

KYTC initiated a committee of five MS4 representatives and the DOW representative in 2009 to work with our consultant, New West, to develop the ads. The members are Abby Rains – DOW, Suzie Bradley – Campbellsville, Randy Stambaugh – MSD, Vicki Brackett – Hardin County, Jamie Holtzapfel – SD1 and Jack Wright – Plum Springs Warren County Joint Storm Water Sewer Agency. A mix of general information and specific item ads were developed. The resulting work of the committee was the six audio spots and the one video spot. In 2012 the committee was called together again to develop a new TV advertisement for the stormwater program. The new ad began airing in December 2012. KBA distributes the ads to 230 stations in 132 communities. The KBA receives certified reports from the member stations verifying the number of times the spots are played. Since the inception of the Media Outreach Program there have been 742,481 plays for a total value of $14,979,088.

The 2019 summary of ad play is as follows:

62,906 radio Spots with a value of $1,093,440

8153 television plays with a value of $413,730

TV and radio plays combined totaled 71059 plays statewide for a total value of $1,507,170.

A new website URL was secured and a new website prepared to help launch the MOP and provide a statewide resource for the KYTC and our partner MS4 communities to promote stormwater issues. The website was designed to address both the public and those involved with the MS4 program either as a permitted community, construction contractor or KYTC. It provides basic information regarding what is stormwater and stormwater pollution, who to contact if more information is needed or a concern needs to be reported, and technical information for MS4 communities and contractors. The website had 1593 visits in 2019 and 1938 page views.

Kentucky has participated in the International Adopt-A-Highway Program since 1988. The Commonwealth has one Statewide Adopt-A-Highway Coordinator in central office and 12 Adopt-A-Highway District Coordinators throughout the state. The Adopt-A-Highway program involves community groups to organize and pick up liter. The Transportation Cabinet participates in Adopt-A-Highway meetings as agreed upon by the Local Community and KYTC. There are 728 groups that manage 2,598 miles of roads throughout the state.

The Members of KYTC's KEEN organization held two presentations across the state. The presentations included the Enviroscape.and watershed discussion. The locations were Lyon County and Rockcastle County,

APPENDIX B

Public Involvement and Participation

Included Documentation

Global Water Issues Drain Making Map Presentation

Global Water Issues Drain Making Worksheet

Pick It Up Campaign Results

Farm Road Rain Garden (UK Cat's CATchment Cleanup) Flyer

Farm Road Rain Garden (UK Cat's CATchment Cleanup) Sign-in sheets

Gluck Pond Planting Event Flyer

Gluck Pond Planting Event Sign-in Sheets

Stormwater Logo Competition Flyer

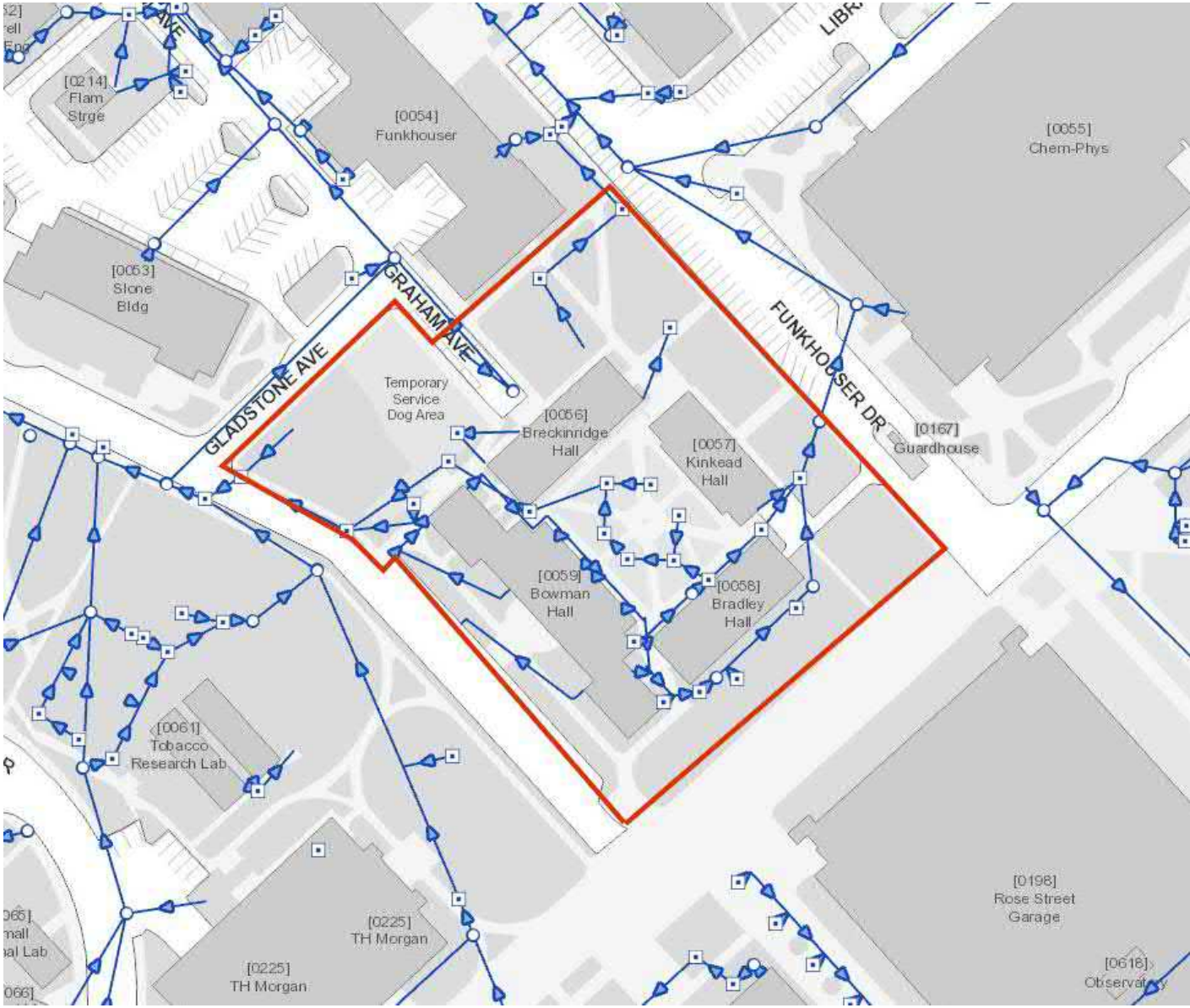
GEN 100 Class Lesson Plan

BAE 532/CE 542 Class Project Presentation Flyer

College of Agriculture Raingarden Project Student Design, Plant List, and Standards Diagram

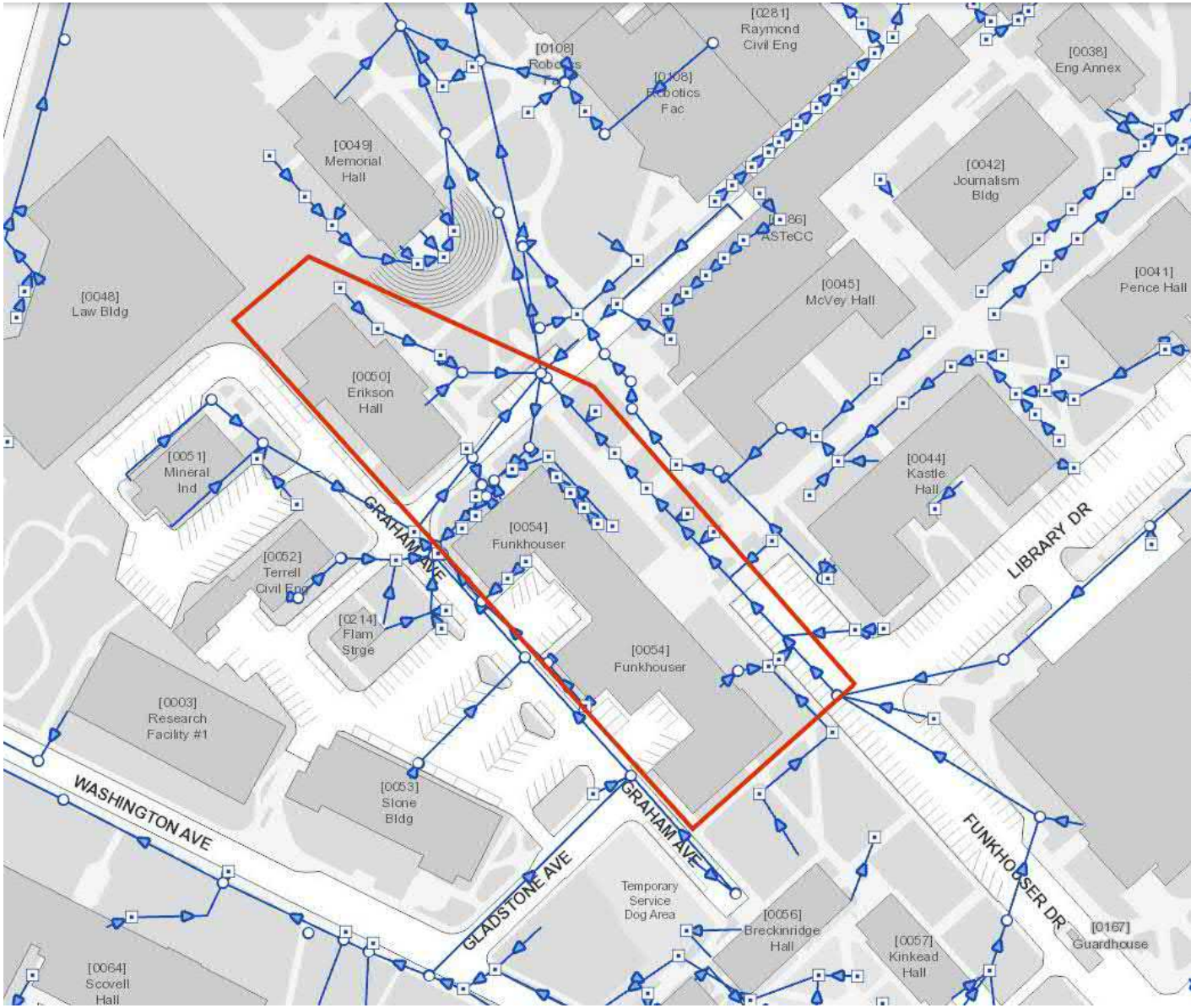
Area 1

“The Quad”



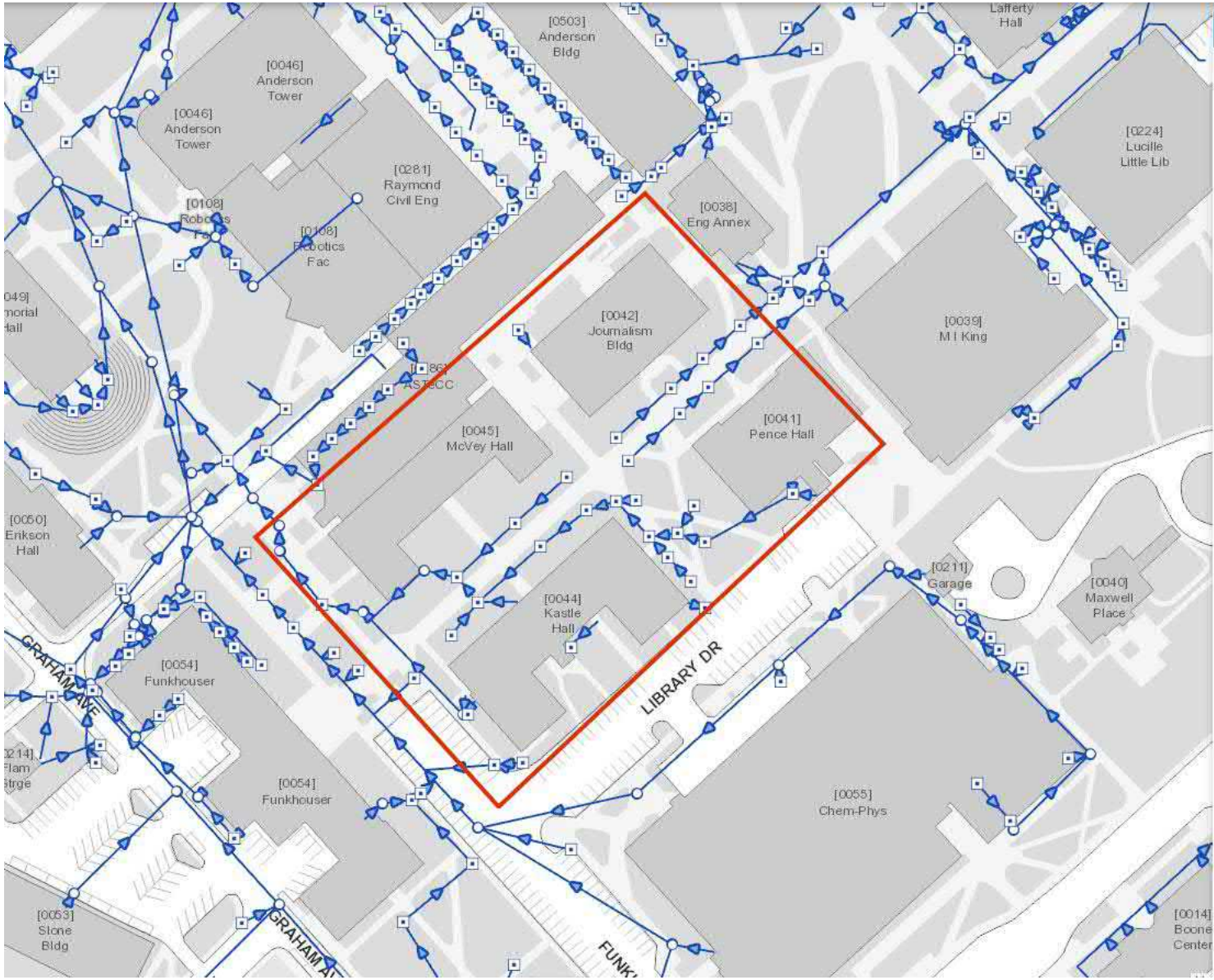
Area 2

“Funkhouser”



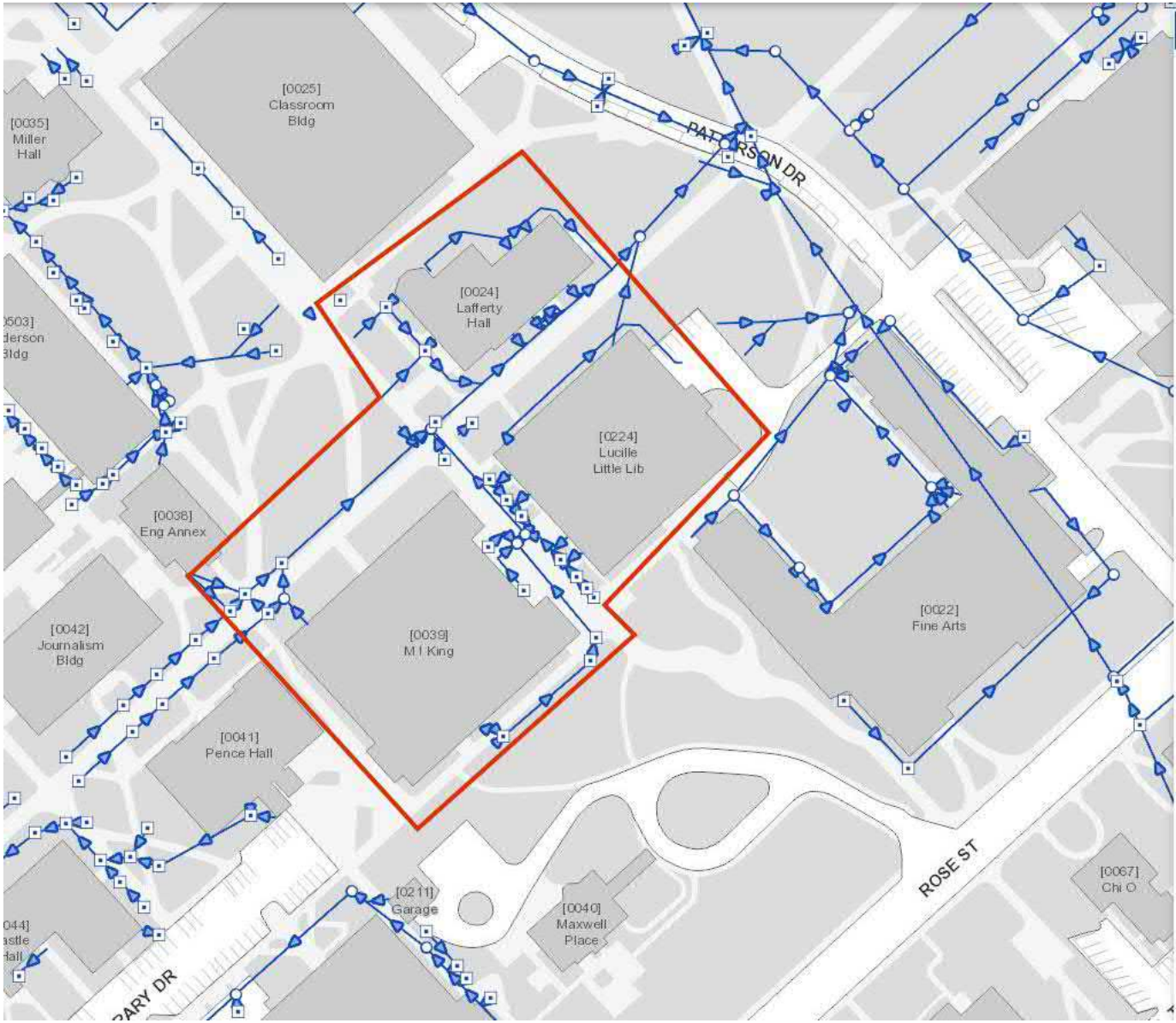
Area 3

“Journalism”



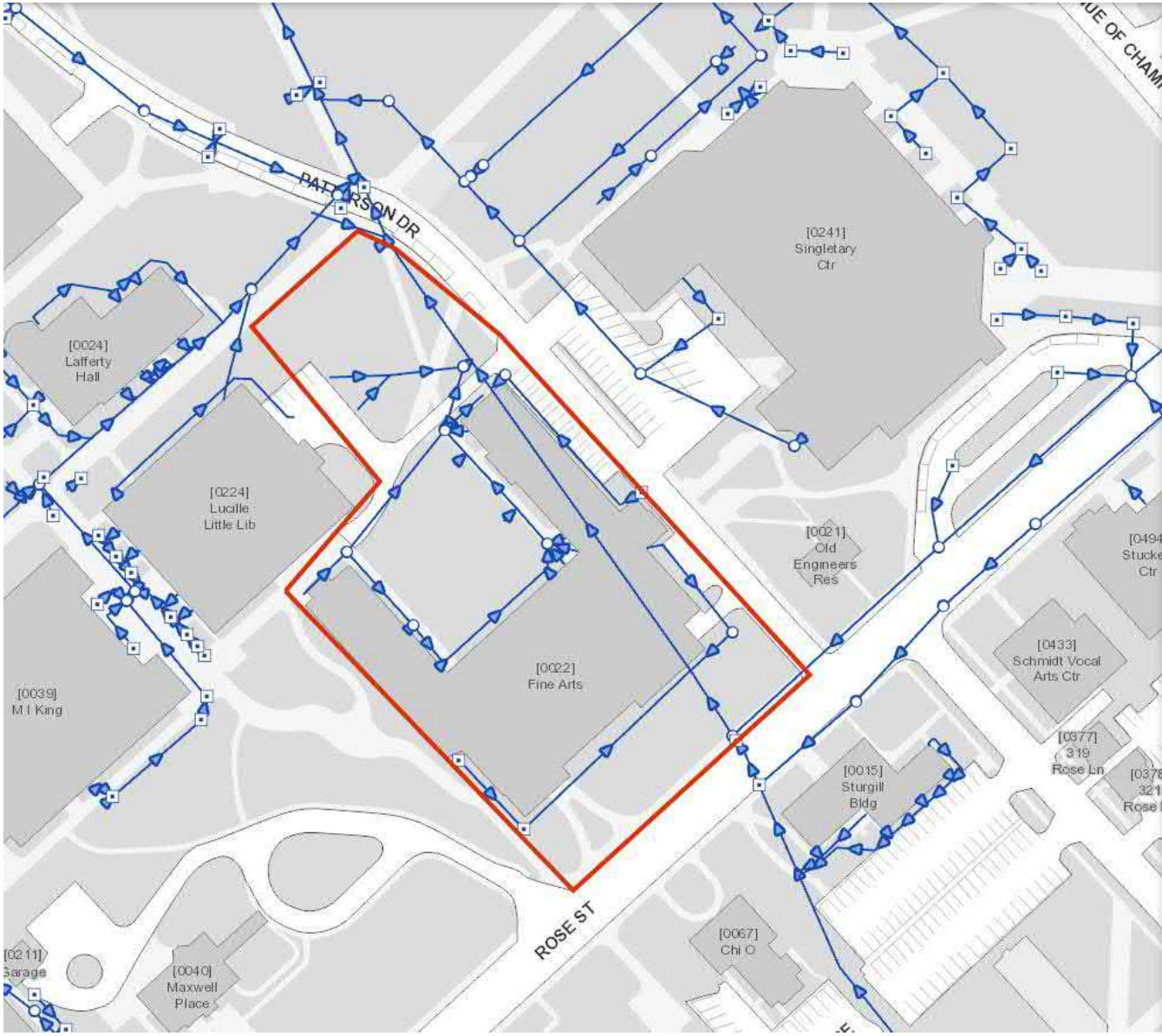
Area 4

“MI King”



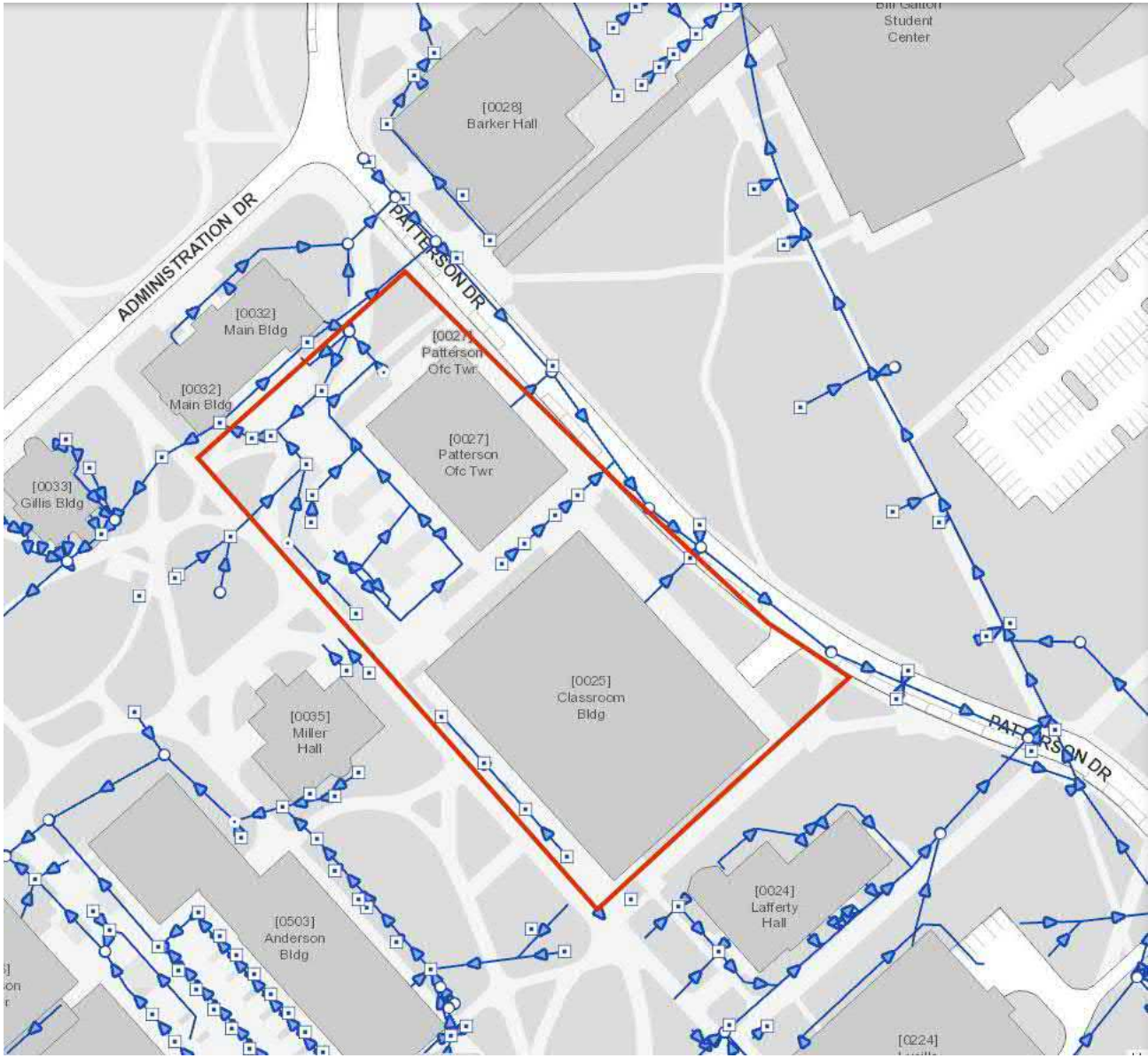
Area 5

“Fine Arts”



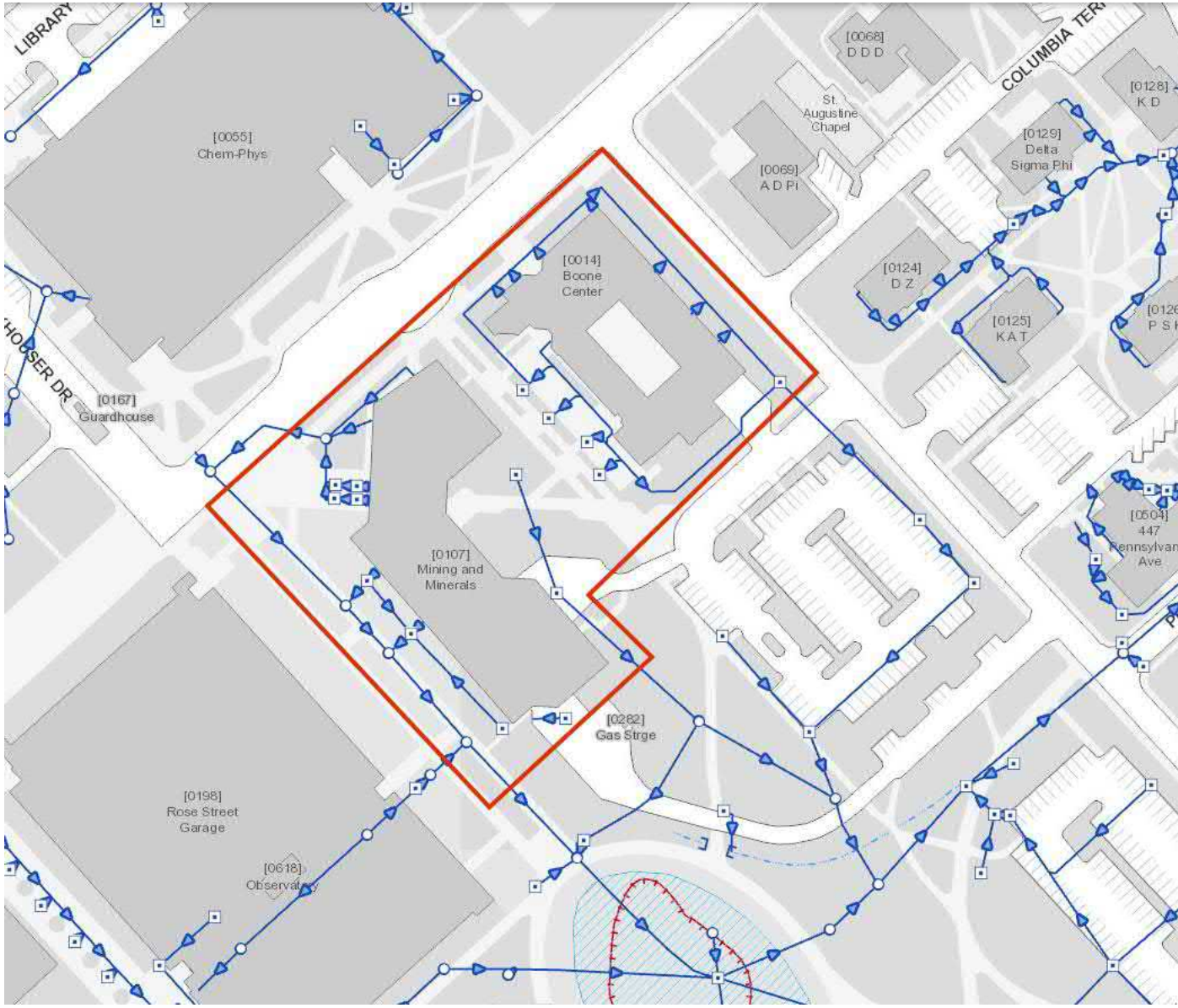
Area 6

“White Hall”



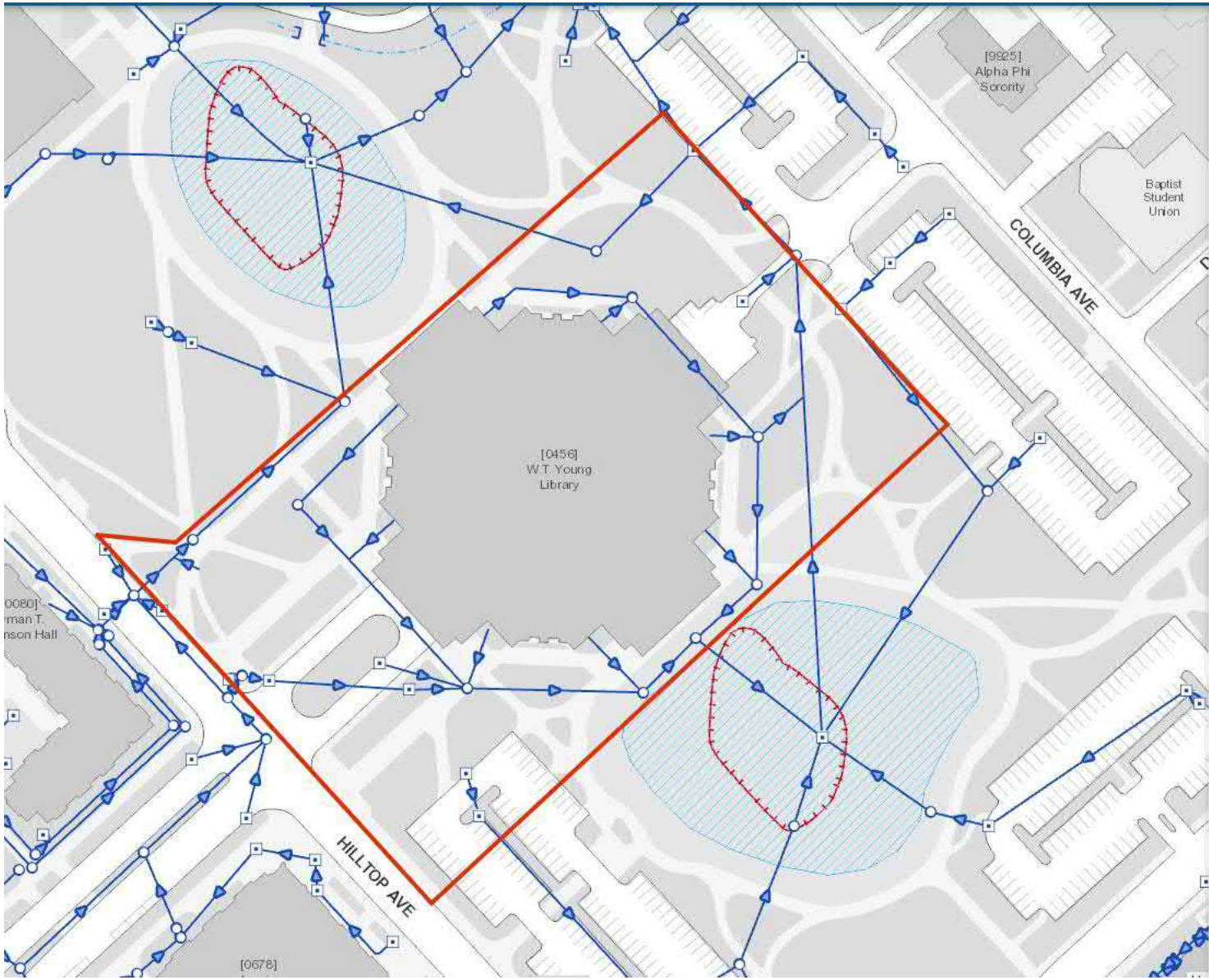
Area 7

“Mining - Boone”



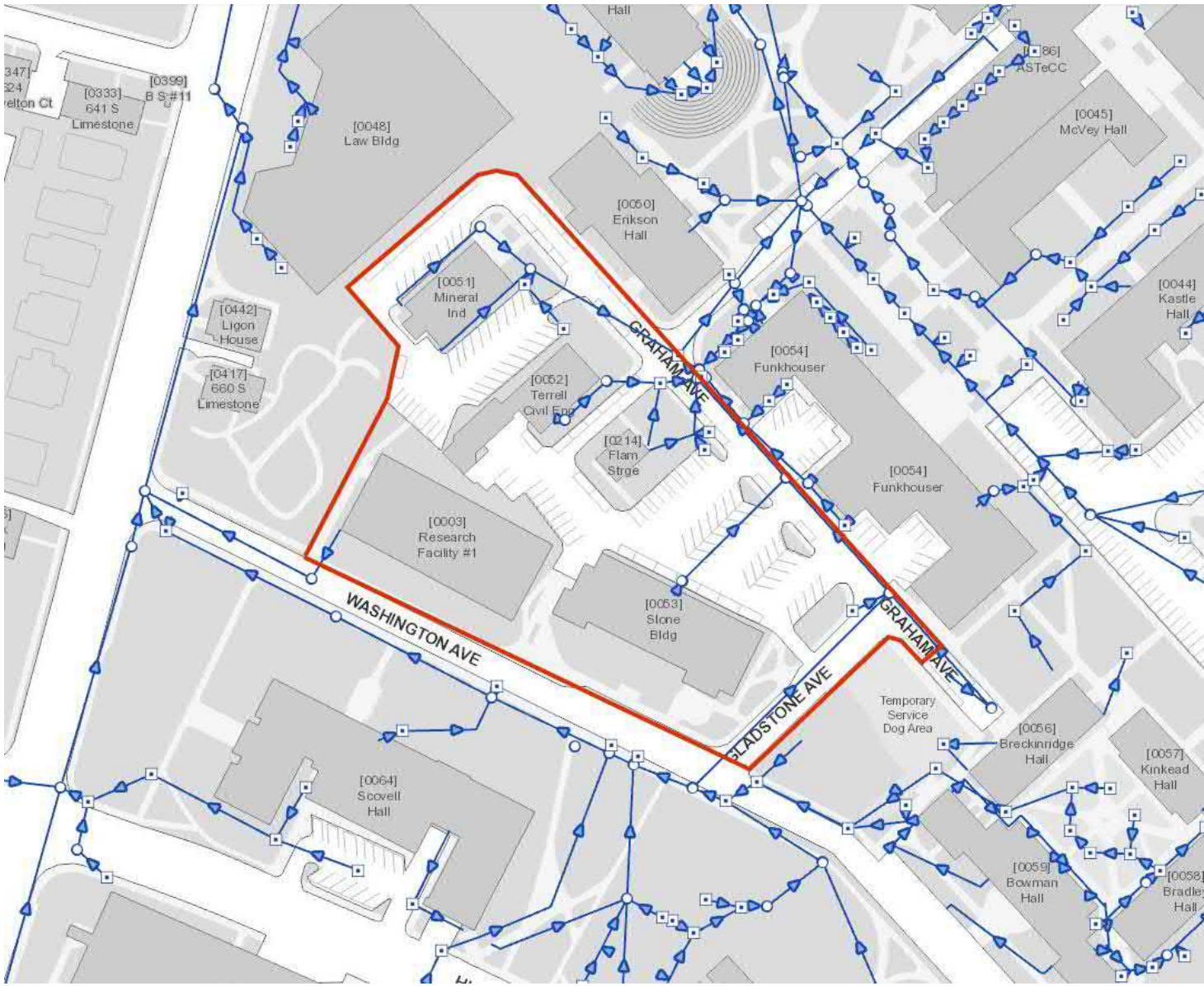
Area 8

“Willy T”



Area 9

“Slone”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641 S
Limestone
[0399]
B S #11
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Law Bldg
[0050]
Erikson
Hall
[0086]
ASTeCC
[0045]
McVey Hall
[0051]
Mineral
Ind
[0442]
Ligon
House
[0417]
660 S
Limestone
[0052]
Terrell
Civil Eng
[0214]
Flam
Strge
[0054]
Funkhouser
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Kastle
Hall
GRAHAM AVE
[0003]
Research
Facility #1
[0053]
Slone
Bldg
WASHINGTON AVE
GLADSTONE AVE
Temporary
Service
Dog Area
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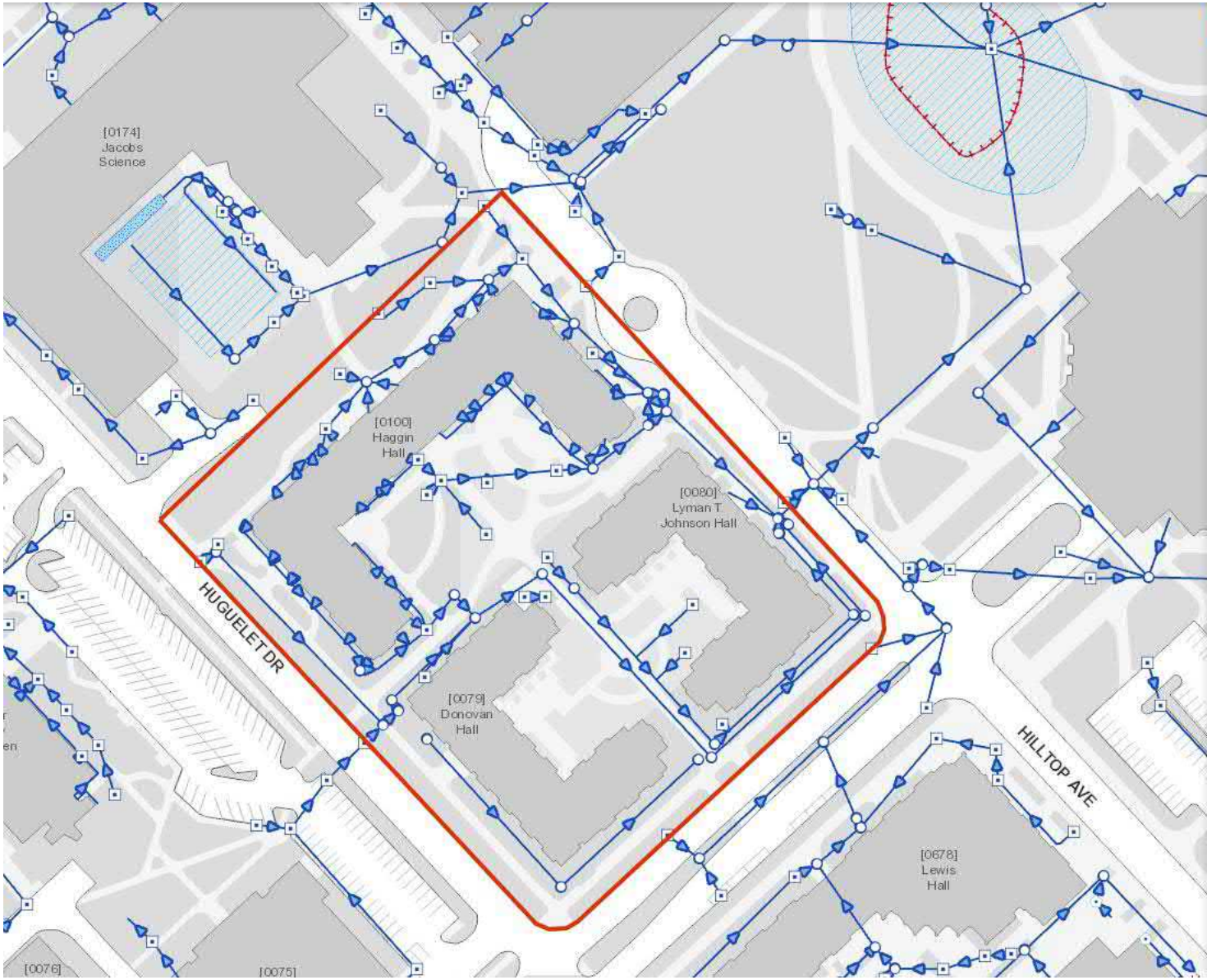
Breckinridge
Hall
[0057]
Kinkead
Hall
[0064]
Scovell
Hall
[0059]
Bowman
Hall
[0058]
Bradley
Hall

Area 10

“K-Lair”



ENS 300/EES 480 - Global Water Issues

2019 Spring Semester Instructor: Alan Fryar

Storm Drain Marking Assignment

- Use provided map to identify all storm drains in assigned area.
- Identify on map whether or not each drain is marked (medallion or cast into grate)
- Select **four** storm drains in your assigned area that need to be labeled.
- Fill out provided form for each drain, including detailed location information and a pre/post label photo. Try to get the surrounding area/landmarks in the photo. It's important that the location information and photo can be utilized to find each drain.(Location info example: Grate located in patio area in front of Environmental Management office beside picnic table)
- Provide form and digital photos to Environmental Management.

Name:_____

Storm Drain ID: *(Official Use Only)*			Watershed: *(Official Use Only)*	
Date Observed: 03/01/2019			Photo Taken: ☒	
Location Description: Behind the fine arts building, in the grass next to the service road that connects to Patterson drive.				
Condition: *(check all that apply)*	Good ☒	Clogged ☐	Flow Present ☐	Other:_____
	Damaged ☐	Surface Stains ☒	Odors ☐	

Storm Drain ID: *(Official Use Only)*			Watershed: *(Official Use Only)*	
Date Observed: 03/01/2019			Photo Taken: ☒	
Location Description: In between the finearts and the Lucille little library. Next to bike rack				
Condition: *(check all that apply)*	Good ☒	Clogged ☐	Flow Present ☐	Other:_____
	Damaged ☐	Surface Stains ☒	Odors ☐	

Storm Drain ID: *(Official Use Only)*			Watershed: *(Official Use Only)*	
Date Observed: 03/01/2019			Photo Taken: ☒	
Location Description: In the parking lot behind Slone building. It is on the middle row of parking.				
Condition: *(check all that apply)*	Good ☒	Clogged ☐	Flow Present ☐	Other: *Paint marks from parking*
	Damaged ☐	Surface Stains ☐	Odors ☐	

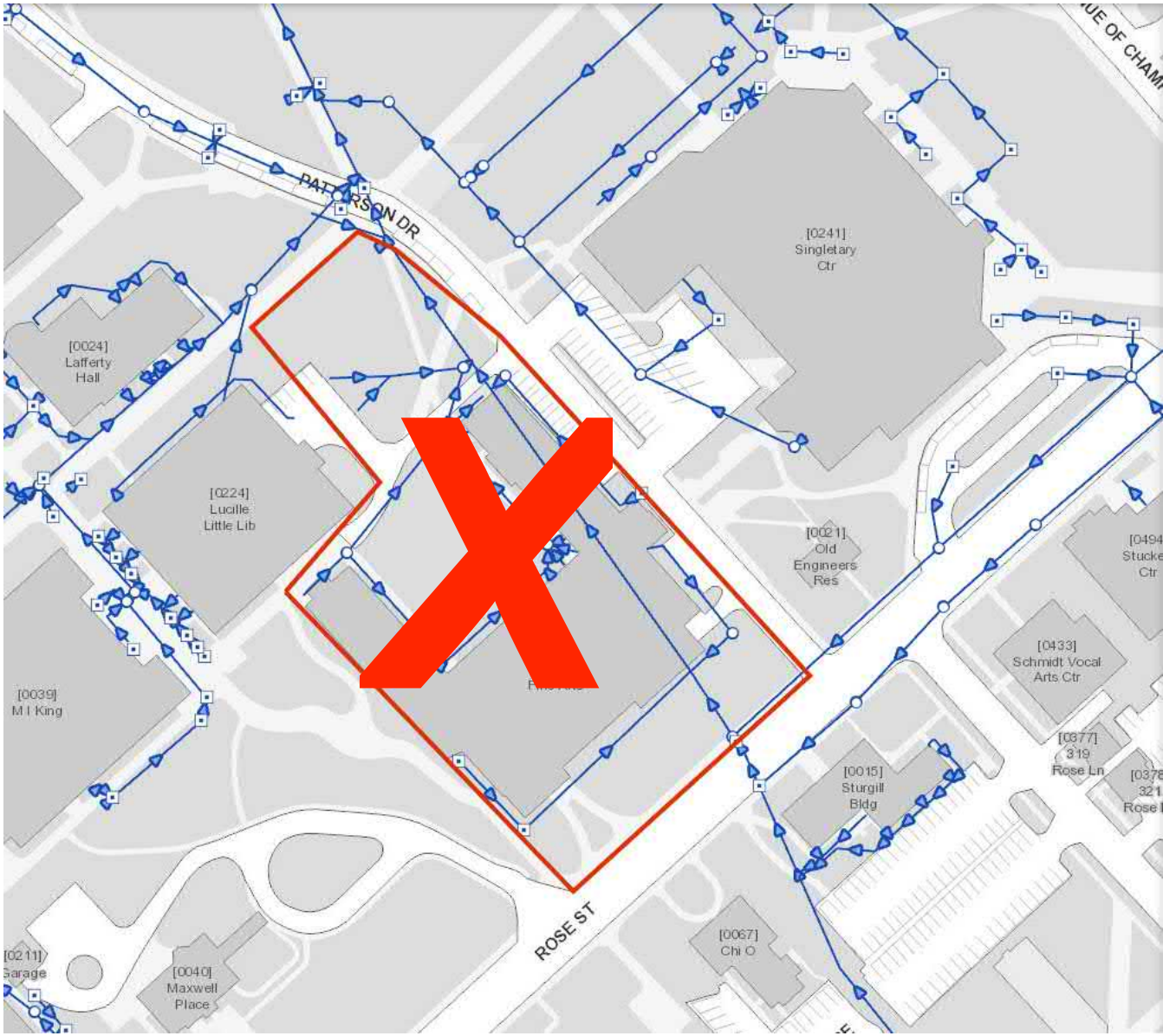
Storm Drain ID: *(Official Use Only)*			Watershed: *(Official Use Only)*	
Date Observed: 03/01/2019			Photo Taken: ☒	
Location Description: It is located on Graham avenue, in between Slone and Funkhouser.				
Condition: *(check all that apply)*	Good ☐	Clogged ☐	Flow Present ☐	Other:_____
	Damaged ☒	Surface Stains ☒	Odors ☐	


UK
Parking
Permits Only
UK
Parking
Permits Only

None of the drains were marked with the "no dumping" sticker

Area 5

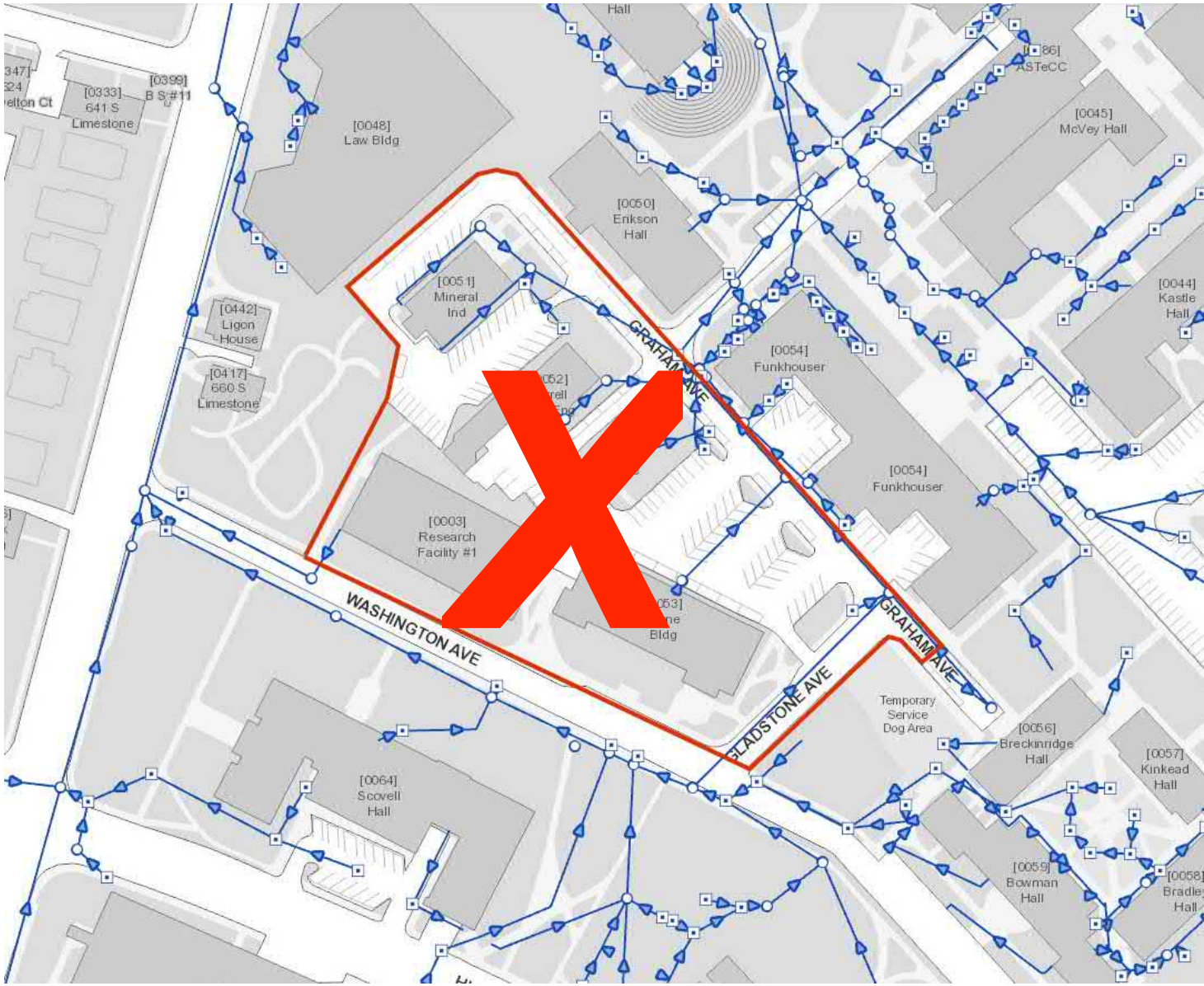
"Fine Arts"



None of the drains were marked with the "no dumping" sticker

Area 9

"Slone"



Pick It Up Results

Team Name	Number of Team Members	Zone	Number of Cleanups	Dates of Cleanup Events
RakeItUp	10	9	2	2/27/19, 3/23/19
The Gorge Monkeys	2	12	2	2/21/19, 3/20/19
UK Student Veteran Association	9	6	3	3/7/19, 3/18/19, 4/18/19
Alpha Phi Omega	8	8	2	2/25/19, 3/26/19
Trash Pandas	8	13	4	2/22/19, 3/19/19, 3/28/19, 4/17/2019
Cat Litter	9	1	3	2/25/19, 3/22/2019, 4/6/19
UK Geology Club	4	5	3	2/22/19, 3/23/19, 4/6/19

Cat-chment
CLEAN-UP

join
The BAE Student Group, Horticulture Club and EHS as we work to beautify the UK rain garden at:

Gluck Building
3-6 pm, April 26th

register at:
http://bit.ly/GluckService19

Name	Class and Instructor	Arrival Time	Departure Time
			2:25
Noah Cornett	BAE 532 - Carman	12:30	1:00
Jasmine Fox	PLS 203 - Durran	12:00	6:00
Cody Soors	NRE 471 - Sass	1:19	3:00
Eric Vanzuuk	BAE 532 - Carman	12:00	3:08
Said Shoaill	BAE532-Carman	1:00 Pm	
Felicity Shirley		3:40pm	
		3:40	5:40
[illegible]			5:45
Viktor Helmes	NRE 471 - Sass	3:45 pm	5.00pm
Tyler Bottoms	PLS 203	4:00pm	5:00pm
Turner Sweet	PLS 203	4:00	
Sarah Atkins	NRE 471 - Sass	4:00	
Brittany LeBlanc	Hort Club	3:00	5:45
Cameron Schiller	Hort Club	3:30	4:15
Kelly Mazza	HON 152	3:00	4:15
		4:00	5:47
Devin Parrish	PLS 203		5:15
Mark Gumbert	Copperhead	3:00	

Name	Class and Instructor	Arrival Time	Departure Time
Jordan Mangold	Gen 100 Lisa Rossi	11:50	1:00
Logan Cheek	PLS 203 Durham	12:00	2:00
Tricia Conkley	CAFE	12:00	
Megan Liz	CAFE	12:00	
Ashley Hall		12:48	3:00
Amy Susko	Capstone	1:30	
Isabella Nomi	Sass	1:30	
Saif Shalti	CES 42	1:00	1:50
Katie Ricciardi	BAE 532	1:00	3:00
Tyler Bottoms	PLS 203	1:00	2:00
Hannah Carden			
Sydney Katz	PLS 203	2:40	4:40
Olivia Lohre	BAE 305	3:00	4:30
Kelsey Cox	PLS 203	1:00	3:00
Ruston Galyean	PLS 203	3:30	
Kelli Vandenberg	Gen 100 Rossi	3:30	
Lexi Granger	Hort club	4:35	
Felicity Shirley	Hort club	4:35	
Fallon Drum	Hort club	4:35	
Leonardo "Nano" Bragg	Hort club	3:30 - 5:00	
Zoe Schroeder	Hort club	12 - ~~5:00~~	5:00
Shari Dunton	Hort : onthe Dept	12:00	5:00

Name	Class / Instructor
Kennedy Krieg	BAE 310/Dr. Shi & BAE 305/Dvorak
Katie Riccardi	BAE 305 / Dvorak
Sarah Peter	NRE Capstone Sec 02/Sass
Chrissy Witt	BAE 305/Dvorak BAE 310/Shi
Rachel Rohner	BAE 310/Shi BAE 305/Dvorak
Sydney Cannon	BAE 310 /Shi
Ashley Bergman	BAE 310/ shi and BAE 305/ Dvorak
Spencer Givan	BAE 310/shi and BAE 305/Dvorak
Courtney Travis	NA
Abby Olalere	BAE 310/Dr. Shi

The CATchment Rain Garden:
2019 Fall Service Learning Events

The CATchment rain garden, located behind the Gluck Equine Research Center, is a living learning laboratory for sustainable stormwater management. A dedicated advisory group of University of Kentucky faculty and staff, representing both academic and administrative departments, oversees the management, maintenance, and use of the garden. Refreshments and native plant species remaining from the service event will be free to volunteers based on availability. Join us for one or more of our service learning events this fall.

Friday
SEPTEMBER 20TH
3-6PM

Saturday
SEPTEMBER 21ST
11AM-2PM

Friday
NOVEMBER 1ST
1:30-4:30PM

Sign Up:
tinyurl.com/catchmentcleanup

Support for this series is provided by:

Tracy Farmer Institute for Sustainability and the Environment

College of Agriculture, Food and Environment

Facilities Management

CATchment Clean-Up Sign in Friday, September 20, 2019

	Name	Class for Credit (If applicable)	Time In	Time Out	Signature
1	Suzette Walling ✓				
2	Alex Rucker Cochran	PLS 220 Durham			
3	Lana Proffitt ✓	PLS 220 Durham	1:00		
4	Trent Wilburn ✓		1:30	5:00	
5	Glynn Townes ✓	PLS 220	2:30	5:00	
6	Haily Hayslip				
7	Alicia Landon ✓		8:00	50	
8	Paul Moore				
9	Carmen Agouridis	OTS	3:00	5:00	
10	Cole Crankshaw		2:00	5:00	
11	Lee Moser		2:00	5:00	
12	Hannah Phillips		3:00	5:00	
13	Suzette Walling				
14	Rick Durham		3	5	
15	Joshua Borgemenke		2:30	5	
16					
17					
18					
19					
20					
21					
22					
23					
24					

CATchment Clean-Up Sign in Saturday, September 21, 2019

	Name	Class for Credit (If applicable)	Time In	Time Out	Signature
1	Spencer Dixon				
2	Jeffrey McCall	EES 385	11:07	1:30	Jeffrey McCall
3	Brynn Angeletti				
4	Abby Phelps	PLS 220 Durham	11:07	1:49	Abby Phelps
5	John McKnight JOHN McKNIGHT	PLS 220 - Durham	JOHN McKNIGHT		
6	Asaad Parsons-Graves	PLS 220 Durham			
7	Donnie Thornton	PLS 220 Durham	11:00	1:00	Donnie Thornton
8	Erika Hernandez Hernandez	WPSC	11:00		Falla affele
9	Alicia Landon	TFISE	11:00	2:00	Alicia Landon
10	Paul Moore		1045		
11	Lee Moser				Lee Moser
12	Ary Gomez	Gen100 Durham	11:07	12:37	Aryanna Gomez
13	Rick Durham		11:10	12:10	Rick Durham
14	Joshua Borgemenke		10:50		Joshua Borgemenke
15	Hannah Phillips		11:00		Hannah Phillips
16	Cole Crankshaw		10:15		Cole Crankshaw
17	Shari Dutton	E	11:00		Shari Dutton
18					
19					
20					
21					
22					
23					
24					

Attendance for Friday, November 1, Catchment Service Learning					
email	Name	Class/ Service Credit	Time In	Time Out	Signature
cabo249@uky.edu	Chase Boling	Durham	1:00 pm	3:00 pm	
katiemd242@gmail.com	Katie Davis	Durham PLS220	2:00	4:00	
alyssasarcher@gmail.com	Alyssa Archer	Greenthumb			
anna.dong@uky.edu	Anna Dong		1:21	2:38	
christopher.metts@uku.edu	Chris metts	Durham pls 220	2:30	4:30	
griffinbeck4@gmail.com	Griffin Beck	PLS220 Durham	1:40	3:40	
pamoore74@gmail.com	Paul Moore	mrpa244@UKY	10:45	16 16	
cole.crankshaw@gmail.com	Cole Crankshaw		1:00pm		Cole Crankshaw
hphillips@uky.edu	Hannah Phillips	TFISE			
alicia.landon@uky.edu	Alicia Landon	TFISE			Alicia Landon
haley.phillips@uky.edu	Haley Phillips	Dr. Richard Durham's PLS 220	1:25	3:25	
kaya.winchell@uky.edu	Kaya Winchell	PLS220			
bpcl226@uky.edu	Ben Clememts	Gtr 100	1:21	2:39	
jacob.smith5@uky.edu	Jake Smith	Alpha Phi Omega	1:45	4:00	
hbco233@uky.edu	Harrison Cook	Gen 100			
nri237@uky.edu	Nikolas Rieke	APO	1:15	3:30	
katherine.lowery@uky.edu	Katherine Lowery	PLS 220 Durham	1:30	5:30	
aparsons19@slabeeber.org	Asaad Jamil Parsons-Gra	PLS 220	3:00	4:00	
matteo.stahl@uky.edu	matteo stahl				
slfa225@uky.edu	Sierra Fair	PLS 220	1:00	3.00	
mpbr242@g.uky.edu	Morgan Brough	PLS220	1:00	3:00	
mette.lockamy@uky.edu	Mette Lockamy	PLS 220 (ENS 201	1:00	3:00	
Crgr242@uky.edu	Curtis Graham	BAE 301	1:15	2:58	
keem223@uky.edu	Katie Emmett	BAE 301	1:30	2:40	
bmle243@UKy.edu	Brittany Lefebvre	PLS 220 Durham	1:30	3:30	
megan.grubb@uky.edu	Megan Grubb	BAE301	1:30	2:40	
aar258@uky.edu	Alyssa Archer		1:35	3:00	
ceed226@uky.edu	Caroline Edwards		1:35	2:00	
[redacted]					
Lee.Moser@uky.edu	Lee Moser	—	12:30	4:30	
Kmda255@uky.edu	Kath-				
lafe223@uky.edu	Landon Frede	BAE301	2:00	4:04	

Attendance for Friday, November 1, Catchment Service Learning					
email	**Name**	**Class/ Service Credit**	**Time In**	**Time Out**	**Signature**
cabo249@uky.edu	Chase Boling	Durham			
katiemd242@gmail.com	Katie Davis				
alyssasarcher@gmail.com	Alyssa Archer	Greenthumb			
anna.dong@uky.edu	Anna Dong				
christopher.metts@uku.edu	Chris metts	Durham pls 220	2:30	4:30	
griffinbeck4@gmail.com	Griffin Beck	PLS220 Durham			
pamoore74@gmail.com	Paul Moore				
cole.crankshaw@gmail.com	Cole Crankshaw				
hphillips@uky.edu	Hannah Phillips	TFISE			
alicia.landon@uky.edu	Alicia Landon	TFISE			
haley.phillips@uky.edu	Haley Phillips	Dr. Richard Durham's PLS 220			
kaya.winchell@uky.edu	Kaya Winchell	PLS220			
bpcl226@uky.edu	Ben Clememts				
jacob.smith5@uky.edu	Jake Smith	Alpha Phi Omega			
hbco233@uky.edu	Harrison Cook	Gen 100			
nri237@uky.edu	Nikolas Rieke	APO			
katherine.lowery@uky.edu	Katherine Lowery	PLS 220 Durham			
aparsons19@slabeeber.org	Asaad Jamil Parsons-Gra	PLS 220			
matteo.stahl@uky.edu	matteo stahl				
Kevinmills@mills.gc.com	Kevin Mills	BAE 301	2:12	3:15	
sfn222@uky.edu	Stuart Nicholas	BAE301	2:12	4:04	
mcginnis.connor@[illegible]	Connor McGinnis	APO	1:45	4:00	Connor McGinnis
~~[illegible]~~	~~[illegible]~~	~~APO~~	~~1:45~~		
crmu225@uky.edu	Carson Mullins	BAE 301	3pm		
abuchi.okeke@uky.edu	ABUCHI OKEKE		3:10pm		
S.walling@uky.edu	Suzette Walling	PSS	1:45pm	3:25pm	
~~Starr Dutton~~ sdutt@uky.edu	Shari Dutton		3:00	4:00	

PROTECT STORMWATER QUALITY, BEAUTIFY CAMPUS

MAY 24, 2019 (1-5 PM) AT GLUCK POND

REFRESHMENTS PROVIDED

SIGN UP AT HTTPS://FORMS.GLE/HLCDQVJQUEZXTVHR9

VOLUNTEER SIGN IN

GLUCK POND PLANTING EVENT

May 24, 2019

NAME	DEPT./ORG.
Carmen Agouridis	UK - BAE
Cole Crankshaw	UK - BAE
FAITH FIENE	M-Nat
Ashley Hall	UK - BAE
Megan Lucy	CAFE - Dean's Office
Ted Kalbfleisch	UK - DVS
Sasah Meiesotto	
Leo Bettel	UK - Civil
Colleen Steele	Reg Services

LOGO CONTEST

Enter for a chance to win the

$500 PRIZE

The UK MS4 Stormwater Program is seeking a new logo design that speaks to the interplay between campus and stormwater management.

In municipalities and campuses with separate storm sewer systems (MS4s), special permits, monitoring programs, and management protocols are put in place to reduce the impacts of urban development on stormwater systems. These procedures aid in reducing the risk of potential contaminants (nutrient, sediment, trash, yard debris, etc.) from entering stormwater systems, which often discharge directly into local surface waterbodies such as streams, rivers, and lakes.

SUBMISSION DEADLINE MARCH 29 2020

UK Sustainability

Scan this code to see details and submit your design

University of Kentucky Stream Restoration Project
UT to West Hickman
GEN 100 Monday/Wednesday/Friday Sections

Agenda

Group 1 (Monday)

11:00 AM to 11:10 AM	Depart for Arboretum (Project Background and Assignment Overview on Bus)
11:10 AM to 11:35 AM	Scavenger Hunt and Brainstorming (Children's Garden)
11:35 AM to 11:40 AM	Debrief
11:40 AM to 11:50 AM	Return to Ag North

Group 1 (Wednesday)

11:00 AM to 11:10 AM	Depart for Arboretum (Project Background and Assignment Overview on Bus)
11:10 AM to 11:25 AM	Scavenger Hunt and Brainstorming (Home Demonstration Garden)
11:25 AM to 11:30 AM	Debrief and Depart for Project Site
11:30 AM to 11:40 AM	Tour Project Site
11:40 AM to 11:50 AM	Return to Ag North

Group 2 (Monday)

12:00 PM to 12:10 PM	Depart for Arboretum (Project Background and Assignment Overview on Bus)
12:10 PM to 12:35 PM	Scavenger Hunt and Brainstorming (Children's Garden)
12:35 PM to 12:40 PM	Debrief
12:40 PM to 12:50 PM	Return to Ag North

Group 2 (Wednesday)

12:00 PM to 12:10 PM	Depart for Arboretum (Project Background and Assignment Overview on Bus)
12:10 PM to 12:35 PM	Scavenger Hunt and Brainstorming (Home Demonstration Garden)
12:35 PM to 12:40 PM	Debrief and Depart for Project Site
12:30 PM to 12:40 PM	Tour Project Site
12:40 PM to 12:50 PM	Return to Ag North

Monday and Wednesday

Get inspired. Explore the Children's Garden and Home Demonstration Gardens. Complete the Scavenger Hunt. Take photos to help you remember what you saw.

Homework

Research other outdoor classrooms. Check out places like the Cassidy Elementary Science Garden and Bernheim. Research other organizations that offer environmental education programs such as zoos, other arboretums, and local, state, and national parks.

Friday

Put your ideas down on paper. Your team will be provided with an aerial image of the site. Sketch out your ideas. Be prepared to present your ideas to the class.

Background

- An unnamed tributary (UT) to West Hickman Creek is located on the southeast corner of the University of Kentucky's (UK) property southeast of the softball complex on the north side of Alumni Drive.
- The perennial stream drains 0.16 mi^2 (102 acres) of which about 16% is impervious. The drainage area includes portions of Alumni Drive, The Arboretum, and UK's Athletic Complex (e.g., baseball, soccer, and softball stadiums) (Figure 1).
- The stream is entrenched, channelized, and embedded. Habitat conditions are poor (RBP score of 81) largely due to lack of epifaunal substrate/cover, embeddedness, bank instability, and poor riparian buffer conditions (Figure 2). Streambank erosion contributes sediment, and associated sediment-bound constituents (e.g., phosphorus, nitrogen) to downstream waters. Absence of features such as a healthy riparian buffer, pools, and extensive hyporheic zone (mixing zone for surface waters and groundwaters that extends alongside and beneath the stream) means nutrients that enter the stream quickly pass through. Short retention times mean that little time is available for plant uptake and microbial transformations, both of which are essential for improving instream water quality. Also, lack of deep pools and an extensive hyporheic zone means that stormwaters quickly pass through offering little opportunity for stormwater volume retention or peak reduction.
- During the realignment of Alumni Drive, an "island" was created whereby the traffic lanes were split allowing the creation of a retention basin as part of UK's FEMA Hazard Mitigation grant. A portion of the stormwater runoff from UK's Athletic Complex passes under Alumni Drive before flowing into the UT to West Hickman Creek (Figure 3).
- The UT to West Hickman Creek is one of two streams located on UK's campus, the other being Vaughn's Branch which underwent restoration in 2015 as part of a large FEMA Hazard Mitigation grant (Figure 4).
- Maintenance of the area is difficult due to the wet, steep conditions. Average annual daily traffic (2016 data from KYTC Traffic Count Reporting System) is about 16,800 vehicles meaning large numbers of citizens drive past the project site, which is located adjacent to Alumni Drive near the intersection with Tates Creek Road. The project site is highly visible to vehicular traffic. Furthermore, a frequently used pedestrian path is located adjacent to Alumni Drive.
- UK is the state's flagship institution and is dedicated to facilitating learning, expanding knowledge, and disseminating, sharing and applying knowledge. UK has a strong track-record of utilizing such projects, as the proposed restoration of the UT to West Hickman Creek, as an outdoor learning environment to help improve people's lives and the environment.

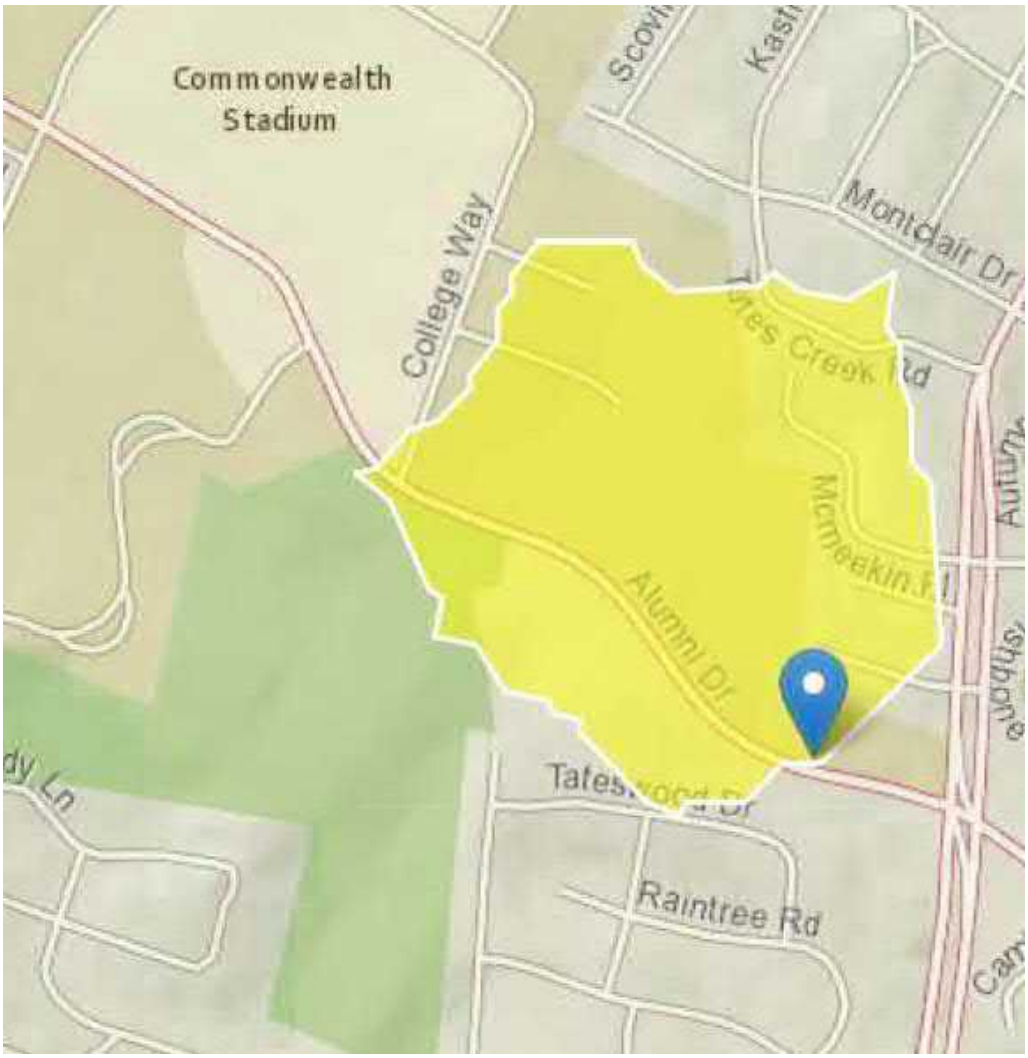


Figure 1a. The perennial stream drains 0.16 mi^2 (102 acres), which includes portions of Alumni Drive, The Arboretum, and UK Athletic Complex (e.g., baseball, soccer, and softball stadiums). The outlet is denoted by the blue marker.

Figure 1b. Existing conditions at the stream consist of two inlet culverts, one outlet culvert (before the embankment located to the south), a mower crossing, and limited riparian vegetation.

Figure 2. Habitat quality is poor (RBP score of 81) largely due to lack of epifaunal substrate/cover, embeddedness, bank instability, and poor riparian buffer conditions.

Figure 3. A portion of the flow passes under Alumni Drive (dashed green line at top of figure), enters a traffic island basin, and then passes under Alumni Drive again (second dashed green line from basin outlet) before entering the UT to West Hickman. The solid green line represents the proposed bioinfiltration swale.

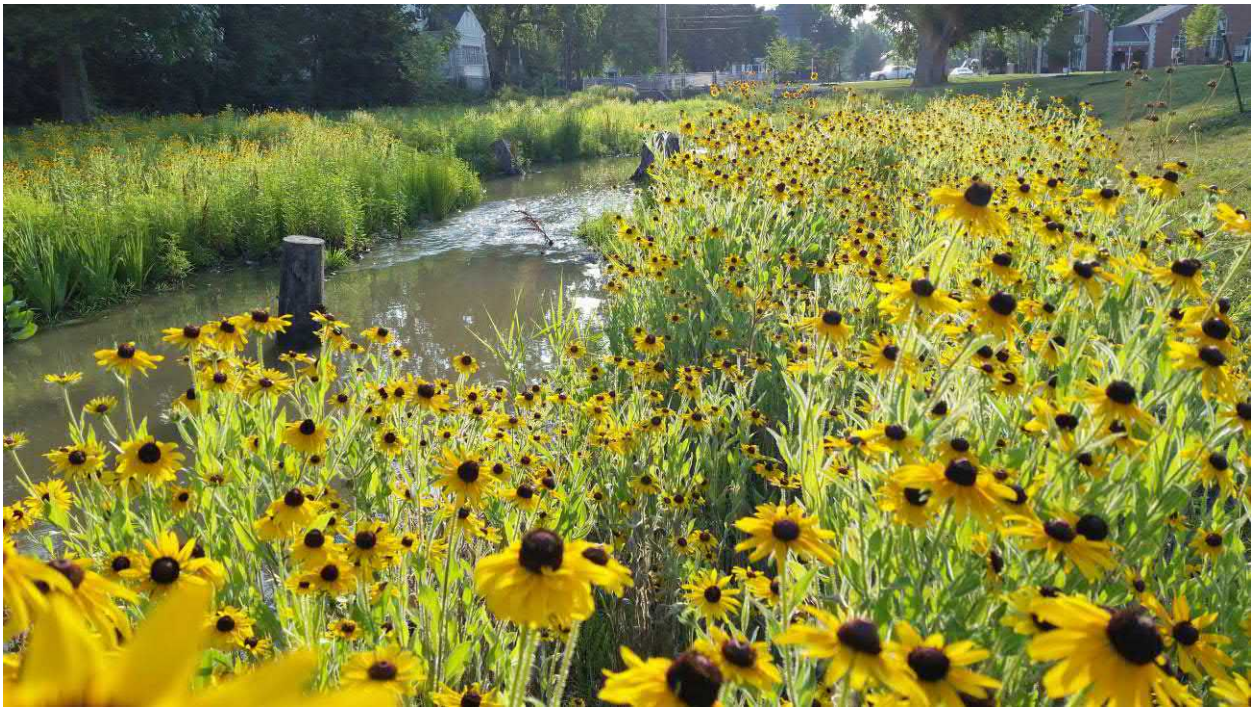


Figure 4. Vaughn's Branch, which is located on UK's property and was restored in 2015, will serve as a template for this project.

Project Purpose

The purpose of this project is to:

- Restore the UT to West Hickman Creek (stream and valley), in a similar manner as the previously restored section of Vaughn's Branch on UK's property, with the goals of:
  - Improving **water quality** in the West Hickman watershed.
  - **Reducing stormwater** runoff volumes and peaks while recharging the local aquifer.
  - **Educating** a myriad of individuals including citizens of Lexington (local community, visitors, students from other institutions/schools), citizens of the University of Kentucky (students, staff, and faculty), and professionals about **stormwater quality**. Students, staff, and faculty from UK will be **involved** in all phases of the project (e.g., design, construction, and monitoring).

Project Elements

The project will focus on the restoration of the UT to West Hickman Creek (*Ch. 9* of the *LFUCG Stormwater Manual*, 2016) and will utilize the following additional BMPs from *Ch. 10* of the *LFUCG Stormwater Manual*, 2016:

- **Riparian buffer restoration**: The project will restore the riparian buffer adjacent to the UT of Hickman Creek with the goals of filtering pollutants (e.g., sediment, nutrients), stabilizing streambanks, improving aquatic habitat (e.g., shading, carbon inputs), improving field habitat (e.g., cover, pollinator-friendly species), providing flood protection (e.g., evaportranspiration, interception, macropore development), and improving aesthetics (e.g., visual diversity).

- **Bioinfiltration swale**: The project will create a bioswales in the traffic island to slow, filter, and infiltrate stormwater runoff. The bioswales will allow for the conveyance and treatment of stormwater (portion not infiltrated or evapotranspired).

The project will also create an **enhanced hyporheic zone** designed to reduce nitrates through denitrification (e.g., modified woodchip bioreactor).

- This design has been employed at other stream restoration projects in Lexington (e.g., MMSK and Clays Mill Elementary – both received funding from the Stormwater Quality Projects Incentive Grant Program; UK's section of Vaughn's Branch)

Other project elements include:

- **Creation of an outdoor classroom** to research and demonstrate water quality protection and water quantity reduction BMPs.

Arboretum

The Arboretum, State Botanical Garden of Kentucky is a 100-acre greenspace located on the campus of the University of Kentucky in the heart of Lexington, Kentucky. We receive over 200,000 visitors annually who can enjoy and learn about our three main features, the Walk Across Kentucky, the Home Demonstration Garden and the Kentucky Children's Garden. The Walk Across Kentucky is a two-mile paved loop featuring wild-collected native plants from the seven physiographic regions of Kentucky. The Home Demonstration Garden includes several outdoor 'rooms' which model what gardeners can accomplish in their yards. Lastly, the Kentucky Children's Garden is a place for children and their families to connect with and learn about plants and the environment. We proudly offer education programming and tours to help connect people to our gardens.

Mission

The mission of the Arboretum is "to showcase Kentucky landscapes and serve as a resource center for environmental and horticultural education, research and conservation."

Assignment

Working in groups of four, your team will develop a conceptual plan for an outdoor classroom for the project site. This outdoor classroom will serve University of Kentucky students (undergraduate and graduate) and the public in the areas of teaching, outreach (extension), and research.

Two important additional items of note: 1) the UK Cross Country team practices in the area, so the outdoor classroom should have a space to accommodate runners, and 2) the area is adjacent to a residential neighborhood so the area should be welcoming to these families.

Tuesday

Get inspired. Explore the Home Demonstration Garden and Children's Garden and complete the Scavenger Hunt. Take photos to help you remember what you saw.

Homework

Research other outdoor classrooms. Check out places like the Cassidy Elementary Science Garden and Bernheim. Research other organizations that offer environmental education programs such as zoos, other arboretums, and local, state, and national parks.

Thursday

Put your ideas down on paper. Your team will be provided with an aerial image of the site. Sketch out your ideas. Be prepared to present your ideas to the class.

Scavenger Hunt

Explore the Home Demonstration Garden and Children's Garden. Find and describe at least one item for each of the following. Take photos for future reference (doing so will be helpful in the next class).

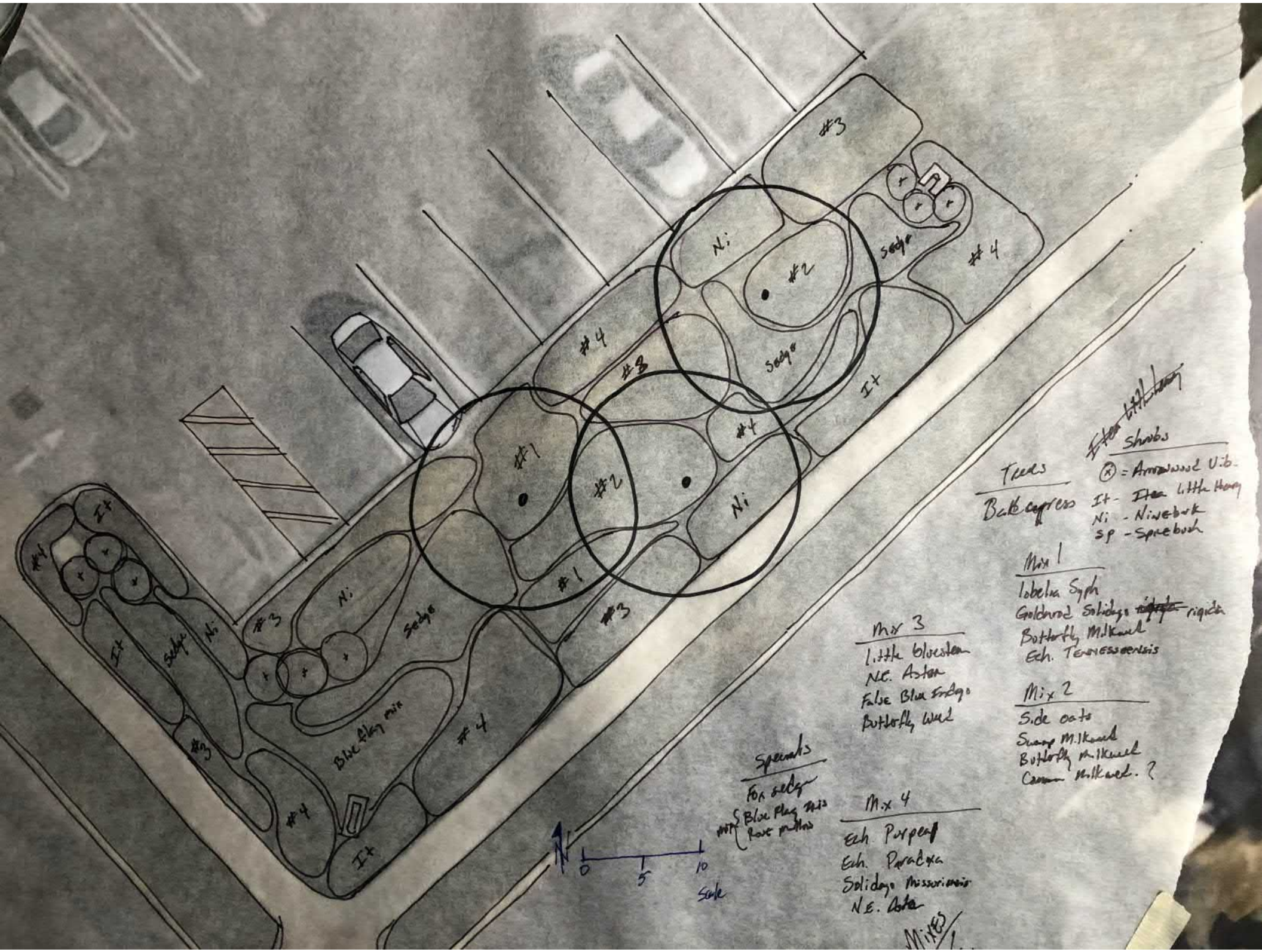
1. Passive education
2. Directing human traffic
3. Promotes thinking
4. Encourages exploration
5. Sustains plant life during droughts
6. Provides human comfort when outside
7. Promotes literacy
8. Promotes research
9. Highlights Kentucky's history
10. Highlights agriculture

My favorite part of the Home Demonstration Garden was …

My favorite part of the Children's Garden was …

The new outdoor classroom must include …


SAVE THE DATE
STREAM RESTORATION
PROJECT PRESENTATIONS
Thursday, April 18th 8:00 AM to 9:15 AM
Featuring projects in Wolf Run,
Cane Run, West Hickman, South
Elkhorn, and Glenns Creek watersheds
Breakfast provided!
RSVP TO CARMEN.AGOURIDIS@UKY.EDU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Blue flag mix
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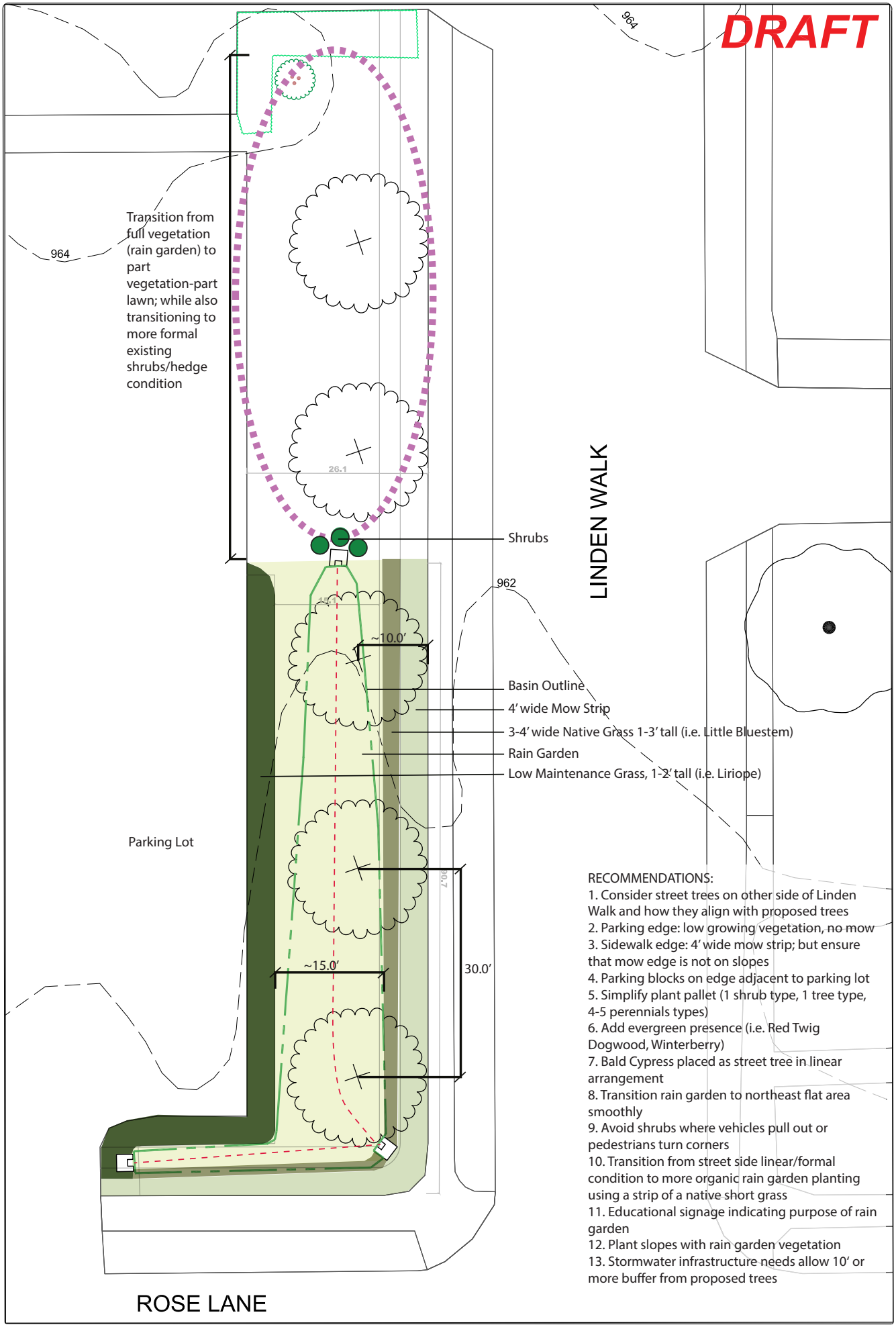
It
Trees
Bald cypress
Shrubs
= Arrowwood V.b.
It - Itea Little Henry
Ni - Ninebark
Sp - Spicebush
Mix 1
lobelia Syph
Goldenrod Solidago rigida
Butterfly Milkweed
Ech. Tennesseensis
Mix 2
Side oats
Swamp Milkweed
Butterfly milkweed
Common Milkweed ?
Mix 3
Little bluestem
NE. Aster
False Blue Indigo
Butterfly Weed
Specials
For sedge
Blue flag mix
Rose mallow
Mix 4
Ech Purpeal
Ech. Paradoxa
Solidago missouriensis
N.E. Aster
0
5
10
Scale

Rose Lane Rain Garden Planting List

Species	spacing	Quantity	Price	Total
Trees				
Bald Cypress	25ft			0
Shrubs				
Arrowwood viburnum	6-15ft			0
Itea	2-3ft			0
Ninebark	3ft			0
Spicebush	6-12ft			0
Mix 1				
Blue Lobelia	1ft			0
Rigid goldenrod	1.5-2.5ft			0
Butterfly Milkweed	1-1.5ft			0
Tennessee Coneflower	1-1.5ft			0
Mix 2				
Sideoats	1-1.5ft			0
Swamp milkweed	2-3ft			0
Butterfly Milkweed	1-1.5ft			0
Common Milkweed	1ft			0
Mix 3				
Little Bluestem	1.5-2.5ft			0
New England Aster	1-2ft			0
False Ble Indigo	3-4ft			0
Butterfly Milkweed	1-1.5ft			0
Mix 4				
Pale Purple coneflower	1-2ft			0
Yellow Coneflower	1.5-2ft			0
Missouri Goldenrod	2-3ft			0
New England Aster	1-2ft			0
Special				
Fox Sedge	.5-2ft			0
Blue Flag Iris	2-2.5ft			0
Rose Mallow	4-5ft			0
Pollinators				
Purple Coneflower	1.5-2ft			0
Yellow Coneflower	1-1.5ft			0
Missouri Goldenrod	2-3ft			0

DRAFT



RECOMMENDATIONS:

1. Consider street trees on other side of Linden Walk and how they align with proposed trees
2. Parking edge: low growing vegetation, no mow
3. Sidewalk edge: 4' wide mow strip; but ensure that mow edge is not on slopes
4. Parking blocks on edge adjacent to parking lot
5. Simplify plant pallet (1 shrub type, 1 tree type, 4-5 perennials types)
6. Add evergreen presence (i.e. Red Twig Dogwood, Winterberry)
7. Bald Cypress placed as street tree in linear arrangement
8. Transition rain garden to northeast flat area smoothly
9. Avoid shrubs where vehicles pull out or pedestrians turn corners
10. Transition from street side linear/formal condition to more organic rain garden planting using a strip of a native short grass
11. Educational signage indicating purpose of rain garden
12. Plant slopes with rain garden vegetation
13. Stormwater infrastructure needs allow 10' or more buffer from proposed trees

UNIVERSITY OF KENTUCKY
Facilities Information Services

RAIN GARDEN

ROSE LANE

DESIGNED BY:
DRAWN BY: MD
PROJECT NO:
DATE: 20190305

0 12'

NORTH

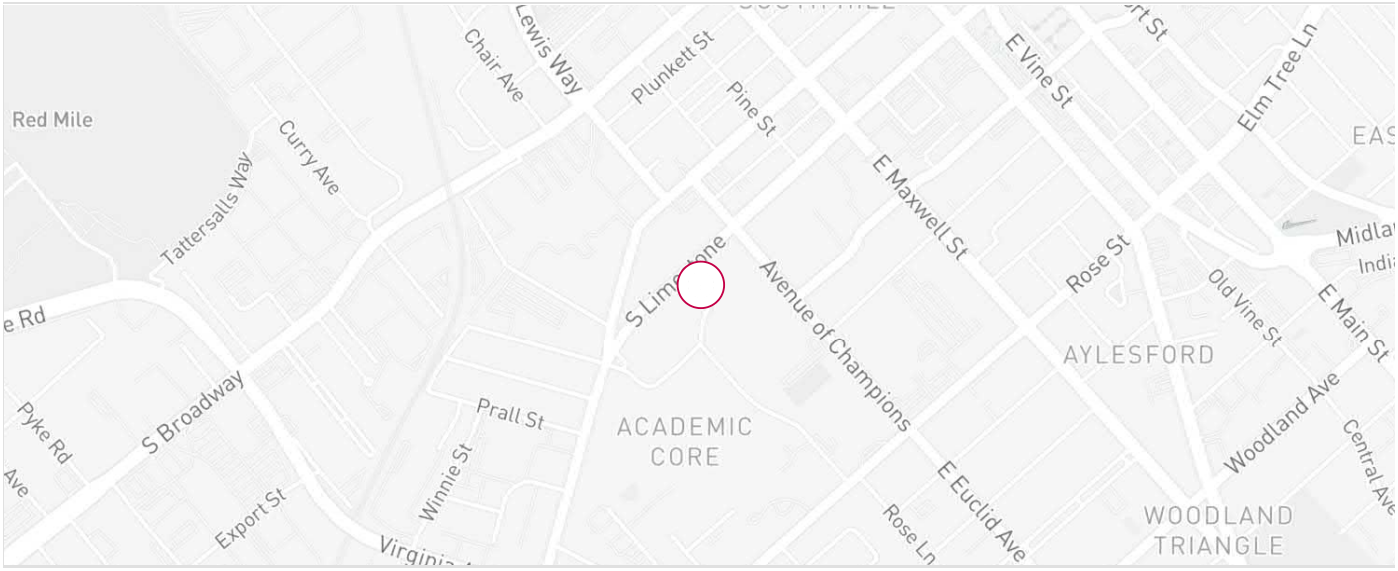
SHEET: 1/1

APPENDIX C

Illicit Discharge and Stormwater Complaint Reports

University of Kentucky

UK Grounds Illict Discharge



Illicit Discharge Properties

Owner Name:	UK Grounds	Inspection Type:	Default Illicit Discharge
Physical Address:	Lexington, KY, 40506	Compliance Status:	Resolved
Date Added:	04/23/2019	Date Reported:	03/15/2019
Follow Up Date:	N/A	Investigator:	Kevin Lewis
Community/Zone:	On Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Town Branch	Receiving Waters:	Town Branch via Stormsewer

Date Eliminated	NA	Phone Number	NA
Cell Number	NA	Fax Number	NA

Conversation Email received from Steve Evans on 3/15/19: "I noticed that the trees under the walking path/bridge to reach the Limestone garage were just mulched a few days ago and already they are getting wash out. I park in the garage there, so I walk this way every day. The issue is that the runoff from the sidewalk runs from the top of the hill near the Administration Building, picking up velocity on the way down. There are no breaks to allow the water to slow and infiltrate, so it quickly washes out. The mulch quickly washes out but even the grassed area near the end of the bridge is beginning to show rill erosion.""

Corrective Action Contacted UK Grounds and Utilities via email on 3/15/19. Utilities 3/15 response indicated that drainage was designed to flow toward the road and not the trees and that the soil and grass next to the sidewalk has sunken, creating an unintended flow path into the grass. Suggested that the sunken soil be raised and sod installed to redirect the flow as intended. Grounds 3/15 response indicated they are currently working on a solution to the problem that will be implemented within the next few weeks.

Discharge Description

Washout occurring adjacent to the Limestone Garage walking path/bridge.

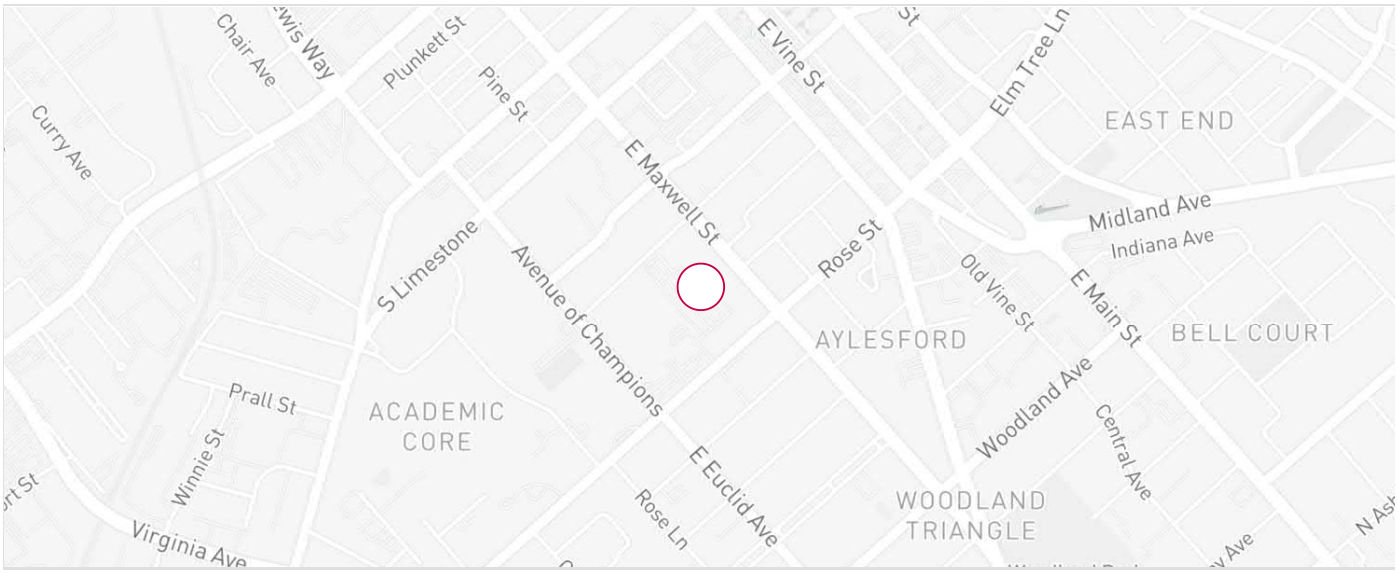
Files

No files to display

Photos


University of Kentucky

Kappa Kappa Gamma, 232 East Maxwell Street Illict Discharge



Illicit Discharge Properties

Owner Name:	Kappa Kappa Gamma	Inspection Type:	Default Illicit Discharge
Physical Address:	232 East Maxwell Street, Lexington, KY, 40508	Compliance Status:	Resolved
Date Added:	04/23/2019	Date Reported:	03/28/2019
Follow Up Date:	03/29/2019	Investigator:	Kevin Lewis
Community/Zone:	On Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Town Branch	Receiving Waters:	Town Branch via Stormsewer

Date Eliminated	03/28/2019	Phone Number	NA
Cell Number	NA	Fax Number	NA

Conversation: Email was received on 3/28/19 from Jefferson Wilham (PPD Building Operator) stating that the sorority kitchen staff is dumping their fryer oil onto the parking lot behind the house and that it is being tracked through the parking lot.

Corrective Action: EMD responded immediately upon notification on 3/28 and placed absorbent (oil dry) on main source of grease. LFUCG was contacted due to dumping from non-campus entity onto campus property. Richard Lamey with LFUCG sent inspectors to assess the situation and contact the sorority. According to sorority, even though they are on private property, an agreement exists between UK and Kappa Kappa Gamma where UK PPD provides maintenance to the sorority. As a result, a work order was placed with UK PPD to have the spill cleaned up on 3/28 in the late afternoon. Clean up occurred later that evening. Kappa Kappa Gamma will be billed for the work. Richard Lamey was onsite 3/29 at approximately 0800 with the Kappa Kappa Gamma Manager/Supervisor confirming that the spill was properly cleaned up. UK EMD (Lee Faulkner) confirmed cleanup later in the am on 3/29.

Discharge Description

The sorority kitchen staff is dumping their fryer oil onto the parking lot located between the sorority and Memorial Coliseum.

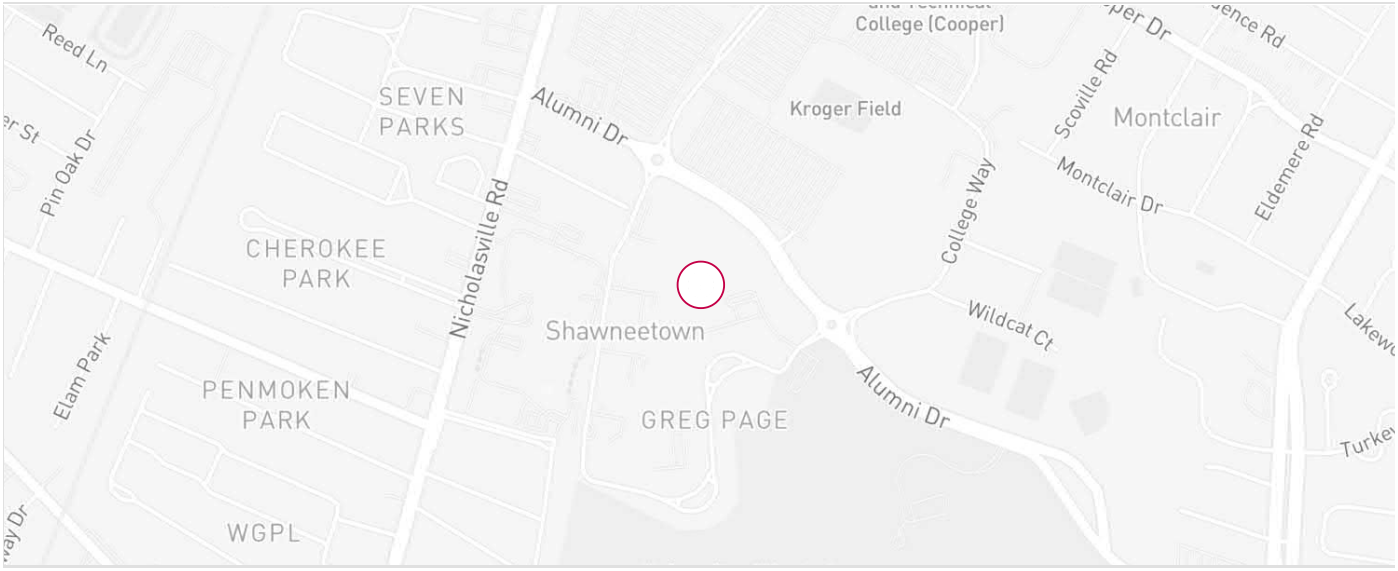
Files

No files to display

Photos

University of Kentucky

Child Development Center, 290 Alumni Dr Illict Discharge



Illicit Discharge Properties

Owner Name:	Child Development Center	Inspection Type:	Default Illicit Discharge
Physical Address:	290 Alumni Dr, Lexington, KY, 40503	Compliance Status:	Resolved
Date Added:	04/23/2019	Date Reported:	04/07/2019
Follow Up Date:	N/A	Investigator:	Kevin Lewis
Community/Zone:	On Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Wolf Run	Receiving Waters:	Vaughns Br via Dantzler Dr

Date Eliminated	NA	Phone Number	NA
Cell Number	NA	Fax Number	NA

Conversation UK PPD (Phill Tackett) received an email from UK Faculty member Mark Farman on April 7th:
"I am writing to alert you to the emergence of a deep sinkhole downslope from the CDCB building in the arboretum. The hole is approx. 2 ft. in diameter, ~ 10 feet deep with the bottom 4 feet submerged in water. This represents a life-threatening danger to any child or pet, or even an adult who fell head first into the hole. Attached are pictures of the hole, and a map showing its approximate location. I have temporarily covered the hole with a grate (which is likely to break if stepped on) and have marked the location with yellow “flags”, mostly as an indication of the hole’s presence. This situation needs to be dealt with IMMEDIATELY!"

Corrective Action EMD was alerted to the presence of the sinkhole as a courtesy of UK Utilities on 4/8/19. UK Utilities and PPD are extensively investigating the issue. The "sinkhole" has been fenced off and dye testing is occurring to determine if it surfaces in the nearby FEMA system or Big Elm Fork. Utilities is also investigating the possible presence of unknown utilities in the area. According to Joe Graft as of 4/22, the sinkhole is suspected to be a geothermal well due to two pipes located inside the hole. A review of the Childhood Development construction plans revealed that the "sinkhole" is indeed located within the boundary of the structures geothermal well field.

Discharge Description

A deep sinkhole has developed down slope from the Child Development Center building.

Files

No files to display

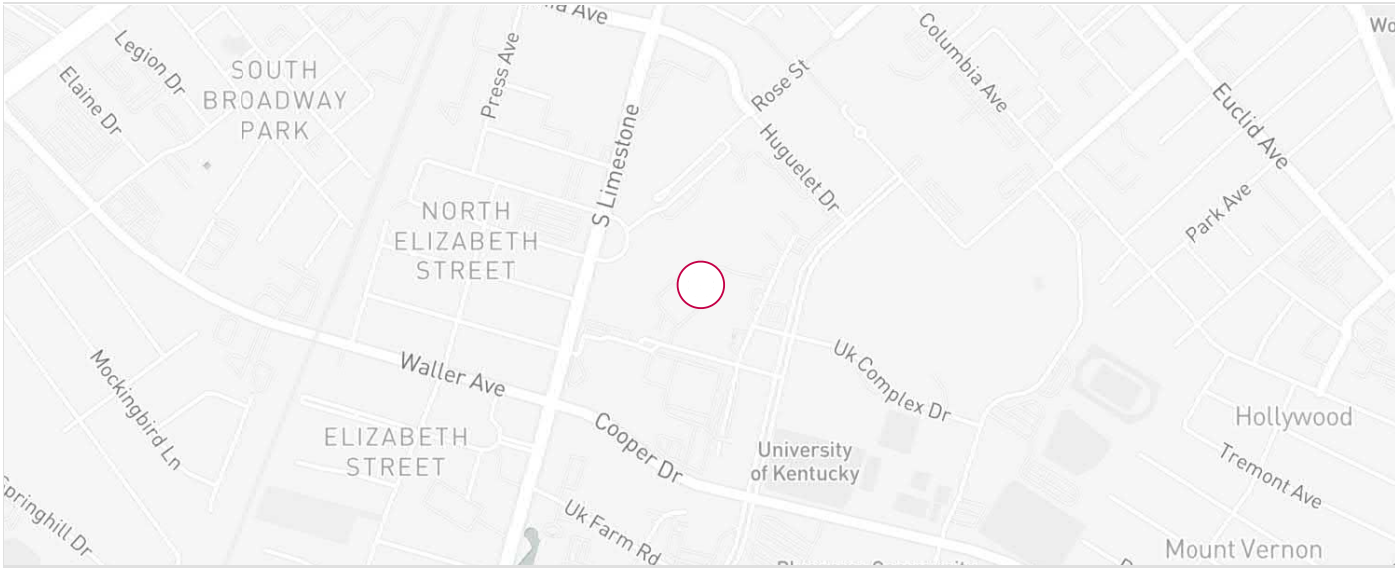
Photos





University of Kentucky

Veteran's Affairs Illicit Discharge



Illicit Discharge Properties

Owner Name:	Veteran's Affairs	Inspection Type:	Default Illicit Discharge
Physical Address:	Lexington, KY, 40506	Compliance Status:	Active
Date Added:	03/09/2020	Date Reported:	05/07/2019
Follow Up Date:	N/A	Investigator:	Robert Kjelland
Community/Zone:	NA	Watershed/Basin:	Kentucky River
Subwatershed:	Wolf Run	Receiving Waters:	Vaughns Br via Simpson Ave/Press Ave.

Date Eliminated	NA	Phone Number	NA
Cell Number	NA	Fax Number	NA

Conversation: Bob Kjelland observed leachate leaking from VA compactor directly into storm drain behind VA hospital. Severe staining present from compactor to storm drain. Photo Taken

Corrective Action: Photograph and observations/concerns sent to Richard Archer (VA) via email along with request that remedy be put in place to prevent recurrence.

Discharge Description

Leachate from compactor entering storm drain behind VA Hospital

Additional Information

Response received from Richard Archer on 5/7. Compactor in question is Sanipak, which is used to reduce red bag waste from Hospital. According to Richard, the unit is very maintenance intensive. They will address the issue.

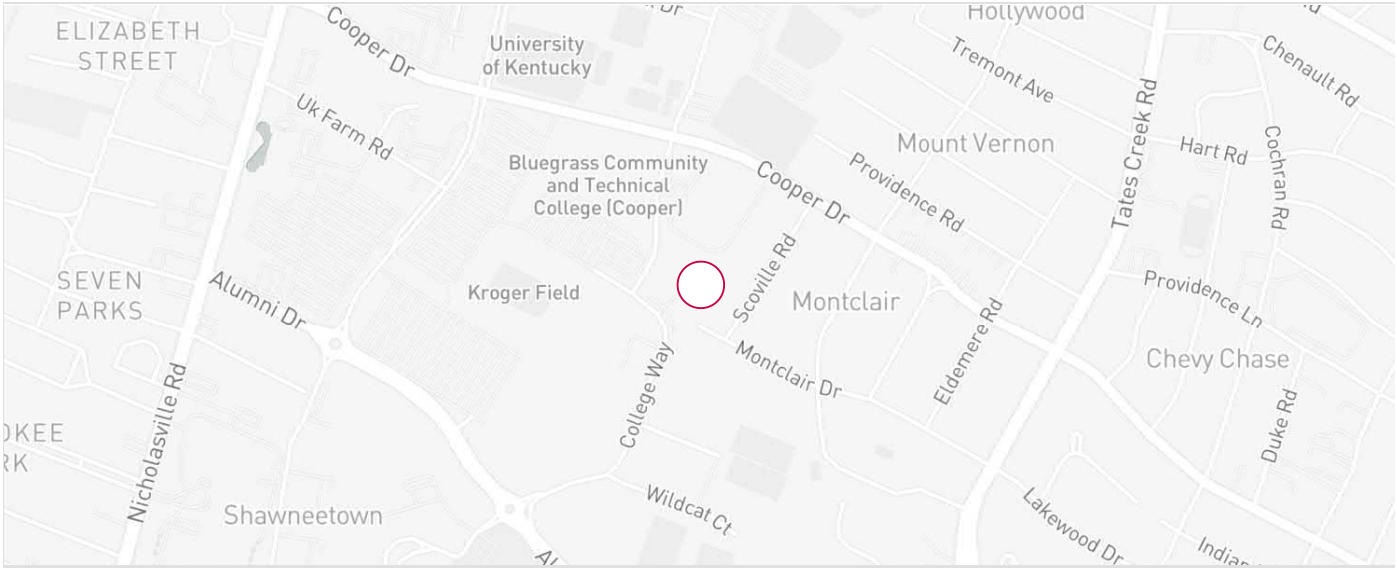
Files

No files to display

Photos

University of Kentucky

University of Kentucky CPMD Illict Discharge



Illicit Discharge Properties

Owner Name:	University of Kentucky CPMD	Inspection Type:	Default Illicit Discharge
Physical Address:	Lexington, KY	Compliance Status:	Resolved
Date Added:	03/09/2020	Date Reported:	07/30/2019
Follow Up Date:	N/A	Investigator:	Bob Brashear
Community/Zone:	On Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Wolf Run	Receiving Waters:	Vaughns Br via Simpson Ave/Press Ave.

Date Eliminated	07/31/2019	Phone Number	NA
Cell Number	NA	Fax Number	NA

Conversation Email received from Nicole Kennedy (Hope Lodge Regional Contact) inquiring about gravel bags blocking all the storm drains on the Hope Lodge property preventing them from draining properly and complaining of sediment and gravel washing off of College Way into the parking lot at this location.

Corrective Action Email Response from Bob Brashear (UK CPMD) on 7/31/19. The gravel bags are BMP's for the College Way Parking Lot construction project and can now be removed since Phase I construction is complete - Contractor notified to remove bags. The new parking lot has been paved so there is no chance for erosion to occur.

Discharge Description

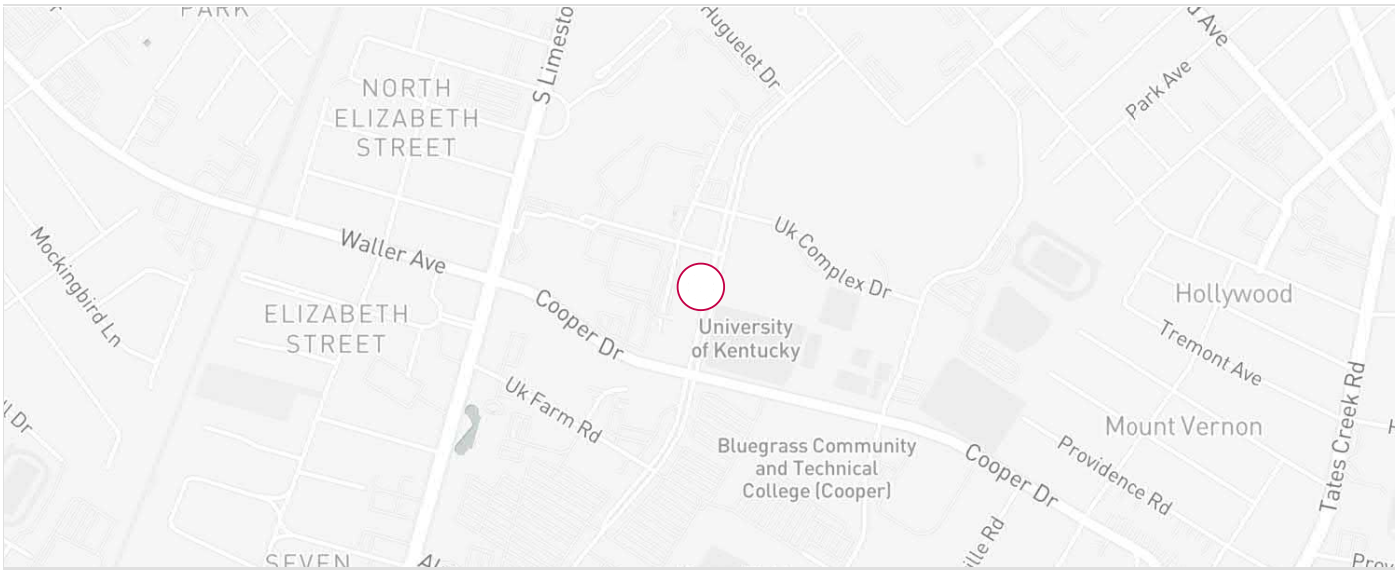
Gravel Bags blocking storm drains in Hope Lodge Parking lot preventing them from draining properly, sediment and gravel washing from College Way into parking lot

Additional Information

8/7/19 - Nicole Kennedy submitted additional request/reminder to have BMP's removed from drains and drains cleaned.

University of Kentucky

UK Grounds - Tim Clark Illict Discharge



Illicit Discharge Properties

Owner Name:	UK Grounds - Tim Clark	Inspection Type:	Default Illicit Discharge
Physical Address:	Lexington, KY, 40506	Compliance Status:	Active
Date Added:	03/09/2020	Date Reported:	07/31/2019
Follow Up Date:	N/A	Investigator:	Kevin Lewis
Community/Zone:	On Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Wolf Run	Receiving Waters:	Vaughns Br via Simpson Ave/Press Ave.

Date Eliminated	NA	Phone Number	NA
Cell Number	NA	Fax Number	NA

Conversation: Email sent to Tim Clark (UK PPD - Grounds) notifying him of eroding hillside on the corner of the parking structure along University Drive. The area is severely eroding and washing across the sidewalk.

Corrective Action: 7/31/19 Email from Tim Clark indicates that this is a known issue funded as a "summer project" and that it will be fixed soon.

Discharge Description

Hillside eroding and running across sidewalk

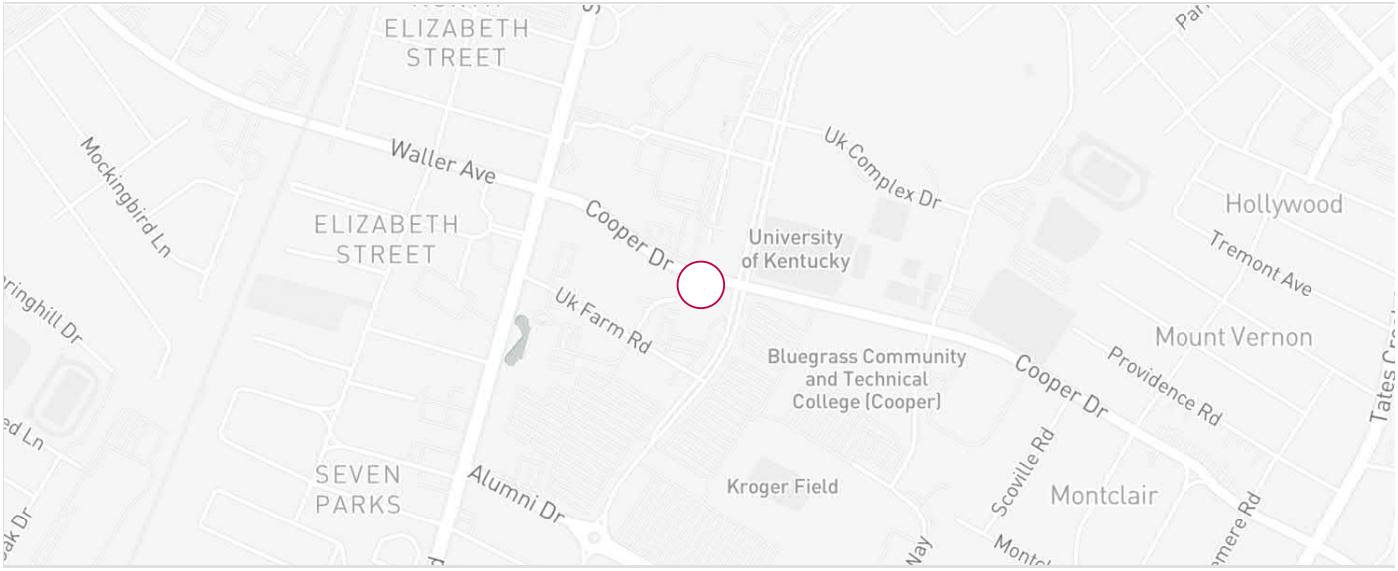
Files

No files to display

Photos

University of Kentucky

UK Utilities Illict Discharge



Illicit Discharge Properties

Owner Name:	UK Utilities	Inspection Type:	Default Illicit Discharge
Physical Address:	Lexington, KY, 40506	Compliance Status:	Resolved
Date Added:	03/09/2020	Date Reported:	08/19/2019
Follow Up Date:	N/A	Investigator:	Kevin Lewis
Community/Zone:	On Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Wolf Run	Receiving Waters:	Vaughns Br via Simpson Ave/Press Ave.

Date Eliminated	09/17/2019	Phone Number	NA
Cell Number	NA	Fax Number	NA

Conversation Email received from Bob Kjelland reporting an observation of dry weather flow in the storm inlet on the south side of the Cooper Drive tunnel. Inlet is located at the foot of a steep bank and it could possibly just be drainage from the bank.

Corrective Action Kevin Lewis contacted UK Utilities (Joe Graft) on 8/20/19 to report issue. According to Joe, there is no sump draining in that area. A 4" clay pipe is present that may be a sub drain but believes the problem could be a domestic or chilled water leak. Utilities to investigate further.

Discharge Description

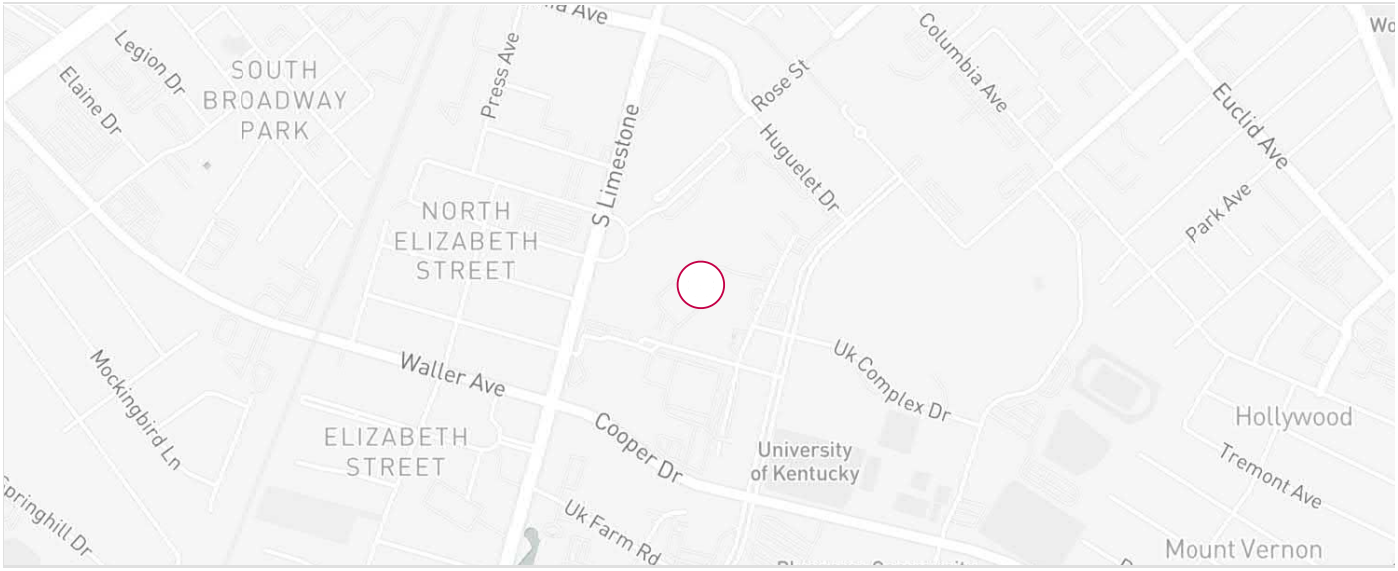
Dry weather flow at inlet on the south side of the Cooper Drive tunnel.

Additional Information

9/12/19 - Email from Graham Gray - Utilities Heating and Cooling Section has identified an issue in a steam vault near Tobacco Research that is likely the cause of the dry weather flow. An outage is planned for 9/17 and a contractor will be making repairs.

University of Kentucky

Veteran's Affairs Illicit Discharge



Illicit Discharge Properties

Owner Name:	Veteran's Affairs	Inspection Type:	Default Illicit Discharge
Physical Address:	Lexington, KY, 40506	Compliance Status:	Active
Date Added:	03/09/2020	Date Reported:	09/30/2019
Follow Up Date:	10/02/2019	Investigator:	Robert Kjelland
Community/Zone:	On Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Wolf Run	Receiving Waters:	Vaughns Br via Simpson Ave/Press Ave.

Date Eliminated	NA	Phone Number	NA
Cell Number	NA	Fax Number	NA
Conversation	Email received from Bob Kjelland - VA Sanipak discovered to be actively leaking into storm drain while responding to separate incident.		
Corrective Action	Contacted Richard Archer with VA via email and phone - Sanipak actively leaking, staff have placed some temporary protection down over the storm drain. Requested issue be eliminated.		

Discharge Description

SaniPak (compactor) leachate entering stormdrain

Additional Information

Follow-up inspection conducted 10/1/19 and 10/2/19. Sanipak continues to leak. Email sent to Richard Archer (attached) on 10/11/19 explaining that this continues to be an issue, that it has been reported to him on several occasions, and that a permanent solution needs to be developed.
Additional Follow-up conducted 10/29/19: No improvement. VA contacted 10/30/19 - they made the same observation and took corrective action. Engineering and EMS are in the process of requesting funds for a replacement system.

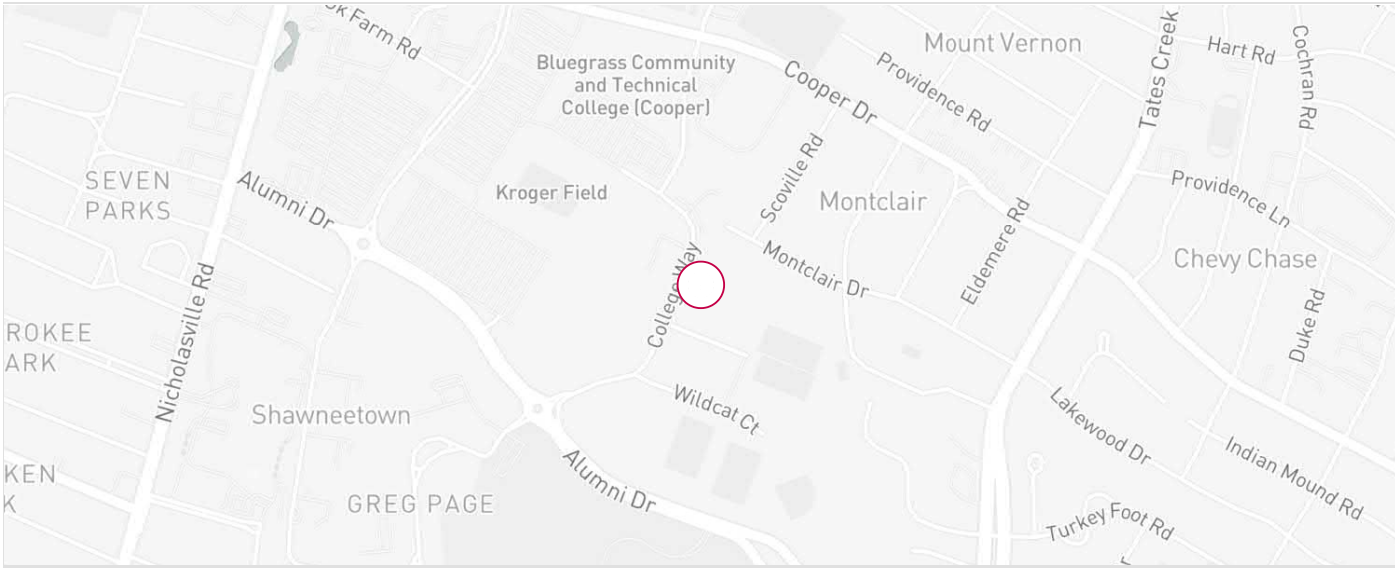
Files

03/10/2020 VA COMPACTOR DISCHARGE.PDF

Photos

University of Kentucky

University of Kentucky CPMD Illict Discharge



Illicit Discharge Properties

Owner Name:	University of Kentucky CPMD	Inspection Type:	Default Illicit Discharge
Physical Address:	Lexington, 40506	Compliance Status:	Resolved
Date Added:	03/10/2020	Date Reported:	10/31/2019
Follow Up Date:	N/A	Investigator:	Kevin Lewis
Community/Zone:	On Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Wolf Run	Receiving Waters:	Vaughns Br via Simpson Ave/Press Ave.

Date Eliminated	NA	Phone Number	NA
Cell Number	NA	Fax Number	NA

Conversation: Received email from Stacy Borden on 10/31/19 (attached) indicating that soil is washing into the new College Way parking lot during heavy rains due to the lack of grass cover.

Corrective Action: Fine sediment washing during heavy rains due to gaps is vegetation coverage. Drought conditions and high temperatures in September hindered proper grass establishment. No additional seed/straw installed - waiting for existing grass to further establish. Contractor cleaned residual soil from the pavement surface and the area was monitored for additional issues. No further complaints were received.

Discharge Description

College Way Parking Lot has soil washing into it during heavy rains.

Additional Information

Post-Construction BMP's in place to protect down stream from sediment impact.

Files

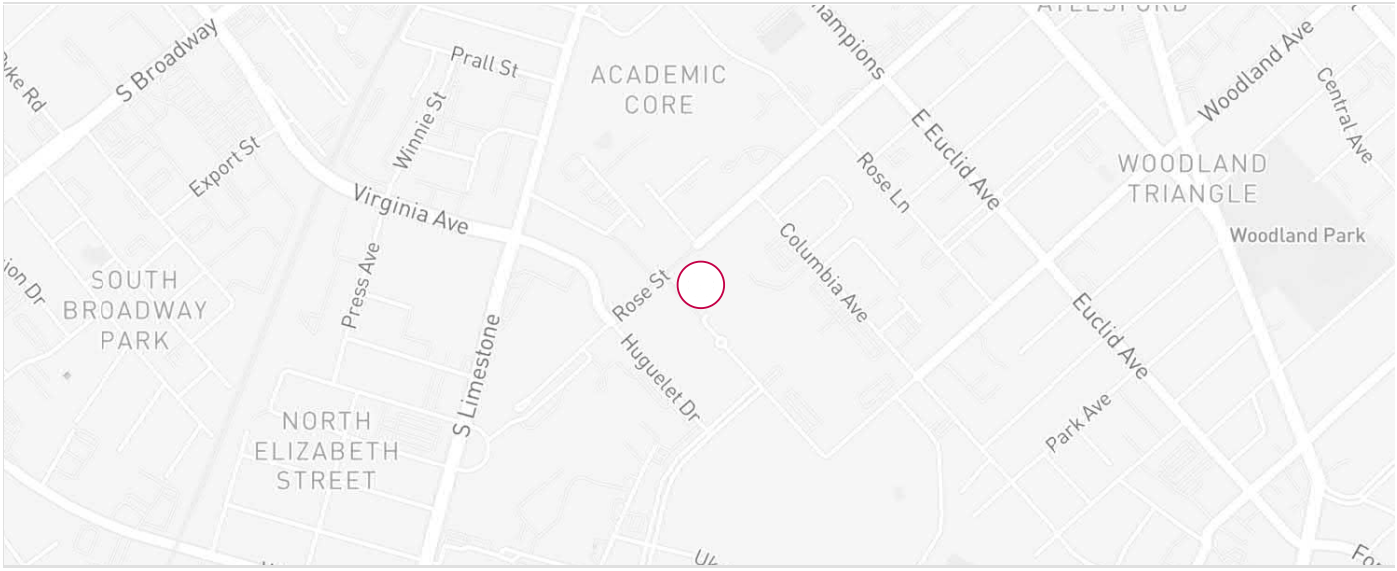
03/10/2020 SOIL RUNOFF AT NEW PARKING LOT.PDF

Photos

No photos to display

University of Kentucky

UK PPD Illict Discharge



Illicit Discharge Properties

Owner Name:	UK PPD	Inspection Type:	Default Illicit Discharge
Physical Address:	KY	Compliance Status:	Resolved
Date Added:	04/22/2019	Date Reported:	01/24/2019
Follow Up Date:	N/A	Investigator:	NA
Community/Zone:	On Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Town Branch	Receiving Waters:	Library_Sinkholes

Date Eliminated	01/24/2019	Phone Number	NA
Cell Number	NA	Fax Number	NA

Conversation: Email received from LFUCG on 1/24/19 regarding a complaint they received while on campus performing sanitary sewer dye testing. Two individuals complained of a sulphur odor in the parking garage adjacent to the Library. LFUCG investigated and found a sump pump with a strong odor.

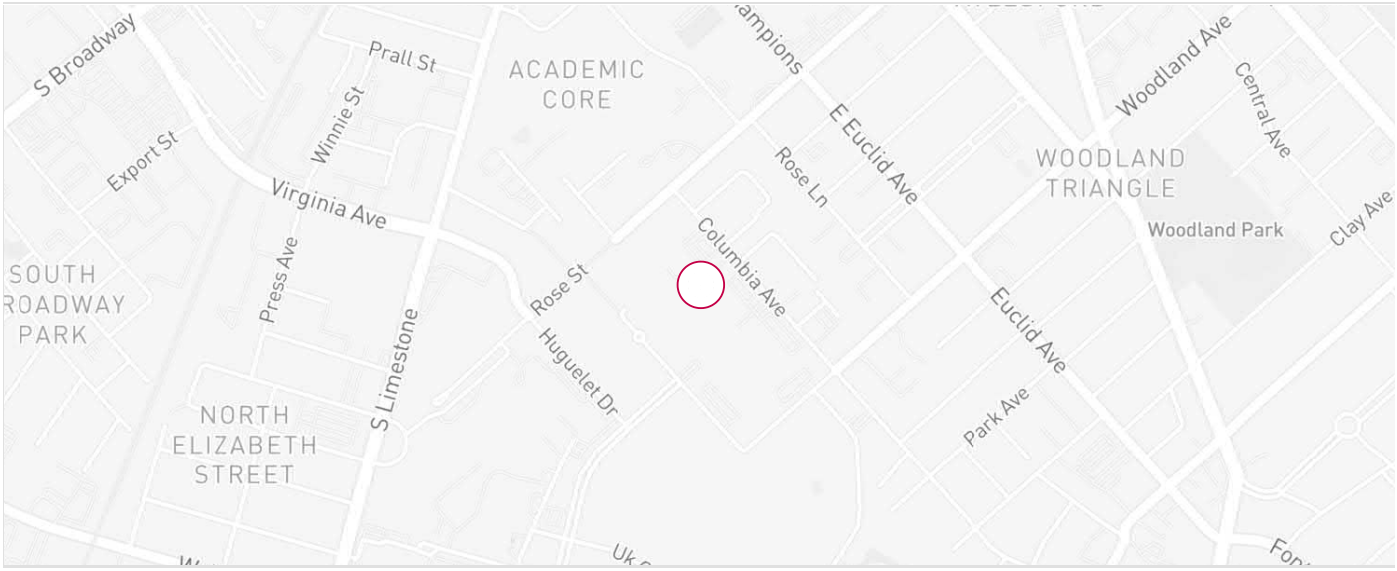
Corrective Action: Alerted UK Physical Plant of issue on 1/24. According to Joe Graft with Facilities, there is a sump in the parking structure that very seldomly runs and often turns black and stagnates. Air intakes on each end of the garage allow the odor to escape.

Discharge Description

Sulphur odor in parking garage adjacent to Library.

University of Kentucky

Campus Utilities and Grounds Illict Discharge



Illicit Discharge Properties

Owner Name:	Campus Utilities and Grounds	Inspection Type:	Default Illicit Discharge
Physical Address:	Lexington, KY, 40506	Compliance Status:	Resolved
Date Added:	04/22/2019	Date Reported:	02/26/2019
Follow Up Date:	N/A	Investigator:	Kevin Lewis
Community/Zone:	On Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Town Branch	Receiving Waters:	Library_Sinkholes

Date Eliminated	NA	Phone Number	NA
Cell Number	NA	Fax Number	NA

Conversation: Students from Dr. Osborn's WRD 204 class brought photos to EMD on 2/26 and began asking questions concerning the drainage ditch (swale) on the perimeter of the Library near Mining and Minerals adjacent to the recent construction. The swale/ditch appeared to not be flowing and the students questioned as to whether or not recent construction was to blame.

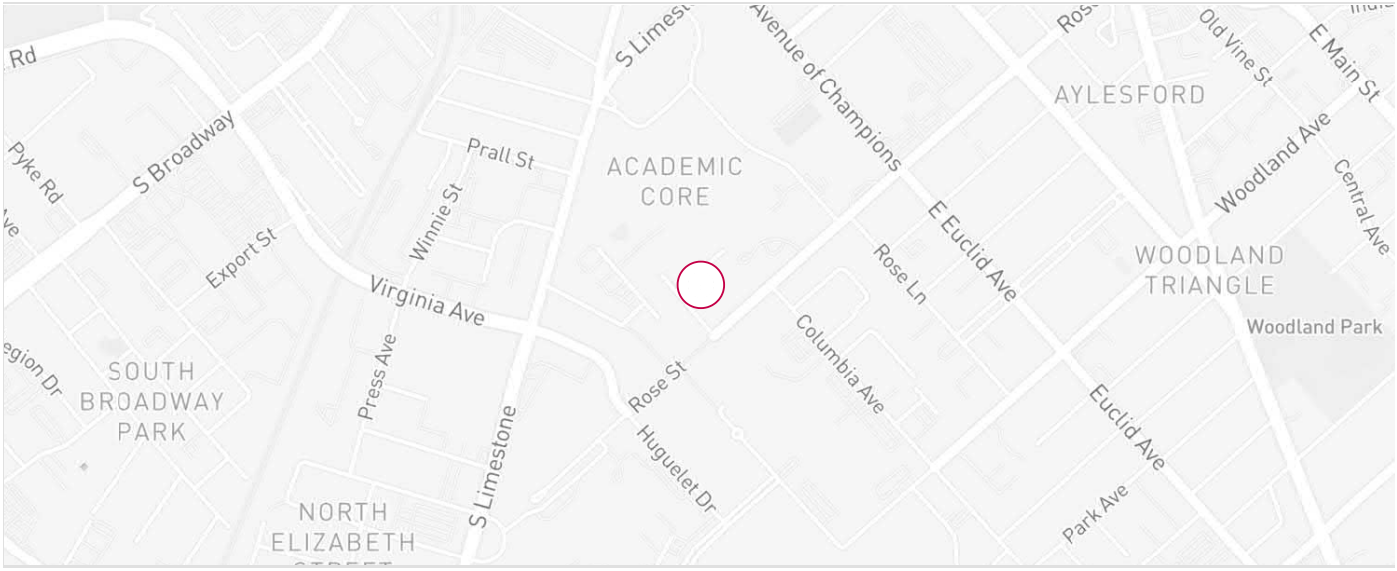
Corrective Action: Contacted UK Grounds/Utilities via email on 2/26. A response from UK Utilities indicated that they had been alerted to several issues they were currently working to resolve and that several of the drainage issues were present prior to construction. The contractor is still on site and can assist in a solution.

Discharge Description

Drainage ditch on the perimeter of the Library not flowing properly. Possibly impacted by area construction.

University of Kentucky

CPMD Illict Discharge



Illicit Discharge Properties

Owner Name:	CPMD	Inspection Type:	Default Illicit Discharge
Physical Address:	Lexington, KY, 40506	Compliance Status:	Resolved
Date Added:	04/23/2019	Date Reported:	03/11/2019
Follow Up Date:	N/A	Investigator:	Kevin Lewis
Community/Zone:	On Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Town Branch	Receiving Waters:	Town Branch via Stormsewer

Date Eliminated	03/14/2019	Phone Number	NA
Cell Number	NA	Fax Number	NA
Conversation	Photos received from staff showing sediment surrounding drain at Chem/Phys loading dock.		

Corrective Action: Email sent to PPD construction, Utilities, PPD Facility Maintenance, and CPMD project manager for Chem Phys renovation on 3/11/19 alerting them of problem and requesting nearby projects have bmp's in place and that loading dock area be cleaned and the drain protected. CMPD project manager Angela Walton responded on 3/12 after alerting area contractors: EC Mathews is going to clean area and sweep road, however, sediment is being tracked via vehicles from other nearby projects and those contractors should be held responsible from this point forward, specifically the Turner group working on Grehan. Contacted CPMD project Manager Sandy Redmon on 3/12/19. Response on 3/12/19 from Sandy indicated that bobcats/lifts delivering construction supplies from the laydown area to the Grehan site are tracking mud back and forth. Sandy spoke with Ben Noble of Turner Construction and he will make sure mud trails within the travel path and lay down area are cleaned. 3/14/19 email received from Ben Noble indicating the lay down area was thoroughly cleaned and that they will continue to monitor the area and make sure nothing is leaving the site. Bob Brashear with CPMD to inspect and monitor.

Discharge Description

Mud entering storm drain at the Chem/Phys loading dock. Sediment has washed down from surrounding area and is surrounding the drain.

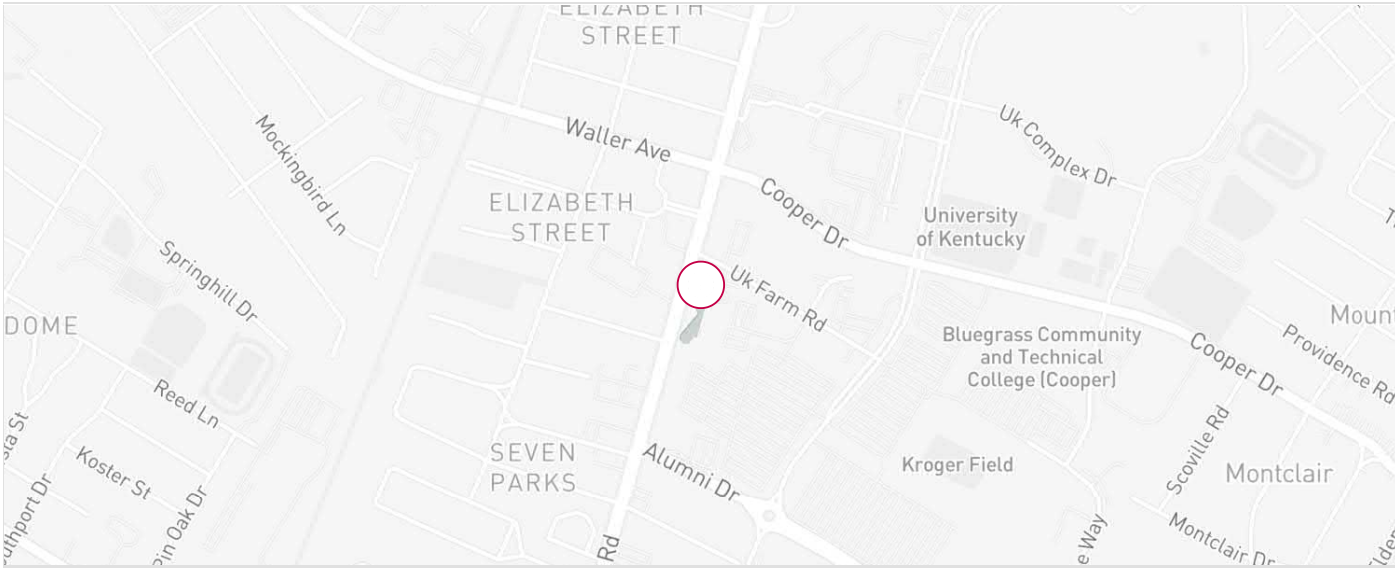
Files

No files to display

Photos


University of Kentucky

UK Communications/UK Utilities, 1400 Nicholasville Rd. Illict Discharge



Illicit Discharge Properties

Owner Name:	UK Communications/UK Utilities	Inspection Type:	Default Illicit Discharge
Physical Address:	1400 Nicholasville Rd. , Lexington, KY, 40506	Compliance Status:	Active
Date Added:	04/23/2019	Date Reported:	03/12/2019
Follow Up Date:	N/A	Investigator:	Kevin Lewis
Community/Zone:	On Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Wolf Run	Receiving Waters:	Vaughns Br via Westwood Dr

Date Eliminated	NA	Phone Number	NA
Cell Number	NA	Fax Number	NA

Conversation: An email from UK Grounds Jerry Hart was received on 3/12/19 indicating that a sinkhole was discovered in early winter near the Gluck Pond between the road and building on the North side of the pond. Attempts were made to fill the sinkhole, however, it has reformed. Other areas also appear sunken in a line.

Corrective Action: Based on a review of Utility Maps, a discussion with Jerry Hart and Joe Graft with UK Utilities on 3/12/19, it appears that the sinkhole and additional sunken areas follow a communications duct bank. PPD has alerted communications to the issue and has handed repair/investigation responsibility over to them.

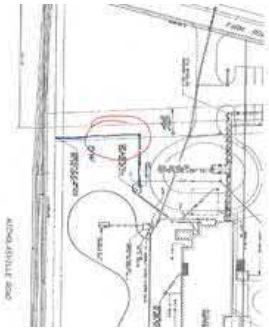
Discharge Description

A sinkhole has developed adjacent to Gluck Pond.

Files

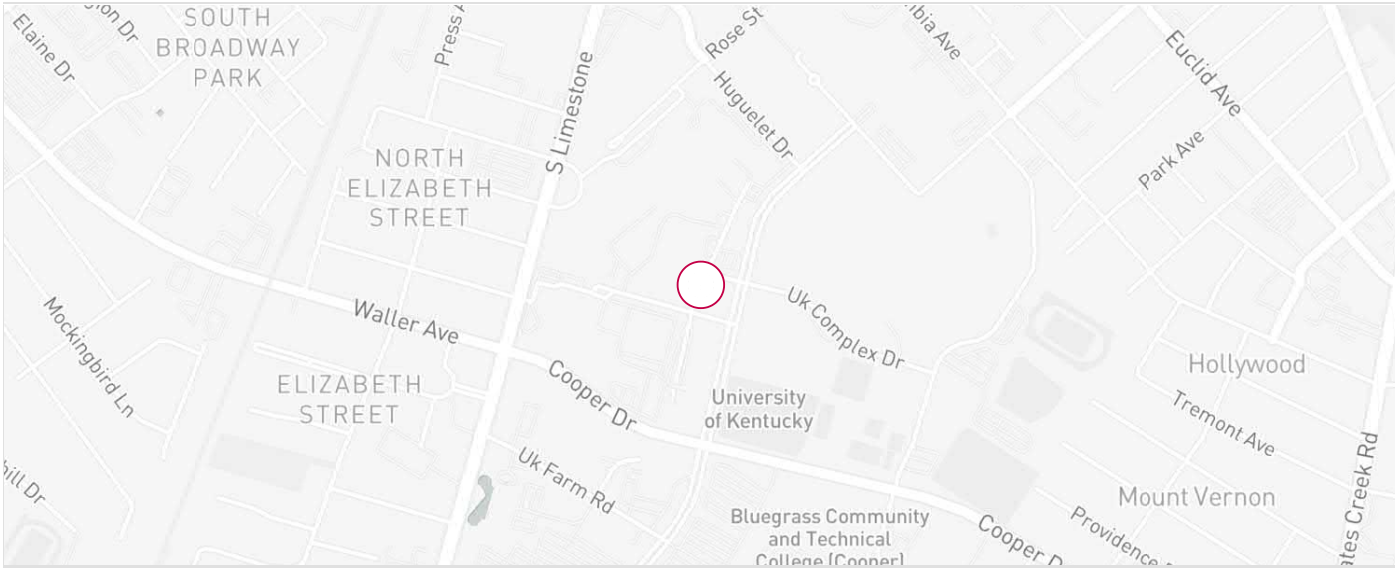
No files to display

Photos



University of Kentucky

VA Hospital, 1101 Veterans Dr Illict Discharge



Illicit Discharge Properties

Owner Name:	VA Hospital	Inspection Type:	Default Illicit Discharge
Physical Address:	1101 Veterans Dr, Lexington, KY, 40502	Compliance Status:	Resolved
Date Added:	04/23/2019	Date Reported:	03/12/2019
Follow Up Date:	N/A	Investigator:	Kevin Lewis
Community/Zone:	Off Campus	Watershed/Basin:	Kentucky River
Subwatershed:	Wolf Run	Receiving Waters:	Vaughns Br via Simpson Ave/Press Ave.

Date Eliminated	NA	Phone Number	NA
Cell Number	NA	Fax Number	NA
Conversation	Pre-emergent covering sidewalks along Veterans Drive in front of VA Hospital.		
Corrective Action	Email sent to Richard Archer with VA requesting that he notify proper staff to blow the chemicals into the turf areas to prevent them from running into the storm sewer prior to rains later in the week and to have them check application rates considering it appears to be a bit heavy.		

Discharge Description

Pre-emergent on sidewalks

Additional Information

Received no response from Richard. Inspection of the area the following day found pre-emergent to still be present on sidewalks. Inspection the following week found no pre-emergent to be present, however, recent rainfall could have cleared them.

Files

No files to display

Photos


APPENDIX D

UK MS4 System and Boundary Map

DRAFT

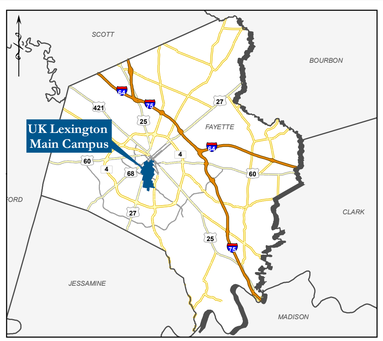


Figure 1:

UNIVERSITY OF KENTUCKY

Municipal Separate Storm Sewer Systems (MS4)
~ Boundary Map ~

This map provides information as required by the Kentucky Division of Water General Permit for Phase II Municipal Separate Storm Sewer Systems, effective May 2018.

Storm Control

- Bioretention
- Class V Injection Well
- Green Roof
- Inlet Control
- Permeable Pavement
- Pretreatment Device
- Rain Garden
- Underground Detention
- Water Harvesting System

Storm Water Features

- Cave
- Outfall
- UK Drain
- Non-UK Drain
- UK Headwall
- Non-UK Headwall
- UK Manhole
- Non-UK Manhole
- UK Storm Line
- Non-UK Storm Line
- Stream Segment
- Intermittent Flow
- Sinkhole
- Detention Basin
- Retention Basin
- Underground Detention

MS4 Boundary

- To On-Campus Sinkholes
- To Town Branch or On-Campus Caves/Sinkholes
- To West Hickman (through outfall WH-1)
- To West Hickman (through outfall WH-2)
- To Wolf Run
- To Wolf Run (through outfall WR-1)
- To Wolf Run (through outfall WR-2)

Campus Map

- Index Contour
- Intermediate Contour
- Arboretum
- Non-UK Building
- Paved Surface
- Pond

*__PROPOSED__ storm controls are represented as black and white symbols

Note: For the purpose of this map, the University of Kentucky's complete storm water system has not been shown. Only drains greater than 3ft x 3ft, storm lines greater than or equal to 15 inch diameter, and connected manholes, drains, and headwalls have been shown. For a detailed map of the complete storm water system, please see the *"Facilities Storm Sewer Utility Map"*.

Created by UK Facilities Information Services
Geospatial.Requests@uky.edu
REV: 20190819

Source: The information provided on this map product reflects current base map and relevant storm water utility data at the time of print. Data was developed from CAD records, aerial and field surveys, LFUCG storm records, and with guidance from engineering personnel.

APPENDIX E

Major Outfall Inspection Reports

WR-2 (STR-2) (Gluck Pond)

Outfall Inspection Report

University of Kentucky

Outfall Details

Location:	WR-2 (STR-2) (Gluck Pond)	Compliance:	Compliant
Added:	01/01/2012	Last Inspected:	12/05/2019

Inspection Properties

Inspector:	Bailee Young	Inspection Type:	Default Outfall Inspection
Inspection Date:	12/05/2019	Scheduled Inspection Date:	NA
Compliance Status:	Compliant	Follow Up Inspection Date:	NA
Dry or Wet Weather:	Dry	Days Since Last Rain:	NA
Color:	Clear	Clarity:	Transparent
Odor:	NA	Foam:	NA
Sheen:	NA	Suspended Solids:	NA
Settled Solids:	NA	Floating Solids:	NA
PH:	NA	Temperature(F):	NA
DO (mg/L):	NA	Turbidity (NTU):	NA
Cond (mOhms):	NA	DO (%Sat):	NA
Flowrate (GPM):	NA	Copper (mg/L):	NA
Phenols (mg/L):	NA	Ammonia (mg/L):	NA
Detergents (mg/L):	NA	T.PO4 (mg/L):	NA
Cl2 (mg/L):	NA	BOD (mg/L):	NA
COD (mg/L):	NA	TSS (mg/L):	NA
NO3 (mg/L):	NA	Fecal Coliform (col/100mL):	NA

E. Coli (col/100mL):	NA	Discharge Description:	NA
1a. Does the vegetation around the outfall show visible signs of pollution?:	No	1b. Explain::	NA
2. Is there excessive sediment accumulation below outfall?:	NA	2b. If yes describe appearance of the discharge: (Color? Turbidity? other?):	NA
3. Are there any activities in the area that may be contributing to polluted runoff?:	No	4. Are non-paved areas vegetated and free from erosion potential?:	Yes
5a. Are there any construction activities in the area?:	No	5b. If yes, are they employing sediment and erosion controls that appear to be working?:	NA
5c. If no, list and provide description::	NA	6. Are there visible signs of sanitary sewer overflows?:	No
7a. Are there any individual sewage treatment systems in the area?:	No	7b. If yes, are system discharge points exhibiting odors or septic conditions?:	NA
7c. If yes, list and provide description::	NA	8a. Are there any gas stations or car washes in the area? :	No
8b. If yes, list and provide description::	NA	8c. Does the business appear to be discharging non-stormwater into the drainage system?:	NA
8d. Are there any visible spills or leaks on site?:	NA	8e. If yes, list and provide description::	NA
9a. Any other ind. or businesses in the area appear to be contributing to polluted runoff?:	No	9b. If yes, list and provide description of business/ industry::	NA
10. COMMENTS / RECOMMENDED ACTIONS:	NA	11. Field Screening performed?:	No
TDS (mg/L):	NA	12. Was sample taken?:	No
Bicarbonate Alkalinity as CaCo3 (mg/L):	NA	Carbonate Alkalinity as CaCO3 (mg/L):	NA
Alkalinity (mg/L as CaCO3):	NA	Hardness (mg/L as CaCO3):	NA
Fluoride, F (mg/L):	NA	Chloride (mg/L):	NA
Sulfate (mg/L):	NA	Nitrate-N (mg/L):	NA
Nitrite-N (mg/L):	NA	Iron, Fe (mg/L):	NA
Magnesium, Mg (mg/L):	NA	Molybdenum, Mo (mg/L):	NA
Zinc, Zn (mg/L):	NA	Bromide (mg/L):	NA
Calcium, Ca (mg/L):	NA	Sodium, Na (mg/L):	NA

Potassium, K (mg/L):	NA	Surfactants (mg/L):	NA

Additional Information

Weather

Weather Condition:	Clear Day	Temperature (F):	34
Precipitation (in):	0	Precipitation Last 72 Hours (in):	0

Contacts

No contacts to display.

Photos

University of Kentucky

WR-3 (BCTCS)

Outfall Inspection Report

University of Kentucky

Outfall Details

Location:	WR-3 (BCTCS)	Compliance:	Compliant
Added:	01/01/2012	Last Inspected:	12/05/2019

Inspection Properties

Inspector:	Bailee Young	Inspection Type:	Default Outfall Inspection
Inspection Date:	12/05/2019	Scheduled Inspection Date:	NA
Compliance Status:	Compliant	Follow Up Inspection Date:	NA
Dry or Wet Weather:	Dry	Days Since Last Rain:	3
Color:	NA	Clarity:	NA
Odor:	NA	Foam:	NA
Sheen:	NA	Suspended Solids:	NA
Settled Solids:	NA	Floating Solids:	NA
PH:	NA	Temperature(F):	NA
DO (mg/L):	NA	Turbidity (NTU):	NA
Cond (mOhms):	NA	DO (%Sat):	NA
Flowrate (GPM):	NA	Copper (mg/L):	NA
Phenols (mg/L):	NA	Ammonia (mg/L):	NA
Detergents (mg/L):	NA	T.PO4 (mg/L):	NA
Cl2 (mg/L):	NA	BOD (mg/L):	NA
COD (mg/L):	NA	TSS (mg/L):	NA
NO3 (mg/L):	NA	Fecal Coliform (col/100mL):	NA

E. Coli (col/100mL):	NA	Discharge Description:	NA
1a. Does the vegetation around the outfall show visible signs of pollution?:	No	1b. Explain::	NA
2. Is there excessive sediment accumulation below outfall?:	No	2b. If yes describe appearance of the discharge: (Color? Turbidity? other?):	NA
3. Are there any activities in the area that may be contributing to polluted runoff?:	No	4. Are non-paved areas vegetated and free from erosion potential?:	Yes
5a. Are there any construction activities in the area?:	No	5b. If yes, are they employing sediment and erosion controls that appear to be working?:	NA
5c. If no, list and provide description::	NA	6. Are there visible signs of sanitary sewer overflows?:	No
7a. Are there any individual sewage treatment systems in the area?:	No	7b. If yes, are system discharge points exhibiting odors or septic conditions?:	NA
7c. If yes, list and provide description::	NA	8a. Are there any gas stations or car washes in the area? :	No
8b. If yes, list and provide description::	NA	8c. Does the business appear to be discharging non-stormwater into the drainage system?:	NA
8d. Are there any visible spills or leaks on site?:	NA	8e. If yes, list and provide description::	NA
9a. Any other ind. or businesses in the area appear to be contributing to polluted runoff?:	No	9b. If yes, list and provide description of business/ industry::	NA
10. COMMENTS / RECOMMENDED ACTIONS:	NA	11. Field Screening performed?:	No
TDS (mg/L):	NA	12. Was sample taken?:	No
Bicarbonate Alkalinity as CaCo3 (mg/L):	NA	Carbonate Alkalinity as CaCO3 (mg/L):	NA
Alkalinity (mg/L as CaCO3):	NA	Hardness (mg/L as CaCO3):	NA
Fluoride, F (mg/L):	NA	Chloride (mg/L):	NA
Sulfate (mg/L):	NA	Nitrate-N (mg/L):	NA
Nitrite-N (mg/L):	NA	Iron, Fe (mg/L):	NA
Magnesium, Mg (mg/L):	NA	Molybdenum, Mo (mg/L):	NA
Zinc, Zn (mg/L):	NA	Bromide (mg/L):	NA
Calcium, Ca (mg/L):	NA	Sodium, Na (mg/L):	NA

Potassium, K (mg/L):	NA	Surfactants (mg/L):	NA

Additional Information

Weather

Weather Condition:	Clear Day	Temperature (F):	34
Precipitation (in):	0	Precipitation Last 72 Hours (in):	0

Contacts

No contacts to display.

Photos

WH-1 (Alumni Drive @ Tates Creek Dr.)

Outfall Inspection Report

University of Kentucky

Outfall Details

Location:	WH-1 (Alumni Drive @ Tates Creek Dr.)	Compliance:	Compliant
Added:	01/01/2012	Last Inspected:	12/05/2019

Inspection Properties

Inspector:	Bailee Young	Inspection Type:	Default Outfall Inspection
Inspection Date:	12/05/2019	Scheduled Inspection Date:	NA
Compliance Status:	Compliant	Follow Up Inspection Date:	NA
Dry or Wet Weather:	Dry	Days Since Last Rain:	3
Color:	Clear	Clarity:	Transparent
Odor:	NA	Foam:	NA
Sheen:	NA	Suspended Solids:	NA
Settled Solids:	NA	Floating Solids:	NA
PH:	NA	Temperature(F):	NA
DO (mg/L):	NA	Turbidity (NTU):	NA
Cond (mOhms):	NA	DO (%Sat):	NA
Flowrate (GPM):	NA	Copper (mg/L):	NA
Phenols (mg/L):	NA	Ammonia (mg/L):	NA
Detergents (mg/L):	NA	T.PO4 (mg/L):	NA
Cl2 (mg/L):	NA	BOD (mg/L):	NA
COD (mg/L):	NA	TSS (mg/L):	NA
NO3 (mg/L):	NA	Fecal Coliform (col/100mL):	NA

E. Coli (col/100mL):	NA	Discharge Description:	NA
1a. Does the vegetation around the outfall show visible signs of pollution?:	No	1b. Explain::	NA
2. Is there excessive sediment accumulation below outfall?:	No	2b. If yes describe appearance of the discharge: (Color? Turbidity? other?):	NA
3. Are there any activities in the area that may be contributing to polluted runoff?:	No	4. Are non-paved areas vegetated and free from erosion potential?:	Yes
5a. Are there any construction activities in the area?:	No	5b. If yes, are they employing sediment and erosion controls that appear to be working?:	NA
5c. If no, list and provide description::	NA	6. Are there visible signs of sanitary sewer overflows?:	No
7a. Are there any individual sewage treatment systems in the area?:	No	7b. If yes, are system discharge points exhibiting odors or septic conditions?:	NA
7c. If yes, list and provide description::	NA	8a. Are there any gas stations or car washes in the area? :	No
8b. If yes, list and provide description::	NA	8c. Does the business appear to be discharging non-stormwater into the drainage system?:	NA
8d. Are there any visible spills or leaks on site?:	NA	8e. If yes, list and provide description::	NA
9a. Any other ind. or businesses in the area appear to be contributing to polluted runoff?:	No	9b. If yes, list and provide description of business/ industry::	NA
10. COMMENTS / RECOMMENDED ACTIONS:	NA	11. Field Screening performed?:	No
TDS (mg/L):	NA	12. Was sample taken?:	No
Bicarbonate Alkalinity as CaCo3 (mg/L):	NA	Carbonate Alkalinity as CaCO3 (mg/L):	NA
Alkalinity (mg/L as CaCO3):	NA	Hardness (mg/L as CaCO3):	NA
Fluoride, F (mg/L):	NA	Chloride (mg/L):	NA
Sulfate (mg/L):	NA	Nitrate-N (mg/L):	NA
Nitrite-N (mg/L):	NA	Iron, Fe (mg/L):	NA
Magnesium, Mg (mg/L):	NA	Molybdenum, Mo (mg/L):	NA
Zinc, Zn (mg/L):	NA	Bromide (mg/L):	NA
Calcium, Ca (mg/L):	NA	Sodium, Na (mg/L):	NA

Potassium, K (mg/L):	NA	Surfactants (mg/L):	NA

Additional Information

Weather

Weather Condition:	Clear Day	Temperature (F):	34
Precipitation (in):	0	Precipitation Last 72 Hours (in):	0

Contacts

No contacts to display.

Photos

University of Kentucky

WH-2 (UK Abor.)

Outfall Inspection Report

University of Kentucky

Outfall Details

Location:	WH-2 (UK Abor.)	Compliance:	Compliant
Added:	01/01/2012	Last Inspected:	12/05/2019

Inspection Properties

Inspector:	Bailee Young	Inspection Type:	Default Outfall Inspection
Inspection Date:	12/05/2019	Scheduled Inspection Date:	NA
Compliance Status:	Compliant	Follow Up Inspection Date:	NA
Dry or Wet Weather:	Dry	Days Since Last Rain:	NA
Color:	NA	Clarity:	NA
Odor:	NA	Foam:	NA
Sheen:	NA	Suspended Solids:	NA
Settled Solids:	NA	Floating Solids:	NA
PH:	NA	Temperature(F):	NA
DO (mg/L):	NA	Turbidity (NTU):	NA
Cond (mOhms):	NA	DO (%Sat):	NA
Flowrate (GPM):	NA	Copper (mg/L):	NA
Phenols (mg/L):	NA	Ammonia (mg/L):	NA
Detergents (mg/L):	NA	T.PO4 (mg/L):	NA
Cl2 (mg/L):	NA	BOD (mg/L):	NA
COD (mg/L):	NA	TSS (mg/L):	NA
NO3 (mg/L):	NA	Fecal Coliform (col/100mL):	NA

E. Coli (col/100mL):	NA	Discharge Description:	There is no flow.
1a. Does the vegetation around the outfall show visible signs of pollution?:	No	1b. Explain::	NA
2. Is there excessive sediment accumulation below outfall?:	No	2b. If yes describe appearance of the discharge: (Color? Turbidity? other?):	NA
3. Are there any activities in the area that may be contributing to polluted runoff?:	No	4. Are non-paved areas vegetated and free from erosion potential?:	NA
5a. Are there any construction activities in the area?:	No	5b. If yes, are they employing sediment and erosion controls that appear to be working?:	NA
5c. If no, list and provide description::	NA	6. Are there visible signs of sanitary sewer overflows?:	No
7a. Are there any individual sewage treatment systems in the area?:	No	7b. If yes, are system discharge points exhibiting odors or septic conditions?:	NA
7c. If yes, list and provide description::	NA	8a. Are there any gas stations or car washes in the area? :	No
8b. If yes, list and provide description::	NA	8c. Does the business appear to be discharging non-stormwater into the drainage system?:	NA
8d. Are there any visible spills or leaks on site?:	NA	8e. If yes, list and provide description::	NA
9a. Any other ind. or businesses in the area appear to be contributing to polluted runoff?:	No	9b. If yes, list and provide description of business/ industry::	NA
10. COMMENTS / RECOMMENDED ACTIONS:	NA	11. Field Screening performed?:	No
TDS (mg/L):	NA	12. Was sample taken?:	No
Bicarbonate Alkalinity as CaCo3 (mg/L):	NA	Carbonate Alkalinity as CaCO3 (mg/L):	NA
Alkalinity (mg/L as CaCO3):	NA	Hardness (mg/L as CaCO3):	NA
Fluoride, F (mg/L):	NA	Chloride (mg/L):	NA
Sulfate (mg/L):	NA	Nitrate-N (mg/L):	NA
Nitrite-N (mg/L):	NA	Iron, Fe (mg/L):	NA
Magnesium, Mg (mg/L):	NA	Molybdenum, Mo (mg/L):	NA
Zinc, Zn (mg/L):	NA	Bromide (mg/L):	NA
Calcium, Ca (mg/L):	NA	Sodium, Na (mg/L):	NA

Potassium, K (mg/L):	NA	Surfactants (mg/L):	NA

Additional Information

Weather

Weather Condition:	Clear Day	Temperature (F):	34
Precipitation (in):	0	Precipitation Last 72 Hours (in):	0

Contacts

No contacts to display.

Photos

WR-1 (STR-1) (Nicholasville Rd. @ Alumni Dr.)

Outfall Inspection Report

University of Kentucky

Outfall Details

Location:	WR-1 (STR-1) (Nicholasville Rd. @ Alumni Dr.)	Compliance:	Compliant
Added:	01/01/2012	Last Inspected:	12/05/2019

Inspection Properties

Inspector:	Bailee Young	Inspection Type:	Default Outfall Inspection
Inspection Date:	12/05/2019	Scheduled Inspection Date:	NA
Compliance Status:	Compliant	Follow Up Inspection Date:	NA
Dry or Wet Weather:	Dry	Days Since Last Rain:	3
Color:	Clear	Clarity:	Transparent
Odor:	NA	Foam:	NA
Sheen:	NA	Suspended Solids:	NA
Settled Solids:	NA	Floating Solids:	NA
PH:	NA	Temperature(F):	NA
DO (mg/L):	NA	Turbidity (NTU):	NA
Cond (mOhms):	NA	DO (%Sat):	NA
Flowrate (GPM):	NA	Copper (mg/L):	NA
Phenols (mg/L):	NA	Ammonia (mg/L):	NA
Detergents (mg/L):	NA	T.PO4 (mg/L):	NA
Cl2 (mg/L):	NA	BOD (mg/L):	NA
COD (mg/L):	NA	TSS (mg/L):	NA
NO3 (mg/L):	NA	Fecal Coliform (col/100mL):	NA

E. Coli (col/100mL):	NA	Discharge Description:	NA
1a. Does the vegetation around the outfall show visible signs of pollution?:	No	1b. Explain::	NA
2. Is there excessive sediment accumulation below outfall?:	NA	2b. If yes describe appearance of the discharge: (Color? Turbidity? other?):	NA
3. Are there any activities in the area that may be contributing to polluted runoff?:	No	4. Are non-paved areas vegetated and free from erosion potential?:	Yes
5a. Are there any construction activities in the area?:	No	5b. If yes, are they employing sediment and erosion controls that appear to be working?:	NA
5c. If no, list and provide description::	NA	6. Are there visible signs of sanitary sewer overflows?:	No
7a. Are there any individual sewage treatment systems in the area?:	NA	7b. If yes, are system discharge points exhibiting odors or septic conditions?:	NA
7c. If yes, list and provide description::	NA	8a. Are there any gas stations or car washes in the area? :	No
8b. If yes, list and provide description::	NA	8c. Does the business appear to be discharging non-stormwater into the drainage system?:	NA
8d. Are there any visible spills or leaks on site?:	NA	8e. If yes, list and provide description::	NA
9a. Any other ind. or businesses in the area appear to be contributing to polluted runoff?:	No	9b. If yes, list and provide description of business/ industry::	NA
10. COMMENTS / RECOMMENDED ACTIONS:	NA	11. Field Screening performed?:	No
TDS (mg/L):	NA	12. Was sample taken?:	No
Bicarbonate Alkalinity as CaCo3 (mg/L):	NA	Carbonate Alkalinity as CaCO3 (mg/L):	NA
Alkalinity (mg/L as CaCO3):	NA	Hardness (mg/L as CaCO3):	NA
Fluoride, F (mg/L):	NA	Chloride (mg/L):	NA
Sulfate (mg/L):	NA	Nitrate-N (mg/L):	NA
Nitrite-N (mg/L):	NA	Iron, Fe (mg/L):	NA
Magnesium, Mg (mg/L):	NA	Molybdenum, Mo (mg/L):	NA
Zinc, Zn (mg/L):	NA	Bromide (mg/L):	NA
Calcium, Ca (mg/L):	NA	Sodium, Na (mg/L):	NA

Potassium, K (mg/L):	NA	Surfactants (mg/L):	NA

Additional Information

Weather

Weather Condition:	Clear Day	Temperature (F):	34
Precipitation (in):	0	Precipitation Last 72 Hours (in):	0

Contacts

No contacts to display.

Photos

APPENDIX F

Contract General Conditions Article 11.3

ARTICLE 11 - SURVEYS, PERMITS, REGULATIONS, AND STANDARD CODES

11.1 The Owner will furnish only such surveys that are specifically required by the Contract Documents. Approvals, assessments, and easements for permanent structures or permanent changes in existing structures shall be secured and paid for by the Owner, unless otherwise specified. All required utility tap-on fees shall be secured and paid for by the General Contractor, or included in a sub-contract, including the Lexington-Fayette Urban County Government (LFUCG) sewer tap-on fee. All construction permits, where required by local ordinances, except excavation permit, shall be obtained by the General Contractor, but no fee shall be charged to or paid by the General Contractor as the Owner is exempt from such charges. A Contractor's license fee for doing business in the locale, if applicable, shall be paid for by the General Contractor.

11.2 All branches of Work shown on the plans and specifications shall be executed in strict compliance with all state and federal regulations and codes, with all national codes, and with the requirements of both ADA and JCAHO when applicable.

11.3 The Contractor, on projects disturbing 1 acre or more, or projects less than 1 acre that are part of a large common development plan, including grading, clearing, excavation, material laydown or other earth moving activities, shall assure full compliance with the requirements of the KYR10 and shall:

11.3.1 File a Notice of Intent (KPDES FORM eNOI-SWCA) with the Kentucky Division of Water and copy the UKCPM Project Manager and Water Quality Manager prior to the start of any excavation, grading or site development work.

11.3.2 The permittee (contractor) shall develop a Stormwater Pollution Prevention Plan (SWPPP) based on the Erosion Prevention and Sediment Control Plan (EPSC) as a minimum design standard. Ensure all requirements of KYR10 are fully addressed in the SWPPP. **Once the SWPPP is written, forward a copy to the Capital Projects Project Manager and to the Water Quality Manager for approval. Work cannot begin until SWPPP is approved and permit coverage obtained.**

11.3.3 Install BMP's such as, basins, traps, drainage, and sediment barriers before beginning land disturbing activities, including the construction entrance/exit. Once prevention measures have been installed, grading can commence. In the event a new construction entrance is added to the site, this new entrance must be built according to the EPSC design details with a wheel wash, a water supply and a sediment catch basin for washed wheel sediment.

11.3.4 Maintain all measures in working condition. Perform maintenance activities identified during inspections prior to the next rain event. Remove sediment from BMPs when 1/3 the storage volume has been filled.

11.3.5 Stabilize disturbed areas within 14 days of inactivity or reaching final grade on any portion of the site according to permit requirements.

11.3.6 Inspect the site every 7 calendar days and after each rainfall of ½"or more. Document site conditions, rainfall, maintenance activities needed and performed, stabilization needed and performed, and where new measures are needed. Discuss deficiencies with UK Project Manager and Water Quality Manager and note on the SWPPP Inspection Sheets.

Per the KPDES Permit, Section 2.1.7. "Inspections – Permittee Conducted". "Inspections shall be performed by personnel knowledgeable and skilled in assessing conditions at the construction site that could impact storm water quality and assessing the effectiveness of erosion prevention measures, sediment control measures, and other site management practices chosen to control the quality of the storm water discharges. Inspectors shall have training in storm water construction management such as Kentucky Erosion Prevention & Sediment Control (KEPSC), Certified Professional in Stormwater Quality (CPSWQ), Certified Erosion, Sediment and Stormwater Inspector (CESSWI), or other similar training."

Inspections shall include a tour of the total site and verification that all BMPs are performing as constructed. Inspector shall certify that all observations are correct as stated and sign and date the inspection form.

11.3.7 Keep Permit, SWPPP, weekly/rain event inspections sheets in binder in construction trailer. Any BMP change/alteration from SWPPP and EPSC plan must be noted on the EPSC and SWPPP.

11.3.8 **No soil and sediment shall leave the construction site. BMPs shall be repaired immediately if failure has occurred. No Mud shall be permitted on any street. All entrances/exits shall have a means by which to wash wheels. If an entrance/exit does not have a wheel wash, that exit shall not be used in muddy conditions. If for any reason mud is tracked offsite, the area must be cleaned in such a way as to prevent sediment from entering the storm sewer system. The use of tractor brooms solely will not be permitted.**

11.3.9 When it is necessary to dewater an excavation, proper BMPs must be implemented. Dewatering filter bags must be sized and used according to manufacturer's requirements and Standard Operating Procedures for Dewatering Bags.

11.3.10 UK (the MS4) routinely inspects sites for compliance with the EPSC/SWPPP. Any deficiencies noted become record for the Kentucky Division of Water and shall be remedied/installed as soon as site conditions are favorable but no more than 7 days from the inspection date.

11.3.11 At the conclusion of the project and all bare areas, slopes and ditches are 70% vegetated with the permanent ground cover, the contactor shall notify the UK Project Manager and Water Quality Manager and request a final site inspection prior to filing a "Notice of Termination (NOT) with the state. This inspection verifies that Construction BMPs can be removed, and Post-Construction BMPs are in place and functioning.

11.3.12 **Failure of the site contractor (permitee of the KPDES Permit) to timely comply with requirements of KPDES, the Construction Manager shall inform the site contractor that a third party contractor shall be retained to remediate all BMP deficiencies immediately, and all third party costs shall be passed to the permitee of the KPDES Permit. Any fines or other costs resulting from failure to comply, levied against the Owner will be assessed against the Construction Manager's or General Constructor's funds.**

11.3.13 Refer to 334000S01 STORM DRAINAGE UTILITIES – Information for Consultants & Contractors.

11.3.14 Reference to standards, codes, specifications, and regulations refer to the latest edition of printing in effect at the date of issue shown in the Contract Documents unless another date is implied by the suffix number of the standard.

APPENDIX G

UK Design Standard 334000S01

334000S01 STORM DRAINAGE UTILITIES - Information for Consultants & Contractors

The University of Kentucky is mandated to comply with a state-issued general permit to discharge stormwater. Formally entitled a Municipal Separate Storm Sewer System (MS4) Permit and issued by authority from the US EPA through the Kentucky Division of Water, it establishes conditions whereby the University can discharge stormwater runoff into the waters of the Commonwealth.

The University's stormwater system is comprised of detention basins, open drainage ditches and miles of underground piping. In addition, this system is also comprised of outfalls that discharge stormwater from the campus' property boundary and into streams or directly into the city of Lexington's stormwater system.

In order to meet the MS4 requirements, all construction on campus must have Best Management Practices (BMP's) designed and in place on all projects to prevent any soil, liquid, or debris from leaving the site and entering the storm system. To accomplish this there are requirements placed on the Architect/Engineering professional and also on the Construction Manager/Contractor in charge of the project.

Architect/Engineer (AE) Responsibilities

For all Capital Projects, with Limits of Disturbance greater than 1 acre, or projects that are part of a larger common plan of development less than 1 acre, the Designer of Record (AE) as part of Phase 3 design documents shall provide the Capital Projects Management, Project Manager an Erosion Prevention and Sediment Control Plan (EPSC). This plan will then be submitted to the Capital Projects Management Water Quality Manager and the Environmental Management Environmental Affairs Compliance Manager for review and approval. The EPSC must be prepared by a licensed professional engineer or landscape architect.

For Linear Utility Projects, an EPSC is needed if the project disturbs 500 linear feet or more of unpaved land surface, but is less than one acre. An EPSC is not required for utility projects that disturb 500 linear feet or more of paved land surface and that immediately places all excavated material into a truck.

Utility work that is part of a new development or redevelopment project that disturbs one or more acres of land will be covered by the contractors KYR10 Permit.

AE's Tasks:

The following steps and documents are required if the Limits of Disturbance are greater than 1 acre or if the project is part of a larger planned development, i.e. Greek Park. If the consultant is unsure of the requirement, the UK Project Manager and Water Quality Manager can help.

1. Site Evaluation
    - Collect site information (soils, slopes, drainage)
    - Produce map or drawing of existing site

- Create final project design map or drawing
- Survey the site area and delineate drainage area(s)

2. Selection of Controls and EPSC Design

- Implement state and LFUCG current edition "Stormwater Manual" requirements in design for temporary BMP's during construction and for post construction storm water quality treatment. Refer to the LFUCG most recent addition of Stormwater Manual and associated addenda at: https://www.lexingtonky.gov/new-development
- Select erosion and sediment controls most appropriate for the drainage area, topography, and flow type (sheet flow versus concentrated flow). Refer to The University of Kentucky Campus Landscape Guidelines for recommendations on green Best Management Practices at: http://www.uky.edu/sustainability/policy-and-plans
- Select controls to manage stormwater around waste areas, concrete washout areas, vehicle maintenance activities, etc.
- Indicate location of controls on map/drawing. Include standard drawings for each structural control measure. Note length, width, depth and materials specifications on the drawings so the contractor can correctly install designed measures.
- Identify the sequence of major activities, with emphasis on the installation of initial control measures prior to beginning land disturbing activities.
- Develop a written "Project Narrative" discussing how water and water quality will be handled for the site and it should contain:
    - A description of the work that will be performed on the site.
    - A general site description with direction of flow/drainage, number of outfalls, and receiving waters
    - A discussion of whether impervious area is increasing, decreasing, or remaining the same ad whether or not detention is being used.
    - A discussion of whether baseline impervious area is being reduced and how water quality requirements are being addressed.
- Develop an "Executive Summary"
    - The UK MS4 follows the requirements of the Lexington Fayette Urban County Government (LFUCG) Stormwater Manual (2016). The "Executive Summary" is a form used to compute water quantity and water quality values for the project.
    - Determine if the Project is "Re-development" or "New Development"

- Re-development Executive Summary
    - Refer to https://www.lexington.gov/stormwater , "Stormwater Manual" and download the "Executive Summary Stormwater Management Plan (Redevelopment projects) (to accompany the Stormwater Manual 2016)"

- New development Executive Summary
    - Refer to https://www.lexington.gov/stormwater , "Stormwater Manual" and download the "Executive Summary Stormwater Management Plan (New development projects) (to accompany the Stormwater Manual 2016)"

- **Submit the Project Narrative and Executive Summary no later than Phase 3 for owner's review. The EPSC Plan, Executive Summary and Narrative must be approved by the UK Water Quality Manager, Project Manager, and the Environmental Affairs Compliance Manager prior to project being bid. All contractors bidding on the project shall be aware of the University of Kentucky MS4 Storm Water Requirements of the project and bid accordingly.**

Site Contractor's Responsibilities:

The CPM Water Quality Manager will discuss the University of Kentucky MS4 Storm Water Requirement at the Pre-Construction Meeting.

1. NOI, Permit, SWPPP and Inspections
    - Submit Notice of Intent for coverage of Storm Water Discharges Associated with Construction Activities under the KPDES Storm Water General Permit KYR10 (KPDES permit). KYR10- Stormwater Construction Fact Sheet can be found at http://eec.ky.gov/Environmental-Protection/Water/Permitcert/KPDES/Documents/KYR10PermitPage.pdf . This is a PDF with links to the sites to fill out eFORMS.

    - The online NOI can be completed by using the online eNOI (application) electronic format.

    - The Kentucky DOW will send the permit and a Notice of Coverage (NOC) to the Contractor usually within 7 days.

    - Send copy of KPDES Permit and NOC to CPM Project Manager and Water Quality Manager.

- The permittee (contractor) shall develop a Stormwater Pollution Prevention Plan (SWPPP) based on the Erosion Prevention and Sediment Control Plan (EPSC) as a minimum design standard. Ensure all requirements of KYR10 are fully addressed in the SWPPP. To obtain information on developing a SWPPP, go to: http://eec.ky.gov/Environmental-Protection/Water/Permitcert/KPDES/Documents/SWPPPPermitPage.pdf.
  Once the SWPPP is written, forward a copy to the Capital Projects Project Manager and to the Water Quality Manager for approval. Work cannot begin until SWPPP, is approved and permit coverage are obtained.

- After approval, implement the SWPPP prior to the commencement of any construction disturbance. **All permit requirements shall be met under "Section 2" of the permit.**

- All operators working on the project are required to comply with the EPSC Plan and SWPPP. The SWPPP shall include erosion prevention measures, sediment controls measures, and other site management practices necessary to prevent the discharge of sediment and other pollutants into waters of the Commonwealth that are adequately protective to minimize receiving waters from being degraded and failing to support their designated uses. These sediment control measures including retention basins, erosion control measures, and other site management practices are required to be properly selected based on site-specific conditions, and installed and maintained to effectively minimize such discharges for storm events up to an including a 2-year, 24-hour event. Permittees are encouraged to design the site, the erosion prevention measures, sediment controls measures, and other site management practices with an eye toward minimizing post-construction stormwater runoff, including facilitating the use of low-impact technologies. Permittees are to minimize soil compaction and, unless infeasible, preserve topsoil except in specific site areas where the intended function dictates compaction or removal/disturbance of topsoil.

2. SWPPP Implementation

- SWPPP shall be an agenda item at the preconstruction meeting.

- Install BMP's such as, basins, traps, drainage, and sediment barriers before beginning land disturbing activities, including the construction entrance/exit. Once prevention measures have been installed, grading can commence. In the event a new construction entrance is added to the site, this new entrance must be built according to the EPSC design details with a wheel wash, a water supply and a sediment catch basin for washed wheel sediment.

- Maintain all measures in working condition. Perform maintenance activities identified during inspections prior to the next rain event. Remove sediment from behind BMPs when 1/3 the storage volume has been filled.

- Stabilize disturbed areas within 14 days of inactivity or reaching final grade on any portion of the site.

- Keep Permit, SWPPP, weekly/rain event inspections sheets in binder in trailer. **Any BMP change/alteration from SWPPP and EPSC plan must be noted on the EPSC and SWPPP.**

- **No soil and sediment shall leave the construction site. BMPs shall be repaired immediately if failure has occurred. No Mud shall be permitted on any street. All entrances/exits shall have a means by which to wash wheels. If an entrance/exit does not have a wheel wash, that exit shall not be used in muddy conditions. If for any reason mud is tracked offsite, the area must be cleaned in such a way as to prevent sediment from entering the storm sewer system. The use of tractor brooms will not be permitted.**

- UK (the MS4) routinely inspects sites for compliance with the EPSC/SWPPP. Any deficiencies noted, requested corrections/repairs, or additional bmp's requested shall be installed as soon as site conditions are favorable but no more than 7 days from the inspection date**. Failure to remedy violations and for repeat violations, the Owner shall instruct the contactor/CM to contract to a third party the remediation to all violations at a cost to the holder of the KYR10 Permit. Site Contractor shall list Erosion and Sediment Control cost separately in schedule of values. Pay applications shall be based on the following schedule:**

    - **25% Initial BMP installation**
    - **50% Periodic maintenance during construction**
    - **25% Final Stabilization and NOT**

3. BMP Maintenance and Inspections
    - Inspect the site every 7 calendar days and after each rainfall of ½"or more. Document site conditions, rainfall, maintenance activities needed and performed, stabilization needed and performed, and where new measures are needed. Discuss deficiencies with UK Project Manager and Water Quality Manager and note on the SWPPP Inspection Sheets.

    - **Per the KPDES Permit, Section 2.1.7. "Inspections – Permittee Conducted". "Inspections shall be performed by personnel knowledgeable and skilled in assessing conditions at the construction site that could impact storm water quality and assessing the effectiveness of erosion prevention measures, sediment control measures, and other site management practices chosen to control the quality of the storm water discharges. Inspectors shall have training in storm water construction management such as Kentucky Erosion Prevention & Sediment Control (KEPSC), Certified Professional in Stormwater Quality (CPSWQ), Certified Erosion, Sediment and Stormwater Inspector (CESSWI), or other similar training."**

- Any inspection Report Template and a sample can be obtained from the Water Quality Manager. All site inspection reports must contain the following certification to be signed by the inspector:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: _____

Signature: _____ Date: _____

4. NOT and Closeout
   - At the conclusion of the project and all bare areas, slopes and ditches are 70% vegetated with the permanent ground cover, the contract shall notify the UK Project Manager and Water Quality Manager and request a final site inspection prior to filing a "Notice of Termination (NOT) with the state.

   - Once the site has been permanently stabilized, complete and submit the Notice of Termination of Coverage under the KPDES General Permit for Storm Water Discharges Associated with Construction Activity. Inspections can cease once the NOT has been submitted to the KDOW. The NOT can be found here: http://eec.ky.gov/Environmental-Protection/Water/Permitcert/KPDES/Documents/KYR10PermitPage.pdf

APPENDIX H

LFUCG Checklists

Included Documentation

EPSC Detailed Construction Plan Checklist

LFUCG Land Disturbance Permit Application & Erosion and Sediment Control Plan Checklist

LFUCG Land Disturbance Permit Application & Erosion and Sediment Control Plan Checklist *v28Feb2017*

Permittee (Owner or Contractor):	Date:
Contact Person:	Contact Phone:
Site Address:	Zone:
Contractor Name: Reg #:	Contractor Phone:
Mailing Address:	Email:

Permitting Information and ESC Plan Narrative	**Yes**	**No**	**N/A**	**Page#**	**Notes**
KY DOW Construction NOI / KYR10 Permit					Required for disturbance ≥ 1 acre
US ACE Section 404 Permit					Required for stream crossings, wetland fills
KY DOW Stream Construction Permit / WQ Certif.					Required for stream crossings / encroachment
FEMA LOMR or CLOMR					If applicable
Project description and purpose					Brief summary
Land cover, soils, percent impervious area					Pre and post construction
Land cover / land use of adjacent property					Can designate on plan sheets
Work schedule with start/end dates					Sequencing, clearing, grading, revegetation
Phasing plan for large projects					25 acre limit on total disturbed area
BMP installation schedule					Can be included on plan sheets (see below)
Inspection and BMP maintenance schedule					Every 7 days, or every 14 days and after ½" rain
Material storage, waste & litter pollution prevention					Covered, away from drainage system, etc.
Fueling / vehicle maintenance pollution prevention					Conducted away from drainage system, etc.
Spill prevention, control, and countermeasures					If reportable quantities present at the site
Dust control plan					Consider if neighbors are present
Stabilized site exit inspection plan					For keeping offsite pavement clear of soil/debris
Stabilization plan and schedule for site areas					Seed/mulch/etc. within 14 days of inactivity
ESC Plan Site Map and Drawing Detail *(See LFUCG Stormwater Manual for BMP Design and Installation Information)*					
Plans stamped by a licensed professional					Required for engineered plan components
Location of the project; property lines					Include small locational map; street address
Limits of construction, disturbed area location/size					Flag off "no disturbance" areas
Topography and drainage patterns (pre and post)					1" = 50 ft; 2 ft contours
Buildings, utilities, paved areas, ditches, culverts					Show stormwater inlets within 100 ft of site
Retention ponds, detention basins, sediment traps					Stabilize immediately after construction
Access and haul roads					Consider dust control where neighbors present
Stabilized exit (50 ft #2 rock pad, shaker rack, etc.)					Must drain to a sediment control BMP
Silt fence or etc. at downslope perimeters					Super silt fence along critical areas
Diversion ditches/berms above disturbed areas					Stabilize immediately after construction
Protection for post-construction BMPs					Keep sediment out of post-construction BMPs
Slope stabilization (seed with mulch/blanket/mat)					See Figure 11-1 in Stormwater Manual
Inlet protection measures					Specify type(s) and location(s)
Outlet erosion protection measures					Specify type(s) and location(s)
Ditch stabilization (sod, or seed with blanket/mat)					Stabilize immediately after construction
Sediment basins (> 5 ac) and traps (< 5 ac)					Stabilize immediately after construction
Dewatering sites and methods					Must use sediment controls
50 ft natural vegetated buffer for all critical areas					Applies to streams, wetlands, sinkholes
Stream crossings					Crossing type, detail; USACE 404 permit req'd
Stockpile areas, equipment storage/fueling areas					Keep away from drainage system if possible
Waste and concrete wash water storage/disposal					Show initial area; can be moved as needed

LFUCG Use Only: *Review Date:* *Status – In Compliance: Yes No*	*Additional Info Needed: Yes No*
Reviewed By:	*Department: DOE DWQ DES*
Comments / Missing Items:	

Erosion and Sediment Control Plans (see checklist – next page)

ESC plans must be prepared in accordance with LFUCG Ordinances, the Stormwater Manual, and Engineering Standard Drawings. Engineered components must be prepared by a KY PE. ESC Plans must be implemented. ESC plans must include (LFUCG Erosion and Sediment Control Ordinance: Sec. 16-101):

- A description of the project, including purpose, location, and size of disturbed area
- Topography, land cover, soils, percent impervious area, before/after drainage patterns
- Land use and land cover conditions of adjacent property
- Schedule of work, beginning/end dates, sequencing (clearing, grading, revegetation)
- List of ESC BMPs, including location, installation schedule, rationale
- List of stormwater pollution control practices for non-sediment pollutants
- Discussion of inspection, maintenance, and BMP repair activities
- Site map showing areas of disturbance, BMP locations, utilities, pavement construction entrance(s), streams, wetlands, sinkholes, basins/ponds, culverts, and storm inlets
- 50 foot natural vegetation buffer must be maintained around streams, wetlands, sinkholes, etc.
- Must minimize the area and length of any disturbance in the buffer zone
- Must post a copy of the LDP at the work site in a conspicuous location
- Revise the plan if there are significant changes; PE must OK changes to engineered items

LFUCG Erosion and Sediment Control Plan Review Steps (see checklist)

- Look over the ESC Plan Review Checklist to ensure that the required items are included.
- Get a sense of the topography of the site (slopes and drainage patterns), and note the existing land cover.
- Identify any critical areas (habitat, woodlands) and buffers (50 ft for streams, wetlands, sinkholes).
- Review the construction procedure/schedule, and identify any project phases (clearing, mass grading, etc.)
- See whether or not upgradient diversion berms or ditches are included, or needed (site run-on).
- Check downgradient perimeter / runoff protection (silt fence, fiber logs, rock berms, etc.).
- Evaluate ditch and channel construction and stabilization approach (seeding, mats/blankets, etc.)
- Look for ditch or pipe discharge areas where outlet protection / splash pads / armoring might be needed.
- Review protection approach for stormwater inlets at the site (drop, curb, pipe, etc.).
- Review sizing and criteria for sediment traps and basins (volume, stabilization, outlet protection, etc.)
- Look for post-construction BMPs and make sure there is appropriate sediment control protection.
- Ensure that any stream crossings have USACE CWA Sec. 404 permits and proper design.
- Identify site exits, and ensure proper stabilization (rock, geotextile, drainage to BMP onsite, etc.)
- Check housekeeping details – concrete washout, material storage, fuel/other tank locations, dust, etc.
- Look for standard notes on stabilization (after 14 inactive days, or immediately for ditches, traps, basins), inspections (weekly or every 14 days and after ½ inch of rain), keeping public roads clean (daily), use of blankets/mats (for ditches, channels, and slopes), protection for soil stockpiles (downgradient silt fence), protection for pollutant-leaching materials (tarps, etc.), keeping records at site (permits posted, ESC Plan and inspection reports available), removing temporary BMPs (as needed and upon completion).

LFUCG Land Disturbance Permit Application & Erosion and Sediment Control Plan Checklist *v28Feb2017*

Permittee (Owner or Contractor):	Date:
Contact Person:	Contact Phone:
Site Address:	Zone:
Contractor Name: Reg #:	Contractor Phone:
Mailing Address:	Email:

Permitting Information and ESC Plan Narrative	**Yes**	**No**	**N/A**	**Page#**	**Notes**
KY DOW Construction NOI / KYR10 Permit					Required for disturbance ≥ 1 acre
US ACE Section 404 Permit					Required for stream crossings, wetland fills
KY DOW Stream Construction Permit / WQ Certif.					Required for stream crossings / encroachment
FEMA LOMR or CLOMR					If applicable
Project description and purpose					Brief summary
Land cover, soils, percent impervious area					Pre and post construction
Land cover / land use of adjacent property					Can designate on plan sheets
Work schedule with start/end dates					Sequencing, clearing, grading, revegetation
Phasing plan for large projects					25 acre limit on total disturbed area
BMP installation schedule					Can be included on plan sheets (see below)
Inspection and BMP maintenance schedule					Every 7 days, or every 14 days and after ½" rain
Material storage, waste & litter pollution prevention					Covered, away from drainage system, etc.
Fueling / vehicle maintenance pollution prevention					Conducted away from drainage system, etc.
Spill prevention, control, and countermeasures					If reportable quantities present at the site
Dust control plan					Consider if neighbors are present
Stabilized site exit inspection plan					For keeping offsite pavement clear of soil/debris
Stabilization plan and schedule for site areas					Seed/mulch/etc. within 14 days of inactivity
ESC Plan Site Map and Drawing Detail *(See LFUCG Stormwater Manual for BMP Design and Installation Information)*					
Plans stamped by a licensed professional					Required for engineered plan components
Location of the project; property lines					Include small locational map; street address
Limits of construction, disturbed area location/size					Flag off "no disturbance" areas
Topography and drainage patterns (pre and post)					1" = 50 ft; 2 ft contours
Buildings, utilities, paved areas, ditches, culverts					Show stormwater inlets within 100 ft of site
Retention ponds, detention basins, sediment traps					Stabilize immediately after construction
Access and haul roads					Consider dust control where neighbors present
Stabilized exit (50 ft #2 rock pad, shaker rack, etc.)					Must drain to a sediment control BMP
Silt fence or etc. at downslope perimeters					Super silt fence along critical areas
Diversion ditches/berms above disturbed areas					Stabilize immediately after construction
Protection for post-construction BMPs					Keep sediment out of post-construction BMPs
Slope stabilization (seed with mulch/blanket/mat)					See Figure 11-1 in Stormwater Manual
Inlet protection measures					Specify type(s) and location(s)
Outlet erosion protection measures					Specify type(s) and location(s)
Ditch stabilization (sod, or seed with blanket/mat)					Stabilize immediately after construction
Sediment basins (> 5 ac) and traps (< 5 ac)					Stabilize immediately after construction
Dewatering sites and methods					Must use sediment controls
50 ft natural vegetated buffer for all critical areas					Applies to streams, wetlands, sinkholes
Stream crossings					Crossing type, detail; USACE 404 permit req'd
Stockpile areas, equipment storage/fueling areas					Keep away from drainage system if possible
Waste and concrete wash water storage/disposal					Show initial area; can be moved as needed

LFUCG Use Only: *Review Date:* *Status – In Compliance: Yes No*	*Additional Info Needed: Yes No*
Reviewed By:	*Department: DOE DWQ DES*
Comments / Missing Items:	

APPENDIX I

Example UK Construction Site Inspection

Improve Campus Parking & Transportation PS#5

Construction Site Inspection Report

University of Kentucky

Construction Site Details

Name:	Improve Campus Parking & Transportation PS#5	Compliance:	Compliant
Added:	04/22/2019	Last Inspected:	03/11/2020
Site Physical Address:	401-405 South Limestone, Lexington, 40506, KY		

Inspection Properties

Inspector:	Bob Brashear	Inspection Type:	Default Construction Site Inspection
Inspection Date:	08/05/2019	Scheduled Inspection Date:	NA
Compliance Status:	Compliant	Follow Up Inspection Date:	NA
Date Resolved:	NA	Is Site Active:	Yes
Is Site Permitted:	Yes	Acceptable Erosion Controls:	Yes
Acceptable Local Controls:	Yes	Has Plan On Site:	Yes
Acceptable Non-stormwater Controls:	Yes	Acceptable Outfall Velocity Controls:	Yes
Acceptable Stabilization Controls:	Yes	Acceptable Structural Controls:	Yes
Acceptable Tracking Controls:	Yes	Acceptable Maintenance of Controls:	Yes
Acceptable Waste Management:	Yes	Has Current Plan Records:	Yes
1. SWPPP approved at Phase Submittal:	yes	2. Weather:	NA
3. Have any discharges of sediment or other pollutants occurred since the last inspection? :	No	4. Are there any discharges of sediment of pollutants at the time of inspection?:	No
5. Engineer's Erosion and Sediment Control Plan is on site:	Yes	6. Engineer's Erosion and Sediment Control Plan is being followed:	Yes

7. Construction entrance and parking areas are stabilized with stone:	Yes	7a. Maintenance Required?:	No
8. Disturbed areas inactive for 14 days are seeded and mulched :	NA	8a. Maintenance Required?:	NA
9. Silt fence is installed and maintained:	Yes	9a. Maintence Required?:	No
10. Sediment ponds/traps are installed and maintained:	NA	10a. Maintenance Required?:	NA
11. Diversion channels are installed and stabilized :	NA	11a. Maintenance Required?:	NA
12. Checked dams are installed and maintained:	NA	12a. Maintenance Required?:	NA
13. Soil stockpiles are stabilized :	NA	13a. Maintenance Required?:	NA
14. Erosion control blanket is installed:	NA	14a. Maintenance Required?:	NA
15. Channels are stabilized with proper channel lining:	NA	15a. Maintenace Required?:	NA
16. Dewatering operations are filtered before discharging to stream:	NA	16a. Maintenance Required?:	NA
17. Are storm drain inlets properly protected? :	Yes	17a. Maintenance Required?:	No
18. Is trash/litter from work areas collected and placed in covered waste containers? :	Yes	18a. Maintenance Required?:	No
19. Is there a concrete truck washout pit provided? :	Yes	19a. Maintenance Required?:	No
20. Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other material? :	Yes	20a. Maintenance Required?:	No
21. Are materials that are potential stormwater contaminants stored inside or under cover? :	NA	21a. Maintenance Required?:	NA
22. Inspection Sheet Up to date?:	Yes	22a. Inspection sheet dated:	NA
23. Describe any incidents of non-compliance not described above: :	NA	:	NA

Additional Information

Site is active. Drilled piers are currently being installed. Site slopes toward the south and drains are protected.

Construction fence is being moved outward further into the street. Awaiting word on whether or not box culvert will receive a pre-construction inspection.

Weather

Weather Condition:	sunny	Temperature (F):	85
Precipitation (in):	NA	Precipitation Last 72 Hours (in):	NA

Contacts

Chris Risky	Contractor	270-980-0001 - Mobile

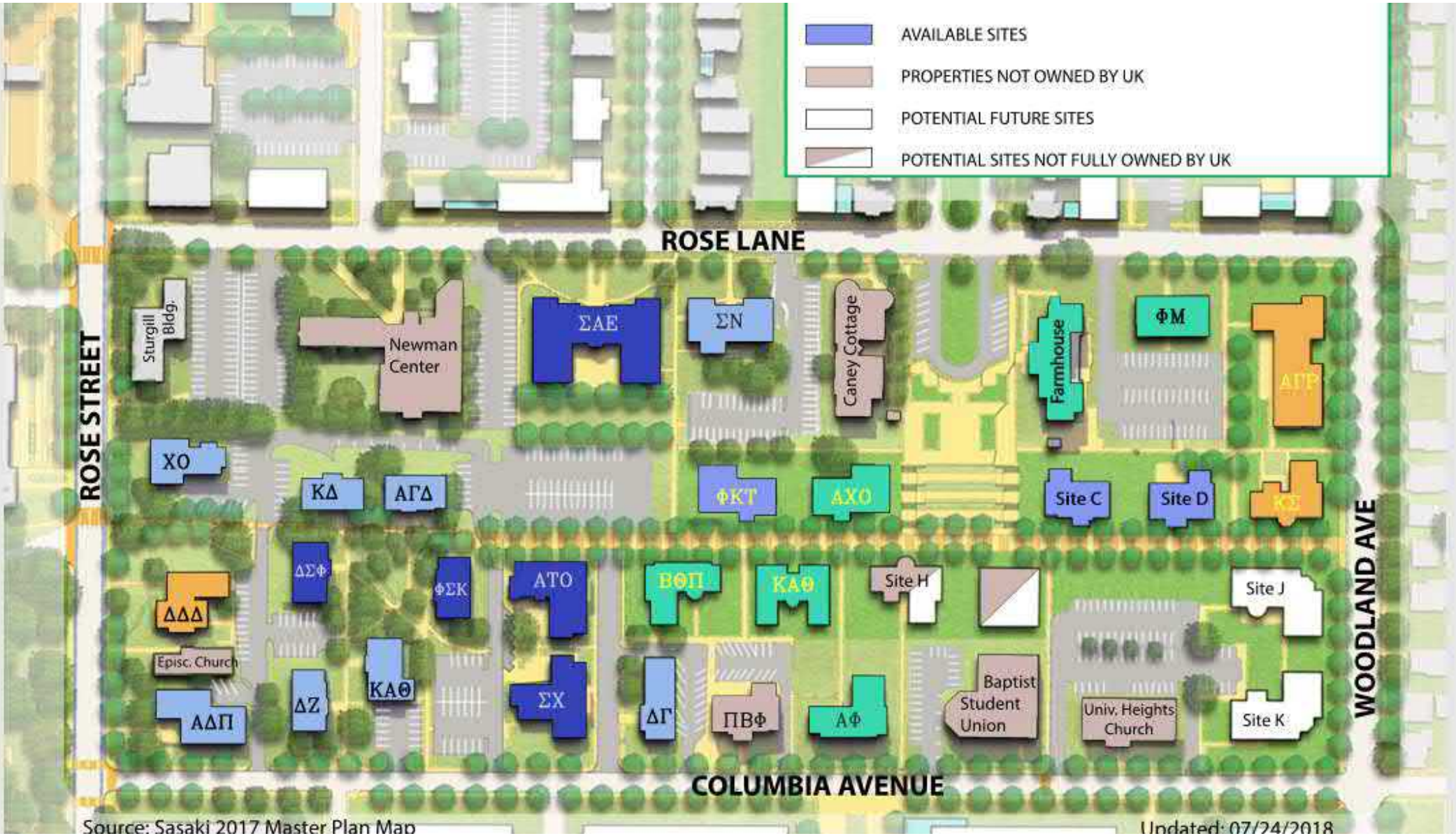
Photos

APPENDIX J

Greek Park Training Presentation

- University of Kentucky is a MS4, Municipal Separate Storm Sewer System
  - We regulate all stormwater that leaves the University's boundary
- Greek Park is a planned development and each house must meet certain stormwater design criteria
- Stormwater infrastructure on campus is 50-75 + years old.
- With campus redevelopment we can't overload the system
- Detention must be added to release the water slowly
- The water leaving the site must be cleaned to collect sediment, trash and oils.

• Greek Park



Source: Sasaki 2017 Master Plan Map

Updated: 07/24/2018

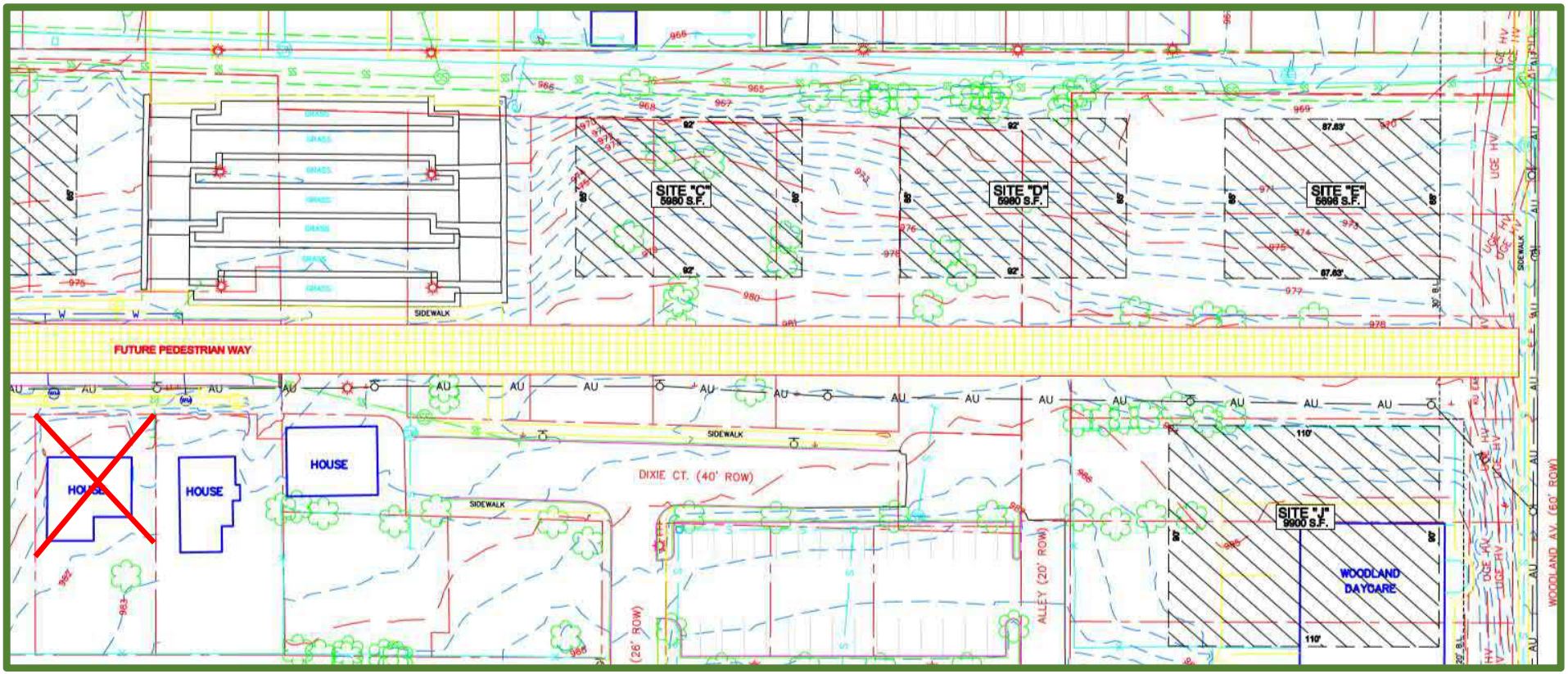
2018

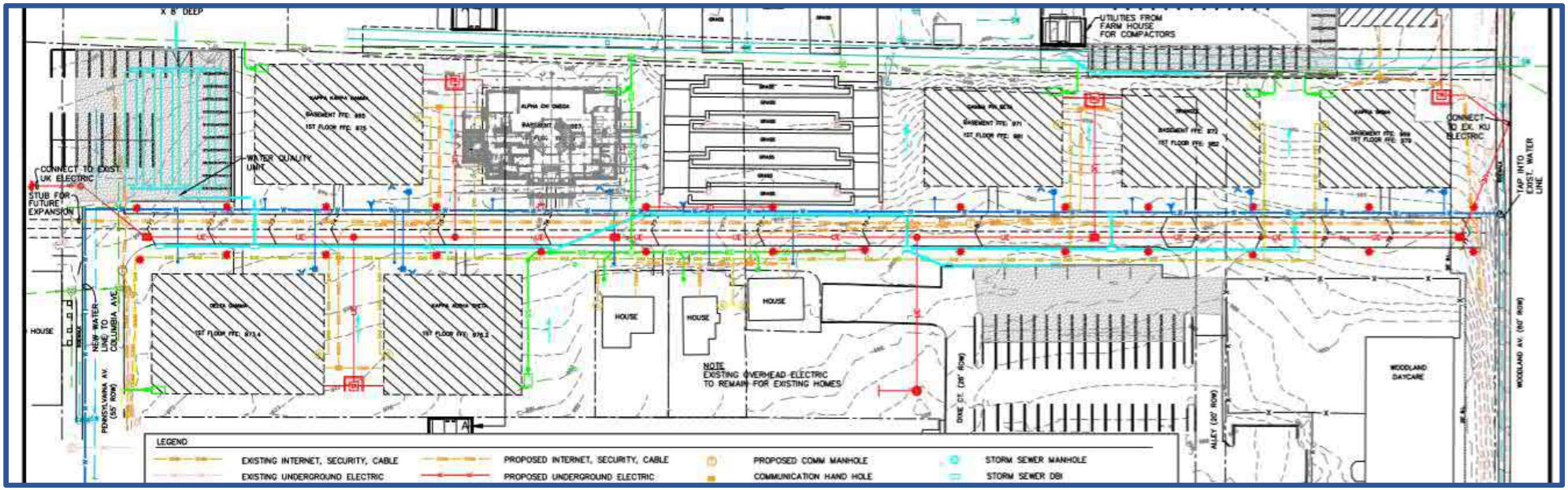
2014

2016

		Credits Revised, 06.12.19			
Site	Organization	Constructed Inpervious	Remaining Alowable SF For Quantity	Quality SF (80%)	Notes
In order of Development		Sq. Ft.	Sq. Ft.	Sq. Ft.	
Pre-development Impervious		28,167	-	22,534	
B	AXO Alpha Chi Omega	5,980	22,187	16,554	
F	Beta Beta Phi Pi	9,200	12,987	7,354	
G	KAT Kappa Alpha Theta	7,360	5,627	(6)	Quantity ands Quality Met
A	PKT Phi Kappa Tau	6,960	(1,333)	(6,966)	Need Quality and Quantity is allowable
E	Kappa Sigma	5696	(7,029)	(12,662)	Need Quality and Quantity

	House Square Footage	
House #1	1,200	
House #2	1,000	
House #3	800	
Total	3,000	
New House Options		
Build 20% smaller	2,400	Don't have to build detention or clean any runoff
Build same size	3,000	Don't have to build detention but have to clean the runoff from 600 square feet (3000 x 20%)
Build bigger	4,000	Have to build detention for the runoff from 1000 square feet (4000-3000) and clean that runoff


SITE "C"
5980 S.F.
SITE "D"
5980 S.F.
SITE "E"
5696 S.F.
SITE "J"
9900 S.F.
FUTURE PEDESTRIAN WAY
HOUSE
HOUSE
HOUSE
DIXIE CT. (40' ROW)
ALLEY (20' ROW)
(26' ROW)
SIDEWALK
WOODLAND DAYCARE
WOODLAND AV. (60' ROW)


X 8' DEEP
UTILITIES FROM FARM HOUSE FOR COMPACTORS
CONNECT TO EXIST. UK ELECTRIC
STUB FOR FUTURE EXPANSION
WATER QUALITY UNIT
CONNECT TO EX. KU ELECTRIC
TAP INTO EXIST. WATER LINE
NEW WATER LINE TO COLUMBIA AVE.
PENNSYLVANIA AV. (55' ROW)
HOUSE
HOUSE
HOUSE
HOUSE
NOTE
EXISTING OVERHEAD ELECTRIC TO REMAIN FOR EXISTING HOMES
DIKE CT. (20' ROW)
ALLEY (20' ROW)
WOODLAND DAYCARE
WOODLAND AV. (50' ROW)
LEGEND
EXISTING INTERNET, SECURITY, CABLE
EXISTING UNDERGROUND ELECTRIC
PROPOSED INTERNET, SECURITY, CABLE
PROPOSED UNDERGROUND ELECTRIC
PROPOSED COMM MANHOLE
COMMUNICATION HAND HOLE
STORM SEWER MANHOLE
STORM SEWER DBI

APPENDIX K

Construction Industry Workshop Agenda

LEXINGTON

Lexington-Fayette Urban County Government
Workshop with the Engineering, Development, and Construction Industry

Municipal Separate Storm Sewer System (MS4) Permit,
Construction Site Stormwater Runoff Control, and
Post-Construction Stormwater Management
Fayette County Cooperative Extension Service
December 13, 2019
Agenda

8:30-9:00	Registration
9:00-9:30	Opening Comments and Overview of Lexington's Stormwater Program – Jennifer Carey, Division of Water Quality - Year in Review - Permit Renewal - Proposed Changes to the Code of Ordinances - West Hickman Watershed Plan
9:30-9:50	New Development Overview – Doug Burton, Director of the Division of Engineering - Common Design Issues - Common Construction Issues - Changes to Standard Drawings
9:50-10:10	Stormwater Section Overview – Mark Sanders, Division of Water Quality - Status of Stormwater Capital Projects - Technical Review Committee — Common Maintenance, Drainage, and Floodplain Issues
10:10-10:30	Update on the Proposed Changes to the Stormwater Manual – Richard Walker, Tetra Tech
10:30-10:45	Break
10:45-11:15	Status Report on the Expansion Area 2 Stormwater Management Facilities – Richard Walker, Tetra Tech
11:15-12:00	Erosion and Sediment Control in New Development and Capital Projects **(Relevant to Engineers / Contractors Doing Work for LFUCG)** – Barry Tonning, Tetra Tech
12:00-12:15	Text Amendment to Subdivision Regulation Section 6-8(k), Street Name/Stub Street Signage – Steve Parker, Division of Traffic Engineering
12:15	Adjourn – *Fill Out and Return the Evaluation Forms!*

APPENDIX L

Training and Certification Documentation

University of Kentucky

College of Engineering
Kentucky Transportation Center
Technology Transfer Program
Lexington, Kentucky

This is to certify that

Kevin Lewis

has earned 6 professional development hours at the

KEPSC Inspector Qualification

Qualification #: 170300094

03/22/2017
Date

Dean, College of Engineering

John K. Ricketts
Instructor

Director, Kentucky Transportation Center

University of Kentucky

College of Engineering
Kentucky Transportation Center
Technology Transfer Program
Lexington, Kentucky

This is to certify that

Lee Faulkner

has earned 6 professional development hours at the

KEPSC Inspector Qualification

Qualification #: 170300121

03/22/2017
Date

Dean, College of Engineering

Instructor

Director, Kentucky Transportation Center

University of Kentucky

College of Engineering
Kentucky Transportation Center
Technology Transfer Program
Lexington, Kentucky

This is to certify that

Robert Brashear

has earned 6 professional development hours at the

KEPSC Inspector Qualification

Qualification #: 170000116

03/22/2017
Date

Dean, College of Engineering

Director, Kentucky Transportation Center

KSA Quarterly Meeting

This Is To Certify That

Kevin Sey

Has Completed 4 Professional Development Hours for the Following Training:

KSA Winter Quarterly Meeting

- Welcome and Updates – KSA
- Overview of Permit Deliverables and Deadlines – Brooke Shireman, SD1
- Examining Potential Usage of GIS/GPS in Stormwater Management – Chris Mayhew, Vine Grove
- Measuring Soil Infiltration Rates – Scott Southhall, CDP Engineers and Joe Hauber, Geotechnology
- Kentucky Water Resources Research Institute – Steve Evans, KWRRI
- Kentucky Backyard Stream Program– Amanda Gumbert, UK Cooperative Extension

Dave Herndon, AICP, CFM
KSA President

02/06/2019
Date

LEXINGTON

Lexington-Fayette Urban County Government
Post-Construction Stormwater Management Workshop
Fayette County Cooperative Extension Service
March 8, 2019
Agenda

8:00-8:30	Registration
8:30-8:40	Welcome and Purpose of the Workshop – Jennifer Carey, LFUCG
8:40-9:10	Post-Construction BMPs: Inventory, Inspection, and Compliance Program – Chris Dent, Dent Civil Engineering, LLC and Jason Martin and Pat McFadden, LFUCG
9:10-9:35	Solar Powered Pond Aeration Systems – Ken Cooke, Friends of Wolf Run
9:35-10:00	Lexington Habitat Project at 700 E. Loudon – Peter T. Carew, Construction Director, Lexington Habitat for Humanity
10:00-10:15	Break
10:15-10:40	Coldstream Park: A Stream Corridor Restoration and Preservation Project – Scott Southall, CDP and Eric Dawalt, Ridgewater LLC
10:40-11:05	Stream Buffers – Russ Turpin, EcoGro
11:05-11:30	What Happens After Construction: A Hospital's Water Quality Unit Issues – Scott Southall, CDP
11:30-11:55	Solutions for Addressing Bacteria Impairments in Fayette County Streams – Barry Tonning, Tetra Tech
11:55-noon	Complete Evaluation Form and Adjourn

CERTIFICATE OF ATTENDANCE

THIS CERTIFICATE IS PRESENTED TO

Kevin Lewis

FOR ATTENDING 3.0 HOURS
OF THE
POST-CONSTRUCTION STORMWATER MANAGEMENT WORKSHOP
ON MARCH 8, 2019

CONDUCTED BY THE
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
DIVISION OF WATER QUALITY

Jennifer M. Casey	*MS4 / Water Quality Section Manager*	*March 8, 2019*
NAME	TITLE	DATE

From: Gotomeeting 6 <customercare@gotowebinar.com>
Sent: Thursday, March 28, 2019 3:03 PM
To: Lewis, Charles K.
Subject: Thank you for attending M and M's: Developing Methods to Detect Toxicity in Water using Mayflies and Mussels

Dear Kevin,

We hope you enjoyed our webinar.

Please send your questions, comments and feedback to: webcastinfo@cadmusgroup.com.

KSA Quarterly Meeting

THIS IS TO CERTIFY THAT

HAS COMPLETED 4.5 PROFESSIONAL DEVELOPMENT HOURS FOR THE FOLLOWING TRAINING:

KSA Spring Quarterly Meeting

- Welcome and Updates – KSA
- Does EPCRA TIER II reporting apply to your MS4?– Matt Powell, Bowling Green
- Watershed Partnerships and an Alternative TMDL – Brooke Shireman, SD1
- Lexington's 2018 Stormwater Survey – Jennifer Carey and Angela Poe, LFUCG
- EKU New Science Building Storm Water System: Overview and Tour – David White, Element Design and Dr. Malcolm Frisbie, EKU

DAVE HERNDON, AICP, CFM
KSA PRESIDENT

04/16/2019
DATE

Certificate of Attendance

PLANNING INFORMATION EXCHANGE (PIE)

This is to certify attendance of

Kevin Lewis

at

PIE Webinar: Go Green with GASB 62!

4/25/2019, 1 hour

1.00 CEC for CFMs

Certificate of Attendance for One Contact Hour

U. S. EPA's Small Water Systems Monthly Webinar Series

Harmful Algal Blooms (HABs) and Algal Toxin Treatment

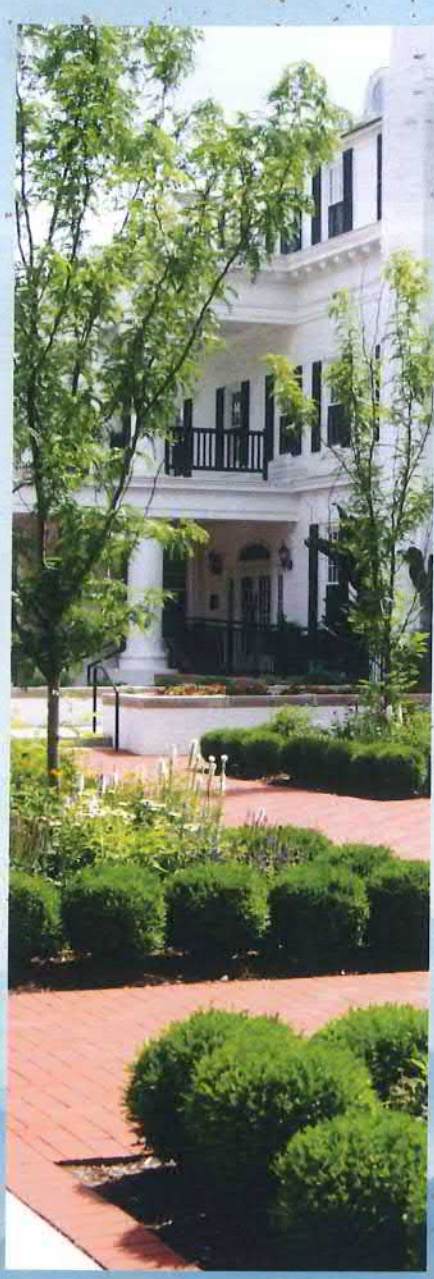
May 21, 2019

Kevin Lewis

This certificate represents participation in the webinar mentioned above as part of *U.S. EPA's Monthly Small Systems Webinar Series: Challenges and Treatment Solutions for Small Water Systems*. The webinar series is a collaboration between U.S. EPA's Office of Research and Development and Office of Water. The participant named above met the attendance requirements for one contact hour.

Dr. Thomas F. Speth
Webinar Series Coordinator
U.S. EPA Office of Research and Development

Michelle L. Latham
Webinar Series Coordinator
U.S. EPA Office of Research and Development



THE KENTUCKY STORMWATER ASSOCIATION PRESENTS

2019 ANNUAL CONFERENCE

KSA

BEREA, KY

JUNE 26-28, 2019

2019 Annual Kentucky Association Conference

PDH SUMMARY

June 26th-28th • Berea, KY

Presentation Title	Speaker	Date / Time	Session Attended (Initial)	
Pre-conference Workshop Part 1: Introduction for New MS4 Coordinators and Elected Officials	Chad McCormick, Land Design & Development & Jennifer Herrell, City of Shelbyville, KY	Wednesday, June 26 10:00 am -10:30 am		
Pre-conference Workshop Part 2: Program Finance Planning in Uncertain Times	Chad McCormick, Land Design & Development & Jennifer Herrell, City of Shelbyville, KY	Wednesday, June 26 10:30 am -11:00 am		
Pre-conference Workshop Part 3: Annual Reports - Avoiding the Rush	Chad McCormick, Land Design & Development & Jennifer Herrell, City of Shelbyville, KY	Wednesday, June 26 11:00 am -11:30 am		
Pre-conference Workshop Part 4: Program Audit Preparedness	Chad McCormick, Land Design & Development & Jennifer Herrell, City of Shelbyville, KY	Wednesday, June 26 11:30 am -12:00 pm		
From 0 to 1,000 in 10 Years: Lexington's Post-Construction Water Quality BMP Inventory, Inspection and Compliance Program	Jennifer Carey & Patrick McFadden, LFUCG	Wednesday, June 26 1:30 pm - 2:00 pm		
Mapping beyond the MEP on a Shoestring Budget	Dave Herndon, City of Hopkinsville	Wednesday, June 26 2:00 pm - 2:30 pm		
Break-out Session	Group "roundtable" discussions	Wednesday, June 26 3:00 pm - 4:00 pm		
MS4 Legal Update	Skipp Kropp, Steptoe and Johnson PLLC	Wednesday, June 26 4:00 pm - 5:00 pm		
Berea College and Sustainability: A Culture of Yes	Joan Pauly, Berea College	Thursday, June 27 8:30 am - 9:30 am		
Cost-Effective Stormwater Management for City Streets	John Steinmetz, Banks Engineering | Tom Moreland, City of Berea | Sandy Camargo, ADS	Thursday, June 27 9:30 am - 10:00 am		
Underground Detention 101 – An Overview of UD With a Public and Private Perspective	Christopher Dent, Dent Civil Engineering	Thursday, June 27 9:30 am - 10:00 am	KL	.5
Sustainability in the Pipe Industry: AASHTO Recycled Polyethylene Pipe	Sandy Camargo, ADS	Thursday, June 27 10:00 am - 10:30 am		
Sensible Sustainability in our MS4s	Angela Herndon & Adam Cannon, City of Hopkinsville	Thursday, June 27 10:00 am - 10:30 am	KL	.5
Numbers and Nuggets: Mining the Extension Database to Meet MS4 Educational Requirements	Brad Lee & Suzette Walling, UK Cooperative Extension	Thursday, June 27 11:00 am - 11:30 am		
Berea College Deep Green Project Part 1: Highlights, Net Zero Water Challenges and Energy Performance	Daniel F. Hellmuth, Hellmuth + Bicknese Architects	Thursday, June 27 11:00 am - 11:30 am	KL	.5
MS4 Program: Making It All Work with Multiple Departments	Julie Morelli, POWER Engineers	Thursday, June 27 11:30 am - 12:00 pm		
Berea College Deep Green Project Part 2: Grounds and Facility Tour	Daniel F. Hellmuth, Hellmuth + Bicknese Architects	Thursday, June 27 11:30 am - 12:00 pm	KL	.5
Monitoring BMPs for Emerging Threats to Stormwater Quality Management	Rachel Kaiser, Western Kentucky University	Thursday, June 27 1:30 am - 2:00 pm	KL	.5
Designing and Building for Effective Education Outreach: A Tale of Two Cities	Blake Durrett, City of Campbellsville | Kara Back & Suzette Walling, UK Cooperative Extension	Thursday, June 27 1:30 pm - 2:00 pm		
An Evaluation of Nutrient Field Kits for Pollutant Screening	Steve Evans, Kentucky Water Resources Research Institute	Thursday, June 27 2:00 pm - 2:30 pm	KL	.5
Berea College Farm: A Regional Model of Sustainable Agriculture	Sean Clark, Berea College	Thursday, June 27 2:00 pm - 2:30 pm		
City of Radcliff – North Logsdon Watershed Hydraulic Analysis	Toby Spalding, City of Radcliff | Neal Crawford & Rebecca Hammond, Qk4	Thursday, June 27 3:00 pm - 3:30 pm		
PBN2: Plant by Numbers and Paint by Nature	Chrissie Tune, Kayla Kidwell Snider & Angela Poe, LFUCG	Thursday, June 27 3:00 pm - 3:30 pm		
Capitalizing on Redevelopment to Reduce Flooding in Downtown Lexington	Chris Rust, Strand Associates	Thursday, June 27 3:30 pm - 4:00 pm		
Trees & Water Sensitive Urban Design	Matthew Werle, GreenBlue Urban	Thursday, June 27 3:30 pm - 4:00 pm		
Developing a Comprehensive MS4 Training Program for Kentucky Stormwater Managers	Jason Polk, Western Kentucky University	Friday, June 28 8:30 pm - 9:30 pm		
Stream-side Sampling Demonstration	Matt Powell, City of Bowling Green & Andrea Strange, Warren County	Friday, June 28 9:30 pm - 11:00 pm		

MAYOR LINDA GORTON

LEXINGTON

CHARLES H. MARTIN, P.E.
DIRECTOR
WATER QUALITY

STORMWATER STAKEHOLDER ADVISORY COMMITTEE

Meeting Agenda
September 6, 2019
9:00 a.m. to 11:00 a.m.
Division of Water Quality
Tate Building - North Elkhorn Conference Room
125 Lisle Industrial Avenue, Suite 180

1. Approval of 3/1/19 Minutes
2. Expansion Area 2 Stormwater Facilities – Richard Walker, Tetra Tech
3. MS4 Permit Renewal: Summary of SSAC Measurable Goal Workgroups – Jennifer Carey, DWQ
4. Nominations for Expired Watershed At-Large Seats
5. Nominations for Vacant Watershed At-Large Seats
6. Topics for Next Meeting
7. Announcements

Annual Erosion and Sediment Control Training Workshop for Construction Projects

LFUCG Division of Engineering Staff

October 17, 2019 11:00 am Tate Building

Agenda

- **Review of Permitting, Inspection, and Enforcement Procedures**
  - ESC Plan development and permitting procedures
  - Construction contractor responsibilities
  - Enforcement procedures for compliance assurance
  - Table on severity of violations and enforcement response
- **Erosion and Sediment Control Best Management Practices**
  - Perimeter control – silt fences, fiber logs, others
  - Drainage system stabilization – blankets, mats, seeding
  - Disturbed area stabilization – seeding, mulch, rolled erosion control products
  - Housekeeping measures – fueling and material storage areas, stable exits, etc.
  - Final site closeout
- **Discussion Session: What's Wrong With This Picture?**
  - Construction site photo review and comment
- **Resources for Contractors and LFUCG Staff**
  - Contractor's Handbook – planning, permitting, BMPs, ESC compliance
  - Permitting Packet – guide to local, state, and federal permits and contacts
- **Final Comments and Evaluation Forms**
  - Contractor/staff coordination; fill out evaluation forms

Sign-In Sheet

Annual ESC Training Workshop
Division of Engineering
October 17th, 2019 11:00 AM

Name	Organization	Email
BARRY TANNING	TETRA TECH	barry.tanning@tetratech.com
Abigail Monhollen	Tetra Tech	abby.monhollen@tetratech.com
Kelly Hunter	LFUCG	KHunter@lexingtonky.gov
Russ Mehnert	LFUCG	RMEHNERT@LEXINGTONKY.GOV
JIM GILLIS	LFUCG DOE	jgillis@lexingtonky.gov
Kevin Lewis	UK	Kevin.lewis@uky.edu
Bob Brachear	UK	bobo.brachear@uky.edu
Todd Fuller	LFUCG	mfuller@lexingtonky.gov
Keith Lovan	LFUCG	KLovan@lexingtonky.gov
ANDREW GRUNWALD	LFUCG	AGRUNWAL@lexingtonky.gov
Vaughan Adkins	LFUCG	VADKINS@lexingtonky.gov
Josh Dezarn	DOE	jdezarn@lexingtonky.gov
Mark Faber	DOE	MFEIBES@lexingtonky.gov
Thomas Clements	DOE	tclements@lexingtonky.gov
Brian Hayes	"	bhayes " " "
Doug Burton	DOE	wdburton - -

KSA Quarterly Meeting

This Is to Certify that

Kevin Sey

Has Completed 4 Professional Development Hours for the Following Training:

KSA Fall Quarterly Meeting

- Welcome and Updates – KSA
- Organizational Tips for a Smooth Compliance Review– Vicki Meredith, Hardin County
- Waters of the US: Legal Update - Skipp Kropp, Steptoe & Johnson PLLC
- Kentucky Division of Water Updates (MS4 Coordinator, KYR10 Renewal, etc.) – KDOW
- KSA Training and Resource Needs – Elisabeth King, Banks Engineering and Brooke Shireman, SD1

Dave Herndon, AICP, CFM
KSA President

10/22/2019
Date

MAYOR LINDA GORTON

LEXINGTON

CHARLES H. MARTIN, P.E.
DIRECTOR
WATER QUALITY

STORMWATER STAKEHOLDER ADVISORY COMMITTEE

Meeting Agenda
December 6, 2019
9:00 a.m. to 11:00 a.m.
Division of Water Quality
Tate Building - North Elkhorn Conference Room
125 Lisle Industrial Avenue, Suite 180

1. Approval of 9/6/19 Minutes

2. Monitoring and Algal Treatment of Jacobson Reservoir – Dorothy Rader, KAWC and Adam Charlton, Aquatic Control

3. MS4 Permit Audit – Jennifer Carey, DWQ

4. MS4 Permit Renewal: Permit Reapplication Letter – Jennifer Carey, DWQ

5. Timeline for Publishing the Updated Stormwater Manual and Procedures Manual for Infrastructure Development – Richard Walker, Tetra Tech

6. Nominations for Expired or Vacant Watershed At-Large Seats – N/A

7. Set 2020 Meeting Dates

8. Topics for Next Meeting

9. Announcements

LEXINGTON

Lexington-Fayette Urban County Government
Workshop with the Engineering, Development, and Construction Industry

Municipal Separate Storm Sewer System (MS4) Permit,
Construction Site Stormwater Runoff Control, and
Post-Construction Stormwater Management
Fayette County Cooperative Extension Service
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11:15-12:00	Erosion and Sediment Control in New Development and Capital Projects **(Relevant to Engineers / Contractors Doing Work for LFUCG)** – Barry Tonning, Tetra Tech
12:00-12:15	Text Amendment to Subdivision Regulation Section 6-8(k), Street Name/Stub Street Signage – Steve Parker, Division of Traffic Engineering
12:15	Adjourn – *Fill Out and Return the Evaluation Forms!*

APPENDIX M

EcoGro FEMA Basin Annual Report

UK / FEMA Alumni Drive Stream Corridor
2019 Natural Areas Stewardship Summary

December 2019

MAY

JUNE

AUGUST

SEPTEMBER

OCTOBER

The stream and stormwater developments along Alumni Drive (Big Elm tributary of the Wolf Run watershed) have become remarkably successful examples of stormwater design and management projects in Lexington. During the course of 2019, the stream channel has remained stable and conformed to the engineered channel morphology. No major changes to the direction of the channel, its depth, or its relative inundation have occurred due to the controlled inflow from upstream basins, and a solid vegetative stream buffer that limits erosive disturbance and major sedimentation movement. As an ecological and biological habitat, the stream channel has been thriving. Teeming with wildlife, this channel continues to be a perfect habitat for various species that contribute to the local biodiversity. The establishment of a functional riparian corridor is solid and continues to grow verdantly and robustly.

Stream Area 1

The most visible section of the project has also been the most productive for plants. The combination of flowers and grasses put on a display from May through late November. Aquatic perennials installed as BogSod or small plugs in 2015 have disseminated into the stream banks. Perennial plants started from seed are thriving and the production of seed is ensuring a robust plant population. The UK Horticulture Club students have collected seed and grown plants, attaining first-hand experiences with native plants in this area as well. The profusion of propagation by seed is also observed in the abundance of volunteer tree seedlings, such as sweet gum and mulberry. Because the natural process of succession will eventually convert this meadow into a forest, management practices have included the control of trees and/or shrubs. Future management activities could be coordinated to utilize any significant species on this site to collect, transplant or otherwise support other campus planting or restoration projects.

Vegetative monitoring of the riparian zone around the stream channel has continued throughout the year of 2019 and it has proven successful for the continuation of welcome species propagation and the elimination/limitation of invasive species. The percentage of invasive species has been maintained to encompass less than 5% of the overall species present, the dominant species being the Common

DECEMBER

ABOVE: Views from University Dr. observation plaza (May, June, August, September, October & December 2019).

Reed: Phragmites. The survival rate of trees from last year to this year was 99%, as only one tree was found to be missing. According to the Urban Tree Condition Methodology criteria, the percentage of trees in Excellent condition is 40%, Good condition - 17%, Fair condition - 16%, Poor condition - 22%, and Very Poor condition - 2%. The remaining 3% of trees have been missing since the second year of the project's inception. The number of volunteer trees recognized this year were a total of 26 with varying ages, sizes and species, the majority being sweetgum and mulberry, trees that already exist nearby. The dominant species within the stream buffer remain riverine and waterphilic in nature. While little quantitative data is available for habitat assessment based on the Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers, from a qualitative standpoint, stream health is good and appears to be improving.

As a result of prolific flowering, pollinator activity has been remarkably abundant. UK Entomology researchers Adam Baker and Dr. Daniel Potter utilized the project's milkweed species to evaluate how these plants support pollinator species suffering a critical decline: native bees, honey bees and Monarch butterflies. Their accounts show this project is definitely supporting a wide variety and quantity of beneficial insects. Their research was published in the Journal of Insect Conservation. (https://rdcu.be/T5oD) Adam remarked that having this facility on campus enables researchers to produce higher quality work with more accuracy and less costs, complications and time associated with travel to distant research sites.

The Stream has truly provided an outdoor classroom for students at UK across several disciplines. It does and could potentially offer insight on entomology, ornithology, biology, geology, and landscape architecture in terms of design and hydrology. It is an educational natural resource whose benefit far exceeds its maintenance costs.

MAY

JUNE

AUGUST

SEPTEMBER

DECEMBER

OCTOBER

ABOVE: Views from Nicholasville Road observation plaza (May, June, August, September, October & December 2019).

APPENDIX N

Sample Post-Construction BMP Inspection Form

University of Kentucky

TBD

Structure Inspection Report

University of Kentucky

Structure Details

Name:	NA	Compliance:	No Status
Added:	NA	Last Inspected:	NA
Site Physical Address:	NA		

Inspection Properties

Inspector:	NA	Inspection Type:	Detention Pond
Inspection Date:	NA	Scheduled Inspection Date:	NA
Compliance Status:	No Status	Follow Up Inspection Date:	NA

Embankment/Emergency Spillway

Adequate vegetation and ground cover?:	NA	Bare soil exposed?:	NA
Evidence of erosion?:	NA	Evidence of animal burrows?:	NA
Evidence of dam cracking, bulging, or sliding?:	NA	Evidence of seeps or leaks in the downstream face?:	NA
Evidence of slope erosion or riprap failures?:	NA	Obstruction or debris in the emergency spillway?:	NA
Embankment/Emergency Spillway Comments:	NA		

Outlet Control Structure/Principal Spillway

Type of spillway?:	NA	Evidence of obstruction or debris in low flow orifice, low flow trash rack, weir trash rack, and/or riser?:	NA
Evidence of corrosion in low flow orifice, low flow trash rack, weir trash rack, and/or riser?:	NA	Evidence of cracks, displacement, spalling, or joint failures in the structure's walls, frame, or top slab?:	NA
Is the control valve operational and exercised? Chained and locked?:	NA	Is the pond drain valve operational and exercised? Chained and locked?:	NA

Evidence of outfall channel impediment or erosion?:	NA	Principal Spillway Comments:	NA

Permanent Pool (Wet Pond Only)

Undesirable vegetative growth in or around ponded area?:	NA	Evidence of floating or floatable trash/debris?:	NA
Visible evidence of oil, gasoline, contaminants, or other pollutants?:	NA	Evidence of sedimentation resulting in loss of pond volume?:	NA
Permanent Pool Comments:	NA		

Sediment Forebays

Evidence of sedimentation resulting in loss of forebay volume?:	NA	Evidence of trash or floatable debris?:	NA
Sediment Forebays Comments:	NA		

Dry Pond Areas

Sufficient vegetation and ground cover?:	NA	Undesirable vegetative growth?:	NA
Evidence of low flow channel impediment?:	NA	Evidence of standing water or wet spots?:	NA
Evidence of oil, gasoline, contaminants, or other pollutants?:	NA	Sedimentation resulting in loss of pond volume?:	NA
Dry Pond Area Comments:	NA		

Outfalls into Pond

Slope erosion or riprap failures?:	NA	Deterioration of storm pipes?:	NA
Deterioration of endwalls/headwalls?:	NA	Evidence of outfall pipe sedimentation or blockage?:	NA
Outfalls into Pond Comments:	NA		

General Comments

Overall Condition of Facility:	NA	Additional Comments:	NA

Prescribed Maintenance Activities

Maintenance Tasks:	NA	Structural Repairs:	NA
Recommended Maintenance Completion Date::	NA	Additional Recommendations :	NA

Additional Information

Weather

Weather Condition:	NA	Temperature (F):	NA
Precipitation (in):	NA	Precipitation Last 72 Hours (in):	NA

Contacts

Owner

Photos

APPENDIX O

Compactor, Drain, and Spill Kit Location Table

Compactor drains and spill kit locations

Location	Used By	Indoor /Outdoor	Has Drain	Drain Type	Spill Kit	Notes	Spill kit notes	Aramark contact for spills
Jewell Hall	Greystar	Outdoor	Yes	Storm	Yes	Drain is inside enclosure	Spill kit is inside the enclosure.	
Blazer Hall	Greystar	Outdoor	Yes	Storm	Yes	Drain is inside enclosure	Spill kit is inside the enclosure.	
Holmes Hall	Greystar	Outdoor	Yes	Storm	Yes	Drain is inside enclosure	Spill kit and floor dry bucket are inside the enclosure.	
Boyd Hall	Greystar	Outdoor	Yes	Storm	Yes	Drain is inside enclosure	Spill kit is inside the enclosure.	
Chellgren Hall	Greystar	Outdoor	Yes	Storm	Yes	Drain is inside enclosure	Spill kit is inside the enclosure.	
Woodland Glen 2	Greystar	Outdoor	Yes	Storm	Yes	Drain is inside enclosure	Spill kit is inside the enclosure.	
Woodland Glen 3	Greystar	Outdoor	Yes	Storm	Yes	Drain is inside enclosure	Spill kit and floor dry bucket are inside the enclosure.	
Lewis Hall	Greystar	Indoor	Yes	Sanitary	No	Drain is inside compactor rooms		
Common Grounds @ Lewis Hall	Aramark	Indoor	Yes	Sanitary	No	Drain is inside compactor rooms		
University Flats - 2 compactor rooms	Greystar	Indoor	Yes	Sanitary	Yes	Drain is inside compactor rooms	Floor dry bucket is in the South side room	
Haggin Hall	Greystar	Indoor	Yes	Sanitary	No	Drain is inside compactors room		
K-lair @ Haggin Hall	Aramark	Indoor	Yes	Sanitary	Yes	Drain is inside compactor room	Aramark has the spill kit inside the Klair Compactor room/BOH kitchen area	Scotty Hardison 859-368-6845
White Hall	UK Facilities	Indoor	Yes	Sanitary	No	Drain is inside the dock area		
RB2	UKHC	Indoor	Yes	Storm	No	Drain is inside the dock area		
Steak and Shake @ Holmes Hall	Aramark	Outdoor	Yes	Storm	Yes	Drain is inside enclosure	Spill kit in BOH kitchen area	Scotty Hardison 859-368-6845
The 90	Aramark	Outdoor	Yes	Storm	Yes	Drain is nearby at the dock area.	Spill kit in dock area	Scotty Hardison 859-368-6845
Kroger Field	Aramark	Outdoor	Yes	Storm	Yes	Drains are under compactors	Spill kit is inside receiving area at the dock	Scotty Hardison 859-368-6845
WT Young Library	Aramark/ UK Facilities	Outdoor	Yes	Storm	No	Drain is at entrance to dock area about 20' from dumpsters and compactors		Scotty Hardison 859-368-6845
UKHC Pav A Dock 1	UKHC	Outdoor	Yes	Storm	No	Drain is at the entrance of the dock area		
UKHC Pav H Dock 2 (MSW compactor)	UKHC	Outdoor	Yes	Sanitary	No	Drain is directly behind compactor		
Good Sam (MSW compactor)	UKHC	Outdoor	Yes	Storm	No	Drain is under tipper		
Good Sam dock (cardboard compactor)	UKHC	Outdoor	No	N/A	No	No Drain		
UKHC Med Center Storage	UKHC	Outdoor	No	N/A	No	No Drain		
Student Center	Aramark/Barnes and Noble/UK Facilities	Indoor	Yes	Storm	Yes	Drain is in the dock area, under compactors	Spill kit in dock area.	Scotty Hardison 859-368-6845
Law Building enclosure	UK Facilities	Outdoor	Yes	Storm	No	Drain is inside enclosure		

Prepared July 2019

APPENDIX P

Waterfowl Management Efforts

07/09/2019

ATTN: Jerry Hart

USDA/Wildlife Services- summary of waterfowl damage management activities for the University of Kentucky Gluck Building.

Canada geese residing on the pond and surrounding areas of the Gluck Equine Building on the University of Kentucky campus have become hazardous to human health and safety and cause extensive damage to landscaping, walkways and grassy areas. In this area of campus it has become typical for 50-100 Canada geese to reside here throughout the nesting season (March through July) Aggressive nesting geese can cause injury to students or employees of the university. The extensive amount of droppings and debris left by these birds in walking areas and parking structures have also been cause for concern. Accumulations of droppings from waterfowl can carry diseases such as salmonella and ecoli which can be carried into buildings on the shoes of those walking through these areas.

In an action to resolve these issues an agreement was signed between the University of Kentucky and USDA/Wildlife Services. The university asked WS to initiate wildlife damage management activities to help alleviate the human health and safety risks associated with the large number of Canada Geese residing on the property.

Wildlife Services provided Canada goose population reduction and control activities on a weekly basis from March 1 2019 through June 23 2019. To reduce the number of geese in the area WS removed 13 active nests and 62 eggs from the Gluck pond, Gluck building and other nearby buildings and nesting areas. Several nesting birds in these areas had become habitually aggressive towards employees, students, and event patrons. WS removed 7 aggressive nesting waterfowl to prevent injury to any persons using walking areas and parking lots. 19 more Canada geese were trapped and removed during the molting season. Harrassment techniques were also included in the integrated wildlife damage management approach for this area to encourage the offending waterfowl to leave and find a more suitable area to reside.

Control efforts were deemed successful by WS due to the decrease in nests and eggs from the previous year. Only 19 birds were found residing in the area during late June of this year. Where there are typically 50-100 birds during this time period.

In late spring of this year university grounds personel introduced habitat manipulation and environmental control techniques to further dissuade waterfowl from using the pond at the Gluck Building. The increase in grass height surrounding the pond and the addition of plants that these waterfowl find unsuitable should help with future efforts in reducing the overall Canada goose population and the human health and safety concerns that they create.

USDA APHIS/ Wildlife Services
Louisville KY
502-254-1592

APPENDIX Q

2019 Athletics Stormwater Policy

Sports Turf Storm Water Quality Procedures

Equipment Wash Off

Blow off any clippings in grass before washing machine.

If possible was machine off in grass area on top of C16 parking lot, or in grass area behind Softball field.

Do not was equipment in an area that can feed to storm drain.

Pesticides

All Pesticides and Liquid Fertilizers will be stored in locked pesticide storage at Kroger Field

Pesticides may move from the targeted application site in several ways: in air, in water, attached to soil particles, and on or in objects.

Most off-site pesticide movement in water is either by **runoff** (surface movement) or by **leaching** (downward movement through the soil).

Runoff and leaching may occur when:

- Too much pesticide is applied or spilled onto a surface.
- Too much rain or irrigation water moves pesticide through the soil offsite or into groundwater.
- Highly water-soluble or persistent pesticides are used.

Runoff water may move pesticides into drainage systems, streams, ponds, or other surface water, where they can travel great distances. Pesticides that leach downward through the soil may reach groundwater. In a greenhouse, pesticides may leach through the soil or other planting medium and contaminate other greenhouse surfaces. Look for special instructions on the label that warn of pesticide hazards caused by the movement of pesticides in water. Sometimes labels require buffers or setbacks from water and wells. *(Runoff water photo: treehugger.com)*

Sources of Water Contamination

Surface water or groundwater contamination results from either point-source or nonpoint-source pollution. Nonpoint-source pollution from pesticide applications is usually blamed for pesticide contamination. However, studies show that water contamination may also result from point-source pollution.

Point-source pollution comes from a specific, identifiable location:

- A pesticide spill entering a storm sewer.
- Back-siphoning of pesticides into water supplies.
- Contaminated surface water entering sinkholes.
- Repeated pesticide spills at mixing and loading sites.

- Careless spilling of wash water at equipment cleanup sites.
- Improper handling of spills and leaks at storage sites.
- Improper disposal of containers, rinsate from containers, and excess pesticides.

Potential point source pollution: **Do not leave granular herbicides and pesticides where they can enter storm drains.**

Nonpoint-source pollution comes from a widespread area. An example is the movement of pesticides into streams or groundwater after broadcast applications to large agricultural fields, rights-of-way, or turf areas.

Pesticide Contamination of Surface Water

Surface water is often a source of drinking water. Therefore, pesticide contamination of surface water (such as ditches, streams, rivers, ponds, and lakes) is a health concern. Pesticides that move in runoff water or with eroded sediment may contaminate plants and animals located downslope and reach sources of surface water.

Factors affecting runoff and erosion rates include slope, vegetative cover, soil characteristics, volume and rate of water moving downslope, temperature, and rainfall amount and intensity. These factors influence how much water runs off and how much moves into the soil (infiltration). In urban areas, runoff may occur on hard surfaces when pesticide granules are left on sidewalks and streets.

Runoff is a potential problem at most application sites. It is critical that runoff does not carry the pesticide into water sources or other vulnerable areas. Generally, runoff risk is greatest when heavy rains immediately follow pesticide applications or when the ground is saturated or frozen. Although surface waters are most likely to be contaminated by runoff, groundwater may also be affected when surface streams connect with shallow groundwater.

Pesticide Contamination of Groundwater

Nationally, groundwater provides 70% of the water used for public and private water supplies, irrigation, and industry. Like surface water, groundwater must be protected from contamination. **Once groundwater is contaminated, correcting the problem is difficult or even impossible. Groundwater** is found underground in cracks in the bedrock and in the spaces between soil particles, gravel, and rocks. It is the source of water for wells and springs. The layer of soil, sand, gravel, or fractured bedrock in which all available spaces are filled with water is the **saturated zone**. The boundary between the saturated zone and the overlying unsaturated rock and soil is known as the **water table**. The overall geologic formation from which groundwater can be drawn is called an **aquifer**.

Kentucky water statistics

- **Approximately 49 inches of precipitation falls on Kentucky every year. About 40% of this water runs off into streams, 60% evaporates or is transpired by plants.**
- **Kentuckians use more than 4.3 billion gallons of water every day. About 95% of this is from surface water, the rest is from groundwater**

- **More than 1.5 million Kentuckians are served by 185 public water-supply systems that rely on groundwater; 416,000 Kentuckians use water wells or springs**
- **Non-point sources pollute about 3.5 times as many miles of streams as point sources.**
- **Primary nonpoint sources of pollution are: - Mining, 31%- Agriculture, 29% - Land disposal/septic systems, 20% - Urban runoff, 10%**
- **Karst topography refers to areas with sinkholes, springs, caves, and underground streams. Approximately 38% of Kentucky is underlain by limestone exhibiting some karst development, and 25% has well-developed karst features**

Karst is a terrain with distinctive landforms and hydrology created from the dissolution of soluble rocks, principally limestone and dolomite. Karst area (yellow to dark brown on the map below) is characterized by springs, caves, sinkholes, and a unique hydrogeology that results in aquifers that are highly productive but extremely vulnerable to contamination. In the United States, about 40% of the groundwater used for drinking comes from karst aquifers.

Pesticides can enter groundwater quickly through sinkholes. Follow label directions concerning buffer zones to reduce the chances of contamination.

Some pesticides reach groundwater by moving through the soil in a process called **leaching**. A pesticide that leaches into groundwater must move down through the soil in water and resist binding to soil particles and breaking down into nontoxic compounds. **Pesticides that have high solubility, low adsorption, and/or are persistent are more likely to leach.** They typically have a label statement describing these concerns. A pesticide that adsorbs or binds itself strongly to soil particles will not leach as easily. Besides the characteristics of the pesticide, soil properties and environmental conditions also affect whether and to what extent a pesticide will leach.

Four soil properties affect a pesticideâ€™s potential for leaching:

- **texture and structure**
- **organic matter**
- **depth to groundwater**
- **geology**

Soil texture is the relative proportions of sand, silt, and clay-sized particles. Percolating water moves faster in sandy soils. Sand also has fewer binding sites available for the adsorption of dissolved chemicals than do clay or silt soils. Though sandy soils are more prone to pesticide movement, leaching may also occur in clay or silt soils .

Soil textures (image: soils4teachers.com)

Soil structure is the shape or arrangement of soil particles. It plays a big role in determining the size and shape of the pores through which water moves. Small amounts of pesticides may also move through soil cracks, worm holes, and root channels. These features are called **macropores**.

Organic matter consists of decaying plant material. The higher the soil organic matter content, the greater the ability of the soil to hold both water and adsorbed pesticides. Pesticides held in the root zone are less likely to leach into groundwater and may be taken up by plants.

Depth to groundwater - **Areas with a shallow water table have a greater chance for groundwater contamination** because less soil is available to act as a filter. There are fewer opportunities for pesticide degradation or adsorption. When using pesticides in areas where the groundwater is close to the surface, choose a product with a low leaching potential. Take extra precautions during mixing, application, and cleanup.

The **permeability of the geologic layers** lying between the surface of the soil and the groundwater is also an important factor. Highly permeable materials (such as gravel deposits) allow water and dissolved pesticides to move freely downward to groundwater. Layers of clay, which are much less permeable, can inhibit and slow the downward movement of water.

Preventing Surface Water and Ground Water Contamination

To help prevent surface water and groundwater contamination, EPA requires all pesticide products labeled for outdoor uses to include the following environmental hazard statement on the label: â€œ***Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water supplies when cleaning equipment or disposing of equipment wash waters.***â€

Pesticides that could contaminate groundwater must bear **groundwater warning statements** on their labels. When such statements appear on product labels, choose pesticides appropriate for use in sandy soils or where extra precautions are needed to reduce the risk of water contamination. You can minimize the risk of point or nonpoint-source contamination by following best management practices (BMPs). BMPs are effective, commonsense procedures that emphasize proper mixing, loading, application, and disposal of pesticides. **Following BMPs reduces the chance that pesticides will harm the environment.**

Use Integrated Pest Management Principles

Apply pesticides only when and where necessary, and only in amounts adequate to control pests. Use nonchemical control methods whenever possible. When using pesticides:

- Determine the type of pest, the density of the pest population, and the proper control method.
- If a pesticide is necessary, choose the least toxic product that will do the job.
- Calibrate pesticide application equipment regularly.
- Use spot treatments or band applications, if possible, to reduce pesticide use.

Identify Vulnerable Areas

The presence of **sandy soil, sinkholes, wells, streams, ponds, and shallow groundwater increases the chance of groundwater contamination**. Never dispose of empty pesticide containers in sinkholes, or dump or rinse sprayers into or near sinkholes. Avoid contaminating drainage ditches and other potential

sources of runoff to streams and waterways. Never clean tanks or intentionally discharge water from a tank of any vehicle into a street, along a road, or into a storm drain.

Do Not Mix and Load Near Water

Mix and load as far as possible (at least 50 feet) from wells, lakes, streams, rivers, and storm drains. When possible, do so at the application site. Consider using a sealed permanent or portable mixing and loading pad to prevent seepage into soil.

Back-siphoning is the reverse flow of liquids into a fill hose. It sucks tank contents back into the water supply. Back-siphoning starts with a reduction in water pressure and **can draw very large quantities of pesticide directly into the water source**. This happens when the end of the water hose is allowed to extend below the surface of the spray mixture when filling a spray tank.

he simplest way to prevent backflow is to maintain an air gap between the discharge end of the water supply line and the pesticide solution in the spray tank. An air gap prevents contamination of the hose and keeps pesticides from back-siphoning into the water source if a drop or loss of water pressure occurs. **Keep the air gap at least twice the diameter of the discharge pipe.** Another method to prevent back-siphoning is to use a backflow prevention device or check valve.

Time Pesticide Applications According to the Weather Forecast

Pesticides are most susceptible to runoff from heavy rains or irrigation during the first several hours after application. Do not apply to saturated or frozen ground. To avoid over-spraying an area and causing drift, check the pesticide label for application precautions or restrictions during windy conditions. Wind speed, temperature, and humidity all affect the off-target movement of pesticides.

Select Products Wisely

Whenever possible, use pesticides that are less likely to leach. Read labels for such warnings.

Handle Pesticides Safely

Follow these guidelines to prevent surface water or groundwater contamination:

- **Immediately contain and control pesticide spills.**
- **Check application equipment regularly for leaks or damage.**
- **Mix and load pesticides away from water sources.**
- **After the pesticide application is complete, follow label directions for proper equipment cleanup and container disposal.**
- **After applying granular pesticides, sweep or blow any granules from sidewalks, driveways, or patios onto the treatment area.**

Whenever possible, clean sprayers at the application site at a safe distance from wells, ponds, streams, and storm drains. Spray the rinsate on the treated area or on another site listed on the pesticide label, or use in the next tank mix. Be sure not to exceed label rates.

Preventing Harmful Effects on Sensitive Areas and Non-target Organisms

Be aware of sensitive areas, non-target plants and animals (especially endangered species), and damaging effects on habitat. In addition to water sources, sensitive areas include sites where living things could easily be injured by a pesticide.

Outdoor sensitive areas include:

- School grounds, playgrounds, and recreational areas.
- Habitats of endangered species.
- Apiaries (honey bee sites), wildlife refuges, and parks.
- Areas where domestic animals and livestock are kept.
- Ornamental plantings, public gardens, and sensitive food or feed crops.
- Indoor areas where ornamental or other sensitive plants are grown or maintained (such as in malls and buildings).

Sometimes pesticides must be deliberately applied to a sensitive area to control a regulated pest (such as mosquito abatement or gypsy moth forest treatments). Only well-trained applicators should perform these applications. At other times, the sensitive area may be part of a larger target site. Whenever possible, take special precautions to avoid treating the sensitive area.

Leaving an untreated buffer zone around a sensitive area is a practical way to avoid contaminating it. In still other instances, the sensitive area may be near a site used for mixing and loading, storage, disposal, or equipment washing. Be very careful to avoid contaminating the sensitive area. Check the label for statements that alert you to special restrictions around sensitive areas.

Wash out Procedures

After Spraying Fill tank with fresh water

Spray out water in grass area behind softball or on the back baseball infield to insure tank is clean for next use.

Mowing

Inspect equipment prior to use and maintain the mower as needed.

Inspect area prior to mowing and remove any objects that could become a projectile(such as stones and woody debris).

Pick up all litter (paper, cardboard) prior to mowing area.

Separate unknown wastes and wastes requiring special management from lawn litter during pickup operations.

Clean debris and litter from storm

water structures to improve drainage and reduce storm water pollution.

At the shop, litter should be placed in the solid waste dumpsters.

After application of the proper rate of granular herbicide, pesticide, or fertilizer, all residues are to be blown or swept from all hardscape.

Fertilizer Storage and Use

Store bags of fertilizer, dry calcium chloride or other bulk materials indoors, on pallets, inclean, dry, weather-tight facilities.

Use a storage area with a concrete or paved floor.

Keep brooms, shovels, bags or other containers, in the work area to clean up spills.

Bulk materials not in bags are to be applied when purchased.

After application of the proper rate of granular herbicide, pesticide, or fertilizer, all residues are to be blown or swept from all hardscape.

Fertilizer should be stored in Cliff Hagan shops

Paint

Wash equipment in the paint room that drains to a collector or sanitary sewer. (Kroger Field)

Outside washing areas must be in designated areas only. Designated area should be reviewed by UK Environmental Management and approved by the facility supervisor.

Keep equipment in clean and good working order.

Repair equipment leaks of oil and other fluids promptly.

Collect waste wash water and place it in containers for removal and proper disposal if an approved drain is not nearby (Soccer/Softball)

Used Oil

Main Cliff Hagan shop only

Maintain a 250 to 660 gallon used oil storage tank above ground, indoors protected from weather, in good condition, on an asphalt or concrete base and clearly labeled.

Provide extra used oil storage containers.

Provide a drum for used oil filters.

Carefully pour used oil into the Used Oil containers without spilling.

Waste fuel from fuel filters may be added if allowed by the recycling vendor.

Drain oil filters on the drain rack for 24 hours and place in the Used (Waste) Oil Filter drum.

Notify the Equipment Technician (Dave) when the tank reaches 80% full.

Record the date and volume of waste removed, hauler and treatment facility receiving the waste.

Label all used oil containers, filter racks, and collection vessels with the words "Used Oil".

Topdressing Sand

Attempt to use day that is delivered to reduce movement of sand.

If rain is forecasted, cover with a tarp and use Sand bags to dam area around pile to reduce the movement of sand.

APPENDIX R

Stormwater Stakeholder Meetings Sign-in Sheets

Sign-In Sheet

UK MS4 Stormwater Stakeholders Advisory Committee Meeting
January 11th, 2019

Name	Department
1. Shane Tedder	Sustainability
2. Steve Evans	KWRRI
3. Bob Kelland	Env. Mgt.
4. DAVID HIBBARD	UK EHS
5. Dennis Mefford	Athletics
6. Kevin Seay	F and D
7. Tim Clark	UK FACILITIES
8. Stacy Bordon	Grounds
9. Suzette Walling	PSS
10. Harold Sandford	FACILITIES MGT.
11. Graham Gray	Utilities
12. Don Crawford	GROUNDS
13. Jeff Zumwalt	UEM
14. Bob Brashear	URCPM
15. Jerry P Hart	UK-Grounds
16. Tim Armstrong	C PPD
17.	
18.	
19.	
20.	

Environmental Management

MS4 Stormwater Stakeholders Advisory Committee Meeting Agenda

Date: January 11th, 2019
1000 - 1130

Location: Peterson Service Bldg., Room 226

Purpose: To discuss the draft Stormwater Quality Management Plan, tasks to be completed in year one, and the addition of water to the Sustainability Strategic Plan.

I. WELCOME

- 2018 Rainfall **1000-1010**
  - Average rainfall is approximately 45 inches
  - 49.16 inched fell in 2017
  - 2011 record rainfall 66.35 inches
  - 2018 rainfall – 71.98 inches
  - Since 2011 Lexington has had 4 of the top 10 wettest years on record
- Newly invited stakeholders – Phil, Harold, and Don
  - Phil Tackett – Facilities Management Director
  - Harold Sandford – Facilities Management Maintenance and Op. Dir. Assoc.
  - Don Crawford – Grounds Manager
- Previous Meeting Questions:
  - Sustainability Strategic Plan & Water
    - During the previous Stakeholder Meeting, concerns were expressed over the Strategic Plan regarding its purpose and whether or not there would be a duplication of efforts in accomplishing tasks within the plan. Shane explained that the plan's purpose is to highlight the efforts departments are already making across campus and to capture them in one place. It is designed to capture information from existing reporting efforts. No new work or duplication of efforts will take place.

II. SWQMP IMPLEMENTATION **1010-1050**

- Initial Individual Group Meetings
  - Have met with Grounds, Facility Operations, and KWRRI/TFISE
  - Have not met with Athletics or Utilities
    - Does either group have questions that we can address now?
    - Are individual meetings needed to address specifics?
      - Neither group had specific questions. Both Utilities and Athletics requested individual implementation meetings to further discuss their SWQMP efforts.
      - Grounds also requested that an additional meeting be scheduled.
      - EMD will schedule the meetings. Utilities requested they be scheduled 2-3 weeks out.

- Tasks with multiple responsible Divisions
    - Generally, tasks with multiple responsible parties (i.e. EMD, Facility Operations, and Utilities) will be accomplished by the assigned person from each group working together with the others/providing input via emails or meetings as necessary
    - Any assigned person can take point start working on the task
    - Certain tasks have multiple divisions/responsible people but can be accomplished individually depending on needs
        - For example: 1.G – Update individual departmental stormwater training and improve delivery system/participation
- Group Questions/Concerns
    - Several divisions expressed concern regarding training and its format/availability.
        - EMD explained that training courses are available in SAP through the PPD section. Stormwater 101,102, 201, and 401 are available. These 15-minute courses provide basic stormwater information, info for custodial services, illicit discharge identification and reporting, and a more in-depth explanation of stormwater. These courses are currently available and their use can be tracked. While a bit outdated, plans exist within the SWQMP to update this training.
        - Discussions included the best way to make training available to all divisions/departments and what type of information they require. The ideas of using SAP, individual departmental methods, and EHS hosting training through its training portal were discussed.
            - Athletics has a medium available for training, they would just like context/information. They also prefer that the training be standardized.
            - Grounds would like information to be provided that they could use to train their personnel. They like the idea of training being located on the EHS website so that content can be standardized/controlled, and so that EMD will have easy access to the training records of all departments.
            - Utilities recently invested in its own training program
            - All PPD related training requirements need to be coordinated with their new training coordinator

- SWQMP Tracking
    - It is each Division's/Responsible person's responsibility to track progress and compete each task assigned
    - We will need to meet routinely to discuss progress, issues, concern's, etc.
    - Spreadsheets
        - I'm working on spreadsheets we can use to track the progress of each task/measurable goal
    - Target Dates
        - Each group/responsible person needs to develop target dates for each assigned task
        - The default target date will be May of the permit year assigned for completion

- Status Updates – What's been done? What are you working on?
  - Sustainability (Shane)
    - Water Added to Sustainability Strategic Plan
    - Development of Campus Stormwater Masterplan added to Strategic Plan
  - KWRRI/TFIS (Steve)
    - Budget Established for MCM's 1&2 – working with EMD to gain access to funding
    - Working on MOU with EMD, in process of developing rough draft
    - Working with Alan Fryar and his Global Water Issues Class to mark storm drains
    - Catchment Cleanup Participation Opportunity Held in October
  - Utilities (Jeff/Joe/Mike/Graham)
    - Shawneetown collection system televised, other televising of lines occurring as needed. Columbia gas recently televised sewer lines in gas line areas looking for cross bores. Utilities has been given that footage for assessment.
    - Wildcat Court Coal Pile discharge assessed, design developed to mitigate
    - Several hundred feet of steam line has been replaced at the Library
    - Stormwater inspections are now being conducted at each utility plant in conjunction with monthly SPCC inspections
    - A steam line leak along Cooper was identified as a water line leak hitting a steam pipe.
    - Did not receive LFUCG infrastructure grant for harvesting system
      - Highly competitive, scoring form not designed for projects like this
  - Grounds (Tim/Don/Jerry)
    - Have assessed budget, needs, and ability to perform required stormwater activities
    - Proposing budget to provide needed maintenance
      - Includes a stormwater management team of 2-3 people
    - Jerry designated as Grounds stormwater "specialist"
    - Goose management
      - Plant material being installed around Gluck
      - Investigating the use of a strobe system as a goose deterrent
    - The street sweeper now runs all day, five days a week.
  - Facility Operations (Harold/Tim)
    - Documenting harvesting system use for systems in operation
    - Greenhouse stormwater conversion to take place in the spring
    - Tim has created a project submittal checklist and will provide EMD with the opportunity to comment on projects. According to Tim, the one review loophole that still exists is Transportation Projects run through CPMD. They are not being reviewed for environmental impact.
  - Athletics (Donnie)
    - Have had several internal meetings/conversations on stormwater requirements and how to integrate them into daily activities
    - Baseball stadium construction has been completed
    - Recently hired a new sports turf manager – Sam Cahill
  - CPMD (Bob)
    - Construction Project Design Standards Updated
    - Project Step List Updated
    - Enforcement added to design standards, need to develop SOP for use

- EMD
  - In process of hiring FTE to assist with the stormwater program
    - Currently developing position description
    - Will utilize position in lieu of intern for drain marking inventory
  - Outfall Inspections Completed
  - Discussed intent to revive MOU with LFUCG
  - Presented a summary of UK's stormwater program at LFUCG stakeholder meeting

- Year 1 Tasks – Are we on schedule?
  - A great deal has been accomplished
  - There are several tasks that are due to be completed by May 2019 (end of permit year)
    - Detailed outline of MCM 1&2 program improvements
    - Holding a stormwater awareness event, involving student organizations, & devising incentive program
    - Updating Utility and MS4 Maps
    - Update IDDE Plan
    - Begin work on Stormwater Operations Manual
    - Develop an alternative to permit issuance for construction projects
    - Developing stormwater remediation RFP?
    - Adopt LFUCG LD Permit Checklist, tailor to UK and integrate into MS4 web
    - Conduct post-construction BMP inspections
    - Conduct underground BMP inspections
    - Develop procedures for monitoring harvesting systems*
    - Create Policy/Procedures for stormwater protection during emergencies*
    - Create Policy/Procedures for unknown spill cleanup*
    - Develop SOP's for Athletics activities that impact stormwater*
    - Update employee training program*
    - Seal Shawneetown Manholes*
    - Monitor to evaluate Shawneetown Improvements*
    - Division Stormwater task budget assessments & development*
    - Annual Report information reporting system development*

- Regular Update Meetings
  - Regular meetings need to be held with each group/division to determine progress, needs, and to answer questions
  - This will allow for a continuous update of SWQMP progress and will save stakeholder meetings for other discussions by having a brief status update
  - Would like frequency to be based on group preferences – bi-weekly, monthly, bi-monthly, as needed?
    - At a minimum we will need to meet prior to stakeholder meetings to discuss progress in more detail
  - Need to schedule – if meetings are not scheduled by groups as needed, EMD will schedule

III. ANNUAL REPORT 1050-1105

- DOW Submittal Deadline: April 15th
- Information Needed:
    - Numbers
    - Training Records (Time, Date, Sign In Sheets, Etc)
    - Questions included with Stakeholder Meeting Agenda sent on 1/8
        - No significant changes from last year

IV. DISCUSSION ITEMS 1105-1125

- Tree Removal and Tree Policy - Stacy
    - The recent UK Now article was discussed
        - The article quotes Stacy stating UK has an inch for inch replacement policy
        - Stacy explained that the inch for inch policy pertains to trees damaged or removed due to construction, not trees that die of natural causes
    - Several large trees (~30" dbh) removed on campus
        - Three on Complex, One beside Ag North
        - Replacement trees will be planted in the same location where these large trees were removed
        - Grounds is looking into purchasing smaller bareroot trees and growing them out in the Greenhouse area so that they can save money purchasing smaller trees, but over time they will have larger trees available when replacements are needed.
        - The current tree canopy for campus is approximately 10% and decreasing. The Student Center prior to construction has ~22% canopy. After construction the canopy is ~5%.
        - In the next few years a national standard for tree canopies for stormwater credits will be developed.
- Capital Projects Design Standards Updates and Enforcement – Bob
    - How have design standards changed to improve compliance at construction sites?
        - Design standards have been updated with greater detail and explanation so that contractors are more clear on the stormwater requirements.
        - As for enforcement, if a contractor is not performing, we have created the ability for UK to hire a unit price contractor to correct the deficiencies and then back charge the original contractor
        - By utilizing a unit price contractor, there is no need for us to develop an RFP for assistance
        - We will live into these changes for several years to see if compliance improves.
        - Tim will add similar language to PPD standards/contracts.

V. OTHER BUSINESS 1120-1130

- Future Meeting Format
    - The plan is to hold SWQMP update meetings with each group/division separately throughout the year and provide brief updates during Stakeholder meetings so that other issues can be discussed, questions can be answered that can benefit the group, etc.
- 2019 Meeting Dates: March 15th, May 10th, July 12th, October 4th
    - Meeting invites have already been sent.
    - Please forward if you think of someone that needs to be added as a stakeholder
        - The new MC PPD Director starts in January and will be invited to stakeholder meetings in the near future.

Sign-In Sheet

UK MS4 Stormwater Stakeholders Advisory Committee Meeting
May 10th, 2019

Name	Department
1. Carmen Agouridis	UK-BAE
2. Suzette Walling	UK PJJ
3. Cole Crankshaw	UK-BAE
4. Bob Brashear	UK-CPM
5. Jeff Zumwalt	UK UEM
6. Jerry Hart	Uk-Grounds
7. Harold Sandford	UK Facilities Mgt.
8. Bob Kjelland	UK EMS
9. Shane Tedder	UK Sustainability
10. Joe Graft	Uk UEM
11. Mike Duffy	UKUEM
12. Donnie Mefford	Athletics
13. Kevin Gray	EMD
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Environmental Management

MS4 Stormwater Stakeholders Advisory Committee Meeting Agenda

Date: May 10th, 2019
1000 - 1130

Location: Peterson Service Bldg., Room 215

Purpose: To discuss SWQMP Implementation including progress made, problems encountered, and current activity updates.

I. PROGRAM UPDATE S 1000-1015

- Annual Report
  - Completed and Submitted
  - Copy provided to stakeholders on 4/12, also on Sharepoint
- Program Assistance – RFP & Grad Student
  - RFP Issued 3/6 – Contractor has been selected, hope to start in June upon approval
  - Cole Crankshaw – Grad Student hired to assist TFISE/KWRRI with MCM's 1&2
- Drain Marking
  - 32 Drains assessed and marked in various areas:
    - Fine Arts
    - Funkhouser
    - Mining and Minerals
    - Quad
    - K-Lair Area
    - MI King
    - White Hall
    - Library
- GI Tour
  - April 4th – LA271 Class – Jordan Phemister, Jerry & Kevin
  - Visited:
    - Farm Rd. Rain Garden
    - Kentucky Proud Park – curbless roadways, bioswales
    - Hope Lodge Detention
    - Ronald McDonald – Rain Garden, Bioswales, Pervious Pavement
    - Hospital – Green Roof
    - Garrigus Plaza – Permeable pavement, Green Roof
  - Shane suggested we build on this and develop a self-guided walking tour and add to the stormwater website.
- Gluck Planting and Rain Garden Clean-Up
  - Ag/Grounds – Carmen & Jerry
  - Event held in April
  - Worked with UK Horticulture Club to grow and plant (with volunteer assistance) 7000 native plants as part of our Goose (Waterfowl) Management Program
    - Volunteers still needed to complete project!
      - Consider a "mulch-a-thon" type event to get more volunteers
  - Farm Rd. Rain Garden Clean-up event held same day

- Steam Weeding
    - Grounds working with Ag/Arboretum (Carmen & others) to apply for LFUCG Stormwater Education Grant to purchase and test a weed steamer for use around stormwater bmp's to limit chemical usage.
- End of Permit Year One/Beginning of Permit Year Two
    - Permit Year One ended April 30th
        - All SWQMP tasks/measurable goals due 4/30 2019 should be complete
    - Permit Year Two Began May 1st
        - Additional (New) tasks/measurable goals will need to be completed by 4/30/2020
        - Will need to complete lingering year one tasks in addition to starting year two tasks

II. SWQMP IMPLEMENTATION TRACKING 1015-1040

- Tracking Spreadsheet
    - Document located on Stormwater Stakeholder Sharepoint Site
    - Current tracking mechanism for SWQMP Implementation Progress
    - Email sent on 1/24 with link and basic explanation
    - How to access and input data
        - Proper log-in: It says I need a password!
            - Link will take you to Microsoft Sign in page
            - You must sign in with your UK username and include @uky.edu
            - This will take you to "Your Organization's Sign-In Page"
            - Sign in with your linkblue username and password
            - Stay signed in? – Yes
            - Depending on which link you use, you'll either open excel online where you can live edit the tracking spreadsheet or…
            - You may be accessing the document from the Sharepoint site
                - You have three options:
                    - Work in the embedded spreadsheet
                    - View the full-sized workbook by selecting the tiny window in the bottom right corner of the embedded spreadsheet
                    - Open the file by selecting documents, scrolling down to the bottom, and selecting the file: SWQMP-2018-Task-Tracking-012419_90346
    - Where to put information and what to include
        - Spreadsheet contains all the tasks, measurable goals, evidence of completion, target due dates, division/people responsible, as well as status and action taken columns
        - Year One/Year Two Tabs
            - The tabs at the bottom include the following:
                - Task Assessment – Looks at tasks based upon type (new, reoccurring, one time, existing), manpower needed (existing staff, contractor, new, intern), and direct cost associated with each
                - Estimated Budget – Summarizes the cost from the assessment tab, does not include indirect costs or other division budgets
                - Complete SWQMP Tracking – includes all tasks, measurable goals, and status tracking for each permit year

            - Individual Permit Year Tracking – each sheet contains tasks due that permit year as well as tasks that need to be started/continued that permit year
        - Status and Action Taken Columns
            - These columns on each individual permit year tracking sheet are where you should provide updated information on your actions.
            - The status should be based on where you are with relation to the due date.
            - The action taken column is where you should keep track of your activities
                - Start with the date (either the date the action was taken or the date you are reporting the action) and a brief description of what was done. *Pressing Alt+Enter will allow you to start on a new line in the cell
    - It was discussed that stakeholders will update the spreadsheet with completed task information and that evidence of completion for each task will be placed on the Stormwater Sharepoint Site. Place evidence in individual folders located under each main MCM folder. Carmen has already created folders for MCM 1&2 documentation.
- Stakeholder Responsiveness
    - A friendly reminder that we as Stakeholders developed and agreed upon all the tasks within the SWQMP. By submitting this plan to the DOW, we made a commitment to perform these actions to remain compliant with our permit. The plan outlines not only what we have agreed to do, but when we plan to accomplish the tasks. Each stakeholder with an assigned task is responsible for actively working towards its completion by the target completion date, providing updates as to progress, and evidence of completion.
    - There is a general lack of responsiveness regarding stormwater activities, either in just the reporting of actions being performed, or in performing actions (that can't be determined because very few updates are being provided).
        - Implementation Updates
            - The tracking spreadsheet went live on January 24th. Since that time only four stakeholders have made modifications, and only one person made any updates after my recent requests.
        - Evidence of Completion
            - This is the documentation we have said we would provide to prove the completion of our tasks/measurable goals.
            - Very little information is being provided.
        - Annual Report Submittal
            - Very few stakeholders responded to requests for information
            - The report was submitted without information using the response "Information not available at time of submittal."
        - Training
            - No training information was received for inclusion in the annual report, despite multiple requests
                - UK's training program, as reported to the DOW, is the annual review of the online stormwater training (101, 102, 201, 401) by staff as well as individual departmental training
                    - It appears that the online training was not transferred from SAP into MyUK Learning

- According to Grounds, the files have been provided to the training coordinator, but have not been uploaded.

III. SWQMP – Year One **1040-1050**

- Tasks/Measurable Goals Completed
  - There are 80 total tasks/measurable goal to begin/complete in PY1
  - 55 of those were due to be completed by 4/30/19
  - 40 of these tasks reoccur annually
  - 25 tasks/measurable goals due by 4/30/19 are confirmed completed
- Tasks/Measurable Goals Remaining
  - 18 appear to be behind schedule, 9 appear to be on schedule, and the status of 23 tasks/measurable goals is unknown

IV. SWQMP – Year Two **1050-1105**

- New Major Efforts to Begin
  - Website redesign
  - Interactive MS4 Map Development/Story Map Creation
  - Illicit Discharge Reporting System Development
  - Stormwater Survey
  - Stormdrain Marking Program Redesign
  - Property Acquisition Notification Procedure Development
  - SSO Response Policy/Procedure/Guideline Development & Training
  - Begin Stormwater Operations Manual Development
  - Dry weather flow assessment evaluation
  - Improve construction project notification/review process
  - Update construction site inspection and project review checklists
  - Develop contractor training program/training
  - Develop formal policy for small construction sites
  - Begin development of a campus Stormwater Masterplan
  - Develop Post-construction BMP preventative maintenance program
  - Develop Waterfowl Management Program
  - Procedure development for stormwater issue repair/resolution
  - Watershed focused monitoring assessment
  - Develop evidence of completion/annual report info reporting system
- Efforts Already Underway/Completed
  - TFISE assistance hired
  - Meeting with LFUCG – participating in measurable goal workgroups
  - Enforcement policy for construction stormwater violations
  - Construction Design Standards Updated
  - Develop RFP for Stormwater Remediation – halted
  - Evaluate the development of a Stormwater Masterplan
    - Plan development already added to Sustainability Strategic Plan
    - Plan development discussed with Mary V.
  - Water harvesting system use being recorded, need to work to refine
  - Gluck Pond Alternative Management Techniques – landscape design and implementation
  - Grounds Budget Assessment

V. Stakeholder Updates –What are you working on? Progress Made? Problems Encountered? Suggestions for Improvements? **1105-1130**

- KWRRI/TFISE (Carmen/Cole)
  - Developing Story Maps for Campus Stormwater BMP's
  - In process of designing professional SW Booth for public events
    - Stormwater website – We need to get started on this as many of our tasks require the website to be developed before we can move forward.

- Utilities (Joe)
    - Hope Lodge Pond – What is the status?
        - Scotty Bowles with CPMD paid a contractor to clear the sediment in the main channel between the Hope Lodge/College Way outlets and the pond outlet structure
    - Alumni Stream Restoration – Is the project underway?
        - The RFP has recently been issued and a contractor chosen. Contract documents are currently being drawn up. A project kick off meeting will be held at the end of May/beginning of June.
    - Last FEMA Detention Basin – Still holding water. Joe is working to correct the flow issues caused by incorrect pipe elevations and a malfunctioning underdrain. Bell Engineering will assist.
    - Wildcat Court Coal Pile – Plans are underway eliminate/treat discharge from the pile:
        - The drain pipe from the coal pile holding area to the settling basin has been cleaned.
        - Waiting for quote to begin work building outlet structure with screening and pH adjustment.
    - Shawneetown
        - Work to line all brick manholes should start in the next several days.
        - Line rehab/repair will occur before this Fall.
- Grounds (Jerry)
    - USDA is managing the goose population around Gluck again this year
    - Currently working to plant the area around Gluck Pond
        - Volunteer effort helped, but many plants still need to be installed and mulched, will plan additional volunteer planting days
    - A water leak has been identified at Woodland Glenn, Facilities is currently working to resolve the issue
- Facility Operations (Harold)
    - Water Harvesting systems – staff currently recording usage information, however procedures and proper info recording need to be discussed and developed
- CPMD (Bob)
    - Research Building 2 and Greek Park Beta House NOT inspections are coming up soon.

Sign-In Sheet

UK MS4 Stormwater Stakeholders Advisory Committee Meeting
July 12th, 2019

Name	Department
1. J. Zumwalt	Facilities UEM
2. Graham Gray	"
3. Joe Graft	"
4. TJ Armstrong	CPPD
5. Stretta Wellby	PSS
6. Harold Sandford	Facilities Mang.
7. Donnie Mefford	UKAD
8. Bob Brashear	UKCPM
9. [illegible]	UKPPD
10. Bob Kellaway	EMD
11. Mike Duffy	UEM
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Environmental Management

MS4 Stormwater Stakeholders Advisory Committee Meeting Agenda

Date: July 12th, 2019
1000 - 1130

Location: Peterson Service Bldg., Room 226

Purpose: To discuss SWQMP accomplishments since May, current progress/activities, and what needs to be done.

I. ACCOMPLISHMENTS 1000-1030

- Hope Lodge Detention Basin
- Gluck Pond Planting
- Alumni Stream Restoration
- 4-H Green Infrastructure Tour
- Stormwater Website Update
- Stormdrain Marking Program
- MS4 Assistance Contract

II. STRAND ASSISTANCE 1030-1045

- Task Assignments

III. SWQMP PROGRESS – YEARS 1&2 1045-1100

- Tasks/Measurable Goals Completed
- Tasks/Measurable Goals Remaining

IV. STAKEHOLDER UPDATES 1100-1130

What are you working on? Progress Made? Problems Encountered? Suggestions for Improvements? Questions?

- Sustainability (Shane)
- KWRRI/TFIS (Steve/Cole)
- Utilities (Jeff/Joe/Mike/Graham)
- Grounds (Tim/Don/Jerry)
- Facility Operations (Phil/Harold/Tim)
- Athletics (Donnie)
- CPMD (Bob)

Sign-In Sheet

UK MS4 Stormwater Stakeholders Advisory Committee Meeting
October 4th, 2019

Name	Department
1.	EMD
2.	UEM
3. Harold Sandford	UK Facilities
4. Steve Evans	KWRRI
5. Carmen Agouridis	UK CAFE
6. TIM CLARK	UK FACILTIES
7. Graham Gray	UEM
8. Mike Duffy	UEM
9. STEVEN VOGEL	STRAND
10. Bob Brashear	CPM
11. Jason PHart	UK- Grounds
12. Stacy Borden	UK Arborist
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Environmental Management

MS4 Stormwater Stakeholders Advisory Committee Meeting Minutes

Date: October 4th, 2019
1000 - 1130

Location: Peterson Service Bldg., Room 226

Purpose: To discuss current progress, activities, and needs; including any issues or developments.

I. UPDATES 1000-1010

- Stream Restoration Project
  - Bioswale completed in median
    - Topsoil added to entire median and entire median "turned" to reduce compaction and allow for better landscaping/beautification
    - Stream channel construction completed
- Website Redesign
  - Design preferences provided to FIS
  - Working to finalize Project Charter
  - Schedule for completion – Start: October 2019, Go Live: End of Nov. 2019
  - Interactive maps (being created by GIS – independent of website)
    - *Illicit Discharge*
    - Interactive MS4 Map
    - Interactive Stormdrain Marking Map
    - Construction Map
- Flood Plain Model Purchase
  - To be used for outreach and education purposes
  - Provides opportunity to show how watersheds can be impacted by construction, how impervious surfaces impact water quantity/quality compared to natural systems, and how stormwater bmps function to simulate natural systems.

II. MCM 1&2 DEVELOPMENTS 1010-1030

- The original agreement/idea was to utilized interns managed by TFISE and funded by EMD to complete SWQMP tasks. Until now, work has been performed by Carmen and a Grad Student, functioning as part of the TFISE Water Working Group.
- Carmen – new job
  - Formerly an Extension Associate Professor, now the Associate Dean for Instruction with the College of Ag.
  - Transitioning out of former responsibilities
    - Has negotiated a 2-year transition and the assistance of Lee Moser during that time
    - During the transition, the goal is to:
      - Complete the Website
      - Complete the Drain Marking Program
      - Establish a Consortium of Stormwater Professionals
      - Develop more Staff Training

- Goals:
  - Develop the MCM 1&2 program foundation during the transition period
  - Prepare to bring additional people that will take over once the transition period is over.
- TFISE – new leadership – Kelly Pennell (Interim Director)
  - Determining the direction to take the institute
  - Wants to more align TFISE efforts with UK Research Priorities (which do not include environmental)
  - Feels that assisting EMD with the SWQMP doesn't quite fit TFISE's purpose
    - Has expressed concern that TFISE doesn't have the resources to perform the work
    - Want's to take over organizing the Catchment Clean-up and work with Sustainability Interns to provide the labor
      - Believes the Clean-up encompasses more of what TFISE values

- We need to determine the best way to proceed through and beyond the transition period. Some options include:
  - Utilize agreement with extension to complete SWQMP tasks?
  - Hire Bluegrass Greensource?
  - Assign MCM 1&2 tasks to Strand?
  - EMD hire additional personnel to accomplish tasks?
    - Full time?
    - STEPS?
    - Grad Students?
    - Interns?

Carmen – We need a single person to coordinate and spearhead efforts.

III. STRAND ASSISTANCE 1030-1055

- Purpose
  - Brief reminder: EMD RFP for MS4 Services, Strand selected, Strand Assigned specific SWQMP Tasks
- Assigned Tasks
  - Strand has been assigned specific SWQMP tasks, notification has been added to the update column of the spreadsheet
  - Efforts on the following tasks will begin immediately
    - Above/Below Ground BMP Inspections
    - Outfall Inspections
    - Stormwater Operations Manual Development
    - IDDE Plan Update
    - Wildcat Court Coal Stockpile BMP Assessment
    - SWQMP Progress Assessment and Schedule Adjustment
- Project Manager Introduction & Comments
  - Steve Vogel

IV. SWQMP EFFORT TRACKING 1055-1100

- Sharepoint Tracking Spreadsheet
  - Now is the time to assess efforts and provide an update for anything completed or worked on from August through October, plus anything not documented since the last stakeholder meeting
  - Based on a review of tracker updates, very few stakeholders are accessing and updating the tracker
  - ***Friendly reminder that updates for this quarter are needed***

V. STAKEHOLDER UPDATES 1100-1130

What are you working on? Progress Made? Problems Encountered? Suggestions for Improvements? Questions?

- MCM's 1&2 – TFISE/Extension (Suzette, Carmen, Steve)
  - Stormwater Logo Competition:
    - Carman – An application has been submitted to the Student Sustainability Council requesting funding for awards
  - Campus Pet Waste Issues:
    - Suzette – Currently working on pet waste program, pet waste logo competition. Wanted to know if pet waste is an issue on campus.
    - Tim – Pet waste is a growing problem, mainly around dorms. Grounds has communicated with Greystar (EDR) about the issue. They requested pet waste stations and are currently trying to determine an effective solution. The UK architect has reservations about using pet waste stations on campus.
    - Carmen – Service animals are on campus and we need to make accommodations. There are two types – registered service dogs and support animals.
    - Joe – Neighbors are walking dogs on campus
    - Tim – The initial focus needs to be on organizations that allow pets on campus – educate those with pets on the UK pick it up requirement and possibly put waste stations in (Greystar) buildings.
    - Jerry - Woodland Glenn, Lewis Hall, and the Flats are the worst areas (within 25' of entrances).
  - Stormdrain Marking Program:
    - Carmen – The program (Survey 123) has been developed, Cole has tested, Lee and Cole are currently working on instructional videos and I am working on lesson plans. Lee is working to determine what is marked vs what isn't marked.
    - Tim – Are all drains being marked?
    - Kevin – Only older drains not cast with "No Dumping, Drains to Stream" are being marked
  - Outdoor Learning Spaces Committee
    - Carmen – This new committee has been created to increase awareness of and manage our outdoor spaces. An announcement regarding the committee and its purpose was sent out on 9/6.
  - Farm Rd Rain Garden Maintenance
    - Carmen – Grounds is providing excellent service helping to maintain and teach those assisting with the maintenance. Public participation/service opportunities available on Friday, Saturday, and November 1st as we work to get the rain garden back into shape.
  - Water Professional Student Chapter – Wildcat Water Wagon
    - Steve – Students are developing a water wagon for educational materials/models and are actively looking for activities/models/projects/funding.
- Utilities (Joe/Mike/Graham)
  - Utility Line Repairs
    - Graham – Repair projects have been completed and significant leaks eliminated at the following locations: Cooper Drive, VA Drive, and at the Tobacco Research Vault. The flow at the Cooper Drive Tunnel inlet believed to have stopped with the latter.

Joe – The city main near central heating is being cleaned, a contractor drilled through an existing pipe between parking 2 and Mining/Minerals, the inlet by Chem/Phys is blocked and they are working to clean. The 15" clay line under Kennedy's was replaced with ductile iron.

- Shawneetown Sewer Improvements

  Joe – Manholes have been lined to reduce infiltration (all manholes, excluding Early Childhood, have been sealed). Efforts are currently underway to repair the existing lines (Phase II). Once Shawneetown repairs are made, efforts will shift to lining all campus brick manholes (over time).

- Wildcat Court Coal Pile Improvements

  Joe – Buchanan is working on a solution – they have installed a manhole and are working on installing bricks and screening.

- Grounds/Custodial/Etc. (Tim/Don/Jerry)
  - Hope Lodge Pond Clean-up

    Jerry – All weed trees have been cut down, all banks are clear
  - BMP/Stormwater Maintenance

    Jerry – A Grounds employee has been assigned to BMP maintenance. Currently, storm inlets are being cleaned/unclogged and they are slowly working through the system Plans are to have all inlets inspected and cleaned within two years.
- Facility Operations (Phil/Harold/Tim)

  Harold – Business as usual, no updates
- CPMD (Bob)

  Bob – Two big jobs wrapping up: Alumni Stream Restoration, RB2

APPENDIX S

Groundwater Protection Plan

GROUNDWATER PROTECTION PLAN

AUGUST 5, 2019

MAIN CAMPUS

LEXINGTON, KENTUCKY

PREPARED BY:

UK Environmental Management Department

GROUNDWATER PROTECTION PLAN
FOR THE UNIVERSITY OF KENTUCKY'S
LEXINGTON MAIN CAMPUS

Table of Contents

Figures

Tables

Appendices

A. GENERAL INFORMATION

A.1 Name and Address of Facility

Facility Name:	University of Kentucky (Lexington Campus)
Facility Address:	Environmental Management Department 355 Cooper Drive Lexington, Ky. 40506
County:	Fayette
Mailing Address:	Same as facility address above
Latitude:	38° 01' 40" N
Longitude:	84° 30' 25" W

A.2 Person Developing GPP

Name:	Robert Kjelland, P.G., CHMM
Title:	Director, Environmental Management Department
Address:	355 Cooper Drive Lexington, Ky. 40506
Telephone number:	859-257-3285

A.3 Person Responsible for Implementing GPP

Name:	Mary Vosevich
Title:	Vice President for Facilities Management & Chief Facilities Officer
Address:	225 Peterson Service Building Lexington, Ky. 40506
Telephone Number:	859-257-5929

A.4 Brief Description of Facility Operation

Founded in 1865 as a land-grant institution, the University of Kentucky's (UK's) main campus consists of approximately 824 acres in Lexington, Kentucky as shown on **Figure 1**. From its early beginnings, with only 190 students and 10 professors, UK is now home to more than 31,000 students and approximately 16,000 employees. UK is one of a small number of universities in the United States that has programs in agriculture, engineering, a full complement of health colleges including medicine and pharmacy, law, and fine arts on a single campus. The University consists of 17 academic and professional colleges where students can choose from more than 200 majors and degree programs at the undergraduate and graduate levels. The colleges are Agriculture, Food and Environment; Arts and Sciences; Business and Economics; Communication and Information; Dentistry; Design; Education; Engineering; Fine Arts; Graduate School; Health Sciences; Law; Medicine; Nursing; Pharmacy; Public Health; and Social Work.

Primary activities at UK include research, teaching, health care, athletics, dining services, student housing, physical plant maintenance, and off-campus agricultural research. Operations are conducted in various buildings scattered throughout campus. The various buildings are surrounded by urban residential and commercial properties. The significant streets that connect

the main campus to downtown Lexington include Woodland Avenue, Rose Street, Limestone Street/Nicholasville Road, Martin Luther King Boulevard, and Broadway Road.

Limestone/Nicholasville Road is the most prominent street corridor through campus with major campus cross streets intersecting Limestone Street/Nicholasville Road including Alumni drive, Cooper Drive, Virginia Avenue/Huguelet Drive, Euclid Avenue/Avenue of Champions, and Maxwell Street. The Newtown Pike extension has recently been added as a significant campus gateway.

Since 2012, UK's main campus has undergone a period of rapid construction and growth. During this time, an excess of $2 billion has been invested in improvements to housing, research, and academic infrastructure. These improvements have encompassed more than six million square feet and 125 separate projects.

B. ACTIVITIES THAT HAVE THE POTENTIAL TO POLLUTE GROUNDWATER

Table 1 presents the five activities that take place on the UK main campus for which a Groundwater Protection Plan is required as stipulated in the corresponding regulatory citation. Additional detail on each activity is provided in Section C.

Table 1. Regulated Activities at UK

Activity	Regulatory Citation
Pesticide or fertilizer application for institutional lawn care	401 KAR 5:037, Sec.2(2)(d)
Storage, treatment, disposal, or handling of hazardous waste, solid waste, or special waste in drums, or other containers	401 KAR 5:037, Sec. 2(2)(f)
Commercial[1] storing or related handling in bulk quantities[2] of raw materials, intermediate substances or products, finished products, substances held for recycling, or other pollutants held in tanks, drums, or other containers or in piles	401 KAR 5:037, Sec. 2(2)(g)
Storing or related handling of deicing agents at a central location	401 KAR 5:037, Sec. 2(2)(j)
Application or related handling of deicing materials	401 KAR 5:037, Sec. 2(2)(k)

Conversely, **Table 2** presents those activities that take place on the UK main campus but are specifically excluded from having to be included in a GPP.

Table 2. Non-Regulated Activities at UK

Activity	Regulatory Citation
Normal use or consumption of products sized and packaged for personal use by individuals	401 KAR 5:037,Sec. 2(4)(a)
Activities conducted entirely inside enclosed buildings, the building has a floor sufficient to prevent the release of pollutants to groundwater and there are no floor drains, or all floor drains within the building are connected to an on-site sewage discposal system	401 KAR 5:037, Sec. 2(4)(c)
Storing municipal solid waste in a container located on property where the municipal solid waste is generated and which is used solely for the purpose of collection and temporary storage of that municipal solid waste prior to off-site disposal	401 KAR 5:037, Sec. 2(4)(e)
Installing and operating sewer lines or water lines approved by the cabinet	401 KAR5:037, Sec. 2(4)(f)
Emergency response activities conducted in accordance with local, state, and federal law	401 KAR 5:037, Sec. 2(4)(j)

C. PRACTICES SELECTED TO PROTECT GROUNDWATER FROM POLLUTION

For each general regulated activity listed in **Table 1** this section provides the associated specific UK activity that takes place at its main campus along with the best management practices[3] (BMPs) that will be used to protect groundwater.

C.1 Pesticide or Fertilizer Application

Appendix 1 describes those activities and associated groundwater protection BMPs related to the application of pesticides and fertilizers at UK's main campus.

C.2 Storage, Treatment, Disposal, or Handling of Hazardous/Special Wastes

UK operates a facility on the main campus that stores and treats hazardous waste in drums or other containers. **Appendix 2** describes those activities and associated groundwater protection BMPs related to the storage, treatment, disposal, or handling of hazardous wastes in drums or other containers at that facility.

No waste is stored, treated or disposed in landfills, incinerators, surface impoundments or piles at the UK main campus. Furthermore, no special waste (as defined in KRS 224.50-760(1)(a) is stored, treated or disposed at the UK main campus. Solid waste generated by UK is classified as *municipal* solid waste and is specifically excluded from groundwater protection planning as noted in 401 KAR 5:037, Sec. 2(4)(e).

C.3 Storing or Related Handling of Materials in Bulk Quantities

Appendix 3 describes those activities and associated groundwater protection BMPs designated for the storing or related handling in bulk quantities of raw materials, intermediate substances or products, finished products, substances held for recycling, or other pollutants held in tanks, drums, or other containers or in piles at UK's main campus.

C.4 Storing or Related Handling of Deicing Agents

Appendix 4 describes those activities and associated groundwater protection BMPs that are related to the storing or related handling of deicing agents at UK's main campus.

C.5 Application or Related Handling of Deicing Materials

Appendix 4 describes those activities and associated groundwater protection BMPs that are related to the application or related handling of deicing materials at UK's main campus.

D. IMPLEMENTATION SCHEDULE

All of the practices descreibed in Section C are currently being implemented.

E. EMPLOYEE TRAINING

Managers or supervisors responsible for facilities or activities covered by this Groundwater Protection Plan are responsible for properly instructing and training personnel to satisfy its requirements. The training requirements for each specific regulated activitiy that takes place on the UK main campus are provided in the applicable section of **Appendix 1 - 4**.

In addition, all affected employees receive annual awareness training which covers:

- Content – Review of the Groundwater Protection Plan
- Awareness – Importance of groundwater protection
- Responsibilities – Activities that have the potential to impact groundwater quality, inspection schedule, and spill response

Briefings for personnel are to be conducted at intervals frequent enough to ensure adequate understanding of the requirements. Such training will include reviews of any known spills, other failures (including malfunctioning components and equipment), and new precautionary measures adopted as a result of these events. All new employee shall receive training prior to assuming responsibility for implementing any of the requirements of this Groundwater Protection Plan.

F. INSPECTION SCHEDULE

Managers and supervisors for facilities and activities covered by this Groundwater Protection Plan are responsible for conducting inspections on a periodic basis commensurate with the complexity, conditions and circumstances of the covered facility or activity. The inspection schedule for each regulated activity that takes place on the UK main campus are provided in the applicable section of **Appendix 1** - **4**.

In addition, each covered facility or activity will be inspected annually by a representative of the Environmental Management Department. During these inspections, the site-specific inspection records maintained by the responsible person at the location of each covered facility will be reviewed. The EMD will also conduct a visual inspection of applicable areas for evidence of spills, leaks or releases that have potential impact to groundwater.

G. CERTIFICATION STATEMENT

I, Mary Vosevich, *certify that this Groundwater Protection Plan complies with the requirements of 401 KAR 5:037. I have reviewed the terms of the plan and will implement its provisions. I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.*

Mary A. Vosevich
Signature

8/7/19
Date

H. RECORD RETENTION

Section 4(7) of 401 KAR 5:037 provides for public inspection of Groundwater Protection Plans. The plan and inspection records are to be kept on site at the University and all records retained for a period of 6 years.

RECERTIFICATION AND REVISION OF GPP

The regulation requires the person responsible for implementing the Groundwater Protection Plan to review the entire plan every three years. If no changes have occurred in responsible personnel, activities, or protective practices, the plan may be recertified by signing and dating another certification statement under Section G. If changes occur at any time, the plan must be revised to address the modifications.

REFERENCES

1 – “Commercial” means services at stores, offices, restaurants, warehouses, and other service and nonmanufacturing activities, excluding households and industries. (401 KAR 5:037, Sec. 1(6))

2 – “Bulk quantities” means undivided quantities of any substance equal to or greater than 55 U. S. gallons liquid measure or 100 pounds net dry weight transported or held in an individual container. (401 KAR 5:037, Sec. 1(5))

3 – “Best management practices” means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the Commonwealth. Best management practices also include treatment requirements, operating procedures, and practices to control plant site run-off, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. (401 KAR 5:037, Sec. 1(3))

Figure 1

University of Kentucky - Lexington Campus

N

0 400 800

Feet

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Geospatial.Requests@uky.edu
REV: 20180925

APPENDIX 1
UNIVERSITY OF KENTUCKY
GROUNDWATER PROTECTION PLAN

Groundwater Protection Practices
Pesticide or Fertilizer Application for Institutional Lawn Care

This appendix to the Groundwater Protection Plan for UK's main campus provides descriptions of those best management practices (BMPs) designed to protect groundwater quality from activities which involve pesticide or fertilizer application. The BMPs for this activity are provided below in Section A1.1 and in **Figure A1-1** which is an excerpt from UK's *Environmental Handbook*.

A1.1 BEST MANAGEMENT PRACTICES

A1.1.1 Application of Pesticides/Fertilizers

Pesticides and fertilizers are used for grounds and vegetation management on UK property. This includes their storage and their application to facility grounds. The following BMPs are compliant with local, state, and federal law:

- These products are applied according to manufacturer's recommendations.

- UK will only use commercial fertilizers that contain a detailed fertilizer analysis which has been properly registered with the UK's Regulatory Services, Division of Fertilizer Inspection.

- UK will utilize established industry standards to prevent the contamination of surface water and groundwater.

- Slow release and organic formulations are the primary methods of fertilization. Additionally, all fertilizer applications will comply with recommendations from soil and/or tissue analysis conducted by the UK's College of Agriculture Division of Regulatory Services.

- Staff who apply pesticides are licensed applicators. A licensed applicator is a person who has received training, passed a test, and received a license from the state of Kentucky Department of Agriculture. Licensed applicators are personally responsible to maintain a current license.

- On rare occasions, unlicensed staff may only apply pesticides with the Signal Word: *Caution*. Unlicensed staff must always be in direct line of site of a licensed applicator during the handling, mixing, hauling, application, or storage of pesticides with the signal word: *Caution*.

- Staff will apply pesticides and fertilizers using properly maintained and calibrated equipment, utilizing proper application techniques.

- Staff will comply with label recommendations and the UK *Storm Water Quality Management Plan*[1] BMPs to maintain adequate set back from all bodies of water, riparian areas, and storm water systems.

- Cleaning of spray or applicator equipment is permitted if the location is greater than 100 feet from a creek, stream, or drainage ditch.

- No pesticide or fertilizer may be sprayed on water surfaces or ponds except for those specifically labeled for such applications.

- No pesticide or fertilizer may be disposed of by burying the excess material on site.

- All Applications of pesticides and fertilizers must be recorded and documented. Records must be stored in readily accessible manner and made available within one business day. Records must include the following information:

    - ✓ Name and address (GPS location) where the pesticide/fertilizer was applied.
    - ✓ Specific crop and site, to which the pesticide/fertilizer was applied.
    - ✓ Year, month, day, and time of application.
    - ✓ Trade name and EPA registration number of the pesticide(s) applied.
    - ✓ Amount of the pesticide applied and percentage of active ingredient per unit of the pesticide used (for every pesticide if a mixture).
    - ✓ Type and amount of the pesticide disposed of, method of disposal, date(s) of disposal, and location of the disposal site.
    - ✓ Temperature, wind direction, humidity, chance of precipitation.
    - ✓ Equipment utilized.
    - ✓ Name and license number of applicator.
    - ✓ Fertilizer type (granular or liquid).
    - ✓ Nutrients ratio including micros.
    - ✓ Application rate expressed in pounds per 1,000 square feet.

- UK attempts to limit the volume of pesticide application through spot treatment and using less pesticide when infestations are light.

A1.1.2 Storage of Pesticides/Fertilizers Storage

Good storage practices for pesticides and fertilizers are inexpensive ways of preventing pollution. The following storage practices are used at UK to reduce stormwater pollution and prevent groundwater impact:

- All pesticides and fertilizers are stored in their original labeled containers until used in a labeled applicator.

- Pesticides and fertilizers are stored under roof on an impervious surface with adequate secondary containment required to prevent run-off.

- All pesticides must be mixed utilizing an approved mixing/loading pad.

- As part of an approved Rinsate and Disposal Plan pesticide and fertilizer containers are triple rinsed when emptied with the rinse water collected and recycled through the applicator system (i.e. there is no discharge of pesticide or fertilizer contaminated water to the storm sewer or the sanitary sewer).

- Empty pesticide and fertilizer containers will be punctured or destroyed prior to disposal. If the containers are not recyclable they will be disposed of in a landfill permitted by the State of Kentucky Division of Waste Management.

- Safety Data Sheets (SDSs) are maintained at every grounds location/site where pesticides and fertilizers are stored and mixed.

- SDSs are to be inspected monthly for accuracy. A cover sheet will be maintained in the SDS Binder to record the inspections and inspectors.

- A copy of both the chemical label and SDS will remain with the applicator during the duration of the application.

- Applicator will carry a spill management kit when making every application.

- Pesticide and fertilizer inventories will be taken monthly to ensure that product does not become obsolete through lack of use and to confirm that there have been no leaks, spills, or damages to containers.

A4.2 INSPECTIONS

Inspections which are applicable to the application of pesticides or fertilizers are described in the "Facility Checklist" portion of **Figure A1-1**.

A4.3 TRAINING

Training of personnel responsible for the application of pesticides or fertilizers will be conducted as noted in **Figure A1-1** and, therefore, will be conducted annually.

1 – University of Kentucky *Storm Water Quality Management Plan*, October 2018 (ehs.uky.edu/env/media/stormwater_quality_plan.pdf)

Carefully pour chemicals directly into the sprayer tank and use a water supply with a backflow preventor to dilute to the needed concentration.

DO

- ✓ Place drums on pallets to move with a forklift.
- ✓ Store chemicals in the original container in a clean, dry location.
- ✓ Check spray equipment for leaks before use.
- ✓ Use a water supply that has a backflow preventer .
- ✓ Carefully watch the fill sight tube to avoid overfilling the spray tank.
- ✓ Rinse empty containers three times and pour rinse water into the spray tank.
- ✓ Apply all chemicals per label directions.
- ✓ Have a spill kit and an empty container available when chemicals are delivered or moved.
- ✓ Replace used spill kit materials promptly after use.

DON'T

- ✖ Don't accept leaking containers from delivery trucks.
- ✖ Don't overfill the spray tank.
- ✖ Don't reuse or burn empty chemical containers.

Tips and Tricks

- ! Park delivery vehicle on the uphill side of the tank to drain delivery hose easily.
- ! Contact UK Environmental Management for list of needed spill kit contents
- ! UK Environmental Mgmt. 859-323-6280

Materials & Waste Management

- ▲ Return refillable chemicals containers to the vendor if applicable.
- ▲ Store containers in a designated location to protect from damage, destruction or theft.
- ▲ Containers that cannot be returned or recycled will be punctured and sent to a solid waste landfill that has agreed to accept the containers.
- ▲ Do not dispose of absorbed materials and soils that contain chemicals and are hazardous. Contact UK Environmental Management for assistance.

Facility Checklist

- ☐ Check *EACH* delivery shipment and do not accept leaking containers.
- ☐ Check chemical mixing and spraying operations *WEEKLY.*
- ☐ Check equipment including sprayers and pumps *WEEKLY* during application season.
- ☐ Check chemicals spill kits *MONTHLY* and promptly restock after use.
- ☐ Check chemical storage location *ANNUALLY.*
- ☐ Review chemical handling procedures *ANNUALLY*, improve as needed.
- ☐ Ensure SDS sheets are current and available *ANNUALLY.*
- ☐ Ensure personnel handling and applying chemicals are trained and licensed.

If…Then

- ➤ Quickly contain and clean up spills or leaks using absorptive devices from spill kits.
- ➤ Return spilled chemicals to the spray tank.
- ➤ Contain absorbed material from spills or leaks and distribute it at a target chemical application site.
- ➤ If absorbed chemical material cannot be used, conduct a waste determination. Clean-up from spilled materials that are found to be non-hazardous can be disposed in a solid waste landfill.
- ➤ Contact UK Environmental Management for guidance regarding spills.
- ➤ Call 911 immediately for large spills.

Training: 1 per Year **Season:** Spring

Relevant Environmental Programs		
	○ Air Quality	● GWPP
	○ 401/404/WQC	● Waste
	● KPDES	● Pesticides
	● MS4	○ SPCC

UK

PESTICIDE AND HERBICIDE DELIVERY, STORAGE AND HANDLING

5.7

Figure A1-1
Pesticide and Herbicide Delivery, Storage and Handling
(Excerpted from UK's *Environmental Protection Handbook*, Sec. 5.7: *ehs.uky.edu/env/*)

APPENDIX 2
UNIVERSITY OF KENTUCKY
GROUNDWATER PROTECTION PLAN

Groundwater Protection Practices Storage, Treatment, Disposal or Handling of Hazardous Waste in Drums or Other Containers

This appendix to the Groundwater Protection Plan for UK's main campus provides descriptions of those best management practices (BMPs) designed to protect groundwater quality from activities which involve the storage and handling of hazardous waste in drums or other containers. The Environmental Quality Management Center (EQMC) is an 11,000-square-foot on-campus facility and is permitted to store and treat hazardous waste generated by UK. Permit No. KYD000-830-851 allows for the storage of a wide range of regulated hazardous waste which is maintained in specific locations within the EQMC until such time at it is transferred to a commercial entity for final disposal/treatment at an off-site facility. The BMPs that follow are excerpted from that permit.

A2.1 BEST MANAGEMENT PRACTICES[1]

Waste unloading operations take place when waste is transported to the EQMC in containers via an EMD vehicle. Unloading operations are conducted at the receiving area within the interior of EQMC. All containers are inspected for leaks or damage, and pallets, if used, are inspected for any signs of spilled material. Inspection of containers by EMD personnel prior to acceptance at the EQMC minimizes the potential for spills during waste handling operations. Records accompanying a shipment of containers are reviewed prior to unloading at the EQMC. The containers are typically moved to the appropriate compatibility location by hand or by cart. The EQMC's interior receiving area is observed daily during operational hours for leakage or accumulated liquids. Documented inspections of this area are conducted on a weekly basis.

Waste loading operations at the EQMC take place at the exterior loading dock when wastes are scheduled for transportation by a commercial carrier to an offsite commercial facility. The loading dock is designed to contain the contents of a 55-gallon container if a leak were to occur. The dock is equipped with a loading platform, bumpers and lighting to minimize the potential for accidental releases. EMD personnel responsible for loading waste are instructed in the proper operational procedures and use of equipment necessary to prevent hazards during these operations. The exterior loading dock is inspected daily while in use (i.e., when loading activities are being conducted).

A2.2 INSPECTIONS[2]

The inspection schedule implemented at the EQMC is based on operational experience and knowledge of the EQMC's systems and equipment, as well as, knowledge of the rates of possible deterioration of storage systems and equipment utilized at the EQMC. The inspection schedules, described in **Figure A2-1** specifies the type of equipment and storage systems inspected, examples of general issues which may occur, and the required frequency of the inspections.

General inspections are required for equipment categorized as monitoring, safety and emergency, security, and operational to prevent, detect, and respond to environmental or public health hazards. Safety and emergency equipment is inspected monthly for availability and readiness in the event of an emergency. Preventative maintenance of operational equipment is routinely conducted to ensure safe operation.

Given the size of the EQMC, any abnormalities of the containment systems or any accumulation of substances therein would be evident to EMD personnel during the course of their routine daily duties. Documented inspections of the secondary containment structures for container storage, treatment, and receiving/unloading areas are conducted on a weekly basis. Additionally, the exterior loading dock/bay is inspected daily while in use (i.e., when loading activities are conducted for transport to off-site TSD facilities).

The EMD Director and/or Assistant Director are ultimately responsible for the continual implementation of the inspection program. Hazardous Materials Specialists will be directly responsible for implementing the inspection program.

A2.3 TRAINING[3]

EMD personnel, with hazardous waste duties, must undergo an approximate eight hour orientation training program, which includes but is not limited to, to the following elements.

- Overview of the EQMC operations and organizational structure of the University, EMD, and EQMC.
- Introduction to local, state and federal regulations applicable to waste management operations conducted at the EQMC.
- Health and safety orientation including general safety rules, chemical hazard communication training, and an overview of personal protective equipment.
- General overview of emergency response procedures.

EMD personnel are required to successfully complete the introductory training program within six months from the date of their employment or assignment to the EQMC or to a new position at the EQMC.

EMD personnel involved in the management of hazardous waste will successfully complete classroom instruction, as well as, on-the-job training to perform their duties in a way that ensures the EQMC's compliance with all applicable requirements and regulations. Personnel involved in

the management of hazardous waste are not allowed to work unsupervised until adequate training has been completed. The employee's supervisor will determine when the employee has acquired sufficient knowledge of the skills necessary to perform unsupervised hazardous waste management tasks.

EMD personnel will also receive continuing and refresher training at a frequency to maintain proficiency in job skills, increase safety, quality, and compliance consciousness and to teach new skills as necessary. EMD personnel involved in operations associated with waste treatment or storage at the EQMC will receive annual refresher training in compliance with 29 CFR 1910.120 (p). Changes in pertinent regulations will be identified and current compliance status will be reviewed, as well as a review of updated University policies and procedures with respect to waste management and any amendments.

1 - Excerpt from Permit KYD000-830-851, Condition III.K - Attachment F, Section 4.1
2 - Excerpt from Permit KYD000-830-851, Condition III.K - Attachment F, Section 2
3 - Excerpt from Permit KYD000-830-851, Condition III.B.5 – Attachment H, Section 1.1.1 and 1.1.2

Figure A2-1
Storage, Treatment, Disposal or Handling of Hazardous Waste in Drums or Other Containers
Inspection Schedules and Criteria

EQMC Waste Management Areas			
Attribute	**Inspection Criteria to Use**	**Inspection Area**	**Frequency**
Container lids secure	• Visually inspect containers • Using gloves, check ALL container caps to insure tightness. • Using bung wrench, check all bungs on drums to insure they meet the torque specification	Container Storage Areas Bulking and Treatment Rooms Receiving Area	Weekly
Container Integrity	• Visually inspect containers and floor for leaks. Clean up if necessary and transfer material to a new container if necessary.		
Proper labeling	• Check each container to ensure proper labeling with “Hazardous Waste” or “Non-RCRA Regulated Waste”, Used Oil, or Universal Waste as appropriate • Check each container for accumulation date and ensure the date is less than 12-months old		
Absorbent Material Inventory	• Inventory the supplies in the storage area and on the truck to ensure adequacy. • Replenish if the level of supplies is below the established acceptable level.		
Floor Integrity	• Visually inspect and ensure any concrete cracks or gaps are adequately marked to ensure containers are not stored in the vicinity of the crack/gap. Report the condition in order for repair to be scheduled.		
Floor Sealant Integrity	• Determine if any floor sealant damage penetrates to the concrete. If so, adequately marked to ensure containers are not stored in the vicinity of the crack/gap. Report the condition for repair to be scheduled.		
Adequate aisle space	• Ensure there is a single row of containers near the containment berm. If more than 1 row is present in the storage areas, ensure a minimum of 3 feet between rows.	Container Storage Areas	Weekly
Equipment/pumps Condition	• Visually inspect equipment and pumps for leaks. Clean up if necessary • Discard and reorder damaged equipment	Bulking / Treatment Rooms	Weekly
Exhaust system operable	• Check fan indicator lights on panel to make sure they are green • Check magnahelic gauges in bulking room to make sure they are in acceptable range • Make sure calibration is current		

	• Initiate any necessary repairs or calibration by contacting the Building Operator or the OHS Department		
Container Integrity	• Visually inspect loading dock and bay for spilled materials. Clean up if necessary	Loading Dock	Weekly And While in Use
Protective Mat for Storm Drain	• Inspect the protective mat for damage. Replace as necessary.		
Absorbent Materials	• Inventory the supplies in the storage area and on the truck to ensure adequacy. • Replenish if the level of supplies is below the established acceptable level.		
Floor Integrity	• Visually inspect and ensure any concrete cracks or gaps are adequately marked to ensure containers are not stored in the vicinity of the crack/gap. Report the condition in order for repair to be scheduled.		
Integrity of sealant (floor and storm water drain interior)	• Determine if sealant damage penetrates to the concrete. If so, repair the sealant as necessary. Report the condition in order for repair to be scheduled.		

EQMC Equipment/Materials/PPE Inspection		
Attribute	**Inspection Criteria to Use**	**Frequency**
Security alarms	• Make sure Simplex box indicator is working	Monthly
Combustible gas panel	• Check panel in administration office to make sure all indicators are registering at approximately “0” • Check the sensors in the gas cylinder room, the treatment room, the bulking room, and the flammable storage room to make sure they are registering approximately “0” • Make sure the calibration for the panel in the administration office is current (within 1 year) and the calibration gas is available and within its useful life	Monthly
PPE	• EMD personnel inspect assigned PPE and report the results/inventory to EMD personnel responsible for the monthly inspection • Inventory the equipment in EQMC and the truck to ensure adequacy. Re-order as necessary.	Monthly
Doors	• Open and close each door. Request repair if not working properly • Check the handle on each exterior door to ensure it is locked. • Unlock each door with key, ensure the door closes and relock to ensure lock is functioning.	Monthly
Emergency Lighting System	• Check that the emergency lights are functioning by walking through the EQMC after the building lights have been shut off	Monthly
Warning Signs	• Inspect the warning signs on each door for wearing or deterioration. Replace as necessary.	Monthly
Communications	• Ensure the phone in the Receiving Area phone has a dial tone	Monthly

EQMC Equipment/Materials/PPE Inspection		
Attribute	**Inspection Criteria to Use**	**Frequency**
(Phone)	• Dial a number (suggest personal cell phone) to ensure the phone is functioning properly	
HVAC System	• Ensure all indicator lights are functioning properly on the panel located on the wall adjacent to the Flammable Gas Storage (Room 114) • Listen for air movement in each area of the EQMC	Monthly
Safety Shower/Eye Wash	• Check tag on each unit to ensure testing has been conducted at the proper interval. • Inspect for leaks at each unit and initiate a repair request if leaking.	Monthly
Fire Extinguishers	• Check each location to ensure an extinguisher is present • Check the unit tag to ensure it was inspected within the acceptable time (1 year) • Check the unit pressure gauge and ensure it is in the “green zone	Monthly
Fire Alarms	• Check the panel beside the EQMC front door to ensure there are no trouble indicators	Monthly
CO_2 System	• Check the panel to ensure there are no trouble indicators	Monthly
First Aid Kits	• Ensure a kit is available in the designated locations (telephone desk in the Receiving Area and supplies cabinet in Administration area). • Check each kit against the inventory list and replenish supplies as needed • Check the expiration date of any supplies (Calcium Gluconate). Replace as needed.	Monthly

All unacceptable conditions identified during the EQMC inspection will be immediately corrected or reported to the Director or Assistant Director so that a repair or replacement may be scheduled. In the event of a corrective action that cannot be immediately corrected, the condition will be reported to the Director or Assistant Director in order that a determination may be made regarding the appropriateness to continue to operate.

APPENDIX 3
UNIVERSITY OF KENTUCKY
GROUNDWATER PROTECTION PLAN

Groundwater Protection Practices
Petroleum Underground and Aboveground Storage Tanks
and
Coal Pile Storage

This appendix to the Groundwater Protection Plan for UK's main campus provides descriptions of those best management practices (BMPs) designed to protect groundwater quality from activities which involve storing or related handling of bulk quantities of raw materials, intermediate substances or products, finished products, substances held for recycling, or other pollutants held in tanks, drums or other containers, or in piles. Any of the above activities that are conducted entirely inside enclosed buildings with a floor sufficient to prevent releases of pollutants to groundwater are excluded from this planning process.

Those activities on UK's main campus that qualify include the following:

- Storage and dispensing of gasoline, diesel fuel and fuel oil in aboveground storage tanks (ASTs) or underground storage tanks (USTs) for fueling vehicles, in emergency generators or as fuel for boilers. Fat and grease from cafeteria operations are also stored in ASTs.

- Storage of coal in piles.

A3.1 UNDERGROUND AND ABOVEGROUND STORAGE TANKS

A3.1.1 Best Management Practices

The storage of bulk quantities of gasoline, diesel fuel, fuel oil, and fats/greases in ASTs or USTs is also regulated by 40 CFR 112 which establishes the procedures, methods, equipment, and other requirements to prevent the discharge of the tanks' contents into surface water. To meet that regulatory obligation UK has developed and maintains a Spill Prevention, Control and Countermeasure (SPCC) Plan for each regulated tank. The responsibility for managing these USTs and ASTs is associated with one of five UK functional units located on the Lexington Main Campus and five unique SPCC Plans are available for each of these units as noted below:

1. Physical Plant Division – SPCC Plan, dated October 2017
2. Dining Services Division – SPCC Plan, dated October 2017
3. Medical Center Physical Plant Division – SPCC Plan, dated October 2017
4. Good Samaritan Hospital – SPCC Plan, dated October 2017
5. Athletics Facilities – SPCC Plan, dated October 2017

The ASTs and USTs used for the storage of bulk quantities of gasoline, diesel fuel, fuel oil, and fats/greases by each of the five units are summarized in **Tables A1 – A22**. The groundwater protection BMPs for these tanks are provided in the following sections of the aforementioned SPCC Plans:

- Section 7.5 - Discharge Prevention Measures
- Section 7.6 - Discharge and Drainage Controls
- Section 7.7 - Discharge Countermeasures

Physical Plant Division

Table A1. Central Heating Plant (Building #0004)

Source	Volume (gal)	Contents	Location
Underground Storage Tank	30,000	Fuel Oil	North of Building

Table A2. Peterson Service Building (Building #0005)

Source	Volume (gal)	Contents	Location
Oil Storage Tank	300	Used Oil	Basement Dock Area (exterior beneath roof overhang)

Table A3. Chemistry-Physics Building (Building #0055)

Source	Volume (gal)	Contents	Location
Emergency Generator	500	Diesel Fuel	Service Court, North of Building
Emergency Generator	200	Diesel Fuel	Service Court, North of Building

Table A4. Cooling Plant #2 Building (Building #0204)

Source	Volume (gal)	Contents	Location
Underground Storage Tank	4,000	Diesel Fuel	NW of Building
Underground Storage Tank	10,000	Gasoline	NW of Building

Table A5. Medical Center Heating and Cooling Building (Building #0085)

Source	Volume (gal)	Contents	Location
Underground Storage Tank	30,000	Fuel Oil	Outside / East of Building
Underground Storage Tank	30,000	Fuel Oil	Outside / East of Building
Underground Storage Tank	30,000	Fuel Oil	Outside / East of Building

Table A6. Plant Science Building (Building #0312)

Source	Volume (gal)	Contents	Location
Aboveground Storage Tank	2,000	Diesel Fuel	Outside / West of Building

Table A7. Central Utility Plant (Building #0514)

Source	Volume (gal)	Contents	Location
Aboveground Storage Tank	3 x 30,000	Fuel Oil	Outside / North of Building
Aboveground Storage Tank	20,000	Diesel Fuel	Outside / North of Building

Table A8. Student Center (Building #0676)

Source	Volume (gal)	Contents	Location
Oil Storage Tank	5,000	Diesel Fuel	Northeast Bldg. Corner (AST in underground vault)

Dining Services Division

Table A9. DS-01: The 90 [Building 0139]

Source	Volume (gal)	Contents	Location
Oil Dumpster	300	Used cooking oil	Outside near loading dock

Table A10. DS-02: K-Lair Grill [Building 0100]

Source	Volume (gal)	Contents	Location
Oil Dumpster	150	Used cooking oil	Inside compacter bay

Table A11: DS-03: Blazer Dining [Building 0012]

Source	Volume (gal)	Contents	Location
Oil Dumpster	150	Used cooking oil	Outside on receiving dock

Table A12: DS-04: Bowman's Den [Building 0427]

Source	Volume (gal)	Contents	Location
Oil Dumpster	150	Used cooking oil	Outside near loading dock

Table A13: DS-05: Memorial Coliseum [Building 0019]

Source	Volume (gal)	Contents	Location
Oil Dumpster	150	Used cooking oil	Outside next to dumpster on SE corner of building

Table A14: DS-06: Kroger Field (Commonwealth Stadium) [Building 0222]

Source	Volume (gal)	Contents	Location
Oil Dumpster	150	Used cooking oil	Outside on receiving dock

Table A15: DS-07: Steak n Shake [Building 0462]

Source	Volume (gal)	Contents	Location
Oil Dumpster	225	Used cooking oil	Outside next to dumpster/compactor area

Table A16: DS-08: Student Center [Building 0676]

Source	Volume (gal)	Contents	Location
Oil Dumpster	____	Used cooking oil	_____

Medical Center Plant Division

Table A17. MCPPD-03: College of Nursing (Building #0232)

Source	Volume (gal)	Contents	Location
Above Ground Storage Tank	1,500	Diesel Fuel	North of Building

Table A18. MCPPD-04: UK Chandler Medical Center (Buildings #0230, #0293, #0297, #0284)

Source	Volume (gal)	Contents	Location
Aboveground Storage Tank	10,000	Diesel Fuel	South of Critical Care / near dock
Aboveground Storage Tank for Emergency Generator	500	Diesel Fuel	Sanders Brown Room 120A

Good Samaritan Hospital

Table A19. Good Samaritan Hospital (Building #8633)

Source	Volume (gal)	Contents	Location
Steel Aboveground Storage Tank	10,000	Fuel Oil	Outdoors, Southeast of Hospital Building on S. Martin Luther King Blvd.
Steel Aboveground Storage Tank	2,000	Diesel	Outdoors, Southeast of Parking Structure at Chiller Building

Athletics Facilities

Table A20. UKA-05: Shively Grounds Annex (Building #0449)

Source	Volume (gallons)	Contents	Location
Oil Storage Tank	100	Diesel Fuel	West of Storage Building
Emergency Generator	200	Diesel Fuel	North of Storage Building

Table A21. UKA-08: Joe Craft Football Training Facility (Building #0280)

Source	Volume (gallons)	Contents	Location
Emergency Generator	380	Diesel Fuel	East side of building (Exterior)

Table A22. UKA-11: New Baseball Stadium

Source	Volume (gallons)	Contents	Location
Emergency Generator	555	Diesel Fuel	Exterior - Mechanical Service Area

A3.1.2 Inspections

The individual SPCC Plans also serve as a guide for the inspections of USTs and ASTs. Therefore, inspections will be performed as required by Section 7.16 of the plans. The owner or operator of a facility subject to 40 CFR § 112 must conduct periodic integrity testing of its bulk containers, periodic integrity and leak testing of the valves and piping, and inspections as required by 40 CFR § 112 in accordance with written procedures that the owner or operator or the certifying engineer develop for the facility. The facility must keep on-file these written procedures and a record of the inspections and tests, signed by the appropriate supervisor or inspector. Records of inspections and tests kept under usual and customary business practices will suffice.

Designated personnel within each of the functional units conduct monthly visual inspections of all the oil storage containers and oil handling areas. Comprehensive annual inspections are also conducted to ensure the monthly visual inspections have been thoroughly and properly conducted. All inspections are documented and signed by the inspector.

A3.1.3 Training

Training of personnel responsible for operating and managing the USTs and ASTs will be conducted as noted in the individual SPCC Plans. Therefore, training will be performed as required by Section 7.17 of the plans. In accordance with the requirements of 40 CFR 112.7(f), spill prevention training for oil handling personnel will be completed at least once every year. The training will highlight and describe known discharges or failures, malfunctioning components, and any recently developed precautionary measures. Further descriptions or comments should be attached on a separate sheet of paper if necessary. Each person who participated in the briefing is listed on the Employee Training Log with printed name, signature, and the date of participation in the training. The training of oil-handling employees will address the following topics:

☐ The operation and maintenance of equipment to prevent discharges;

☐ Discharge procedure protocols (including spill communication procedures);

☐ Applicable pollution control laws, rules and regulations;

☐ General facility operations;

☐ The contents of the SPCC plan; and

☐ Review of any spills that occurred in the previous year.

A3.2 COAL PILES

A3.2.1 Best Management Practices

Coal fuel reserves for UK's two on-campus heating plants noted as Central Heating Plant and Medical Center Heating Plant, are maintained at two primary stockpile locations on the main campus. Each of the two heating plants also maintains a smaller, fuel-stock supply and these piles are located adjacent to the plants. No treatment of the coal takes place prior to use.

The coal for the Central Heating Plant is retrieved from the primary stockpile pile located near Cooling Plant #2 using front-end loading equipment and transported the short distance across South Upper St. to the smaller secondary storage pile location adjacent to the plant until needed for fuel-stock. The primary storage pile is on concrete and surface water runoff is directed to storm drains that have been retrofitted with filtration systems. Such systems are designed to filter out silts and sediments associated with coal storage and that are typically contained in first-flush storm events. The smaller fuel-stock pile is on asphalt and surface water run-off is directed to a storm drain which is also equipped with a filtration system.

The coal for the Medical Center Heating Plant is retrieved from the primary stockpile pile located between Wildcat Court and Stadium View using front-end loading equipment which places the coal into dump-trucks for transport and placement on a concrete pad adjacent to the plant for fuel-stock storage. The primary storage pile is on a diked concrete pad and surface water is directed to one discharge pipe which drains to a concrete underground settling unit. After passing through this unit, water is discharged into an earthen drainage ditch This unit allows any entrained coal sediment to settle out. The smaller fuel stock is located on asphalt adjacent to the plant and surface water is directed through hay bales to remove coal silt and sediment prior to discharge into storm drains.

Groundwater protection BMPs for the bulk storage of coal in piles includes:

- Storing the coal on concrete or asphalt-coated surfaces equipped with drainage systems capable of directing run-off for treatment prior to discharge.

- Following the manufacturer's recommended frequency for cleaning of the filtration systems.

- Following good housekeeping procedures to eliminate escape of coal from the storage pads which includes using a street sweeper on a monthly basis to perform cleaning of the surfaces adjacent to the piles.

A3.2.2 Inspections

Monthly visual inspections are conducted of each stockpile. **Figure A3-1** provides an example inspection record.

A3.2.3 Training

Annual training will be provided for all facility personnel involved in managing the coal piles. Training is held on BMP maintenance and management and inspection criteria.

FIGURE A3-1
PHYSICAL PLANT DIVISION
COAL STORAGE PILES GROUNDWATER PROTECTION PLAN INSPECTION RECORD

d

DATE	INSPECTED BY	INSPECTED ITEM (Check All That Apply)	OBSERVATIONS (i.e., Condition of general area, in-drain filtration units, hay bales, settling basin)	ACTIONS TAKEN (if necessary)
		□ Central HP Primary Pile □ Central HP Fuel-Stock Pile □ MC HP Primary Pile □ MC HP Fuel-Stock Pile		
		□ Central HP Primary Pile □ Central HP Fuel-Stock Pile □ MC HP Primary Pile □ MC HP Fuel-Stock Pile		
		□ Central HP Primary Pile □ Central HP Fuel-Stock Pile □ MC HP Primary Pile □ MC HP Fuel-Stock Pile		
		□ Central HP Primary Pile □ Central HP Fuel-Stock Pile □ MC HP Primary Pile □ MC HP Fuel-Stock Pile		
		□ Central HP Primary Pile □ Central HP Fuel-Stock Pile □ MC HP Primary Pile □ MC HP Fuel-Stock Pile		
		□ Central HP Primary Pile □ Central HP Fuel-Stock Pile □ MC HP Primary Pile □ MC HP Fuel-Stock Pile		
		□ Central HP Primary Pile □ Central HP Fuel-Stock Pile □ MC HP Primary Pile □ MC HP Fuel-Stock Pile		
		□ Central HP Primary Pile □ Central HP Fuel-Stock Pile □ MC HP Primary Pile □ MC HP Fuel-Stock Pile		

HP – Heating Plant; MC – Medical Center

APPENDIX 4
UNIVERSITY OF KENTUCKY
GROUNDWATER PROTECTION PLAN

Groundwater Protection Practices
Storing or Related Handling and Application of Deicing Agents

This appendix to the Groundwater Protection Plan for UK's main campus provides descriptions of those best management practices (BMPs) designed to protect groundwater quality from activities which involve handling and application of deicing agents.

A4.1 BEST MANAGEMENT PRACTICES

Those BMPs which have been established for the handling and application of deicing agents are contained in UK's *Environmental Handbook* (March 2019) , Section 7.1.[1] This section is provided as **Figure A4-1**.

A4.2 INSPECTIONS

The inspections which have been established for the handling and application of deicing agents are contained in the "Facility Checklist" portion of **Figure A4-1**.

A4.3 TRAINING

Training of personnel responsible for storing or related handling and application of deicing agents will be conducted as noted in **Figure A4-1** and, therefore, will be conducted annually.

Storing rock salt in a covered dome helps to protect surface and ground water from chloride contamination.

DO

- ✓ Check for, and correct, deficiencies in salt storage units.
- ✓ Keep salt dry by covering the dome entrance or the face of the salt pile with tarps.
- ✓ Sweep the storage areas clean before salt delivery and sweep up spilled salt after delivery.
- ✓ Move delivered salt into storage immediately.
- ✓ If salt is stored on an uncovered concrete or asphalt pad, shape the salt pile to avoid pooling water and cover immediately with a tarpaulin weighted with sand bags, cinder blocks, tires on ropes, etc.
- ✓ Store dry calcium chloride indoors on pallets.
- ✓ Load salt trucks on a paved surface.
- ✓ Sweep the paved staging area prior to loading trucks and sweep spilled salt back into storage.
- ✓ Load what is needed for the job and return unused product to storage.
- ✓ Use grading, berms, swales, curbs and dikes to prevent stormwater run-on and run-off; direct downspouts away from storage and loading areas.

Tips & Tricks

- ! Traffic dividers can be used to improve stockpiles of salt.
- ! UK Environmental Management can assist with Stormwater best management practice (BMP) selection
- ! UK Environmental Mgmt. 859-323-6280

DON'T

- × Don't leave salt unprotected from weather.
- × Don't store salt on permeable surfaces.
- × Don't use building walls as a backing for loading.
- × Don't overfill storage areas.

Materials & Waste Management

- ▲ Dry calcium chloride or rock salt that becomes dirty is to be worked into future snow and ice operations.

Facility Checklist

- ☐ Check *EACH* salt delivery operation.
- ☐ Check salt pads *DAILY* for proper cover with tarps and signs of runoff when in use.
- ☐ Check salt storage domes and sheds *DAILY* during snow and ice season (October to April) for water-tight roof & floors, tarpaulin covers for entrances, ventilation fans, lights, and building damage. Immediately report repair needs to the facility superintendent.
- ☐ Check salt storage areas for white chloride deposits *DAILY* during snow and ice season and *WEEKLY* during the rest of the year.
- ☐ Check salt domes, sheds and pads *MONTHLY* between May and September for structural integrity and runoff issues.
- ☐ Check salt pads *ANNUALLY* during summer for cracks and wear; repair as needed.
- ☐ To prevent salt tracking watch for and move salt away from storage entrances where rain is blown in.

If…Then

- ➤ If bags of dry calcium chloride break open, sweep up and put into a new bag or clean container for future use.
- ➤ If rainfall pools around salt storage areas, construct a drainage ditch, dikes or re-grade the area to send runoff to an area treated by a Stormwater Best Management Practice.
- ➤ If possible, the entrances of new salt storage facilities will face away from prevailing weather.

Training: 1 per Year **Season:** Fall

Relevant Environmental Programs		
	○ Air Quality	● GWPP
	○ 401/404/WQC	○ Waste
	● KPDES	○ Pesticides
	● MS4	○ SPCC

UK

7.1 STORING AND LOADING ROAD SALTS

Figure A4-1
Storing and Loading Road Salts
(Excerpted from UK's *Environmental Protection Handbook*, Sec. 7.1: ehs.uky.edu/env/)

1 – Information Sources:

401 KAR 5:031. Surface Water Standards.

401 KAR 5:050. KPDES Effluent Standards

401 KAR 5:055. Scope and applicability of the KPDES Program

401 KAR 5:065. KPDES permit conditions.

401 KAR 5:070. Provisions of the KPDES permit.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 4, KPDES Permit, Good Housekeeping BMP; Unit 5 pages 5-9 & 10, 13 to 15 and 5-19, p32)

Kentucky Transportation Cabinet and Kentucky Transportation Center. 2005. *Environmental Handbook for Management of Highways and Transportation Facilities. (Fact Sheet 2.4.1)*

New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. April, 2006. 33-35, 42.

Salt Institute. *The Snowfighter's Handbook: A Practical Guide for Snow and Ice Control*. 1999. Alexandria, Virginia. SI-1999-R.

City of Bowling Green. 2006. *Environmental Handbook for City of Bowling Green Facilities Management. (Fact Sheet 7.1)*

NOTES

1) UK Environmental Management is located at 355 Cooper Drive, Lexington, KY 40506-0490, 859-323-6280, ehs.uky.edu/env.

APPENDIX T

Athletics SPCC Training Presentation

University of Kentucky

SPILL PREVENTION CONTROL AND COUNTERMEASURES (SPCC) PLAN

A Training Module for UK Employees who Handle Oil and Oil Products

TOPICS & OBJECTIVES

40 CFR 112.7(f)

PART 1: General Awareness Topics

OBJECTIVES:

- To understand what an SPCC Plan is, its contents, and requirements for updates.
- To understand the applicable laws, rules and regulations regarding oil spills.

PART 2: UK-Specific Topics

OBJECTIVES:

- To understand the general oil-handling operations at UK facilities.
- To understand oil spill procedures at UK facilities.
- To understand the operational/maintenance procedures in place at UK to prevent oil spills.

PART 3: Area Specific Topics

OBJECTIVES:

- To understand locations of oil in the area.
- To understand discharge control and spill clean-up equipment locations and use.
- To understand the spill pathways for area and reporting obligations.
- To understand the specific area operating procedures.

PART 1: General Awareness Topics

- What is an SPCC Plan?
- What are the contents of an SPCC Plan?
- What are the requirements for updating an SPCC Plan?
- What are the applicable laws, rules and regulations regarding oil spills?

What is an SPCC Plan?

A document which must be maintained by certain oil-handling facilities that describes:

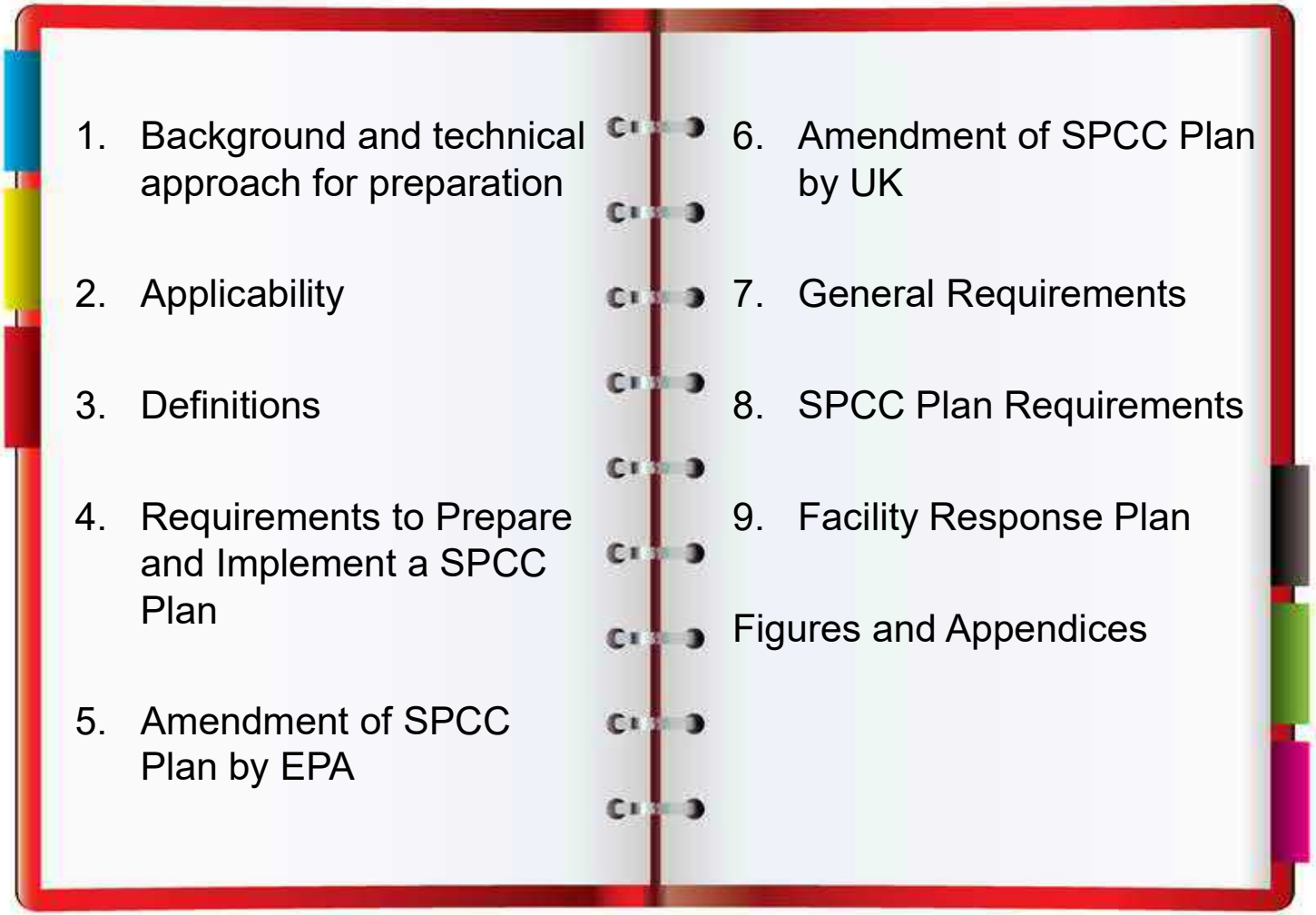
- Spill containment and procedures to *prevent* oil* discharges.
- *Control* measures to keep oil discharges from entering the waters of the U.S.

- *Countermeasures* to contain, clean up and mitigate any oil discharge (spill response measures).

*Oil is defined as:

- Petroleum and non-petroleum based
- Crude Oil
- Refined Products
- Animal Fats
- Vegetable oils

What are the contents of an SPCC Plan?



What are the requirements for updating an SPCC Plan?

- Must be amended if facility changes occur.
- Must be reviewed at least every 5 years.
- Must be prepared based on Good Engineering Practices.
- Must be certified by a Professional Engineer.
- Requires management approval for implementation.
- Requires routine inspections.
- Requires annual training for persons handling oil.

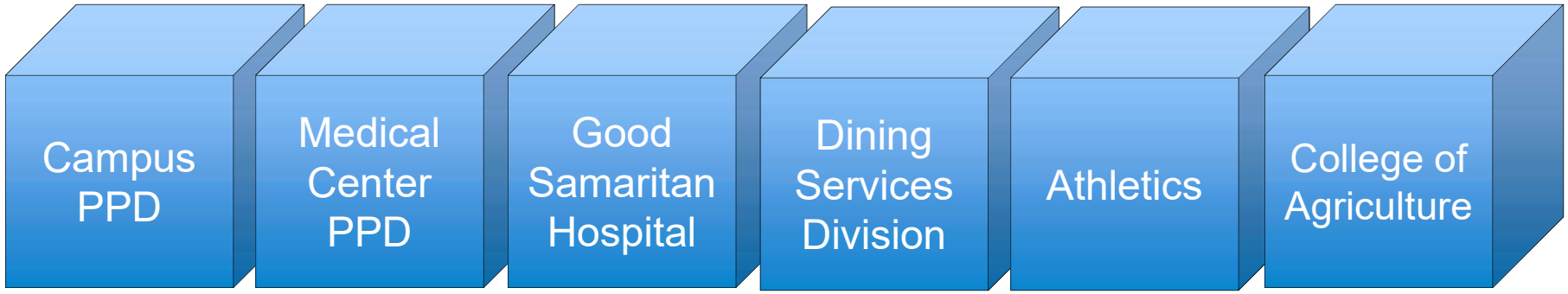
What are the applicable laws, rules and regulations regarding oil spills?

- The SPCC rule is part of the U.S. EPA's oil spill prevention program originally published in 1973 under the statutory authority of §311 of the Federal Pollution Control Act (i.e., the Clean Water Act).
- The federal regulatory authority may be found at Title 40, Code of Federal Regulations, Part 112.
- Kentucky's rules for oil spills also includes additional release notification requirements.

PART 2 – UK-Specific Topics

- What are the oil-handling facilities at UK?
- What are the oil spill procedures in place at UK facilities?
- What operational and maintenance procedures are in place at UK to prevent oil spills?

What are the oil-handling facilities at UK?



Types of Oil at UK

- Gasoline
- Fuel Oil
- Used Oil
- Animal Oil
- Transformer Oil
- Hydraulic Oil
- Motor Oil

Types of Oil Storage at UK

- Aboveground Tanks
- Underground Tanks
- Hydraulic Elevator Reservoirs
- Electrical Transformers
- Motor Vehicle Shops
- Waste Oil Collection Locations
- Waste Cooking Oil Collection Tanks
- Portable Containers ≥ 55 gallons in various locations

What are the oil spill procedures in place at UK facilities?

General Spill Clean Up Procedures*

- Take action to stop the discharge, if safe.
- Notify your supervisor immediately.
- Determine the magnitude of the spill.
- Notify the UK Environmental Management Dept. immediately, if necessary.
- Obtain the on-site spill kit and protect all drains, if safe.

*Also know the detailed spill response procedures for your facility and the *Petroleum Spill Decision & Notification Chart* as provided in your SPCC Plan.

SPILL RESPONSE PROCEDURES (continued)

- Don appropriate Personal Protective Equipment (nitrile gloves, rubber boots)

- Identify and protect all drains and drainage areas from oil flow by:

- ❑ Covering all drain grates with rubber drain protector mat

- ❑ Placing oil absorbent socks around manholes, curb inlets, and any other drains

- ❑ Placing absorbent material, oil absorbent socks, earth, or sand across any drainage ditches to which the oil may flow

Post-Spill Clean Up Procedures – No Assistance Needed

If the spill is of such a size that it can be cleaned up by the operating department personnel safely, follow these steps:

Clean Up

- Place oil absorbent pads over the surface of the spill.
- Pour granular absorbent material around the perimeter of the spill.
- Work the granular material and the absorbent pads toward the center of the area using a shovel.
- Add additional pads or granular material as necessary to absorb all spilled material.

Disposal

- Pick up all material and place into an empty drum.
- Ensure that any impacted soil, etc., is also picked up and placed in the drum.
- Close the drum, label the drum as “Non-Regulated Waste – Oil Clean up”
- Contact the UK Environmental Management Dept. at 859-323-6280 for pick up.

Post-Spill Clean Up Procedures – Assistance Needed

If the spill is of such a size that it can not be cleaned up by the operating department personnel safely, follow these steps by:

- ❑ Secure the area.
- ❑ Protect drains if possible.
- ❑ Await UK Environmental Management Dept. and outside assistance.
- ❑ Remain at the spill area to ensure it remains secure until assistance arrives.

SPILL RESPONSE PROCEDURES (continued)

Some spills into the environment require “immediate” reporting to regulatory authorities, such as:

- Gasoline and other oils greater than 25 gallons.
- Diesel fuel greater than 75 gallons.
- Spills that create a sheen on the surface of water ways.

“Immediate” regulatory reporting is assumed to be within 15 minutes of confirmation of the above spills!

The UK Environmental Management Dept. can assist in this notification - only if time allows.

SPILL RESPONSE PROCEDURES (continued)

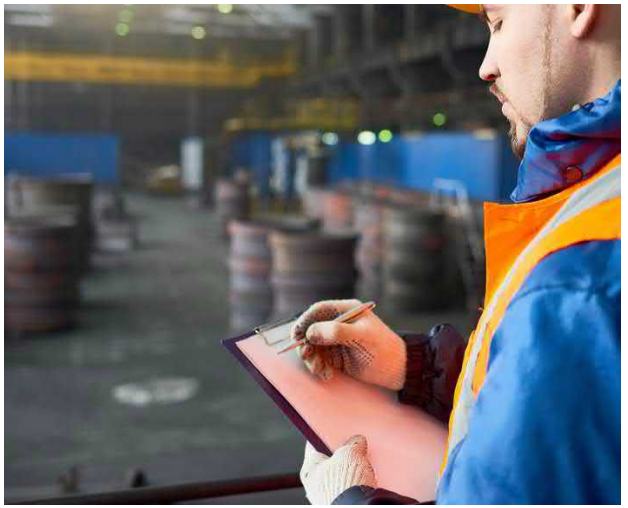
- Drainage of spilled oil can be through surface runoff, curb inlets, storm drains, or drainage ditches.
- Ensure familiarity with drainage pathways as identified in the plan.
- Drainage paths for each facility are identified in the ***Figures*** section of each individual SPCC plan.
- In the event of a spill, it is imperative to prevent runoff from entering nearby drainage areas.

What operational and maintenance procedures are in place at UK to prevent oil spills?

Each facility will have appropriate operating procedures for oil handling processes to describe:

- Start up and shutdown
- Operating instructions for equipment
- Equipment testing requirements if necessary
- Loading and unloading of oil containers
  - ✓ Authorized persons to load and unload the container
  - ✓ Observations during the operation

INSPECTIONS



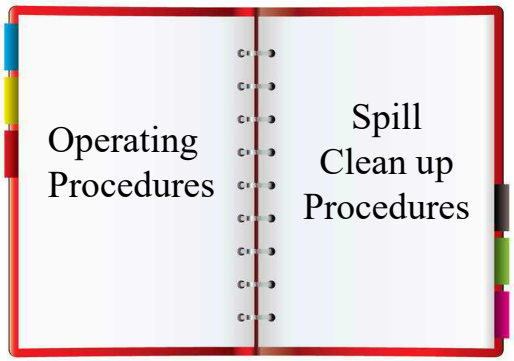
- Must be performed monthly
- More comprehensive annual inspection
- Inspect containers, piping, containment, response equipment
- Ensure any deficiencies noted are corrected as scheduled
- Document using the monthly or annual inspection form
- Records must be maintained at the facility
- Some equipment such as UST's may require additional periodic testing and certification

PART 3 – Area Specific Topics

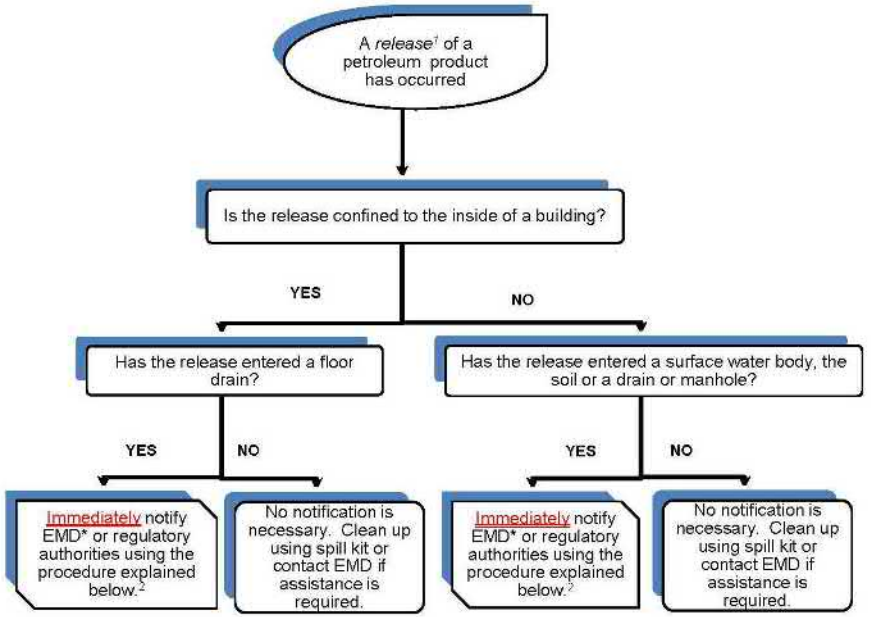
- What are the operating procedures for the area to prevent discharges and where are they located?
- Where are spill kits located?
- What are the discharge reporting procedures?
- Where is the oil located in the area?
- Where will oil flow if discharged (spill pathways)?

DISCHARGE CONTROL / CLEAN UP
(SPCC Plan, Sections 7.6 and 7.7)

- Follow established area operating procedures to prevent spills and leaks
- Know spill kit location (usually near oil vessel)
- Inventory spill kit supplies annually and if used
- Protect drains
- Notify EMD immediately
- Clean up spills following departmental and UK procedures



SPILL DECISION MAKING AND REPORTING (SPCC Plan, Appendix A)



1 – *Release* means any spilling, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of petroleum into the environment.

2 – A release of petroleum meeting any of the criteria below must be reported to appropriate regulatory authorities within 15 minutes of knowledge of the release.

- Release of gasoline or other petroleum products such as oils in quantities greater than 25 gallons.
- Release of diesel in quantities greater than 75 gallons.
- Release that creates a visible sheen on surface waters.
- If a release enters a floor drain immediate determination must be made as to whether the material could enter the environment. If in doubt, assume it has for reporting purposes.

If a release occurs, EMD should be notified to provide assistance in notifying the proper regulatory agencies. If EMD cannot be contacted within approximately 10 minutes of knowledge of the release, then the operating unit should notify each of the regulatory authorities listed below:

CONTACT	NORMAL BUSINESS HOURS (8 AM – 5 PM; M – F)	AFTER HOURS AND WEEKENDS / HOLIDAYS
UK Environmental Management Department	323-6280	9-911 (from campus phone) or 257-8573 (UK Police Department)
LFUCG** Fire Department	9 – 911 (campus phone) 911 (mobile phone)	9 – 911 (campus phone) or 911 (mobile phone)
LFUCG** Emergency Management	258-3784	9 – 911 (campus phone) or 911 (mobile phone)
Kentucky Emergency Response Center	502-564-2380	800-928-2380
National Response Center	800-424-8802	800-424-8802

*EMD – UK Environmental Management Department ** LFUCG – Lexington Fayette Urban County Government

LOCATION OF OIL IN THE AREAS (SPCC Plan, Section 7.4)

Memorial Coliseum

Source	Volume (gallons)	Contents	Location
Oil Storage Tank	100	Diesel Fuel	Room 84
Elevator Reservoir	60	Hydraulic Oil	Cats Center – Room 130

Wildcat Coal Lodge

Source	Volume (gallons)	Contents	Location
Emergency Generator	200	Diesel Fuel	Basement Room B004

Joe Craft Center

Source	Volume (gallons)	Contents	Location
Emergency Generator	400	Diesel Fuel	Room A-0033
Elevator Reservoir	255	Hydraulic Oil	Room A-006

Cliff Hagan Baseball Stadium

Source	Volume (gallons)	Contents	Location
Elevator Reservoir	100	Hydraulic Oil	Room 106

Shively Grounds Annex

Source	Volume (gallons)	Contents	Location
Oil Storage Tank	100	Diesel Fuel	West of Storage Building
Emergency Generator	200	Diesel Fuel	North of Storage Building
Oil Storage Drum	55	Used Oil	Within Main Shop Area (NW Corner)

LOCATION OF OIL IN THE AREAS (SPCC Plan, Section 7.4)

Nutter Training Center

Source	Volume (gallons)	Contents	Location
Emergency Generator	100	Diesel Fuel	Room 147B
Elevator Reservoir	100	Hydraulic Oil	Room 178

Kroger Field

Source	Volume (gallons)	Contents	Location
Emergency Generator	300	Diesel Fuel	Room 174A; Southeast side of building
Emergency Generator	100	Diesel Fuel	Room 122; North side of building
Elevator Reservoir	255	Hydraulic Oil	Room 189A

Joe Craft Football Training Facility

Source	Volume (gallons)	Contents	Location
Emergency Generator	380	Diesel Fuel	East side of building (Exterior)
Elevator Reservoir	70	Hydraulic Oil	Room 103
Hydraulic Lift	25	Hydraulic Oil	Room 127
Loading Dock Ramps (2)	10	Hydraulic Oil	Loading Dock on East side of building

John Cropp Softball Stadium

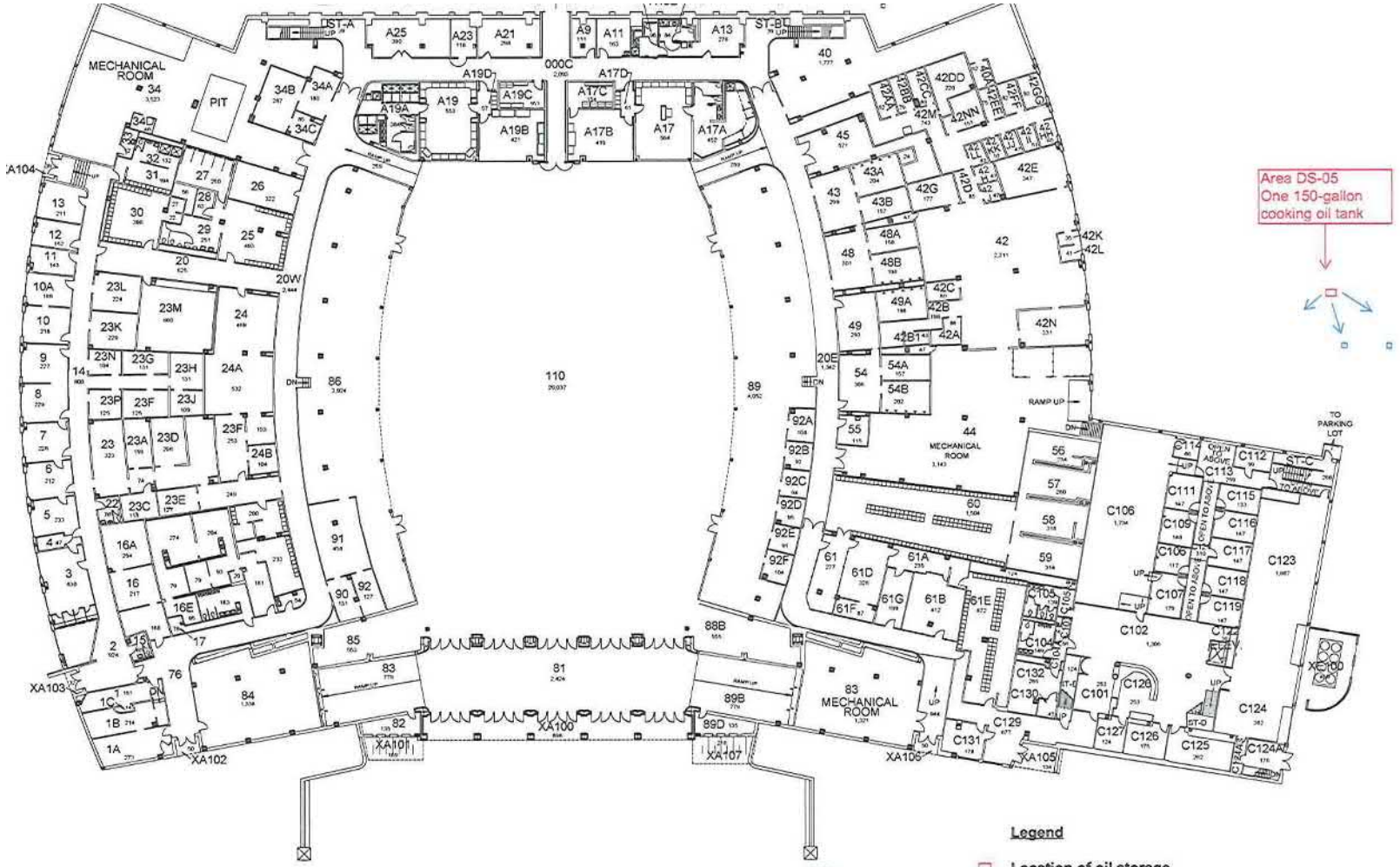
Source	Volume (gallons)	Contents	Location
Elevator Reservoir	100	Hydraulic Oil	Room 115A

Softball Hitting Pavilion

Source	Volume (gallons)	Contents	Location
Oil Storage Tank (for fire water pump)	100	Diesel Fuel	Room 107 between Hitting Barn & Offices, back of room behind fire pump

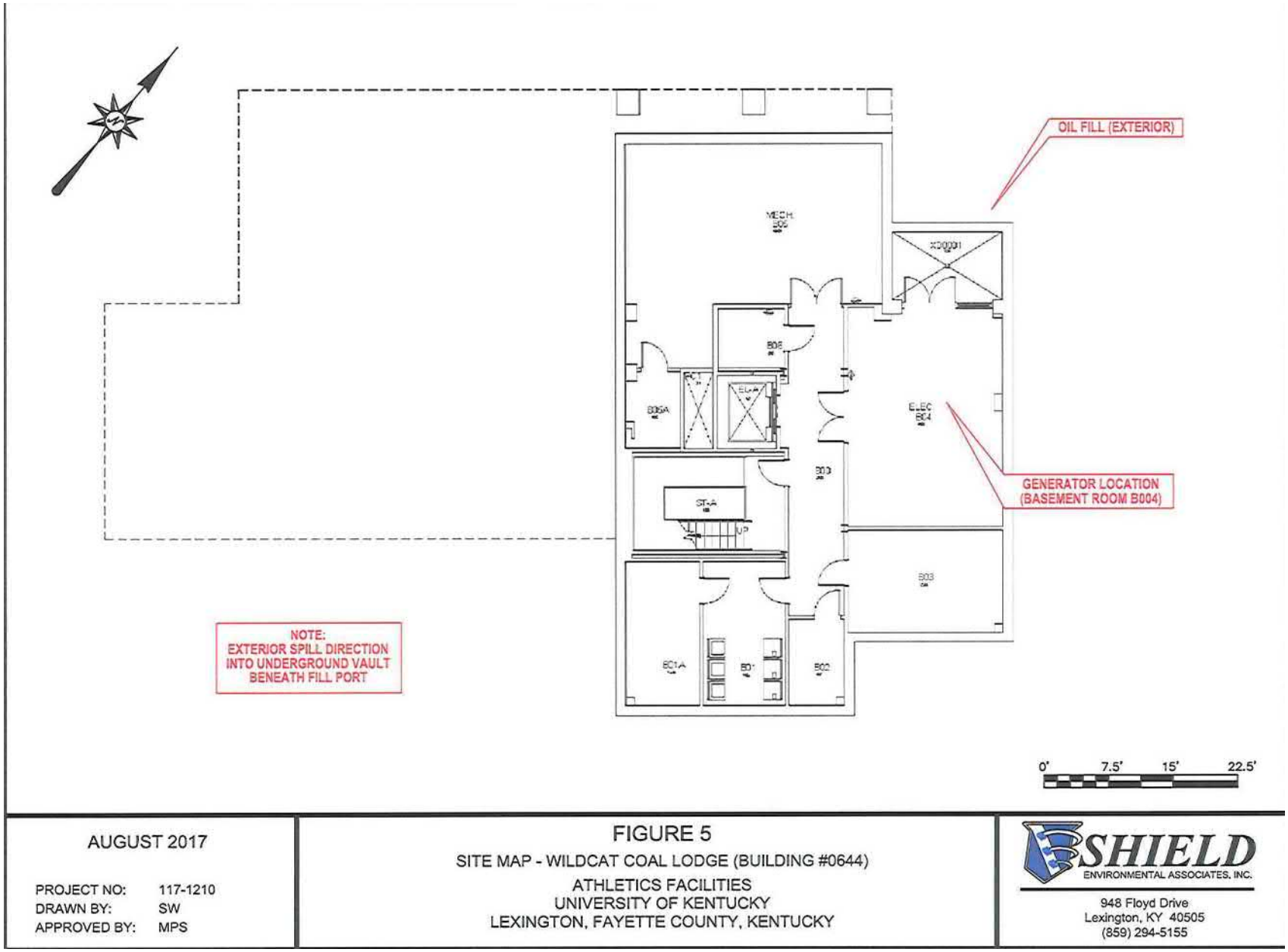
New Baseball Stadium

Source	Volume (gallons)	Contents	Location
Emergency Generator	555	Diesel Fuel	Exterior - Mechanical Service Area
Elevator Reservoir	430	Hydraulic Oil	Room C009



FIRST FLOOR PLAN
MEMORIAL COLISEUM - FIELD HOUSE
107,559 Gross Square Ft.

FIGURE 8
Memorial Coliseum



AUGUST 2017

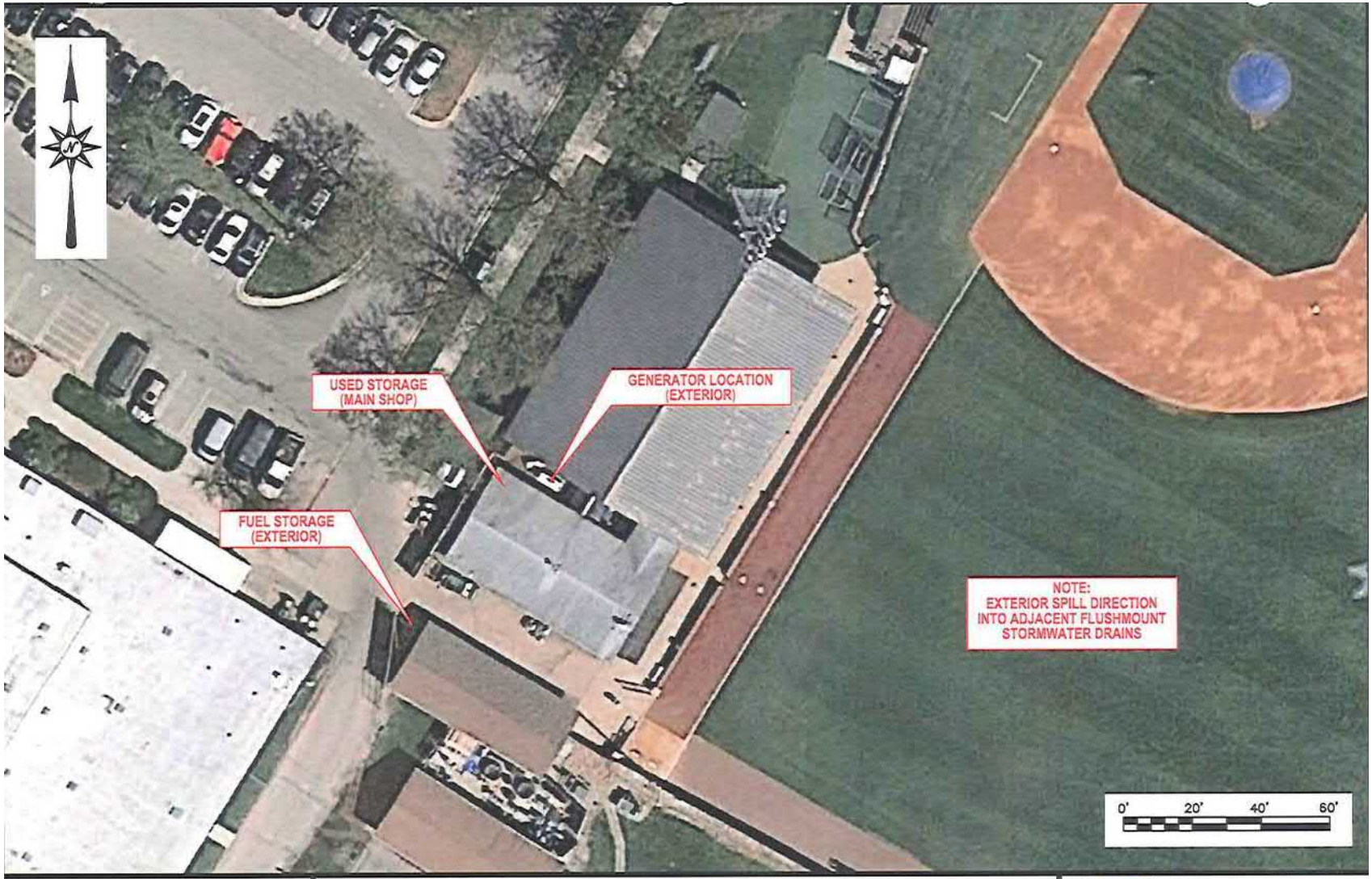
PROJECT NO: 117-1210
DRAWN BY: SW
APPROVED BY: MPS

FIGURE 5

SITE MAP - WILDCAT COAL LODGE (BUILDING #0644)

ATHLETICS FACILITIES
UNIVERSITY OF KENTUCKY
LEXINGTON, FAYETTE COUNTY, KENTUCKY

SHIELD
ENVIRONMENTAL ASSOCIATES, INC.
948 Floyd Drive
Lexington, KY 40505
(859) 294-5155



AUGUST 2017

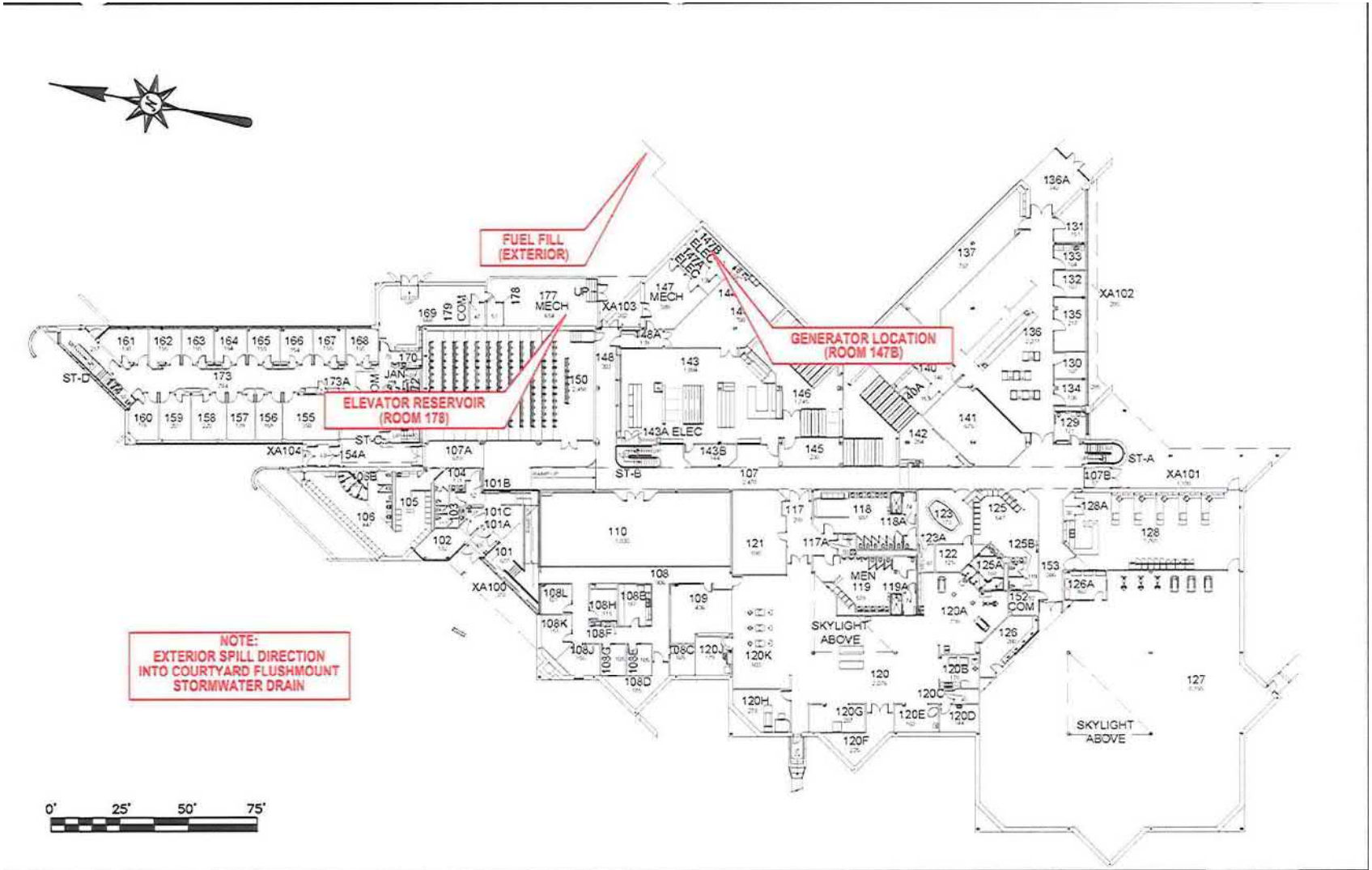
PROJECT NO: 117-1210
DRAWN BY: SW
APPROVED BY: MPS

FIGURE 8

SITE MAP - SHIVELY GROUNDS ANNEX (BUILDING #0449)

ATHLETICS FACILITIES
UNIVERSITY OF KENTUCKY
LEXINGTON, FAYETTE COUNTY, KENTUCKY

SHIELD
ENVIRONMENTAL ASSOCIATES, INC.
948 Floyd Drive
Lexington, KY 40505
(859) 294-5155



AUGUST 2017

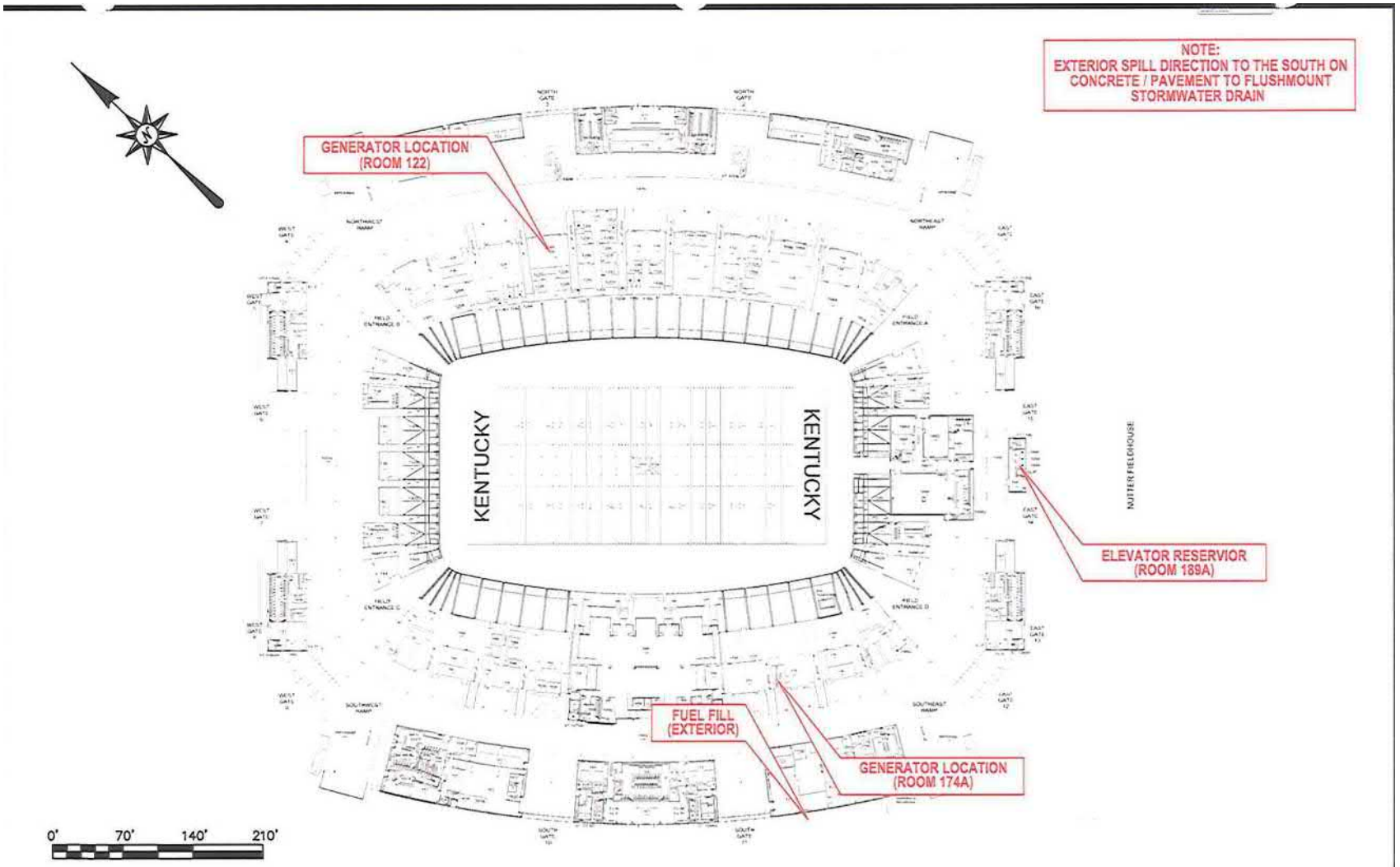
PROJECT NO: 117-1210
DRAWN BY: SW
APPROVED BY: MPS

FIGURE 9

SITE MAP - NUTTER TRAINING CENTER (BUILDING #0277)

ATHLETICS FACILITIES
UNIVERSITY OF KENTUCKY
LEXINGTON, FAYETTE COUNTY, KENTUCKY

SHIELD ENVIRONMENTAL ASSOCIATES, INC.
948 Floyd Drive
Lexington, KY 40505
(859) 294-5155



AUGUST 2017

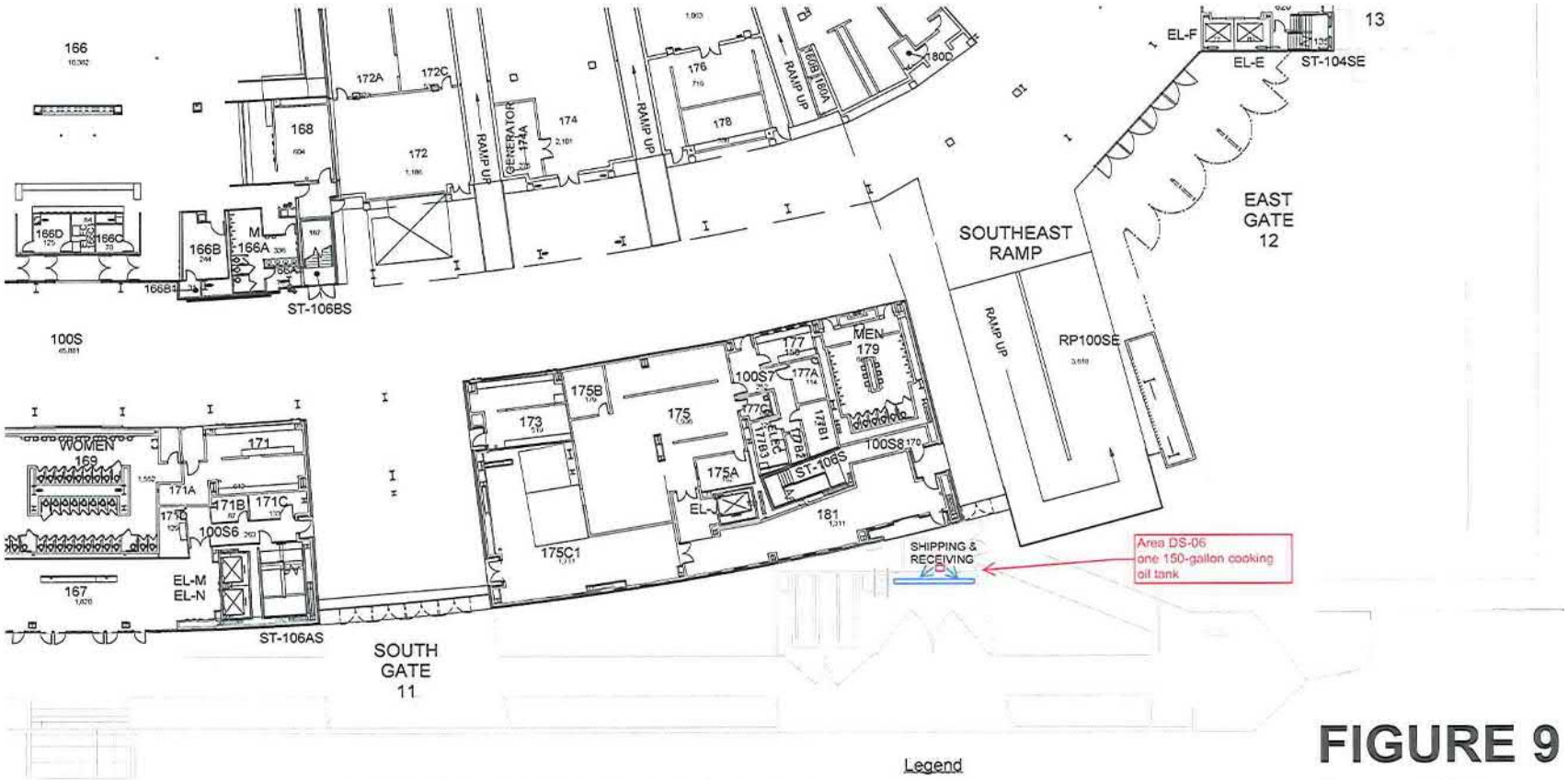
PROJECT NO: 117-1210
DRAWN BY: SW
APPROVED BY: MPS

FIGURE 10

SITE MAP - KROGER FIELD / COMMONWEALTH STADIUM (BUILDING #0222)

ATHLETICS FACILITIES
UNIVERSITY OF KENTUCKY
LEXINGTON, FAYETTE COUNTY, KENTUCKY

SHIELD ENVIRONMENTAL ASSOCIATES, INC.
948 Floyd Drive
Lexington, KY 40505
(859) 294-5155



LEVEL 1 - MAIN CONCOURSE LEVEL PLAN
KROGER FIELD (Commonwealth Stadium)

343,739 Gross Square Ft.

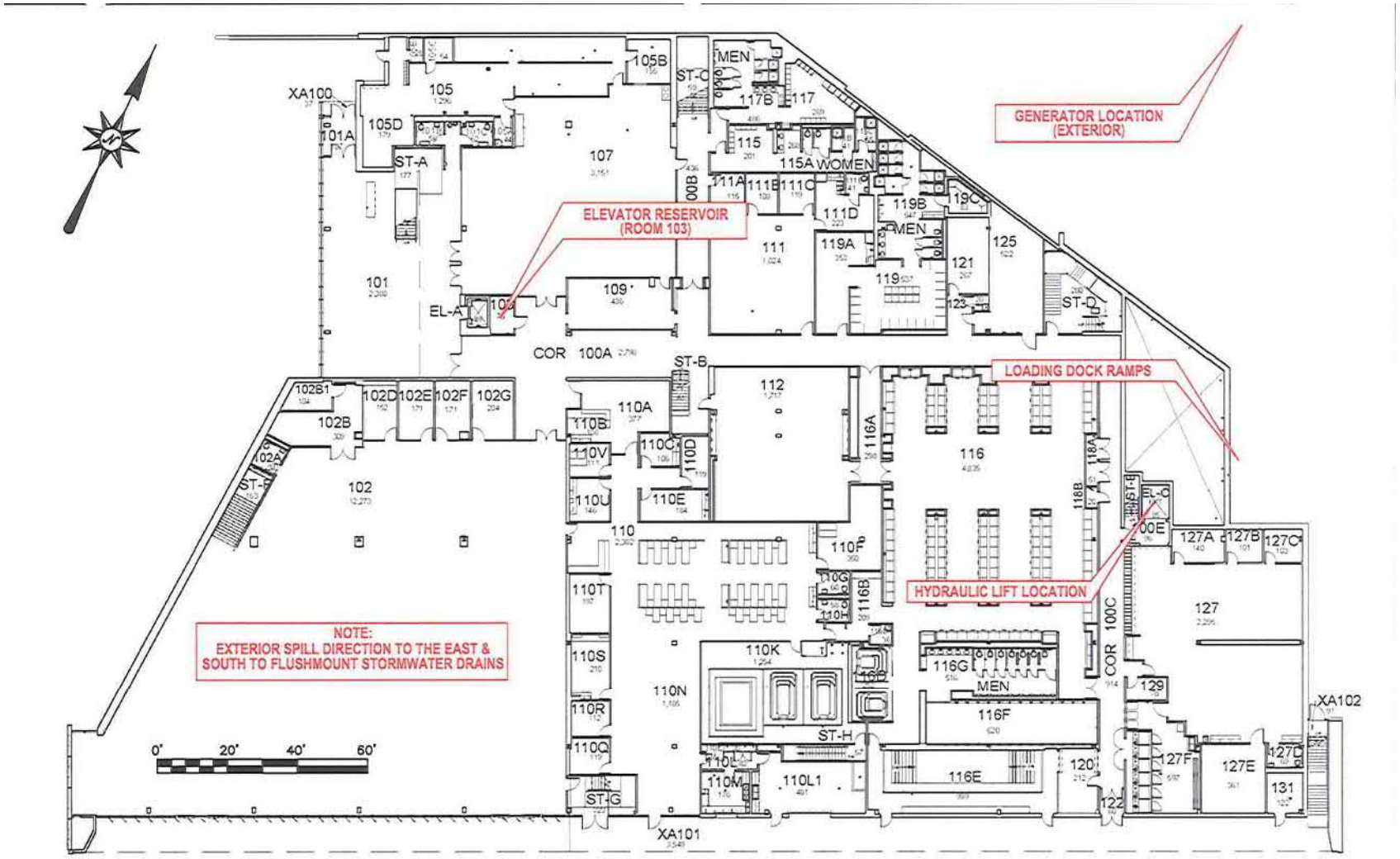
Legend

- Location of oil storage tank
- Drain
- Flow Direction

NORTH

FIGURE 9

Kroger Field-Commonwealth Stadium



AUGUST 2017

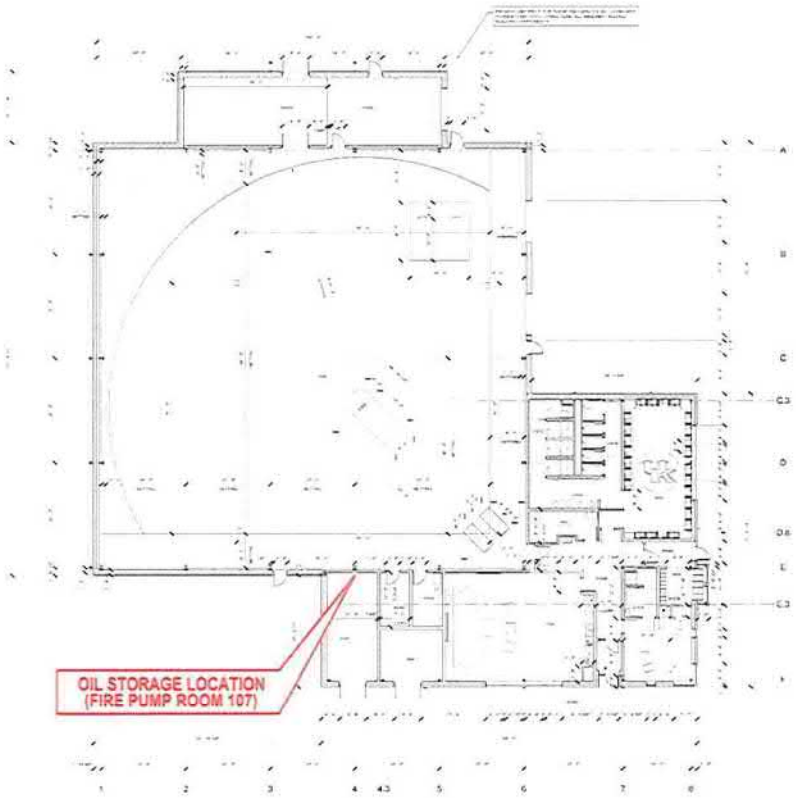
PROJECT NO: 117-1210
DRAWN BY: SW
APPROVED BY: MPS

FIGURE 11

SITE MAP - JOE CRAFT FOOTBALL TRAINING CENTER (BUILDING #0280)

ATHLETICS FACILITIES
UNIVERSITY OF KENTUCKY
LEXINGTON, FAYETTE COUNTY, KENTUCKY

SHIELD ENVIRONMENTAL ASSOCIATES, INC.
948 Floyd Drive
Lexington, KY 40505
(859) 294-5155



NOTE:
SPILL DIRECTION INTO FLOOR DRAIN
INSIDE ROOM 107

0' 20' 40' 60'

AUGUST 2017

PROJECT NO: 117-1210
DRAWN BY: SW
APPROVED BY: MPS

FIGURE 13

SITE MAP - SOFTBALL HITTING PAVILION (BUILDING #0447)

ATHLETICS FACILITIES
UNIVERSITY OF KENTUCKY
LEXINGTON, FAYETTE COUNTY, KENTUCKY

SHIELD
ENVIRONMENTAL ASSOCIATES, INC.
948 Floyd Drive
Lexington, KY 40505
(859) 294-5155

University of Kentucky

Contact the UK Environmental Management Dept. for further information:

Kevin Lewis
Water Quality Compliance Manager
257-0093
kevin.lewis@uky.edu

APPENDIX U

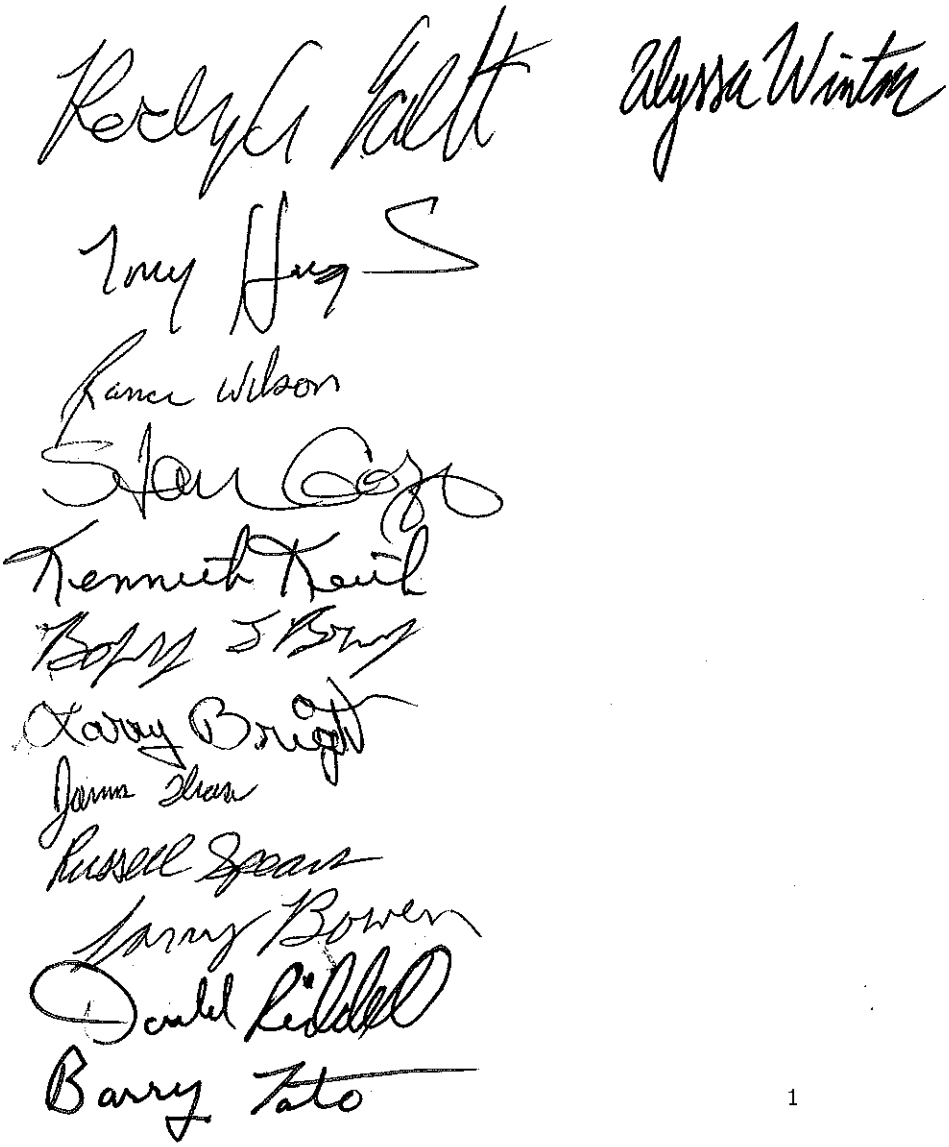
Basic Stormwater Training Sign-in Sheets

Hamilton, James

From: Sandford, Harold
Sent: Tuesday, May 7, 2019 3:42 PM
To: Stone, Todd; Sewell, Gary; Drury, Stephen; Shank, Craig; Toomey, Harold; Olding, Albert; Hobbs, Krishna; Moore, Kenneth D.; Thacker, Todd; Gambill, John; Allegrini, Christine; McAlister, Patrick; Blackwell, James H.; Laue, Charles; Weber, Charles; Miles, Jeff; Steverson, Ed; Hamilton, James; Gabbard, Jeremy D.
Subject: Storm Water Training Session

I need for all of you to take 10 minutes between now and Thursday afternoon and sit down with your employees and talk about Storm Water Training. It only has to be a "common sense" class where you talk about not pouring anything down the Storm Drains outside of your buildings (paint, oil, cleaning products, ect). Once you have the class, I just need a signed roster of who was in the class. I need this before Friday morning. This is only the "kickoff" training, there will be more to follow (I will find that out on Friday). Any questions, call me. Thanks

Harold "Tree" Sandford
Facilities Management
Maintenance and Operations
University of Kentucky
102B1 Peterson Service Bldg
(C) 859-457-0611
(O) 859-257-4385



Storm Drains

	Dwight Kendrick
	Dave Gardner
	Brad Dube
	Tim Cline
	Clint McManne
	Billy Carman
	Scott Bolton
	Shawna Mingna
	Mike Lyvers
	Keith Demus

Storm Water Training

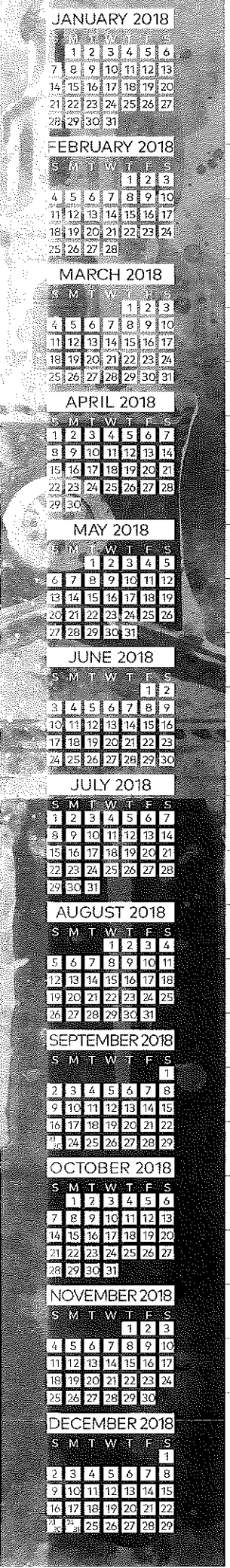
I was given a Storm water training session by my supervisor Harold Sandford on the proper use of Storm Water Drainage systems.

Name	Date
J Blackwell	5/9/19
John Gambill	9 May 19
Todd Thacker	5/9/19
Eva Tomeah	5/9/19
Stephen Davis	5/9/2019

AREA 1 Storm Drain Training 5/8/19

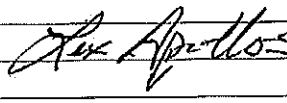
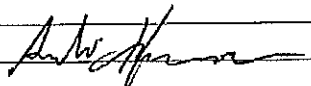
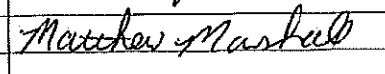
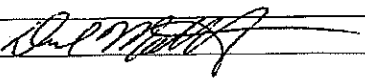
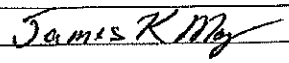
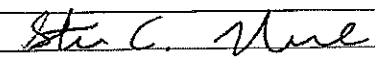
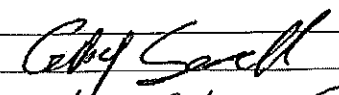
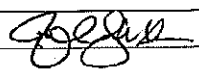
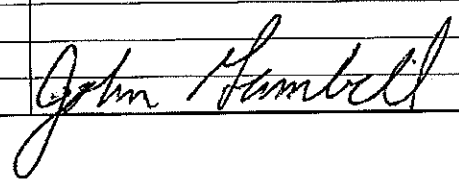
Ryan Dennis	Ryan	5-8-19
Jefferson Wilham	Jeff Wilham	5-8-19
Tim Carter		5-8-19
Karl Warner		5-8-19
Clyde Dearham	Clyde Dearham	5-8-19
Charlie Moberly	Charlie Moberly	5-8-19
Patrick McAlister	Patrick McAlister	5-8-19
Shayne Dunn	Shayne Dunn	5-8-19
Dorian Shelton	Dorian Shelton	5-8-19
Kevin Ramsdell	Kevin Ramsdell	5-8-19
Hugh CRAMER	Hugh Cramer	5-8-19
Benny Mayo	Benny Mayo	5-8-19
KRISHNA HOBBS	Krishna Hobbs	5/8/19

* LINVILLE PALMER ON VACATION, K. MOORE TO TRAIN ON RETURN



Storm Water Training Sign in

Keith T.	Keith Thurman
Tom Sutton	Tom Sutton
Tommy Ralls	
Hezekiah Davis	
Joseph Cornett	
Jon Oepping	
Ed Vanhoose	
Logan Allen	
Allen Babinette	
Greg Richardson	
Rick Williams	Rick Williams
Jay Kennedy	
Jeremy Gabbard	

Storm Water Training Session May 9th, 2019	signature
Name	
Allegrini, Christine C.	
Apollos,Samuel A.	
Clark, Norman	
Harmon, Andrew J.	
Marshall, Matthew	
Mattingly, Daniel	
May, James K.	
Monroe, Steven C.	
Montgomery, Charles W.	
Sewell, Gary K.	
Stephens, Chad	
Stratton, Jarrod	
Wilson, Gerald L.	
Gambill, John L.	

5/9/19

STORM WATER TRAINING

Lindy Boelhauf

Jerry Brown

Allen Burnette

William Coleman

~~Russell Good~~

James Moody

Steve Ryan

Doug Seat

Joe Sims ABSENT

Sam Taylor

Robby West

Hobie Wilson

Dan Shank

Charlie Weber 5/9/19

APPENDIX V

Impervious & Pervious Surfaces Map

Square Footage Calculations
Total Campus: 35,885,595 sqft
Pervious Areas: 18,112,352 sqft
Impervious Areas:17,773,243 sqft

Note: Square footage calculations based off current campus area information and does not include future planned construction.

Created by UK Facilities Information Services
Data Source: UK Facilities Managment (2020)
Geospatial.Requests@uky.edu
REV: 20200317

Impervious & Pervious Surfaces

University of Kentucky

N

0 375 750 Feet

1 inch = 375 feet

APPENDIX W

Maintenance Tasks and Cost

2019 Storm System Repair, Maintenance, and Assessment Costs

Storm System $
01/01/2019 - 12/31/2019

Row Labels	Sum of Val.in RC
CENTRAL CAMPUS AREA - STORM	
807002283760 - CLEAN STORM DRAIN PIPING	$1,019.85
807002311169 - NEAR CHEM PHY, STANDING WATER ON ST.	$640.70
807002329900 - RUN CAMERA THRU STORM SYSTEM	$1,312.39
807002360287 - ROSE ST., WATER/SEWAGE MAIN LEAK	$798.75
807002360432 - CHECK OUTSIDE DRAINS	$90.00
807002385242 - CLEAN OUT OUTSIDE STORM DRAIN	$225.00
807002429945 - REPR & REPL DRAIN COVERS	$334.05
807002451134 - BLOCKED STORM DRAIN NEAR JOHNSON CTR.	$45.00
807002486231 - GRAHAM AVE. PKG LOT, STORM WATER DRAIN	$50.50
807002496233 - BACK COURTYARD, REPL STORM INLET BOX	$1,188.26
807002499237 - REPR HOLE IN ROADWAY BY PARKING LOT	$2,220.88
807002510320 - EXPLORE/DEVISE PLAN TO ELEVATE WATER SHE	$2,228.38
807002514132 - COAL PILE, STORM OUTLET FILTERING DEVICE	$9,950.00
807002517896 - WATER RUNNING OUT OF STORM DRAIN	$858.50
807002522541 - WORK ON OUTSIDE DRAIN COVER	$198.00
807002524032 - MODIFY STORM YARD INLET BOX	$2,200.00
807002570992 - WHITE HALL AREA, LOOSE COVER ON WALK	$926.79
807002616152 - DRAIN CLOGGED	$252.50
807002617464 - STORM DRAIN BEHIND SLONE, CLOGGED	$24.75
807002626483 - LOCATE STORM MANHOLE INSIDE CAGE	$50.50
807002676824 - SEWER DRAIN CLOGGED	$363.81
CENTRAL CAMPUS AREA - STORM Total	**$24,978.61**
SOUTH CAMPUS AREA - STORM	
807002378969 - COAL PILE STORM DRAIN & SEDIMENT BOX	$2,370.00
SOUTH CAMPUS AREA - STORM Total	**$2,370.00**
Grand Total	**$27,348.61**

APPENDIX X

Updated SWQMP Table

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency				
					PY1	PY2	PY3	PY4	PY5
	The program must be formalized in a written Stormwater Quality Management Plan (SWQMP) that details how the required six minimum control measures will be implemented. This document must be modified as needed.				X	= Original Schedule	X	= Updated Schedule	
MCM 1	**Public Education and Outreach**								
	1.A – Strengthen Education, Outreach and Participation Program	EMD, TFISE	▪ Develop partnership with TFISE in year one ▪ Develop MCM 1&2 budget in year one to determine operating constraints of program ▪ Develop MCM 1&2 program improvements in year one ▪ Hire interns to assist TFISE in education/outreach activities by year two	▪ Provide agreement between EMD and TFISE (MOU) ▪ Provide copy of operational budget for MCM 1&2. ▪ Provide detailed outline of program for MCM 1&2. ▪ Provide copies of intern final reports, presentations, data, etc.	X	X			
	1.B – Update and maintain stormwater website	EMD, TFISE	▪ Website redesigned ▪ Website routinely updated ▪ Page visits are trackable/analytics package	▪ Updated website launched, documentation of regular updates, page traffic information		X	X		
	1.B.1 – Develop interactive MS4 Map	EMD/FIS	▪ Create a map for inclusion on the website that provides detailed MS4 information above and beyond the existing 2D map. Examples of information to include: stormwater flow direction, watershed information, post construction bmp information (photos, descriptions, etc.) ▪ Develop interactive Story Map	▪ Provide link to published map			X		
	1.B.2 – Develop illicit discharge reporting system	EMD	▪ Create mobile friendly illicit discharge reporting web feature that allows the user to take photos, provide comments, and send information to EMD with minimal effort.	▪ Provide link of operational website that includes access to reporting system ▪ Provide the number of complaints through website and copies of the submitted reports		X	X		
	1.B.3 – Develop educator resource page (in conjunction with task 1.C.3)	TFISE	▪ Create a portion of the website to include stormwater resources for educators ▪ Create content to include on the resource page ▪ Develop notification of availability once completed	▪ Provide link to resource page ▪ Provide access to created educator resources			X		
	1.B.4 – Develop and maintain social media sites focused on UK stormwater	TFISE, EMD	▪ Begin utilizing existing social media accounts (Facebook, Twitter, etc.) to promote UK stormwater ▪ Add account links to UK Stormwater page ▪ Regularly update sites to keep information relevant	▪ Provide links to social media accounts		X			
	1.C – Develop and distribute public (faculty, staff, students, visitors) specific educational materials	TFISE	▪ Create education materials that specifically address how UK's public impacts and can protect stormwater.	▪ Provide a copy of the created materials, numbers distributed		X	X	X	X
	1.C.1 – Extend program focus to visitors	TFISE	▪ Identify ways in which visitors can impact stormwater and develop an awareness campaign to target those actions	▪ Provide a copy of awareness program items (pamphlets, signage, etc.)			X		
	1.C.1.a – Develop awareness materials to address illicit discharge prevention from tailgater RV's (No dumping of gray/black water holding tanks) – Coordinate with Task 8.A	TFISE, Athletics, EMD, Transportation Services	▪ Develop awareness materials and coordinate distribution with annual parking pass/ticket sales.	▪ Provide copy of awareness materials and number distributed			X		
	1.C.2 – Provide mechanism for incorporating students in stakeholder/planning process	EMD, Sustainability, TFISE	▪ Create meeting/forum/platform for students to provide input in campus stormwater management decisions	▪ Provide meeting dates, sign in sheets, meeting minutes, agendas, etc.				X	
	1.C.3 - Focus on pollutants impairing local waterways	TFISE	▪ Create awareness materials that specifically address pollutants identified in the 303d list impairing local waters as well as existing TMDL's. ▪ Specify how those on campus can help reduce these problems.	▪ Provide copy of materials created as well as numbers distributed.				X	X
	1.C.4 – Create stormwater education materials for staff/extension use	TFISE	▪ Create curriculum that can be used to educate University public on their impacts to campus stormwater, MS4 requirements, and how they can help	▪ Provide any materials developed		X	X	X	X
	1.D – Participate in and/or facilitate special events/activities/joint sponsored events to increase stormwater awareness	TFISE	▪ Facilitate/Participate in one event per semester (minimum) that focuses on campus stormwater.	▪ Provide information on the events (dates, times, sign in sheets, photos, agendas, etc.)	X	X	X	X	X
	1.D.1 – Involve student organizations	TFISE	▪ Work with student organizations to get participation in a minimum of one event/activity per year. ▪ Devise incentive program to boost participation	▪ Provide name of special event/activity, name of student organization, sign in sheet/attendance numbers per activity, and photos ▪ Provide description of incentive and names of qualifying groups	X	X	X	X	X
	1.E – Create stormwater awareness articles/posts/podcasts/videos for campus wide distribution (e.g. UKNow/Website/Kernel/Social Media/News Letters)	TFISE	▪ Develop and publish at least 1 article/post/podcast/ video per year	▪Provide copy of created items		X	X	X	X

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency				
					PY1	PY2	PY3	PY4	PY5
	1.F – Update staff IDDE training and create method to ensure training is conducted annually	EMD, TFISE	▪ Update training to make more user friendly and relevant to campus activities ▪ Integrate training into online training programs and routine staff meetings	▪ Provide copy of training ▪ Provide sign in sheets and online training records annually			X		
	1.F.1 – Develop short promotional video on the most frequent illicit discharges and how to report them	EMD, TFISE	▪ Develop video/videos that can be utilized to train staff as well as promote the illicit discharge program and stormwater protection to general campus audiences to be shared through targeted outreach, social media, and other outlets.	▪ Provide copy of the completed video/link to access video ▪ Provide distribution list/number of viewings, etc.				X	
	1.G – Update individual departmental stormwater training and improve delivery system/participation	EMD, TFISE, Facility Operations, Utilities, Athletics	▪ Work to improve/develop department specific (Facility Operations, Athletics, Utilities) stormwater training and include that training in online systems and in routine departmental trainings, minimum annually. ▪ Expand training to areas such as grad students, outdoor labs, etc. that may impact stormwater	▪ Provide copy of/link to the developed training			X	X	X
	1.H – Update and conduct campus wide survey to determine effectiveness of the Outreach and Ed.program	TFISE	▪ Determine if/which questions must be retained from previous survey, develop more campus relevant survey, and conduct survey of faculty, staff, and students to determine stormwater awareness and areas of program improvement.	▪ Provide copy of survey along with results and analysis		X	X		
	1.H.1. – Conduct follow up survey every 2-4 years	TFISE	▪ Utilizing updated survey, conduct survey of faculty/staff/students on routine basis to determine program effectiveness and areas needing improvement	▪ Provide results and analysis of survey				X	
	1.I – Regularly meet with LFUCG MS4 Coordinator to coordinate programs and provide updates	EMD	▪ Set up meetings/calls (minimum quarterly) to discuss relevant issues from each MS4 that could benefit or impact the other.	▪ Provide dates of the meeting/calls along with a summary of the discussion		X	X	X	X
	1.J – Develop a consortium of stormwater professionals targeting universities	TFISE	▪ Develop a network of individuals ▪ Meet with stormwater professionals to discuss campus stormwater and share ideas at least once annually.	▪ Provide meeting date(s), attendees, and the agenda/list of topics discussed		X	X	X	X
	1.K – Develop a stormwater steward certification program (StormCats) similar to the backyard stream steward certification process	TFISE	▪ Develop program along with online modules that can be used to gain certification in stormwater protection. Center program around campus/MS4.	▪ Provide link to program and modules (e.g. Canvas)				X	
MCM 2	**Public Involvement/Participation**								
	2.A – Update and Improve the stormdrain marking program	EMD/TFISE	▪ Develop a redesign for the stormdrain marking program and plan in year two ▪ Coordinate the program and participation with the marked drain inventory and the interactive map completion.	▪ Provide progress update of efforts/changes completed each year		X	X	X	X
	2.A.1 – Update inventory of marked drains via intern program	EMD	▪ Develop an outline for intern job responsibilities ▪ Begin/complete intern hiring process ▪ Work with FIS to create map/inventory for intern to document findings ▪ Assign duties to intern and train ▪ Continue with process annually until inventory is complete	▪ Intern progress will be tracked via map/inventory system. Provide updates on progress via inventory/map versions and/or link.		X	X	X	X
	2.A.2 – Develop interactive map to show/track drain marking activity	EMD/FIS	▪ Work with FIS to develop interactive map to be added to webpage that indicates storm drain locations and which ones are marked/need to be marked.	▪ Map added to website, link provided		X			
	2.A.3 – Develop advertising/awareness campaign to improve program participation	TFISE	▪ Create various advertising materials ▪ Market program to faculty, staff, students, and visitors through various means to increase awareness and participation annually once completed.	▪ Provide # stormdrains marked annually ▪ Provide # of participants annually ▪ Provide copy of marketing materials			X	X	X
	2.B – Involve students, faculty, and staff in stormwater activities (e.g. drain marking, rain garden maintenance, new stream restoration project)	TFISE	▪ Involve students in a minimum of two activities per year	▪ Provide list of activities, list of participants, and photos	X	X	X	X	X
	2.B.1 – Develop procedures for alerting public (Faculty, Staff, Students, etc.) of program participation opportunities and changes/updates	TFISE	▪ Determine notification preferences, including how best to utilize the webpage (see task 2.B.2) ▪ Create procedures outlining when and how notifications are used	▪ Provide copy of notification methods and procedures/include in the Stormwater Operations Manual ▪ Provide copies of any notifications		X			

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency				
					PY1	PY2	PY3	PY4	PY5
	2.B.2 – Update webpage (see task 1.B) to include an events calendar or latest info	TFISE/EMD	▪ Include public alerts, notifications, and updates on webpage/social media.	▪ Provide link to webpage & copies/dates of notifications			X		
	2.C. – Consider development of brief pre and post survey for activity participants	TFISE	▪ Develop pre and post survey templates in year three and identify activities suitable to perform surveys ▪ Conduct at least one survey activity in years 4 and 5 to gain feedback on the stormwater program and/or the activity.	▪ Provide a copy of any surveys conducted along with the results			X	X	X
MCM 3	**Illicit Discharge Detection and Elimination**								
	3.A - Maintain and update MS4 and Utility Maps annually/as necessary	EMD, Utilities	▪ Add recently installed bmp's, changes, and updates to MS4 system as they occur	▪ Utility map updated online ▪ Latest version of MS4 map added to website	X	X	X	X	X
	3.A.1. - Update Utility map to include Bell 2017 assessment/mapping info	Utilities	▪ Provide the survey information from Bell's assessment to FIS for inclusion on the Utility map	▪ Include the latest data on the utility map and provide the link		X	X		
	3.A.2 – Develop clear procedures for recording/reporting of MS4 boundary expansion and inclusion of new territory in MS4/University O&M and add to the Stormwater Operations Manual	EMD, Facility Operations, Utilities, Real Estate	▪ Determine steps and current procedures for adding property and notification to Utilities/Facility Operations/EMD in year two ▪ Develop/amend current procedures and include documentation of notification in year two/three ▪ Add procedures to Stormwater Operations Manual	▪ Provide list of procedures ▪ Provide list/map of added properties (include link)		X	X		
	3.B - Review IDDE Plan and update as necessary	EMD	▪ Bring the plan up to date ▪ Include the updated MS4 map and adjust any references to the map	▪ Provide copy of updated plan	X				
	3.B.1 – Update to include the new permit requirements	EMD	▪ Compare contents of existing plan to the permit requirements ▪ Amend content as necessary	▪ Provide copy of updated plan	X				
	3.B.2 – Develop SSO protocols and resolution timeframes	EMD, Facility Operations, Utilities	▪ Develop a Sanitary Sewer Overflow response policy/procedures/guidelines that include clean up requirements, reasonable timeframes for clean-up/correction, and notification procedures ▪ Distribute protocols to those involved in SSO response, train as necessary	▪ Provide copy of procedures ▪ Provide distribution list and/or training sign in sheet		X	X		
	3.B.3 – Incorporate procedures/requirements into the Stormwater Operations Manual	EMD	▪ Add SSO section to the Stormwater Operations Manual	▪ Provide copy of the Stormwater Operations Manual once completed					X
	3.B.4 – Visually inspect outfalls from campus annually	EMD	▪ Inspect outfalls during dry weather based on IDDE Manual requirements ▪ Input inspections into MS4 database	▪ Provide copy of outfall inspection reports	X	X	X	X	X
	3.B.5 – Evaluate the assessment of dry weather flows in known areas of concern on campus	EMD	▪ Determine the need for dry weather flow assessment based on historical sampling data and outfall inspections ▪ Determine if resources are available this permit cycle for sampling efforts (time, budget) ▪ Develop/add to monitoring program as necessary	▪ Provide summary of determination, timetables, and a copy of the monitoring plan/QAPP if/when developed.		X	X		
	3.B.5.a – Evaluate assessment of UK based dry weather flows to the Manchester Street Culvert via confined space entry and sampling of E.coli, Ammonia, TSS, and other constituents	EMD	▪ Review LFUCG sampling data ▪ Observe dry weather flows through system ▪ Discuss possibility of coordination with LFUCG ▪ Develop/add to monitoring program as necessary	▪ Provide summary of evaluation and any assessment findings (if applicable)		X			
	3.C – Update website and complaint reporting mechanism (see tasks 1.B and 1.B.2)	EMD, TFISE	▪ Develop a reporting mechanism that allows the user to quickly snap a photo of an issue and send directly to EMD.	▪ Provide link to reporting mechanism		X	X		
	3.D – Update staff training on illicit discharge identification and reporting (see task 1.F)	EMD, TFISE, Facility Operations	▪ Consolidate and update existing online staff training ▪ Develop staff protocols for reporting and include information on the new reporting mechanism ▪ Add protocols to IDDE Manual/Stormwater Operations Manual	▪ Provide copy of/link to training ▪ Provide copy of protocols			X		
	3.D.1 – Integrate illicit discharge detection and prevention into routine staff duties	Facility Operations, Utilities, Athletics	▪ Evaluate activities already being performed by staff where the inspection of storm drains and reporting of issues can be easily integrated. ▪ Add inspection of surrounding storm drains to SPCC monthly inspection list ▪ Train grounds staff how to identify issues when mowing, etc.	▪ Provide list/description of activities where IDDE has been integrated				X	

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency				
					PY1	PY2	PY3	PY4	PY5
	3.D.2 – Include all information/procedures into a comprehensive Stormwater Operations Manual	EMD	▪ Integrate training and procedures developed into the Stormwater Operations Manual	▪ Provide copies of any/all procedure updates being included in manual or a copy of the created/updated Stormwater Operations Manual				X	
	3.D.3 – Develop video on most frequent illicit discharges and how to report them (Task 1.F.1)	TFISE, EMD	▪ Determine most frequent illicit discharges	▪ Provide link to video					
			▪ Work with TFISE to develop video	▪ Provide distribution list and/or list of trainings/discussions where video is used					X
			▪ Distribute/utilize video						
	3.E – Update and maintain the illicit discharge tracking program as necessary	EMD	▪ Document all complaints and input into MS4 web as they occur	▪ Provide copy of complaint reports	X	X	X	X	X
	3.F – Evaluate performing additional/routine Thermal Imaging scans to locate possible discharges and develop procedures as necessary	EMD, Utilities	▪ Determine if additional/routine scans will be beneficial/economically viable	▪ Provide summary of determination					
			▪ Determine protocols for how/when scans will be used.	▪ Provide copy of protocols/include in Stormwater Operations Manual		X			
			▪ Plan for future scans as necessary	▪ Provide schedule of future scan (if applicable)					
	3.F.1 – Locate, prioritize, and minimize heating/cooling system leaks	Utilities	▪ Investigate as necessary to determine source of leaks impacting the storm sewer system	▪ Provide list of annual investigation efforts/repairs made/maintenance costs					
			▪ Develop a prioritized repair list	▪ Provide prioritized repair list	X	X	X	X	X
			▪ Repair/maintain system as necessary to minimize leaks and impact to the storm sewer system						
	3.G – Complete Greenhouse conversion to sanitary sewer	Facility Operations	▪ Divert remaining greenhouse drains from storm to sanitary	▪ Provide evidence of completion (project as-builts/invoices)	X				
	3.H – Minimize cigarette butts entering storm drains	EMD, Facility Operations, Grounds	▪ Meet with UK Tobacco-free Taskforce to discuss cigarette butts entering storm drains, the impact on stormwater, and stormwater requirements.	▪ Provide sign-in sheet/meeting minutes/copy of invite					
			▪ Develop/implement bmp's to prevent cigarette butts from entering storm drains	▪ Provide list/description of bmp's implemented			X		
			▪ Coordinate with LFUCG at campus boundaries						
MCM 4	**Construction Site Stormwater Runoff Control**								
	4.A. – Improve the project notification/review process, including timing of notification and inclusion of appropriate departments	CPMD/Facility Operations	▪ Update the Capital Projects Typical Projects Step List	▪ Provide copy of updated project steps list					
			▪ Educate CPMD Project Managers on updated project steps	▪ Provide copy of presentation and/or meeting sign in sheet for PM training		X	X		
			▪ Develop/verify Facility Operations procedures and update as necessary	▪ Provide copy of updated Facility Operations procedures					
	4.B – Develop alternative to permit issuance as part of formal review process (i.e. – EMD Notification to Proceed)	CPMD, EMD	▪ Create project step that requires approval of water quality measures by CPMD and EMD before a project can proceed	▪ Provide procedures for approval process					
			▪ Create procedures for how step will be utilized and enforced			X	X		
			▪ Integrate step into MS4 web and project manager project step list						
	4.C – Strengthen contract language requiring contractors to implement SWPPP controls, obtain stormwater permit coverage, and maintain compliance with stormwater requirements	CPMD	▪ Update contract language to provide for better enforcement capability and correction of construction site stormwater deficiencies	▪ Provide copy of updated contract language	X				
	4.D – Perform audit inspections on construction sites monthly	CPMD	▪ Inspect all active construction sites once per month minimum	▪ Provide number of inspections conducted as well as copies of the inspections/annual inspection report	X	X	X	X	X
	4.D.1 – Update construction site inspection checklist as necessary	CPMD, EMD	▪ Tailor existing checklist to better meet UK needs or develop new checklist	▪ Provide copy of updated checklist		X			
			▪ Update MS4 web with any changes						
	4.D.2 – Develop progressive/escalating enforcement policy and procedures for SWPPP/KYR10 violations (See task 3.A)	CPMD, EMD	▪ In conjunction with contract language changes, develop enforcement policy and procedures for SWPPP violations.	▪ Provide copy of enforcement policy/procedures					
			▪ Update design standards to clarify requirements and expectations of contractors	▪ Provide copy of updated design standards		X	X		
	4.D.2.a – Develop RFP for Stormwater Remediation and award contract	CPMD	▪ Draft and post Stormwater Remediation RFP	▪ Provide selected contractor information and description of duties					
			▪ Review proposals and select contractor	▪ Provide list of construction sites contractor has been hired to repair along with list of deficiencies corrected		X			
			▪ Utilize contractor to repair stormwater deficiencies on active construction sites as needed						
	4.D.3 – Update/maintain inspection and enforcement tracking mechanism as necessary	CPMD, EMD	▪ MS4 Web regularly updated with inspection and compliance information	▪ Provide an up to date inspection report	X	X	X	X	X

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency				
					PY1	PY2	PY3	PY4	PY5
	4.D.4 – Develop and implement an internal QC process to ensure site inspections are being performed and KYR 10 requirements are being met	EMD	▪ Develop procedures for the auditing of UK's construction site stormwater inspection program to ensure MS4 permit requirements are being met	▪ Provide copy of procedures		X	X	X	X
			▪ Conduct audit of program annually	▪ Provide audit results/report					
	4.E – Review construction plans to ensure SWPPP measures are being incorporated for all projects disturbing 1 acre or more	CPMD	▪ Review all applicable construction project plans to ensure stormwater requirements are being met	▪ Provide list of all construction projects reviewed annually	X	X	X	X	X
			▪ Update MS4 web with review information						
	4.E.1 – Continue to utilize LFUCG's most recent stormwater requirements, including their Stormwater Manual and LID guidelines	CPMD, EMD	▪ Update contract/design standards as needed	▪ Provide copy of updated contract/design standards	X	X	X	X	X
			▪ Review projects based on LFUCG guidelines	▪ Provide project review reports from MS4 web					
			▪ Update MS4 Web as needed						
	4.E.2 – Update SWPPP review checklists	CPMD, EMD	▪ Adopt the LFUCG Land Disturbance Permit Application and Sediment Control Plan Checklist for project review, tailor to fit UK needs, and integrate into MS4 web	▪ Provide copy of updated checklist(s)		X			
			▪ Develop addition checklist for SWPPP requirement review based on KYR10 and integrate into MS4 Web						
	4.F – Have designated staff reviewing plans or performing inspections receive/maintain KEPSC Inspector Certification	EMD	▪ Require designated staff to maintain current certification	▪ Provide staff certification information	X	X	X	X	X
	4.G – Develop training program to educate contractors and designers on stormwater requirements	CPMD, EMD	▪ Create training program procedures, goals, and guidelines	▪ Provide copy of training procedures/goals/guidelines		X	X		
	4.G.1 – Develop UK construction process/requirement training	CPMD, Facility Operations	▪ Develop training in year two	▪ Provide training presentation/ information			X	X	X
			▪ Conduct training annually (minimum)	▪ Provide training schedule & sign in sheets					
	4.G.2 – Develop KYR10 Requirement training	CPMD, EMD	▪ Develop training in year two/three	▪ Provide training presentation/ information			X	X	X
			▪ Conduct training with each project/annually (minimum)	▪ Provide training schedule & sign in sheets					
	4.G.3 – Develop SWPPP development/requirement training	CPMD, EMD	▪ Develop training in year three	▪ Provide training presentation/ information			X	X	X
			▪ Conduct annually/as needed	▪ Provide training schedule & sign in sheets					
	4.G.4 – Work with the Kentucky Transportation Center to provide KEPSC Inspector Training on campus annually (minimum)	EMD	▪ Contact the Kentucky Transportation Center and discuss possibility of providing training on campus annually	▪ Provide summary of discussion		X			
			▪ Hold training annually (if possible)	▪ Provide training schedule (if applicable)					
	4.G.5 – Develop stormwater site inspection review training to be provided for each project	CPMD, EMD	▪ Develop training in year three to be provided during the preconstruction meeting of each project	▪ Provide copy of training			X		
				▪ Provide list of projects and sign in/training acknowledgement sheet					
	4.H – Develop formal policy/guidance/procedure for small construction projects (<1 acre)	CPMD, Facility Operations	▪ Create written procedures/policy for handling stormwater on small construction projects (review, approval, bmp selection, inspection, contractor training, etc.)	▪ Provide copy of developed policies/procedures		X			
			▪ Put policy in place for small construction projects (as appropriate)						
MCM 5	**Post Construction Stormwater Management**								
	5.A – Continue the adoption of LFUCG Post Construction Requirements for New/Redevelopment	CPMD/EMD	▪ Require the submittal of a narrative and Executive Summary for new or re-development for all applicable projects	▪ Maintain submitted information for each project	X	X	X	X	X
			▪ Review projects based on latest LFUCG standards	▪ Provide copy of updated design and construction standards if applicable					
			▪ Update design and construction standards with any changes to post construction stormwater quality requirements as necessary	▪ Provide list of approved projects/ MS4 web report					
			▪ Update MS4 web with project information and approvals						
	5.A.1 – Review possibility of finalizing LFUCG Memorandum of Understanding	EMD	▪ Begin discussions with UK and LFUCG regarding the completion of a MOU between the two MS4's	▪ Provide summary of the determination and/or copy of the completed/signed MOU			X		
			▪ Complete and sign the MOU if applicable						
	5.A.2 – Evaluate the development of a Stormwater Masterplan for UK's main campus	EMD, CPMD, Sustainability, Facility Operations, Utilities	▪ Meet with applicable stakeholders to determine the need for a masterplan, it's components, and development	▪ Provide meeting minutes/summary, sign in sheet, and copy of masterplan or schedule (if applicable)		X	X	X	
			▪ Begin development of masterplan or schedule development of masterplan as needed	▪ Provide copy of post construction BMP selection standards					
			▪ Create UK standards for stormwater post construction BMP selection (consider local water quality impairments)	▪ Provide update on Landscape Guidelines as policy determination along with procedures for enforcement of policy if applicable					
			▪ Evaluate adopting the UK Landscape Guidelines as policy and enforcement of the policy	▪ Provide procedures for SITES review process (or equivalent)					

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency				
					PY1	PY2	PY3	PY4	PY5
			▪ Incorporate into work flow and utilize the SITES review process (or equivalent) on all construction projects	▪ Provide documentation of review processes use on new construction sites (score cards, etc)					
	5.B – Review plans to ensure post-construction stormwater quality treatment has been addressed	CPMD/EMD	▪ Review plans in accordance with latest LFUCG requirements ▪ Document review of plans in MS4 Web	▪ Provide report of reviewed projects	X	X	X	X	X
	5.B.1 – Have those employees responsible attend training regarding plan review and post construction BMP's when available	CPMD/EMD	▪ Attend training when available	▪ Provide training information (dates, attendees, etc)	X	X	X	X	X
	5.B.2 – Adopt the LFUCG Land Disturbance Permit Application and Sediment Control Plan Checklist for project review and tailor to fit UK's needs. (Task 4.E.2.a)	CPMD/EMD	▪ Checklist adopted, tailored to fit UK needs, and updated to include additional components for post construction requirements ▪ Update MS4 Web with new checklist ▪ Begin using new checklist for project review	▪ Provide copy of updated checklist ▪ Provide MS4 web report and/or copies of completed project review checklists		X			
	5.C – Conduct inspections to ensure measures are being installed correctly	CPMD	▪ Conduct punch list walkthrough and/or NOT inspection for all new construction projects upon project completion ▪ Document inspection in MS4 web	▪ Provide list of completed inspections	X	X	X	X	X
	5.D – Revise long-term post-construction stormwater quality BMP inspection program	Facility Operations, EMD, Utilities	▪ Inspect 20% of above ground post construction BMPs annually ▪ Inspect 100% of underground BMP's annually ▪ Develop preventative maintenance program for all UK owned post construction BMP's in year two ▪ Develop tracking system to assess long term pm cost for bmp's in conjunction with PM program ▪ Assist EDR with development of PM program for EDR owned bmp's in year two ▪ Document all inspections and maintenance in MS4 web or effective equivalent	▪ Provide report/list of all inspected bmp's along with findings ▪ Provide preventative maintenance program procedures/ guidelines ▪ Provide copy of pm cost assessment ▪ Provide list of all maintenance performed on BMP's ▪ Provide copy of EDR PM plan	X	X	X	X	X
	5.E – Incorporate all relevant post-construction information into new Stormwater Operations Manual	CPMD, EMD, Facility Operations	▪ Include all inspection, bmp maintenance procedures and schedules, site plan review/post construction processes, etc. in new Stormwater Operations Manual	▪ Provide copy of Stormwater Operations Manual/Procedures				X	
	5.F – Advise administrative staff on the benefits of green infrastructure and the costs of construction and maintenance as compared to that of gray infrastructure. Do this prior to/in conjunction with tasks 5.A.2	EMD, Facility Operations Grounds, Sustainability	▪ Develop comparison of green vs gray infrastructure to include costs and benefits ▪ Provide information to administrative staff via report and/or presentation	▪ Provide copy of report/presentation		X	X		
	5.G – Incorporate Stormwater Program into Sustainability Strategic Plan	EMD, Sustainability	▪ Update Sustainability Strategic Plan to include water section	▪ Provide copy of updated Strategic Plan	X				
MCM 6	**Pollution Prevention/Good Housekeeping for Municipal Operations**								
	6.A – Develop comprehensive UK Stormwater Operations Manual to include all policies/procedures/bmps utilized to meet permit requirements (all MCM's)	Facility Operations, Utilities, Athletics, EMD	▪ Integrate all existing procedures/ departmental policies into new manual ▪ Update existing policies/procedures to improve permit compliance (Environmental Handbook, Factsheets, etc.) ▪ Create new policies/procedures as necessary ▪ Incorporate inventory of facilities, campus maintenance activities, and maintenance schedules	▪ Provide completed Stormwater Operations Manual						X
	6.A.1 – Update BMP O&M Manual to include specific maintenance requirements, calendar of required activities, and responsibilities for each existing post construction BMP	EMD, CPMD, Utilities, Facility Operations	▪ Compile all O&M Manuals for new and recently installed bmp's ▪ Create bmp specific requirements based on manufacturer's recommendations and existing O&M manual ▪ Create calendar for completing required maintenance activities for all bmp's ▪ Assign/Update responsibilities for maintenance of each bmp ▪ Incorporate/Coordinate with BMP inspection program (see task 5.D)	▪ Provide copy of O&M manual including the activity calendar and responsibility assignments to be integrated into comprehensive Stormwater Procedure Manual.				X	

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency				
					PY1	PY2	PY3	PY4	PY5
	6.A.1.a – Determine which activities will be contracted out (e.g. underground bmp annual inspections and maintenance, pervious pavement cleaning) and issue RFP as necessary (See task 5.D – Preventative Maintenance Program)	Facility Operations, Utilities	▪ Determine which activities require contractor assistance ▪ Draft and issue RFP ▪ Hire contractor ▪ Schedule and perform inspections and maintenance as needed	▪ Provide inspection reports and maintenance invoices		X	X	X	X
	6.A.1.b – Incorporate maintenance calendar into SAP Plant Maintenance system and create scheduled work orders for all activities	Facility Operations, Utilities	▪ Provide completed O&M Manual and calendar to Facility Operations/Utilities ▪ Utilize information to create reoccurring work orders in PM system	▪ Provide example reports of SAP data/work orders				X	
	6.A.2. – Evaluate incorporation of SPCC program into Stormwater Program	EMD	▪ Determine if/how the two programs can be combined ▪ Create plan to integrate two programs (as necessary)	▪ Provide determination and integration plan (if available)			X		
	6.A.3 – Develop procedures for rainwater harvesting system monitoring and reporting	Facility Operations, EMD	▪ Utilizing LFUCG requirements and manufacturers O&M manuals, develop departmental procedures for monitoring the use of harvesting systems. ▪ Record monthly/annual use and total water harvested	▪ Provide water harvesting data for all systems		X	X	X	X
	6.A.4 – Create policy/procedures surrounding stormwater protection during emergency/unplanned events (water main breaks, etc.)	Facility Operations, Utilities, EMD	▪ Develop SOP for bmp implementation in response to emergencies/ unplanned events	▪ Provide copy of policy/ procedures		X	X		
	6.A.5 – Create policy/procedures for unknown spill cleanup (dumpsters, etc.)	Facility Operations	▪ Create SOP for response, notification, & proper clean-up of unknown spills	▪ Provide copy of policy/ procedures		X	X		
	6.A.6 – Develop SOP's for all Athletics activities that impact stormwater	Athletics, EMD	▪ Assess Athletics maintenance activities and determine which activities (e.g. irrigation, fertilization, materials storage, etc.) have the potential to impact stormwater ▪ Develop SOP's/BMP's for those activities	▪ Provide fact sheets/SOP's			X		
	6.B – Update Employee Training Program	EMD, Utilities, Facility Operations, Athletics	▪ Evaluate employee training participation/documentation and improve as needed ▪ Update/consolidate training as necessary ▪ Train employees on new procedures developed during permit term ▪ Integrate training prescribed actions into departmental procedures & employee behaviors/actions	▪ Provide list of updated training ▪ Provide sign in sheets for any training conducted ▪ Provide evidence of procedures that have been amended to alter employee behavior to protect stormwater					X
	6.C – Evaluate pollution prevention measures for coal stockpiles and upgrade, improve, or maintain as necessary	Utilities, EMD	▪ Assess and improve coal pile discharge at Wildcat Court ▪ Evaluate remaining coal pile bmp's for effectiveness ▪ Determine alternate bmp's for ineffective bmps ▪ Install new bmp's as necessary	▪ Provide assessment information and list of replacement bmp's installed				X	
	6.D – Develop Waterfowl Management Program in response to local impairments (See task 8.C)	Facility Operations	▪ Assess waterfowl impact on water quality ▪ Assess and move forward with alternative management techniques for Gluck Pond ▪ Develop area specific Waterfowl Management Program for impacted areas of campus as needed	▪ Provide assessment results ▪ Provide description and photos of installed bmp's and measures put in place at Gluck Pond ▪ Provide copy of management plan				X	
	6.E – Develop steam/chilled water infrastructure repair priority list (See task 3.F.1)	Utilities	▪ Create list of required maintenance based on leak detection efforts	▪ Provide list of annual investigation efforts/repairs made/maintenance costs ▪ Provide prioritized repair list	X	X	X	X	X
	6.F – Create procedures to address/repair stormwater issues/problems on campus once they are identified	EMD, Utilities, Facility Operations, Athletics	▪ Create general procedures for notification, responsibility assignment, bmp installation (temporary and permanent), repair/resolution, timeframes, and reporting. ▪ Add procedures to the Stormwater Operations Manual	▪ Provide copy of procedures				X	
	6.G – Evaluate changes to administrative regulation 6:3 with regard to stormwater during upcoming review cycle in 2021	EMD	▪ During regular administrative regulation review cycle, determine if administrative regulation 6:3 needs to be amended based on stormwater program performance.	▪ Provide assessment summary and/or any administrative regulation updates				X	

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency				
					PY1	PY2	PY3	PY4	PY5
SWQMP Review and Mod									
	7.A – Review SWQMP annually and update as required by permit	EMD	▪ Determine completion of SWQMP tasks annually	▪ Provide a summary of the SWQMP assessment along with a description of any modifications made. Include a description of any replacement BMP's along with an analysis of why the former bmp was ineffective or infeasible.	X	X	X	X	X
			▪ Evaluate bmp effectiveness and scheduling	▪ Provide information regarding any modifications to the schedule					
			▪ Modify SWQMP as needed (in accordance with permit)	*See the permit for more details regarding the information to be included with this task					
TMDL's & Impaired Waters									
	8.A – Implement BMP's in Big Elm Fork Watershed in response to recent impairment	Utilities, Athletics	▪ Continue sewer line evaluation/cross connection review	▪ Provide assessment reports/invoices/photos	X	X	X	X	X
			▪ Seal all manholes in Shawneetown/Greg Page area as needed	▪ Provide photos/description of any bmp's implemented					
			▪ Evaluate development of BMP's to prevent discharges of grey/blackwater from tailgating RV's. Implement as necessary. (Coordinate with Task 1.C.1.a)	▪ Provide monitoring results/assessment					
			▪ Perform monitoring to evaluate bmp implementation/need						
			▪ Develop additional bmps as necessary						
	8.B – Begin/continue watershed focused monitoring as appropriate (see task 9.A)	EMD	▪ Sample watershed dry weather flow to determine contribution to local impairments and direct bmp implementation (as appropriate)	▪ Provide sample results/analysis and a description of any action taken as a result		X	X	X	X
	8.C – Continue goose population control efforts at Gluck Pond and FEMA Basins/Big Elm Fork (See task 6.D)	Facility Operations	▪ Reduce waterfowl populations	▪ Provide a description of efforts taken along with an assessment of waterfowl populations	X	X	X	X	X
Monitoring Plan									
	9.A – Assess need/desire/ability to develop and implement watershed focused monitoring plan with emphasis on local watershed impairments	EMD	▪ Evaluate the development of a watershed focused monitoring plan	▪ Provide copy of Monitoring Plan, QAPP, DOW approval, and Water Quality Monitoring Data/Analysis or summary of determination to not pursue watershed focused monitoring		X	X	X	X
			▪ Create/Update monitoring plan as necessary						
			▪ Coordinate with LFUCG to determine their monitoring locations, monitoring dates, constituents, and historical data						
			▪ Develop/Update QAPP in association with monitoring plan as necessary						
			▪ Submit monitoring plan and QAPP to DOW for approval if/when developed						
			▪ Begin collecting water samples in accordance with written monitoring plan and QAPP if/when developed						
	9.B – Evaluate/Plan completion of campus research monitoring database	TFISE, EMD	▪ Work with TFISE Water Working Group to evaluate and complete the campus research monitoring database (as needed)	▪ Provide summary of actions related to the database and link to completed database if applicable					X
Fiscal Req.'s									
	10.A – Perform assessment to determine if all departments are adequately funded to perform stormwater duties as assigned	Facility Operations, Utilities, Athletics, TFISE, EMD	▪ As work is being done to complete SWQMP tasks, determine if departments are properly funded to accomplish tasks and reoccurring stormwater responsibilities	▪ Provide annual stormwater budget information	X	X	X	X	X
			▪ Develop stormwater budget for Utilities Division						
			▪ Assess Grounds Department's ability to perform BMP/storm drain maintenance						
			▪ Develop initial/reoccurring training budget for specialized maintenance needs (if/as needed)						
Reporting Req.'s									
	11.A - Develop and submit the annual report by April 15th	EMD	▪ Compile information regarding SWQMP task completion along with any additional stormwater efforts	▪ Report submitted annually by April 15th	X	X	X	X	X
	11.A.1 – Develop reporting system for those providing annual report info	EMD/TFISE	▪ Have stakeholders provide evidence of task completion along with any additional stormwater effort information in a timely manner	▪ Information received and included in annual report	X	X	X	X	X