

MUNICIPAL SEPARATE STORM SEWER SYSTEM PERMIT

2024 ANNUAL REPORT

FOR THE LEXINGTON CAMPUS OF THE



General Permit Annual Compliance Report

Phase II MS4

Kentucky Division of Water

2024 KYG20 GENERAL PERMIT ANNUAL COMPLIANCE REPORT

Phase II Stormwater MS4

Kentucky Division of Water

For questions regarding this form, contact:

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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 through the eForms Portal.

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

- Due April 15, 2025.

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: 63,999 (34,000 Students, 29,999 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:

Provide a summary of your public education/outreach efforts during 2024. For each material/activity, give a brief description, the pollutant of concern, the target audience, and the number of materials distributed/attendees.

During 2024, the MCM1 and MCM2 programs continued their overhaul. As part of program restructuring, Environmental Quality Management (EQM) is responsible for managing MCMs 1 and 2. The program will be streamlined as part of the upcoming SWQMP development for the new permit. The primary goals of 2024 were to onboard the new Water Quality Compliance Specialist so that familiarity could be gained with the MCM 1 and 2 permit requirements and the SWQMP as well as to provide basic opportunities for UK's public while the new Specialist learns about the program's needs. 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. EQM will continue to work with stakeholders assisting in MCM 1 and 2 efforts, and will communicate with folks in Sustainability, Extension, and Faculty in various colleges to create opportunities for stormwater education as well as content for the broader education of campus.

SWQMP Task	Description of the Material/Activity	Pollutant of Concern	Target Audience	Number Distributed/Attendees
The following efforts took place in 2024 to strengthen the education, outreach, and participation program.				
1.A	Employ interns to assist TFISE in education and outreach activities—A Water Quality Compliance Specialist was hired in Q2 of 2024 to assist with the Stormwater Management Program, including restructured MCMs 1 and 2. The Water Quality Compliance Specialist is responsible for managing campus resources to meet the requirements of the scaled down program. Additionally, an intern was hired from August to November of 2024 to assist with education and outreach activities. Budget Development—A budget for MCMs 1 and 2 was developed and approved (see the following and the discussion for MCM 2 for more information) in 2018. This budget included 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. This budget may be reviewed as program planning progresses.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat, Illicit Discharges	Students, Staff, Faculty, Visitors	Campuswide
The following efforts are related to the update and maintenance tasks associated with the Stormwater Website.				
1.B	Stormwater Website Update and Maintenance—A significant accomplishment during 2021 was the completion of the EQM website update, which includes a portion specifically devoted to the UK Stormwater Program. This website was maintained throughout 2024. The Stormwater Website includes detailed information regarding UK's Stormwater Program, including operations and construction-related stormwater requirements. Located at https://www.uky.edu/env/stormwater , this website has been designed to serve as an educational tool, providing detailed information regarding each MCM and UK's permit compliance efforts. Key components of the website related to MCM 1 include the interactive MS4 map, illicit discharge reporting system, and educator resource pages, discussed in greater detail in the following along with various measurable goals for subsequent MCM tasks. The website will have ongoing updates as additional information and resources become available. Analytics for the Stormwater Website from 2024 are included in Appendix A .	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat, Illicit Discharges	Students, Staff, Faculty, Visitors	Campuswide

1.B.1	Interactive MS4 Maps- - MS4 System Map—UK's GIS assisted EQM in the update and maintenance of this map that is accessible from the stormwater website. Efforts are ongoing to improve the mapping and include additional information. Future efforts will include the addition of construction site information as well as a database of post-construction BMP information. - UK Environmental Storm Drain Marking Program—This system is updated on an as needed basis and automatically as drain assessments/markings events are completed. In 2024 the Stormwater Intern completed the assessment of over 1159 drains and applied 200 drain markers. Mapping was updated post verification of these efforts. Future efforts will include the elimination of the "To Be Determined" drain status via additional drain assessments and marking performed by the 2025/2026 Sustainability Stormwater Intern. - Stormwater Tracking Tool—Master's Student and UK IT Technical Project Specialist Kevin Dohner completed work on his proof of concept for the Stormwater Tracking tool. The current tool includes the UK Main Campus MS4 area with the existing GIS information for BMPs and the stormwater conveyance system. Users can click on the map and the stormwater route is highlighted showing the overall distance traveled before it exits the MS4. Additional improvements and information can be added in the future through collaboration with UK IT and EQM. The concept can be accessed at: https://kdoh12.github.io/stormwater-tracking/.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat, Illicit Discharges	Students, Staff, Visitors	Campuswide
1.B.2	Illicit Discharge Reporting System—The website allows for reporting of illicit discharges within the MS4 via the Illicit Discharge Reporting Tool. EQM worked with UK GIS to develop a smart reporting tool that provides a fillable form and allows the collection of additional data using features from smart devices including GPS location and the ability to attach photographic documentation. The effectiveness of this tool will be tracked through the number of reported instances and is expected to increase as the new tool is promoted via planned outreach and education. Additional Illicit Discharge Detection and Elimination (IDDE) efforts are further discussed in MCM 3 and in Appendix C.	Illicit Discharges	Students, Staff, Faculty, Visitors	Campuswide
1.B.3	Educator Resource Page Development—A location for Educator Resources is included on the UK Stormwater Program website where resources are organized and posted for distribution. This location on the website is updated as needed with additional information.	Non-Point Source, Urban Runoff Pollutants, Illicit Discharges	Students, Faculty	Campuswide
1.B.4	Social Media- Development of EQM's updated social media program began in 2022 and included multiple internal meetings and a peer evaluation of other universities to determine the most beneficial usage of social media as well as platform selection. Accounts were created for both Facebook (UK-Environmental-Quality-Management@Facebook) and X (@UK_EQMD). The program will be managed by the EQM Administrative and Technology Support Specialist and an intern may be used to assist in content creation. Because of turnover in the Administrative and Technology Support Specialist position as well as the Water Quality Compliance Specialist (WQCS), the social media program was temporarily put on hold. Efforts are planned to resume in the summer of 2025 with the start of the Sustainability Stormwater Internship.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat, Illicit Discharges	Students, Staff, Faculty, Visitors	Campuswide
The following materials were developed and/or distributed in 2024.				
1.C	Stormwater Website Educator Resource Page—This location on the Stormwater Website has become a clearinghouse for materials and other resources that have been developed for distribution. It will continue to be updated as additional resources become available.	Non-Point Source, Urban Runoff Pollutants, Illicit Discharges	Students, Faculty	Campuswide

1.C.4	A Wards Stormwater Floodplain Model was purchased in 2019 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. In 2024, the KWRI copy of the model was used at the following events. • Toyota Earth Day Festival, Georgetown, KY (April 22, 2024) - o 150 attendees • Water Week Event in Wellington Park, Neighbors United for North Elkhorn Creek (March 17, 2024) - o 15 signed in • Kentucky Geological Survey Open House–(October 16, 2024) - o 150 attendees	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Students, Staff, Faculty, Visitors	Public
1.C.4	KWRRI Watershed Academy–In 2017, the Kentucky Division of Water provided 319 Nonpoint Source Grant funding to KWRRI to develop six initial training modules for the Kentucky Watershed Academy. The six core modules address The Clean Water Act & Related Water Quality Laws, Water Quality Basics, Dealing with Data, Land Use Impacts & Related Best Management Practices, Likely Partners, and Effective Communications. These modules provide a strong foundation for watershed coordinators and other water quality professionals to better understand and navigate the wide range of challenges and opportunities they will inevitably confront in their daily efforts to improve water quality in Kentucky. Materials available include presentations, interactive group or individual activities, and supplemental reading materials and guides. The presentations are available through the KWRRI website as well as the KWRRI YouTube Channel.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Students, Staff, Visitors	16.641 views, more than 1.496 hours of watch time
1.C.3	Alumni Drive Stream Restoration Project Outreach and Education–The stream restoration project along Alumni Drive was originally completed in 2019, and efforts are continuing to create education and outreach opportunities. Educational signage was installed in 2021 and continues to provide project information to the public. Classes and professors used the stream restoration for teaching and research. Specifically, BAE 532 (Introduction to Stream Restoration) uses the restoration as part of their lesson plans (available upon request). Additional hydrologic and water quality monitoring has been conducted at the site for the last several years, and the site is used for BAE recruitment tours.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Students, Staff, Visitors	BAE 532 Class
1.C.4	Activity Information Sheet Development–Updates have continued on several of the Activity Information Sheets. Activity Information Sheets were developed for a variety of activities and are in various stages of review or have been completed. These will be available on the Stormwater Website.	Non-Point Source, Urban Runoff Pollutants, E.coli	Students, Staff, Visitors	Widely Available
1.C.4	Pet Waste response for Athletics Facilities–Worked with the folks in Athletics on information related to the "Bark in the Park" event. This included providing information to any pet owner that entered the park, signage about mandatory waste collection and disposal, and providing waste collection bags around the event.	Non-Point Source, Urban Runoff Pollutants, E.coli	Students, Staff, Visitors	All Attendees
1.C	Sustainability Strategic Plan 2.0–Amendments to the final draft continues for the update to the Sustainability Strategic Plan (SSP 2.0). The final draft of SSP 2.0 includes Guiding Principle #5, Goal 1, "Demonstrate excellence and innovation in water conservation and stewardship." Additional information about SSP 2.0 is included in Section E, and a copy of this draft plan update is included in the 2023 Annual Report.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat, Illicit Discharges	Students, Faculty, Staff, Visitors	Campuswide
1.C.4	Urban Extension Publications–In November 2024, KWRI posted a curated list of urban extension publications dealing with urban water quality related issues at https://kwri.uky.edu/cooperative-extension-publications.	Urban Runoff Pollutants	Students, Staff, Visitors	Widely Available, Website saw 2,426 visitors in 2024

1.C.4	Triple-Bottom Line Analysis—In November 2024, KWRI published the Kentucky Triple Bottom Line Analysis of Conservation Practices at https://kwri.uky.edu/tbl . This tool ranks urban, rural, and stream and ditch practices in terms of environmental, economic, and social factors to produce a quantitative score. With simple pictures and descriptions, this resource allows for local leaders and interested community members to prioritize practices for their community.	Urban Runoff Pollutants, Loss of Riparian Habitat	Students, Staff, Visitors	Widely Available, Website saw 2,426 visitors in 2024
1.C.4	Kentucky Watershed Watch Grading System—In 2024, KWRI, KGS, and Kentucky Watershed Watch collaborated to develop a grading system for Kentucky Watershed Watch sites results throughout the state from 1997 to 2023 (https://kgs.uky.edu/wwky/result/). This grading system provides a 0-100 scale for sites and parameters for comparability across geography and pollutants. The grading system is designed to aide in community volunteer understanding and action based on collected water quality monitoring results.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat, Illicit Discharges	Students, Faculty, Staff, Visitors	Widely Available
1.C.4	Kentucky Erosion Prevention and Sediment Control Interactive Guide—In September 2024, the Kentucky Erosion Prevention and Sediment Control Interactive Guide was published at https://www.kyms4.org/epscguides . This interactive guide depicts an example residential construction site with interactive links to the Kentucky Division of Water ESPC factsheets associated with each of these BMPs. This interactive guide is intended to provide an overview of how all the practices work together on a site.	Urban Runoff Pollutants, Illicit Discharges	Students, Faculty, Staff, Visitors	Widely Available, Website saw 346 visitors in 2024
1.C.4	Interactive guide for Permeable Pavement—In September 2024, the interactive guide for Permeable Pavement was published at https://www.kyms4.org/postconstructionbmpguides . This post-construction BMP education guide provides a wealth of information concerning the components of permeable pavement, 360-degree photo example from UK's campus, design calculations and guidance, and inspection and maintenance schedules and forms.	Urban Runoff Pollutants	Students, Faculty, Staff, Visitors	Widely Available, Website saw 346 visitors in 2024
The following events were hosted or supported by UK in 2024 to involve the public and engaged student groups.				
1.D	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. In 2023, this effort continued with decals placed on the top of outdoor landfill-bound receptacles with updated signs on all 500 outdoor trashcans.	Non-Point Source, Urban Runoff Pollutants	Students, Staff, Visitors	Campuswide
1.D	The following Green Infrastructure Tours were held on campus in 2024: - UEM hosted a CUP Water Harvesting Tour on July 7, 2024 which included UK Engineering Faculty and some of the LFUCG Water Quality Board. - Sections of the AFE 100 class participated in a walking tour of campus stormwater infrastructure with a specific focus on green infrastructure and stream restoration.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Students, Staff, Visitors	UEM Hosted XX Attendees AFE 100 Hosted 593 Attendees
1.D	Campus Sustainability Showcase—This event was held October 23, 2024. The event highlighted the Stormwater Harvesting Project at the Central Utility Plant with the information booth staffed by folks from Utilities. Additional information about the Stormwater Harvesting Project is included in Section B and later on in this report.	Non-Point Source, Urban Runoff Pollutants	Students, Staff, Visitors	125 Attendees
1.D	Water Week 2024—Water Week is sponsored by the UK College of Agriculture, Food and Environment, the City of Lexington, and local watershed groups. It was held from March 16 th to March 23 rd , to celebrate the importance of water and how to protect it. Additional information and a list of associated events is included in Section B.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Students, Staff, Visitors	Campuswide

1.D	Tree Week—This year was the sixth annual Tree Week, which was held from October 11 to 20, 2024, and is “A celebration of trees and all of the ways that trees affect our lives.” Presented by the UK’s Urban Forest Initiative, this celebration included more than 85 events hosted by multiple unique hosts in Lexington along with other communities around the state (including Hazard, Berea, Georgetown, and Paducah). Additional information regarding Tree Week can be found at the event website: https://ufi.ca.uky.edu/treeweek2024	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Students, Staff, Visitors	Widely Available
1.D	The Watershed Game—An interactive tool that helps individuals understand the connection between land use and water quality. Participants learn how a variety of land uses impact water and natural resources, increase their knowledge of BMPs, and learn how their choices can prevent adverse impacts. Participants apply plans, practices, and policies that help them achieve a water quality goal for a stream, lake, or river. KWRRI purchased “The Watershed Game” Local Leader Versions for the Stream Model and Lake Model as well as the classroom version of the Stream Model in 2021. These resources are available for use by faculty or staff who are interested. There are copies of the Local Leader Version, Lake Version, and Classroom Version available for borrowing.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Students	Available Upon Request
1.D	Water Resources Annual Symposium—Held on September 27, 2024 at Central Bank Center in downtown Lexington, this event had 46 presentations, with multiple addressing stormwater topics. More information on the event can be found at: https://uknowledge.uky.edu/kwrri_proceedings/2024/symposiumprogram/1 .	Non-Point Source, Urban Runoff Pollutants	Students, Staff, Visitors	125 Visitors
1.D	University Drive Restoration Project—Lewis Honors College Faculty member, Kenton Sena, and his HON 152 class developed a project to remediate erosion along University Drive adjacent to Lewis Hall in 2022. The idea was to test the effects of engineering solutions for improved infiltration and planted solutions for soil development, mulch retention, soil health, and soil microbial community diversity. The project included plantings completed by volunteers as well as UK Grounds staff. UK Grounds staff completed the planting in 2023 with an additional 2,000 sedges and a few dozen shrubs. Follow up research was completed in 2024, and a manuscript is being prepared to share the results in a peer-reviewed journal in 2024. A copy of the draft manuscript is available upon request. Additionally, this site was used for Kenton's Fall HON 152 - Lexington Ecosystem class. A copy of the assignment which included collecting data, digitizing the information, and preparing a report along with photos of the class activity are included in Appendix A .	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Students, Faculty, Staff, Visitors	20 HON 152 Students
1.D	Kentucky Stormwater Training Program Grant— In October 2023, a Stormwater Outreach Strategy Committee was formed, comprising of 20 representatives of Kentucky Division of Water, MS4s of various sizes, the UK Water Quality Compliance Manager, and KWRI. In 2024, the committee met 6 times to develop a to develop a Kentucky Statewide Outreach Strategy. During these meetings, KWRI lead training presentations on Target audiences and Evaluation Metrics and Barriers and Bridges Analysis. In 2024, the Committee identified and prioritized: • Water related motivations associated with ten core personal values • Seven major receiving water impacts • Ten pollution-generating activities • Forty potential target audiences with profiles on eight major audiences • Summarized available research on target audiences in Kentucky • Twelve messages of forty-seven potential messages for further strategy development • Forms to assist in describing target audiences and listing barriers and bridges to implementation	Illicit Discharges	Students, Staff, Faculty, Visitors	Widely Available

1.D	Cooling Tower Stormwater Harvesting Project– On June 7th, 2024, Britany Ragland gave the LFUCG Stormwater Stakeholder Advisory Committee a quick overview of the Cooling Tower Stormwater Harvesting Project highlighting the project goals, lessons learned, and total stormwater diverted. A copy of the presentation and a case study handout are included in Appendix A and meeting minutes are available at: https://www.lexingtonky.gov/stormwater-stakeholder-advisory-committee	Non-Point Source, Urban Runoff Pollutants	Staff, Faculty, Visitors	35 Attendees
1.D	Presentation: Lessons Learned: BMP Inspections, Tracking, and Maintenance Plan Development for the University of Kentucky–Nathan Weber from EQM and Steven Vogel from Strand Associates, Inc presented on at the Kentucky Stormwater Association Annual Conference on July 11, 2024. A copy of the presentation is available in Appendix A .	Non-Point Source, Urban Runoff Pollutants, Illicit Discharges	Staff, Visitors	100+ Attendees
1.D	Presentation: Insights and Recommendations from the 2022 Kentucky MS4 Annual Report Review–Steve Evans and Adam Shelley presented at the Kentucky Stormwater Academy Annual Conference on July 12, 2024. A portion of this report was also made available at https://www.kyms4.org/annualreportreview2022 .	Non-Point Source, Urban Runoff Pollutants, Illicit Discharges	Faculty, Staff, Visitors	100+ Attendees
1.D.1	Water Professionals Student Chapter–The Water Professionals Student Chapter at UK holds events throughout the academic year for the AWWA/WEA Student Chapter. It discusses topics related to the fields of sustainability and water resources engineering, careers in the water or wastewater industries, the water resources profession, or environmental engineering and related professions. It also provides opportunities for students to meet with local water professionals.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Students, Faculty, Visitors	12+ Attendees
The following Publications and Articles were created for campus-wide distribution.				
1.E	WholeSum Blog–WholeSum is a platform designed to inspire, inform, and encourage the UK community to engage in sustainability. To do this, they have highlighted six areas of focus: UK operations, sustainability tips, community, research, academics, and activism. The blog can be found at https://wholesumky.org/ . Several blog posts touch on stormwater impacts, including the following: - How UK cares for over 13,500 trees – 1/18/24 - Stormwater Harvesting System Case Study – 2/15/24 - Earth Month Events 2024 – 3/28/24 - Sustainable Features: Gatton Student Center – 9/17/24 Copies of the blog posts are available on the website.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat, Illicit Discharges	Students, Staff, Faculty, Visitors	Widely Available
1.E	UK Facilities Newsletter–Created by Shane Tedder, Sustainability Coordinator for UK, this newsletter was distributed monthly to all facilities personnel. The audience is primarily the Facilities Management Division. In 2024, content was provided in the following issues: - Happy Earth Day #55 (April 22, 2024) - How We Get it Done: Decreasing Water Usage During a Time of Significant Growth (September 6, 2024) Issues are included in Appendix A .	Non-Point Source, Urban Runoff Pollutants	Staff	Around 800 distributed
1.E	UEM Week in Review Newsletter (UEM Weekly Wire) – This newsletter reports on UEM weekly activities, including stormwater and sanitary efforts. Distributed via e-mail, this publication reaches approximately 100 Utilities and Energy Management personnel, plus key stakeholders. 32 of the issues covered stormwater related topics and are summarized in Appendix A with a few examples of newsletters. All copies of these issues are available upon request.	Non-Point Source, Urban Runoff Pollutants, Illicit Discharges	Staff	100+ distributed

1.E	Facilities Management Training Newsletter–This monthly newsletter provides training information to Facilities Management personnel in the form of course announcements, reminders, and tips. As part of MCM 1 and 2 improvements, EQM will be regularly providing stormwater related content for this publication. In 2024, content was provided in the following issues: September Edition: General Stormwater, SPCC, and GPP Training reminders and tips. Issue is included in Appendix A.	Non-Point Source, Urban Runoff Pollutants, Illicit Discharges	Staff	Around 800 distributed
1.E	UKNow Articles–The following UKNow articles were published relating to stormwater or water quality and are included in Appendix A: “Celebrate Earth Day at UK” (April 22, 2024) “Did you Know? Plastic Free July” (July 2, 2024)	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat, Illicit Discharges	Students, Staff, Visitors	Campuswide
1.E	The Kentucky Water Research Institute supports the research of others through collaborative partnerships and grants. In 2024, several of these research projects were related to water quality and stormwater subjects. Because many of these are copyrighted, these works are listed with links to sources rather than full-text downloads at the following link: https://uknowledge.uky.edu/sup/	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat, Illicit Discharges	Students, Staff, Faculty, Visitors	Widely Available
Update Staff IDDE Training and Create Method to Ensure Training Is Conducted Annually				
1.F	Staff IDDE training has been incorporated into the General Stormwater Training, developed in 2022, to be taken by employees annually. IDDE information has also been added to the Stormwater Website. A detailed Illicit Discharges page is available as an education and training tool and contains such information as how to identify and report illicit discharges as well as a pictorial guide to the most common illicit discharges found on campus. An IDDE Basics Fact Sheet is also included on the Stormwater Training Webpage and is available for use as a training aid.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Staff	183 Attendees
Update Individual Departmental Stormwater Training and Improve Delivery System and Participation				
1.G	General Stormwater Training–A general stormwater training was developed in 2022 and is available through UK’s online platform. This training that includes general reminders about stormwater protection and illicit discharge reporting is scheduled to be taken by all relevant new employees as well as all applicable existing employees annually. Additional information regarding the General Stormwater Training is included in Section F.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Staff	183 Attendees
1.G	For departmental specific training, each division or department is responsible for assessing activities performed by employees and creating/providing departmental specific training to cover those activities. These trainings are provided by supervisors during departmental staff and safety meetings. The Stormwater Training webpage is a resource for supervisors to use in the creation of this departmental training. This resource defines the available training types at UK, provides access to currently available training, and provides training resources for supervisors in the form of Fact Sheets that discuss BMPs for campus activities that have the potential to impact stormwater. These Fact Sheets are all in the process of being updated and converted to Activity Information Sheets with a focus on stormwater protection. Some of these conversions have been completed and are available upon request.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Staff	Widely Available

1.G	SPCC/GPP Annual Training—A combined Spill Prevention, Control, & Countermeasure and Groundwater Protect Plan training was developed in 2022 and made available for staff to take via UK's online platform in order to meet annual training requirements. Additional information regarding the SPCC/GPP Training is included in Section F.	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Staff	83 Attendees
LFUCG MS4 Program Coordination				
1.I	EQM and UK staff continued regular meetings with LFUCG to coordinate programs and provide updates. This was achieved through attendance and participation with LFUCG Stormwater Stakeholder Advisory Committee Meetings held quarterly, as well as through participation in additional trainings that were held throughout the year. UK participated in the following: LFUCG Stormwater Stakeholder Advisory Committee Meetings—Minutes for these meetings as well as copies of the meeting agendas are available at: https://www.lexingtonky.gov/stormwater-stakeholder-advisory-committee . - June 7, 2024 - December 6, 2024 LFUCG Trainings: - Erosion and Sediment Control - October 30, 2024 - Construction Industry Workshop - December 13, 2024	Non-Point Source, Urban Runoff Pollutants, Loss of Riparian Habitat	Staff	N/A

What is the primary pollutant(s) of concern for the MS4 Public Education & Outreach Program? Why was this pollutant(s) chosen?

The receiving waters are impaired under a variety of parameters. The suspected sources are Non-Point Source pollutants from urban runoff from a high-density area and loss of riparian habitat. This includes anything that the University can discharge other than stormwater, like pollutants generated from staff and contractor activities in addition to illicit discharges from steam/chilled water and aging sanitary sewer infrastructure.

What behavior changes is your Public Education Program seeking among the target audience(s)?

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. The goal of this program is to increase staff's awareness that their actions can cause stormwater pollution, that they need to report and eliminate stormwater issues when they are observed, and that stormwater pollution is prohibited. Ultimately, 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 continue this effort as UK moves forward with the MCM 1 and 2 programs. 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 area and Alumni Drive Stream Restoration projects have been used extensively for these purposes. More information is provided in MCM 2.

What is the mechanism for measuring the understanding and adoption of the targeted behaviors among the targeted audience(s)? When was the most recent measurement performed? What were the results?

Stormwater Survey—An updated survey was developed based on the original survey from the first permit cycle. The survey was sent to approximately 10,000 e-mail addresses in May 2021. Survey results were received in July 2021 and have impacted the approach to stormwater-focused outreach. More details for this can be found in the 2021 Annual Report.

How have these measurements been used to direct education and outreach resources more effectively? How has the Public Education and Outreach Program been altered due to these measurements?

Throughout the permit cycle, efforts have been made to improve the stormwater training. This includes detailed instructions for the use of the IDDE reporting tool and a focus on personnel briefings targeted at staff activities. Public outreach in the form of UKNow articles have also focused on these reporting elements and the protection of stormwater through common activities and other outreach efforts described in the section above.

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 monitor permit compliance for the UK Stormwater Program falls under UK's EQM. EQM'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 was originally created for MCM 1 to assist KWRRI and TFISE in the development of a more robust program. This budget may be reassessed as changes are made to the program and its management.

The current recurring annual budget for this program is \$56,000, excluding one-time costs. See the following chart for more details:

2018 - 2023 SWQMP Estimated Budget									
Task (#)	Task/Expense Description	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.2	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

Attach documentation of all public education/outreach activities held in 2024. This should include (as applicable):

Educational Materials

- Materials distributed.
- Web addresses for online materials if the activity was online.

Educational Activities

- Documentation of the method for notifying the public of educational activities (flyers, social media posts, etc.)
- Documentation of the activities (meeting notes, minutes, agendas, pictures, etc.)
- Documentation of outreach (sign in sheets, pictures, attendance counts, etc.)

Documentation of Measurement(s) of Program Efficacy

- Results of measurement(s) of the changes in understanding and adoption of the targeted behaviors among the targeted audience(s.)

The following documentation of public education/outreach activities held in 2024 is included in Appendix A:

- Stormwater Website Analytics
- HON 152 – University Drive Restoration Project Assignment & Photos
- Cooling Tower Stormwater Harvesting Project Presentation & Case Study
- BMP Lessons Learned Presentation
- UK Facilities Newsletters
- UEM Weekly Wire
- Facilities Management Training Newsletter
- UK Now Articles

B. Public Involvement and Participation:

Provide a summary of your public involvement and participation efforts during 2024. Describe any events or activities advertised to the public by the MS4 in 2024 through which the public may be involved in the stormwater management program. For each activity give a brief description, the method of advertisement to the public, who hosted/led the activity, and the results of the activity (SWQMP changes, wastes collected, number of participants, etc.):

SWQMP Task	Description of the Activity (Include date, location, and purpose)	Method of Advertisement	Who Hosted	Results of Activity
Storm Drain Marking Program				
2.A	As a part of the effort to update the Storm Drain Marking Program, work began on a Marking Database and Program Update in 2019. Over the past few years, the Environmental Storm Drain Collector has been created along with technical support documents, marker installation instructions, and a presentation on drain marking and inspection for class instruction. The updated approach uses a mobile-based platform to create inspection reports and documentation. Using this, participants can locate, document, and track marked storm drains. A map showing the progress of the program with an opportunity to volunteer has been created and is included on the Stormwater Website.	N/A	Internal Project	Easier documentation and tracking for participants marking storm drains
2.A.1	In 2024, an intern was hired to continue drain assessments and marking. During the internship, 1159 drains were assessed and approximately 200 were marked. One outcome of the drain assessments was that the intern reported several Illicit Discharge concerns to be investigated by EQM. Additionally, the intern developed a final draft for an updated drain marker.	Stormwater Website	University of Kentucky	1159 drain marking assessment entries were completed with 1 Intern
2.A.3	An advertising and awareness campaign targeted at improving program participation by faculty, staff, students, and visitors will continue to be developed over the permit cycle. Training materials and videos have been added to the <u>Storm Drain Marking</u> portion of the website.	N/A	Internal Project	Training materials included on website
2.A.1	Drains were previously inventoried as part of Grounds Drain Maintenance Program and documented via their information collector. Because of restructuring within Grounds, their use of the collector has been put on hold until the appropriate staff can be trained. To continue to make progress, the EQM Water Quality Compliance Specialist has been tasked with assessing all storm drains since 2022. The collector will be used to assess the marking status of each drain as well as any associated issues to provide a baseline status of all drains or until such time that grounds can resume its efforts.	N/A	Internal Project	All drains were assessed and baseline status of each was updated
The following activities involving students, faculty, and staff in stormwater activities occurred in 2024.				
2.B	Water Week 2024— Water week was hosted from March 16 th to March 23 rd to celebrate the importance of water and how to protect it. Activities included the 5 th Annual Reforest 5K, Litter Cleanups, Hiking, Workshops, and Informational Sessions. Event information is available annually through https://www.lexingtonky.gov/water-week as well as various media outlets and social media. A copy of the 2024 event list is available in Appendix B .	LFUCG Website, UK Martin-Gatton College of Food and Environment Website, University Email, Local News	The University of Kentucky partnered with KWRI, TFISE, and LFUCG to host event.	The public was informed of the importance of water and how to protect it

2.B	UK Sustainability Challenge Grants– The Sustainability Challenge Grant program is designed to engage multidisciplinary teams from the UK community in the creation and implementation of ideas that will promote sustainability by simultaneously advancing economic vitality, ecological integrity, and social equity. In 2024, six teams of UK students, faculty, and staff were selected to receive Sustainability Challenge Grants totaling a combined \$200,000. One of the grants funded in 2024 titled Can Urban Reforestation Contribute to Climate Mitigation received a grant and directly impacts stormwater. The project proposal is available upon request.	Website, Social Media, UK Now	University of Kentucky	Grant Recipients were chosen
2.B	UEM Intern Stormwater Case Study–An intern with Utilities, Jennifer Bukowski, prepared a stormwater harvesting case study based on the stormwater harvesting work at Central Utility Plant focused on the process, operation, maintenance, performance, and sustainability of the project. A copy of the draft case study is included in Appendix B.	Intern Assignment	University of Kentucky	Case study developed.
2.B	Kentucky Stormwater Association Limelight Series–KWRI worked with the Kentucky Stormwater Association to host the Limelight Series during two of the Kentucky Stormwater Association Quarterly meetings each year. This series is intended to train MS4 Coordinators statewide by highlighting successful efforts of other MS4s in the state. Two Limelight Series were hosted in 2024: Stormwater Ordinances on February 7th (https://www.kyms4.org/stormwater-ordinances) 85 attendees were present. Presentations included: - Minimal Elements for Compliance – Lucas Hanks, KDOW - Beneficial Elements for More Effective Ordinances – Steve Evans, KWRI - Ordinances for Effective Enforcement of Illicit Discharges – Bowling Green, Matt Powell - Updating Requirements to Manage Critical Flow – Brooke Shireman, SD1 - Establishing a Payment in Lieu Of Program, Neal Crawford, QK4 and David Curry, City of Radcliff - Overview of KY Stormwater Fees and Structures, Steve Evans, KWRI - ERU Fee Structure – Josh Morgan, City of Danville - Two-Tiered Fee Structure – Nikki Koller, Warren County Stormwater - Introduction to Co-Permittee Agreements – Steve Evans, KWRI - Bullitt County Co-Permittee Agreement – Allison Thomas, Bullitt County Key Steps to Your Compliance and Enforcement Program on October 23 (https://www.kyms4.org/compliance-and-enforcement) – 74 attendees were present. Presentations included: - Compliance and Enforcement – Demetria Kimball-Mehlhorn, LFUCG - Enforcing Ordinances – Demetria Kimball-Mehlhorn, LFUCG - Internal Enforcement – Sarah Donaldson, LFUCG The limelight series video recordings are also posted on the KWRI YouTube channel. In 2024, the 11 videos had 246 views with 8.33 hours in watch time.	KSA Website and Announcement	University of Kentucky through KWRI partnered with Kentucky Stormwater Association	The public was informed on a variety of topics listed in the activity description.

2.B	UK Stormwater Logo Competition– In an effort to brand the UK Stormwater Program and create a symbol that can be universally recognized across campus, the UK MS4 Stormwater Program 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 were judged based on creativity and suitability for diverse uses, including website, apparel, and brochures. The logo or “graphic identifier” was completed in 2022 and passed internal UK review. The graphic identifier will continue to be used by the program based on use guidelines set forth by Public Relations.	UKNow, Flyers	University of Kentucky	Logo was created and adopted
2.B	Alumni Drive Tree Planting–Kenton Sena and approximately 40 students from his classes planted 10 sizable trees along Alumni Drive. This project was funded by a LG&E Plant for the Planet grant, matched with funds from the Student Sustainability Council. Work with this grant to plant additional trees is planned for 2025. Photos from the tree planting event are included in Appendix B .	Class Assignment	University of Kentucky	Trees planted to improve stormwater quality
2.B	With the stream restoration project along Alumni Drive completed in 2019, efforts are continuing to create education, involvement, and participation opportunities with various classes. As mentioned in MCM1, in 2024, several classes and professors used the stream restoration for teaching and research.	Class Assignment	University of Kentucky	Research and learning opportunities
2.B	CE 429 Central Utility Plant Senior Design Project–The fall cohort of the civil engineering senior design class used the CUP Water Harvesting Project as their topic for the semester. Student teams were responsible for researching the process, evaluating a design, and developing their own implementation approach for the project. Each team prepared a poster submission with their plan and findings. These posters are included in Appendix B .	Class Assignment	University of Kentucky	Learning opportunities for students studying engineering.
Procedures for notifying students, faculty, and staff of stormwater activities.				
2.B.1 2.B.2	The website includes a <u>“Get Involved” section</u> that provides information for students, faculty, and staff regarding the various opportunities available to engage in stormwater activities. Individual activities also provide notifications to targeted groups through a variety of methods to promote attendance at their events.	Website, social media, class announcements, news, flyers, and a variety of other outlets	University of Kentucky	Information was provided for students, staff, faculty, and visitors about opportunities to be engaged in stormwater activities.
Consider development of brief pre and post survey for activity participants.				
2.C	The inclusion of a survey for activity participants is being handled on a case-by-case basis.	N/A	N/A	N/A

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

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, UK has a Stormwater Stakeholder Advisory Committee that is made up of staff from various campus departments including Athletics, Environmental Management, Utilities and Energy Management, Facilities Management, Capital Projects Management, the Office of Sustainability, and the College of Agriculture. Formed in 2010 to address on-campus stormwater issues, the members of this committee assisted in the creation of and work to accomplishing the tasks set forth in UK’s SWQMP. Among the group’s many responsibilities are the enforcement of the stormwater policies and procedures as well as the

development of new policies and procedures, when required, for the continued improvement of the UK Stormwater Program and the protection of water quality.

How can the public find information about the SWQMP?

At the Stormwater Stakeholder Advisory Committee meetings, the representatives from UK's faculty and staff that assist in the implementation of the UK Stormwater Program report on their department or group's progress towards the tasks listed in the SWQMP. The updates shared are recorded as meeting minutes and distributed to provide progress updates. These updates are also incorporated into the task tracking spreadsheet that is a shared document between all stakeholders providing ongoing access to the program status.

UK's public can access information regarding UK's Stormwater Program through the Stormwater Website that includes detailed information in the following sections: Program Information, Stormwater 101, Protecting Our Streams, Educational Resources, Getting Involved, Training, Illicit Discharges, Construction, Post Construction BMPs, and Maps. EQM also responds to requests for information as needed.

What is your budget for MCM #2?

As mentioned in MCM 1, a specific budget has been created for MCM 2 to assist in the development of a more robust program. This estimated budget covers specific tasks and direct costs only. Additional funding can be provided on an as-needed basis. This budget is due to be reassessed as changes made to the program and its management are realized. 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.

The current recurring annual budget for the MCM 2 portion of this program is \$6,000, excluding one-time costs. Refer to the following chart for more details:

2018 - 2023 SWQMP Estimated Budget									
Task (#)	Task/Expense Description	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

Attach documentation of all public involvement/participation activities held in 2024. This should include (as applicable):

- Advertisements to the public of each activity (flyers, social media posts, etc.)
- Documentation of the activities (meeting notes, minutes, agendas, pictures, etc.)
- Documentation of participation (sign in sheets, pictures, attendance counts, waste collection amounts, etc.)

The following documentation of public involvement/participation events held in 2024 is included in Appendix B:

- Water Week 2024
- Alumni Drive Tree Planting
- CE 429 Central Utility Plant Senior Design Class Submittals
- UEM Intern Stormwater Case Study

C. Illicit Discharge Detection and Elimination:

Did you have any reported/discovered illicit discharges for 2024? If so, describe the incidents including the investigation procedures and the elimination.

- 3.E The use of the MS4 Web software for IDDE tracking began in 2012 and was used through July of 2024 when the software was retired. That information was moved to a new software program, Compliance Go, which will be used going forward for continued tracking. UKIT has also developed a stormwater-related complaints GIS tracking tool, discussed below, that has been used over the last several years. For the 2024 reporting period, there were a total of 30 illicit discharge or stormwater complaints reported and resolved. Output from the reporting tool and a detailed report of each is included in **Appendix C-1**.

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

- 3.C The Stormwater Website allows for reporting of illicit discharges within the MS4 via an Illicit Discharge Reporting Tool. This smart reporting tool provides a fillable form and allows the collection of additional data using features from smart devices including GPS location and the ability to attach photographic documentation. The effectiveness of this tool will be tracked through the number of reported instances and is expected to increase as the new tool is promoted via planned outreach and education.

If a spill or release of a chemical, petroleum-based product or a hazardous substance occurs at UK, EQM provides an around-the-clock on-call service that can be called upon for assistance. However, if an incident does occur, UK staff are trained through the SPCC Program in the correct method of handling substances, responding quickly to small spills, and regulatory requirements for reporting. Additional information regarding the SPCC program is included in Section F.

In those instances that the volume exceeds a small manageable amount, EQM is prepared to respond and assist. EQM may be contacted during regular business hours at its main line, 323-6280, or after hours by dialing 911 from any on-campus phone or by contacting the UK Police at 257-UKPD (8573). Additional information can be found on the [Spill Plans and Response Page](#) of the Stormwater Website.

How is this reporting mechanism advertised to the public?

A link to the reporting tool is included on every page of the Stormwater Website though a large button underneath the menu. The Stormwater Website also contains a specific section on the reporting of Illicit Discharges as well as a Fact Sheet that covers Illicit Discharge Basics, one of which is reporting. The General Stormwater Training provided to staff includes how to find the tool and instructions for usage.

Do you have a written IDDE Plan in place?

- 3.B
3.B.1
3.D EQM originally created its IDDE Field Protocol Plan in 2011 and updated the plan in March 2015. The plan included sections on Field Screening and Inspection, Identifying Illicit Discharges, Indicator Parameters, Steps to Remove Illicit Discharges, Enforcement Procedures, and Recordkeeping. A new updated version was finalized for formal adoption in 2022. IDDE is also covered in the basic stormwater training for employees and includes instructions on the use of the latest version of the IDDE reporting mechanism.

- 3.B.2 Planning efforts have also begun on the development of a sanitary sewer overflow protocol document to supplement the IDDE plan as a part of the Stormwater Operations Manual development. Following the review and finalization of this document, copies of the procedures will be distributed, and training provided as needed.

The Monitoring Plan was updated in 2023 to meet the requirements stated in Section 2.5 of the MS4 Permit. Previously updated in 2015, the updates include a brief narrative of the permittee's proposed monitoring program, a map of the Urbanized Area showing the outfalls including names of the receiving streams, information on the water quality status of the local receiving streams based on the latest 303d list, an Inspection Checklist for visual monitoring of the outfalls, including basic information, documentation to verify performance of the visual monitoring, standard operation procedures, and any reference materials cited. The updated Monitoring Plan is available for review upon request.

Have you completed the mapping of the storm sewer system? If not, what is the percentage of the storm sewer system that has been mapped? What is your timeline to complete the mapping?

3.A This task was completed at the very outset of UK's submittal of its Notice of Intent and SWQMP in April 2010. 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 fall 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. An interactive map for the Stormwater Website (available at <https://www.uky.edu/env/stormwater/maps>) was developed in 2021. Efforts are now made to update the map on an ongoing basis, as needed. This includes, but is not limited to, utility location, impervious surfaces, and stormwater management infrastructure locations. Copies of the overall and impervious area maps are available on UK's website and are included in **Appendix C-2**.

3.A.1 It should also be noted that a more comprehensive stormwater infrastructure map has been developed by UK as part of its infrastructure master plan. 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. UKIT has a process to collect and inform staff of map ongoing updates. Also, an Interactive Utilities Web Application is located online and is maintained for use by employees only due to the level of information provided. Updates to this map continued in 2024. Efforts were also initiated to include Spill Prevention, Control and Countermeasure related tanks and drums, grease interceptors, and acid dilution pits to the map.

How many major outfalls discharge from your MS4? Of these, how many were dry-weather screened during 2024? How many illicit discharges were detected via dry-weather screenings in 2024?

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. Inspections during 2024 are reflected in the following table:

Total Number of Major Outfalls	Major Outfalls Dry-Screened in 2024	Illicit Discharges Detected by Dry-Screening in 2024
5	5	0

Do you document dry-weather screenings with, at minimum, completed inspection checklists and photographs?

Copies of the dry-weather outfall screenings are included in **Appendix C-3**.

Have you reviewed the most recent 303(d) list for updated information on the water quality attainment status of the local MS4 receiving waters?

The Monitoring Plan was updated on July 5, 2023 and included updates based on the combined 2018/2020 303(d) list. On July 7, 2023, the EPA approved the 2022 Integrated Report that included an updated 303(d) list. Shortly after this update, the 2024 303(d) list was issued. This new information has not been included in the monitoring plan but the updated 2024 Integrated Report has not added new listings or delisted any local MS4 receiving waters. See more information in the answers to questions 18 and 19 in this report.

Have municipal field staff been trained on the identification and reporting of illicit discharges into the MS4? When did this training occur and who received it?

Training for the identification and reporting of illicit discharges is included in the general stormwater training that is completed annually by selected staff. More information about this training can be found in **Section A**.

What is your budget for MCM #3?

With the development of the 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. Refer to the following chart for more details:

Task (#)	Task/Expense Description	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 has also continued or completed the following in 2024:

- 3.B.5 Campus Dry Weather Flow Assessments
 - Currently, no additional dry weather flow assessments have been warranted based on the targeted illicit discharge being addressed.
- 3.F Evaluate Thermal Imaging
 - An updated thermal imaging scan was completed in 2023 with the goal of identifying heating and cooling leaks as well as sanitary sewer overflows. UK Utilities has been using it to complete repairs around campus and for comparison with the 2017 data. Future scans will be performed on an as-needed basis and will be re-evaluated in conjunction with future UK Utilities planning efforts.
- 3.F.1 Locate, Prioritize, and Minimize 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 **Section F** of this report.
- 3.H Minimize Cigarette Butts Entering Storm Drains
 - Cigarette butt litter is an area of concern and is discussed regularly by the Tobacco Free Committee. Ambassadors visit high concentration areas frequently and engage folks, with discussions on cigarette butt litter. Grounds crews frequently sweep and vacuum butts out of storm drains. These are the BMPs that have been put in place to reduce the cigarette butt litter.

Tailgating and Charcoal Disposal

- In response to issues with inappropriate disposal of charcoal following athletic events, Athletics sent out a reminder to season ticket holders via email with information regarding the appropriate procedure and location for disposal of used charcoal.

Please attach:

- Updated inventory of all MS4 receiving waters including the water quality attainment status and pollutants of concern for each. This should include information from Kentucky's 2022 303(d) list.
- Documentation of the discovery, investigation, and elimination of all illicit discharges in 2024.
- Checklist or form used for outfall dry-weather screening.
- Example documentation of a completed dry-weather screening including, at minimum, a completed inspection checklist and photograph(s.)
- Documentation of any public reports of spills or other illicit discharges (e.g. public reporting log).
- Documentation of all training for municipal field staff on the identification and reporting of illicit discharges conducted in 2024.

The following documentation is attached in the appendices referenced above.

- **Appendix C-1**–Illicit Discharge and Stormwater Complaint Reports
- **Appendix C-2**–UK MS4 Boundary Map & Surface Calculations
- **Appendix C-3**–Major Outfall Inspection Reports

D. Construction Site Stormwater Run-off Control:

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 to develop an alternative to permit issuance as part of the project review process. To accomplish this task, the Project Checklist, UK Design Standards, and UK Contract Language were updated in 2019 to require the submittal and approval of stormwater information as well as the approval of the SWPPP and obtainment of KYR10 permit coverage before sitework can begin.

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–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 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: [Divisions 30 - 39 - Site and Infrastructure Subgroup | Capital Project Management \(uky.edu\)](#)

How many permits were issued by the MS4 in 2024 for land disturbances one acre or larger, or smaller than one acre if part of a larger common plan of development or sale?

While no permits were issued (see response to previous question), SWPPPs, Executive Summaries, and/or project plans were reviewed for the following 21 projects with a disturbance of one acre or larger:

- | | |
|---------------------------------------|---|
| • Parking Structure 8 Expansion | • USDA Building |
| • Indoor Track | • Funkhouser Building Expansion |
| • Pence Hall | • Scovell Hall Renovation |
| • Health Education Building | • Cancer Center - Elizabeth Street Reconstruction |
| • Barnhart Building Expansion | • Cancer Center - Site and Utilities |
| • Shawneetown Stormwater Improvements | • Cancer Center - Core and Shell |
| • Still and Maturation | • Cancer Center – Parking Structure |
| • Memorial Coliseum Renovation | • Whitehall Renovation |
| • Gluck Parking Lot | • Kirwan-Blanding Redevelopment |
| • New EQMC | • Ag Research 1 |
| • Arboretum Visitor Center Expansion | |

It should be noted that UK staff review all projects regardless of size and require EPSC plans/SWPPPs when necessary for the protection of stormwater. UK is undergoing yet another unprecedented construction boom. There are currently a total of 74 construction projects within the MS4 totaling 6 billion dollars. A map showing the location of these projects is included in **Appendix D-1**. Throughout 2024, EQM staff conducted a total of 188 project reviews and related tasks (associated meetings, review discussions, and compliance tracking efforts) related to these projects.

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? 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/SWPPPs 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 projects 1 acre or larger. Since 2023, UK has utilized their contract with Strand Associates, Inc to provide additional technical review of construction projects. This is a result of the retirement of staff and the significant increase in the number of construction projects on campus as discussed throughout this report.

Each item is reviewed by using a modified version of the LFUCG submittal checklist. Updated review and inspection checklists specific to the needs of UK have been created as part of the Stormwater Operations Manual – Guide to the Stormwater Construction Program. To improve project review efficiency and reduce submittal errors, effort was put forth in 2024 to draft standard design notes for designers to include on plans and updated draft review component checklists were created. These checklists are being provided to designers to ensure complete submittals and are also being utilized by reviewers to streamline/standardize the review process. Project comments are also now cataloged through the use of a Bluebeam Studio in addition to the checklists. While this additional step has created some difficulties related specifically to stormwater reviews, UK project managers believe the communication process between designers and stakeholders has been improved.

Also, in the interest of understanding the impacts to the growing number of project reviews, EQM participated in the Kentucky Stormwater Association Draft KYR10 General Construction Stormwater Permit & Fact Sheet Review Workgroup in 2024.

4.H Formal Procedures for Small Construction Projects—The majority of construction projects handled by UK Facilities occur in the interior of structures. Exterior projects typically consist of concrete sidewalk, curb, and gutter replacements. While a formal submittal checklist has not been developed for this process, EHS/EQM are notified of all project through a Master Project List. Necessary personnel have access to this list and can review smaller projects on an as needed basis. Further refinement of this process will be included in the construction stormwater process manual described above.

How many 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, were conducted in 2024?

4.E As noted previously, all projects are reviewed regardless of size. As a requirement of the LFUCG stormwater manual, if there is an increase in impervious area, water quantity controls are required regardless of the size of the disturbed area. Therefore, designers are required to submit information for review and approval. With that being said, as noted above, 21 projects were reviewed during 2024 that were one acre or larger. Information from these plan reviews has been tracked in a project review spreadsheet and will be included in ComplianceGo as transfer to the new system is completed. This information is available upon request.

At what frequency are inspections occurring at active construction sites with land disturbances of one acre or larger, or smaller than one acre if part of a larger common plan of development or sale? How many inspections were conducted in 2024 at such sites? (Do not include inspections sites with land disturbances to which this criteria does not apply.)

4.D Inspections at active construction sites typically occur on a monthly basis; however, more frequent visits often take place. The use of the MS4 Web software for Construction Site Inspections was used through July of 2024 when the software was retired. A new software program, Compliance Go, which will be used going forward for continued inspections. Inspections from the MS4 Web database and Compliance Go database are available upon request.

How many inspections in 2024 resulted in enforcement actions? Fines collected?

4.D.2 No construction site inspections resulted in enforcement actions.

Describe the escalating enforcement strategy utilized by the MS4 to respond to issues of non-compliance on applicable sites.

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.

Describe the training program for MS4 staff involved in the review of erosion and sediment control plans or Stormwater Pollution Prevention Plans. What qualifications do you require for plan reviewers to perform these tasks?

Kentucky Erosion Prevention and Sediment Control (KEPSC) is required by UK staff for plan review. EQM and CPMD staff continually engage in workshops and trainings on changes being considered by LFUCG as noted in the following. EQM staff attend the annual LFUCG Division of Water Quality Erosion and Sediment Control Training. This training provides reminders about proper construction BMP installation along with documentation requirements. Additionally, EQM is developing a construction stormwater process manual as a single document that describes the project approach as it relates to stormwater and consolidates all the adopted requirements and documentation.

Plan reviews are completed by EQM staff to provide comments back to the project manager and design team. Where additional expertise is required, plan reviews are completed by a licensed professional engineer at Strand Associates, Inc.

Describe the training program for MS4 staff involved in inspections of construction site erosion and sediment controls. What qualifications do you require for site inspectors to perform these tasks?

4.F Kentucky Erosion Prevention and Sediment Control (KEPSC)—UK personnel completed the “KEPSC Inspector Qualification Training” provided by the Kentucky Transportation Center on March 21, 2023 (the Water Quality Compliance Manager) and August 28, 2024 (the Water Quality Compliance Specialist). CMP staff responsible for regular inspection of construction sites completed the EPA CGP Site Inspector Training Course. The training certificate is included in **Appendix D-2**. Additional staff will be trained as needed.

Describe any training given to operators/contractors in 2024? How often is training for operators/contractors conducted?

4.G At the beginning of each project CPMD, and EQM staff notify designers of 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.
4.G.1
4.G.2
4.G.3
4.G.5

Contractors working at UK have several ongoing projects on campus. This leads to varying degrees of familiarity and 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, EQM 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.

Regarding 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, 2024. The agenda is included in **Appendix D-3**.

More formal training information has been incorporated into the construction section of the [Stormwater Website](#), including KYR 10 requirements, SWPPP development and requirements, and site inspection requirements. Further plans are to include a training program to educate contractors and designers on stormwater requirements and UK’s review process. The contractor training module development will take place in later years of this permit term or during the next permit cycle.

What is your budget for MCM #4?

As previously stated, UK’s Stormwater Program is part of the EQM’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. In 2024, a

significant portion of the budget and time was spent on project reviews through EQM. 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.

Please attach:

- Documentation of all site operator training that occurred in 2024. This should include copies of any training materials given to site operators or the web address of any online materials. For formal trainings, include the date and location the training was held, who conducted the training, sign-in sheets for participants, an agenda or brief description of the training, and copies of or links to any training materials used. For one-on-one trainings, include a log of when the training occurred, who was present, and a general description of topics discussed.
- Documentation of training received by MS4 staff in 2024 on the review of erosion and sediment control plans of Stormwater Pollution Prevention Plans.
- Documentation of training received by MS4 staff in 2024 on the inspection of construction site erosion and sediment controls.
- A sample copy of the permit used by the MS4 for land disturbances of one acre or larger.
- A sample copy of the form used to review plans for land disturbances of one acre or larger, if applicable.
- A sample copy of the construction site inspection form used by the MS4, if applicable.

The following documentation is included in the appendices:

Appendix D-1–Active Construction Map

Appendix D-2–KEPSC Training Certificate

Appendix D-3–Construction Industry Workshop Agenda

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

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 re-development and new development project (copies can be found at the previously provided website address). Post-construction stormwater requirements are discussed with each design team as part of the project review process.
- 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.A.2 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. Currently in its fifth year, the Sustainability Strategic Plan underwent an update (SSP 2.0) and includes references to the UK Stormwater Program along with the goal to develop and adopt a Stormwater Master Plan as a main element. The final draft of SSP 2.0 includes Guiding Principle #5, Goal 1, "Demonstrate excellence and innovation in water conservation and stewardship." This update has priority actions to report annually on UK's water footprint, prioritize harvesting and infiltration of stormwater from construction projects by targeting diversion of at least 50 percent of stormwater on future projects, working towards adopting a stormwater master plan, and developing a baseline for water use per square foot by building use, and targeting annual improvements with a 10 percent over time. Development of a standalone Stormwater Master Plan is still under consideration to support planning for more centralized projects and a holistic perspective on the campus to allow for the further definition of best practices for campus. No formal timeframe has been developed for a decision, but considerations will continue to be given as ongoing discussions continue through the permit cycle.
- 5.A.1 Initial efforts were previously made toward finalizing a Memorandum of Understanding with LFUCG. These efforts are being reviewed with the potential of moving forward in subsequent permit years, if needed.

How many and what types of projects were reviewed for new and redevelopment considerations in 2024? What types of BMPs were installed or planned to be installed by the end of construction activities at applicable sites?

As noted in Part D, project plans were reviewed for 21 projects. Projects generally included new construction, renovation, and utility improvements to support campus activities. BMPs included extended detention basins, underground detention, rain gardens, pervious pavers, green roofs, and hydrodynamic separators.

Describe the training of staff in 2024 on the fundamentals of long-term stormwater-quality treatment management BMPs and in how to review such BMPs on construction plans. Who reviews construction plans for these BMPs for the MS4? What qualifications do you require for plan reviewers to perform these tasks?

- 5.B.1 EQM staff attend the annual LFUCG Workshop with the Engineering, Development, and Construction Industry. This workshop provides an opportunity to learn about BMP implementation along with reminders about proper BMP design and documentation requirements. As mentioned in Section D, plan reviews are completed by EQM staff to provide comments back to the project manager and design team. Where additional expertise is required, plan reviews are completed by a licensed professional engineer at Strand Associates, Inc®.

Describe the training of staff in 2024 on how to inspect post-construction BMPs for long-term protection, operation and maintenance. Who inspects installed post-construction BMPs for the MS4? What qualifications do you require for BMP inspectors to perform these tasks?

In 2023, EQM staff and Strand completed the updates to the Post-Construction BMP Operation and Maintenance Manual. This manual provides information about the different types of post-construction BMPs found on campus,

including background on their purpose, required operation and maintenance tasks, general guidance on how to complete necessary maintenance, and inspection protocols to promote a proactive response to BMP condition. Further, this information was applied to each post-construction structural BMP on campus through the development of the Preventative Maintenance Plan matrix that identifies what operation and maintenance tasks need to be completed and how frequently to complete them. More information about the Post-Construction BMP Operations and Maintenance Manual and Preventative Maintenance Plan matrix are included in Section 6.

In 2024, the new Water Quality Compliance Specialist was trained in the field by a licensed engineer from Strand.

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

UK's BMP maintenance is provided by one of two entities on campus: UK Utilities (UEM) or Grounds. All underground BMPs fall under the responsibility of Utilities while all aboveground BMPs fall to Grounds. UEM maintains BMPs on an as-needed basis while Grounds maintains many BMPs as part of routine campus maintenance. A list of BMP maintenance performed in 2024 is included in **Appendix E-1**. The FEMA project basins and stream restorations along Alumni Drive are currently being maintained via contract with EcoGro. The annual report for these areas is included in **Appendix E-2**.

- 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. UEM is working with Greystar to develop a preventative maintenance program for these BMPs.

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 2024? 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. A NOT Inspection was completed by EQM and CMPD staff for the following projects in 2024:

- Indoor Track Facility - Completed March 7, 2024
- Grey Design Building - Completed March 22, 2024
- Rose Street Beautification Project - Completed April 29, 2024

Following the inspection of 100 percent of the BMPs on campus in PY2, the program has returned to inspecting a minimum of 20 percent of aboveground BMPs and 100 percent of belowground BMPs annually. This is beyond what is technically required for permit compliance. It should also be noted that for the aboveground BMPs, the selection of the 20 percent to be inspected was based on previously noted deficiencies. The following is a summary of the BMP inspections that were completed in May and June of 2024. Inspection summary reports were prepared for both aboveground and underground BMPs. Copies of the reports are available upon request.

Total Number of Post-Construction BMPs	Post-Construction BMPs Inspected in 2024	Number of Post-Construction BMPs Requiring Maintenance or Repair	Number of Resulting Enforcement Actions
159	59	12	0

- 5.C In addition to annual and follow-up inspections, EQM staff and Strand previously completed the initial version of the Preventative Maintenance Plan (PMP) for all UK-owned BMPs. This began with an update to the Post-Construction BMP Operations and Maintenance (O&M) Manual (originally published in 2012) for its inclusion in the Stormwater Operations Manual. The format of the PMP is a matrix listing all O&M tasks for each post-construction BMP on campus and identifying the frequency and timing of each task. These documents were shared with representatives from Utilities, Facilities, and Grounds to provide a forum to answer questions and initiate the process of entering the tasks into UK's work order system. Once O&M tasks are completed, confirmation should be sent back to EQM to

allow for follow-up inspections to be completed. Because of the number of tasks and the effort to integrate them into the work order system, implementation is expected to take place over time.

Describe any changes to local ordinances in 2024 to accommodate green infrastructure alternatives.

No changes to regulatory authority documents that impact green infrastructure alternatives were made in 2024.

What is your budget for MCM #5?

Post-Construction Stormwater is primarily implemented and maintained by four UK Departments: EQM, CPMD, Grounds, and Utilities, with each having its own independent budgets. EQM 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, EQM'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, ongoing maintenance of these BMPs is handled by Grounds or Utilities.

10.A UK Grounds is responsible for any aboveground BMPs, such as the FEMA detention basins, campus rain gardens, green roofs, or pervious pavement.

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 Description	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. Completion of the Preventative Maintenance Program development and associated maintenance costs as determined by the parties responsible for operation and maintenance will aid in this assessment.

Please attach:

- Documentation of MS4 staff training in post-construction stormwater management. This should include the date and location the training was held; who conducted the training; an agenda or brief description of the training; and copies of training certificates.
- A sample copy of the long-term maintenance agreement being implemented.
- A sample copy of a post-construction BMP maintenance inspection checklist used by your MS4 or for owner self-inspection, as applicable.
- A log of post-construction BMP owner self-inspection documentation oversight by your MS4, if applicable.

The following documentation is included in the appendices:

Appendix E-1–Stormwater Quality Device Maintenance

Appendix E-2–EcoGro Natural Areas Stewardship Report

F. Pollution Prevention and Good Housekeeping for Municipal Operations:

The permittee must develop and implement a municipal Operation and Maintenance (O & M) program that includes a training component for municipal staff 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 2024.

The following Pollution Prevention and Good Housekeeping Activities occurred in 2024.

O&M:

- 6.A
 - Stormwater Operations Manual—During this permit term, UK has been working on the development of a comprehensive Stormwater Operations Manual (Task 6.A) that will include all policies, procedures, and BMPs used to meet the MS4 permit requirements. Ongoing efforts include the development of additional sections and materials for inclusion in this manual as described below.
- 6.A.1
 - Updated BMP Operation and Maintenance Manual (BMP O&M Manual)—Strand completed the development of the updated UK BMP O&M Manual in 2023. The manual includes updated text that is focused on its intended audience and purpose, a compilation of plans and manufacturers operation and maintenance documents, procedures, work instructions, and forms for routine, maintenance, and compliance inspections.
- 6.A.1.a
 - Preventative Maintenance Program—EQM staff and Strand completed the initial version of the Preventative Maintenance Plan (PMP) for all UK-owned BMPs in 2023. The format of the PMP is a matrix listing all O&M tasks for each post-construction BMP on campus and identifying the frequency and timing of each task. These documents were shared with representatives from Utilities, Facilities, and Grounds to provide a forum to answer questions and initiate the process of entering the tasks into UK's work order system. Once O&M tasks are completed, confirmation should be sent back to EQM to allow for follow-up inspections to be completed. Because of the number of tasks and the effort to integrate them into the work order system, implementation is expected to take place over time. The initial stages of implementation continued in 2024.
 - BMP Maintenance—In 2024, UEM performed cleaning of BMPs, including many of the Water Quality Units. A list of maintenance actions is included in **Appendix E-1**.
- 6.A.3
 - Rainwater Harvesting and Monitoring—Based on past inspections of the rainwater harvesting systems O&M and current use, it has been determined that this topic needs additional discussion and planning. These efforts will include clarification of responsibilities through informing and training on O&M, needs, usage, and the LFUCG requirements associated with their operation. The procedures for rainwater harvesting system monitoring and reporting have been included in the BMP O&M Manual.
 - Central Utility Plant Stormwater Harvesting—This system continues to be used to harvest water from a stormwater culvert for use in cooling at the Central Utility Plant. The system came online initially in July of 2023. To date, the system has harvested over 4.04 million gallons of stormwater for reuse, including 1.7 million gallons in 2024. The system operation continues to undergo refinement to address seasonal filtration issues.
 - As previously mentioned, because of the complexity of the vegetation installed as part of the FEMA project, Big Elm Fork restoration, and Alumni Stream restoration, EcoGro was hired to maintain these areas. This partnership began in 2016 and continued through 2024. Maintenance takes place periodically throughout the year. EcoGro's annual report is included in **Appendix E-2**.
- 6.E
 - 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. The following is a partial list of repairs that were completed in 2024 with a total cost of approximately \$71,500.
 - o Engineering Annex—Steam Gasket Blowout Repair
 - o Med Center Plant—Chilled Water Valve Break Repair
 - o Breckenridge—Mechanical Room Gasket Blowout Repair
 - o Gluck—Condensate Pipe Leak Repair
 - o Limestone Tunnel—High Pressure Steam Gasket Blowout Repair
 - o Patterson Tunnel—Chilled Water Gage Piping Repair

- 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. Additional information about this task is included in Section A.
 - Stormwater-related Infrastructure Maintenance and Repair Tasks—A storm sewer repair at Good Samaritan cost \$3,200 to repair. Invoices are available upon request.
 - Sanitary Sewer-related Infrastructure Maintenance and Repair Tasks—Repair and replacement with a cost of approximately \$512,000 were completed in 2024. This includes the replacement of the sanitary sewer along Washington Avenue, an emergency repair at Central Heating Plant, and break repairs at Chi Omega and Columbia Terrace. Repair and replacement of sanitary lines on campus has a direct impact on the reduction of potential water quality impairments.
 - Domestic Water-related Infrastructure Maintenance and Repair Tasks—Repairs with a cost of approximately \$41,400 were completed in 2024. This includes leak repairs at Med Center Plant and VA Hospital, College Way, and Seaton. Addressing leading domestic water lines on campus has a direct impact on water quality.
 - The following are updates on ongoing Water Quality Incentive Grants that have been awarded to UK by LFUCG.
 - o Room to Breathe—Tree Soil Cell Retrofit (\$360,000)—This is a 2022 infrastructure grant that will help fund the installation of “tree cells” that will allow trees to be planted in campus hardscapes to grow to maturity and maximize stormwater interception. Design of the project includes up to 12 trees with additional soil volume and pervious pavers. Bidding and construction anticipated for 2025.
 - o Shawneetown Stream Restoration (\$316,000)—This is a 2023 infrastructure grant that will implement improvements to the drainage way and swale located along University Court at UK’s boundary adjacent to Baptist hospital and numerous residences that ultimately discharge to Big Elm Fork. The goal of the project is to prevent the stormwater from running in the roadway and to rehabilitate the grass swale to reduce erosion, improve inlet flow, and improve overall channel flow. Preliminary design was completed, but the project is currently on hold while funding issues are addressed.
 - o Athletics Complex Stormwater Improvements (\$322,000)—This is a 2024 infrastructure grant. Previous developments to the project location removed a grass swale and directed flow to an underground conveyance system. However, later improvements to the Athletic complex reintroduced flow to the area which was previously a grass swale. This portion of flow is currently missing the stormwater conveyance system and causing damage to a downstream infiltration basin. Additionally, the excess moisture in the project location has led to the loss of recently installed tree canopy. This project will reintroduce a vegetated swale to this location and direct this portion of flow back to the underground conveyance system, allowing for the continued operation of the infiltration basin and the reintroduction of tree canopy along the mixed-use trail. The grant application is included in **Appendix F-1**.
 - o Hope Lodge Stormwater Improvements (\$43,034)— This is a 2024 infrastructure grant. This study is proposed in response to the previous Five-Year Stormwater Improvements Feasibility Study completed in May 2024. This study identified the area surrounding the Hope Lodge as an area with numerous stormwater concerns. Preliminary investigations found the concerns to be primarily due to runoff from the nearby Montclair neighborhood. This project would further narrow down proposed design elements, scope of work, and costs required to reduce localized flooding and improve stormwater conveyance. The grant application is included in **Appendix F-1**.
- 6.A.4
- UEM began development of a Dig Permit Policy & Procedure Document in 2020. This document governs any trenching, excavation, or digging operations on campus. The original purpose was to prevent injury, avoid damage to property, and to ensure uninterrupted utility service. After review, EQM recommended that Stormwater Protection be added to create the policy and procedures surrounding stormwater protection during emergency and unplanned events. Additional updates have been made to the document relative to the utility location process, with plans for finalization once that is complete.
 - EQM continued working with various departments on campus to update the information included in the Environmental Handbook Fact Sheets, now known as Activity Information Sheets, which are now more focused on stormwater protection. These will be included on the website, as appropriate, and in the Stormwater Operations Manual. Drafts are available upon request.

Pollution Prevention:

- 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 to determine whether there are any issues, problems, concerns, or regulatory requirements that pertain to the event in question. The following are examples of unique events that occurred that needed to be assessed.
 - o Wildcat Plaza Pro-Life Chalk Event
 - o DanceBlue Bubble Run Event
- 6.D • Gluck Pond Waterfowl Management Efforts—Grounds introduced habitat manipulation in 2019. This area was maintained throughout 2024. As a result of UK's goose management efforts, goose populations have been reduced to a more manageable level. Because of the success of the program, the USDA continued to monitor the site and advise but was not needed to remove geese in 2023 or 2024.

Good Housekeeping:

- The Stormwater Stakeholder Meeting in 2024 was held on December 20. Meeting minutes and sign-in sheets are enclosed in **Appendix F-2**.
- Storm Drain Assessments—Storm drain assessments were performed in 2024 by the water quality intern. More information about these assessments is available in Section B. As a result of these assessments, several issues were identified and a report with updated mapping was prepared. A copy of the report and maps is included in **Appendix F-3**.
- Campus Street Sweeping
 - o While not a formal task within the SWQMP, the operation of the sweeper is an important part of UK's Good Housekeeping and Pollution Prevention approach. Since being purchased in 2017, the sweeper has a targeted operation schedule of 5 days each week, for a total of 40 hours per week, with a focus on the areas around the coal piles. Ongoing maintenance issues have hampered the ability to meet the operations goal, but the street sweeper is operating as scheduled, unless it is down for repairs.
- 6.A.1.a • In an effort to obtain additional assistance in the completion of SWQMP tasks, EQM hired Strand in 2019 for Phase II Permit Compliance Assistance. This contract was extended through June 2025. To date, Strand has assisted in tasks including, but not limited to, the following:
 - o Post-Construction BMP Inspection Reports
 - o Outfall Inspection Reports
 - o SWQMP Update and Schedule Modifications
 - o IDDE Plan Update
 - o Stormwater O&M Development
 - o Fact Sheet Updates
 - o BMP Operations and Maintenance Plan Update
 - o Preventative Maintenance Plan Development
 - o General Stormwater Training
- MS4 Web—MS4 Web continued to be used for activities related to MS4 compliance, including BMP Inspection, Outfall Inspections, Design Document Collection and Organization, Construction Site Inspections, and NOT inspections during the first half of 2024, before the software was retired in July. All the data was exported out of the system in preparation of selecting a new compliance software.
- Compliance Go—Due to the retirement of the MS4 software, a new compliance tracking software was required. In the first half of 2024, a variety of platforms were evaluated, and a recommendation was made to EQM to transition to Compliance Go. Through the middle of 2025, the existing data was exported out of MS4 Web and archived for future reference. Asset attributes were imported into Compliance Go and new inspection forms and processes were developed. Construction Site Inspections began immediately after MS4 Web was retired, and implementation of new forms and protocols continued through the end of 2024 including SPCC and GPP inspections. Annual inspections for post-construction BMPs in 2025 will use this new system for the first time with forms and protocols being adjusted as needed.
- Still and Maturation Building (Jim Beam Institute)—A draft standard operation procedures/spill prevention manual has been developed and document completion is planned for 2025. A draft of the document is available upon request.

- **In-Vessel Composting System**—In 2024, a new in-vessel composting system was installed on south campus in the Physical Plant Division's storage area off Stadium View Drive. The composter is fed with pre-sorted food waste generated on campus mixed with a bulking agent such as wood chips, chopped weeds, or leaves. The material is processed in the vessel through auger mixing and positive aeration to produce compost. Once the process is complete, the compost material is transferred to a covered concrete pad until it is used as mulch around campus. The implementation of this system and process required an assessment of regulatory requirements and environmental impacts. This system has been incorporated in the requirements for the updated Groundwater Protection Plan.
- **Athletics Chemical Storage Improvements**—The chemical storage at Athletics was reevaluated and additional efforts were taken to make sure all products were stored off the ground, chemical logs and safety data sheets were updated, checklists were completed, and soil testing records were updated and organized as needed.
- **Construction Site Diesel Exhaust Fluid Storage**—EQM conducted regulatory review and provided UK Stormwater inspector with interpretation of proper storage and handling requirements for DEF on construction sites.
- **Sinkhole Management**—A sinkhole opened in Woodland Glenn near the Hydrodynamic Separators adjacent to the Woodland Glenn V dormitory. Addressing this surface failure included resistivity testing, exploration of the throat through excavation, testing the infiltration rates, and installing a geotextile-lined aggregate backfill to allow continued infiltration while allowing the soil backfill to stay in place.

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:
 - o The greenhouses off Veterans and Hospital Drives
 - o Cooling Plant No. 1
 - o The College of Agriculture Motor Pool
- In October 2011, the storm drains under Cooling Plant No.1 were rerouted to sanitary sewer. During approximately 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.
- 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:
 - o Identify existing energy and utility system capacities
 - o Identify deficiencies and inefficiencies
 - o Account for future growth over the next 20 years
 - o 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:

- o Completing a detailed condition analysis of the existing system
- o Building a hydraulic model and conducting a capacity analysis of the existing system
- o Identifying deficiencies in the system
- o Providing recommendations that can be used to determine where future growth can best be 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.
- In 2024, UK worked with Terracon to update the Spill Prevention Control and Countermeasure plans that cover the major operational divisions on campus. This included a restructuring of the manuals into the following five areas:
 - o Campus Facilities Management
 - o Martin-Gatton College of Agriculture, Food, and Environment Facilities
 - o Medical Center Facilities Management
 - o Good Samaritan Hospital
 - o Utilities and Energy Management

Each area has been assessed for stormwater discharge potential related to petroleum products and is required to be inspected monthly and annually. Plans have been certified by the engineer and are available upon request.

- The Peterson Garage floor drains were reassessed in 2019 to confirm their connection to the sanitary sewer system, rather than to storm sewer. 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 was included in the 2019 Annual Report. In 2022, inspection checklists were created for each activity covered under the plan, inspections of all activities were performed, and an updated draft of the plan was developed. Copies of the checklists and draft plan are available upon request. Completed annual inspection reports were provided to stakeholders. Additional inspections were completed in 2024 and final plan updates/recertification will be completed in 2025.

Have BMPs been installed/implemented to address the pollutant discharge potential for all municipally-owned facilities?

As mentioned above, the Spill Prevention Control and Countermeasure plans and Groundwater Protection Plan cover the requirements for both structural and non-structural BMPs at UK facilities.

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

- UK originally created an Environmental Protection Handbook in 2013 to serve the needs of main campus operations. This document contains Fact Sheets for a variety of campus activities that have the potential to impact stormwater. The Fact Sheets within this handbook have been updated and converted to Activity Information Sheets that will be housed on the stormwater website and are available for use in personnel briefings.

UK has also developed several additional policy manuals including:

- o Grounds Stormwater Policies and Procedures
- o PPD Contractor Handbook
- o Post-Construction BMP O&M Manual
- o UK Landscape Guidelines
- o PPD Dewatering Bag SOP
- o Stadium and Parking Garage Washdown SOPs

These additional manuals are discussed in more detail and can be accessed on the [University Operations and Stormwater](#) portion of the Stormwater Website.

- The Hazard Mitigation Plan has been developed to reduce risks from natural and human-caused hazards. Completed in 2023, the document consists of a mitigation strategy and a suite of actions based on a comprehensive risk assessment and input from a wide range of University stakeholders. Several of the mitigation actions proposed by this plan have the potential to impact the stormwater program. They include conducting campus karst assessments and monitoring karst activity, maintaining the Tree Inventory, securing

funding for and the development of a campus stormwater masterplan to address stormwater flow/volume, securing funding and for the development of a sanitary sewer master plan, documenting and mapping indoor shut off valves and equipment, and performing thermal imagery flyovers in order to identify and eliminate utility leaks. More information can be found on the [Hazard Mitigation Plan website](#).

6.A.5

- Policy for Unknown Spill Cleanup—The procedures for response, notification, and proper cleanup of unknown spills are covered within the UK IDDE Field Protocol Plan, EQM Stormwater Website, and UK General Stormwater Training. It is also covered in the updated Activity Information Sheets to be used in staff training.
- O&M manuals are also required to be provided for each post-construction stormwater BMP installed with new construction.
- During this permit term, UK has been working on the development of 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 manual, update that information, and create new policies and procedures to improve permit compliance.

As part of this manual, the existing O&M manual has been updated to include specific maintenance requirements for each BMP on campus. These requirements are all included in the Preventative Maintenance Plan matrix listing all O&M tasks for each post-construction BMP on campus and identifying the frequency and timing of each task to be entered into UK's work order system. Because of the number of tasks and the effort to integrate them into the work order system, implementation is expected to take place over it. Certain maintenance tasks may be assigned to outside contractors for completion. The development and implementation of this manual will be an ongoing effort throughout this and subsequent permit cycles.

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.

Two plans exist that govern UK facilities and operations: the SPCC and the GPP. Each of these plans require routine inspections of facilities and activities. The SPCC plan targets oil handling and spills associated with facilities. Stormwater inspections are now being conducted at each utility plant in conjunction with monthly SPCC inspections. As previously mentioned, there are SPCC plans for the five major operational areas of campus:

- Campus Facilities Management
- Martin-Gatton College of Agriculture, Food, and Environment Facilities
- Medical Center Facilities Management
- Good Samaritan Hospital
- Utilities and Energy Management

Each area has been assessed for stormwater discharge potential related to petroleum products and is required to be inspected monthly and annually. All annual SPCC inspections were completed in June of 2024 and plans have been certified by an engineer. Copies of the SPCC plans are available upon request.

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 was included in the 2019 Annual Report. The GPP covers activities that take place on campus that may impact groundwater. These activities include:

- Pesticide or fertilizer application for institutional lawn care.
- Storage, treatment, disposal, or handling of hazardous waste, solid waste, or special waste in drums, or other containers.
- Commercial 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).
- Strong or related handling of deicing agents at a central location.
- Application of related handling of deicing materials.

In 2022, new annual GPP compliance checklists were developed for each activity associated with the plan and utilized for the annual compliance inspections. In 2024, an updated version of the GPP was developed to incorporate necessary updates to the plan. Recertification of the updated plan will be completed in 2025.

Describe any training presented to staff on pollution prevention/good housekeeping in 2024. What municipal staff activities are covered by this training?

The following trainings were provided relating to pollution prevention and good housekeeping in 2024.

6.B

- **General Stormwater Employee Training**—The online general stormwater training is available for all necessary staff to take annually. The Facilities Training Coordinator assigns this training to employees. The Stormwater Website also has a training section that provides information to aid supervisors in creating training to be conducted during safety and staff meetings on a routine or as-needed basis. Supervisors can assess those staff that perform activities capable of impacting stormwater and determine whether training is needed or has been received. Supervisors can develop or update training as necessary to discuss stormwater protection during job-related activities. General Stormwater Training documentation is available in **Appendix F-4**.
- **Comprehensive SPCC and GPP Web Based Training**—Training was developed in 2022 and made available for use via the University's online training platform. The Training Coordinator has assigned this training to employees in the following departments: Campus PPD, Medical Center PPD, Utilities and Energy Management, and Grounds. The training includes SPCC topics such as: General Awareness, What is an SPCC Plan and the Definition of Oil, Contents of the SPCC Plan, Applicable Laws and Regulations, UK Specific Oil Handling and Oil Spill Response Procedures, Inspection Requirements, Discharge Control and Cleanup, a Review of Spill Pathways in the Area, as well as Groundwater Protection topics such as: Plan Contents, Applicable Regulations, and Plan Practices and Responsibilities. More detail about the training can be found in the 2022 Annual Report. SPCC and GPP Training Documentation is included in **Appendix F-5**.
- **Stormwater Website Training Page**—The updated Stormwater Website has a Training Page that includes a variety of training resources for Staff and Contractors related to preventing or reducing pollutant runoff from UK operations. Resources on this page have been previously mentioned throughout the various sections of this report and include Available Stormwater Training, Fact Sheets to support Departmental and Activity Specific operations, IDDE, SPCC and GWPP Training, and Construction Stormwater Training. As additional materials are developed, they will be added to the website.

What is your budget for MCM #6?

EQM 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, EQM'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 Description	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

Please attach:

- Documentation of municipal staff training events. This should include the date and location the training was held, who conducted the training, sign-in sheets for participants, an agenda or brief description of the training, and copies of or links to any training materials used.
- A sample copy of an inspection checklist/document for a structural or non-structural BMP at a municipal facility.

- Any other documentation you feel would help describe how your Pollution Prevention and Good Housekeeping for Municipal Operations program is managed.

The following documentation is attached in the appendices referenced above.

Appendix F-1–LFUCG Water Quality Incentive Grant Applications

Appendix F-2–Stormwater Stakeholder Meeting Presentation, Sign-in Sheet, & Minutes

Appendix F-3– Storm Drain Marking Assessment Report and Mapping

Appendix F-4–General Stormwater Training Documentation

Appendix F-5–Spill Prevention & Control Countermeasures Training Documentation

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.

12. Small MS4 Training

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 2024 and attach documentation for the training they received.

Kevin Lewis, Water Quality Compliance Manager for UK, is responsible for permit implementation attended and participated in the following trainings:

- KSA Quarterly Meeting (February 7 – 2 hrs)
- KSA Quarterly Meeting (May 14 – 2 hrs)
- KSA Quarterly Meeting (October 23 – 1.5 hrs)
- Webinar: Capturing Stormwater - Tapping the Resource (April 14 – 1 hrs)
- Webinar: A Retrospective on Green Infrastructure: Lessons Learned in Design and Implementation (April 24 – 1 hrs)
- Webinar: Green Infrastructure Planning, Implementation, and Maintenance program from a Needs-based Approach (April 24 – 1 hrs)
- LFUCG Annual EPSC Training (October 30 – 1 hrs)
- LFUCG Annual Engineering, Development, and Construction Industry Workshop (December 13 – 3 hrs)
- UEM Lunch and Learn: ADS Stormwater (July 16 – 1 hrs)

Certificates for these activities, if available, are included in **Appendix G**.

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? Have you provided an updated MS4 Map to the KDOW?

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. This is facilitated through the procedures outlined in the previously discussed MS4 Boundary Expansion Process developed through Task 3.A.2.

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

Most 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 2024, many additional tasks were designated for implementation with significant progress being made on several of them. As in previous years, there were also many lessons learned on the difficulties encountered in implementing such an aggressive SWQMP. The realities of the time taken to complete tasks, existing workload of stakeholders, and the impact of personnel changes all have an impact on the ability of the program to complete all these tasks to the high standard that UK is working to achieve and maintain.

The original SWQMP extended to the end of PY5 on April 30, 2023. Following expiration, the conditions and requirements of this version of KYG20 Permit remain in effect until DOW reissues the permit. As such, progress has continued with ongoing tasks and towards the completion of tasks that are not yet completed to the

satisfaction of UK. As shown in the SWQMP summary table in **Appendix H**, all ongoing and incomplete tasks are noted for continuation until such time as a new KYG20 permit is issued and a new SWQMP is developed.

14. Discuss any problems encountered during this period (include any BMP changes in response to problems encountered). Include any overall program weaknesses and your plan for addressing those.

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

As previously discussed, personnel changes, organizational changes within TFISE, and staff unavailability have caused EQM to abandon partnership development with TFISE and/or KWRRI for the management of MCMs 1 and 2. This has created a need to seek alternative methods for management of the outreach, education, and public participation program. In 2021, the decision was made that EQM will manage a revised version of the program. The EQM Water Quality Compliance Specialist (WQCS) will be responsible for maintaining the MCM 1 and 2 programs. This position was vacated in late 2023 and was later filled in June of 2024. Efforts are underway with the new WQCS to improve upon MCMs 1 and 2, including participation in the Sustainability Internship Program, with the intern assisting with the improvement of the Outreach, Education, and Public Participation programs.

Rapid growth is leading to numerous major capital projects with aligned schedules. These major projects require review and tracking for both construction and post-construction BMPs along with documentation. The retirement of CPM project review staff at the end of 2022 has led to a reassignment of project review responsibilities to EQM. Increased volume of plan reviews and reduced staff to support them have, in some instances, shifted focus away from further progress on some SWQMP tasks and the need for outside assistance. While EQM maintains responsibility for project reviews, significant assistance with project reviews has also been contracted to Strand Associates, Inc. **W**

In taking on additional responsibilities for project reviews, the need for streamlining the documentation and submittal process has led to the development of a Construction Stormwater Manual. The purpose of this manual is to further define responsibilities for the UK departments, designers, and contractor on the project with the goal of streamlining the review process and targeting first submittal compliance. Development of this manual is ongoing, and a draft copy can be made available upon request.

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

In 2024, two Stormwater Quality Incentive Grants were received from LFUCG totaling approximately \$365,034 for the Athletics Complex Stormwater Improvements and Hope Lodge Stormwater Improvements projects. The projects are described in greater detail above in Section F.

Through the previous planning grant, UK is actively planning for the pursuit of additional grant opportunities to leverage towards water quality and program improvements.

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 2024 are included in **Appendix C-1**.

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 original scope of the SWQMP, several tasks have implementation schedules that are being expanded to 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 have been and will continue to be adjusted annually as necessary.

18. Do you have any impaired streams? If so, impaired for what pollutant? List all impaired Waters of the Commonwealth which receive discharges from the MS4, as well as the cause of impairment for each.

Areas of UK's MS4 drain to Town Branch, Wolf Run, and West Hickman Creek. Based on the KDOW 2024 303(d) list, segments of West Hickman, Wolf Run, and Town Branch, along with many of their tributaries, are impaired. None of these impaired stream segments or tributaries are within UK's boundary, with the exception of Big Elm Fork (listed as Vaughn's Branch UT 0.0 to 1.85).

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. It is important to note 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. As mentioned in previous annual reports, all brick manholes in the Shawneetown area have been sealed, tree roots have been removed from the sewer lines, and documents have been prepared to support remaining line repair and replacement that will allow UK to bid the project as soon as funds are available.

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.

The 2019 statewide TMDL addressing the numerous bacteria-impaired waterbodies found throughout Kentucky includes Big Elm Fork (listed as Vaughn's Branch UT 0.0 to 1.85). Even though a TMDL has yet to be developed for Big Elm Fork's other impairments, UK is addressing them through tasks included in the SWQMP. Task 8A requires BMPs to be implemented, including 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. Have there been any improvements in receiving water quality due to watershed activities in 2024?

Outfall dry-weather screenings have not revealed any illicit discharges or apparent degradation to water quality. Since water quality sampling is not a requirement of the permit, there is no quantitative data to show improvements. However, as mentioned throughout the report, efforts toward addressing pollutants of concern, like the water harvesting system, resources put towards significant sewer line repairs, and updates to the SPCC and GPP, it is anticipated that attention to these and other programs has had positive improvements toward water quality in the receiving waters.

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

Nothing at this time.

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: _____

Mary Vosevich

Signature: _____

Mary A. Vosevich

Date: _____

4/14/25

(mm/dd/year)

APPENDIX A

Public Education and Outreach

Included Documentation

Stormwater Website Analytics

HON 152 – University Drive Restoration Project Assignment & Photos

Cooling Tower Stormwater Harvesting Project Presentation & Case Study

BMP Lessons Learned Presentation

UK Facilities Newsletters

UEM Weekly Wire

Facilities Management Training Newsletter

UK Now Articles

APPENDIX A

Public Education and Outreach

Stormwater Website Analytics

All Users

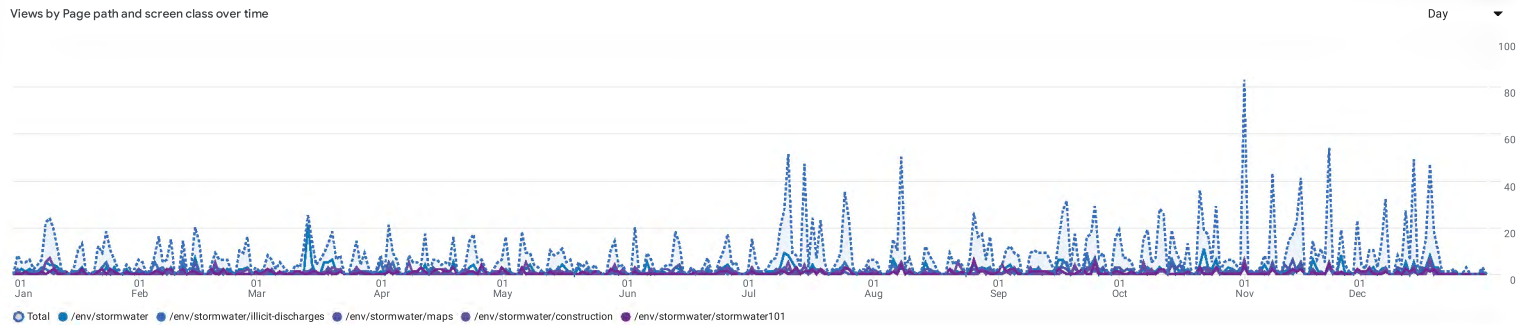
Add comparison

Last calendar year Jan 1 - Dec 31, 2024

Pages and screens: Page path and screen class

Add filter

Views by Page path and screen class over time



Plot rows		stormwater				Rows per page:		1-25 of 25	
Page path and screen class		Views	Active users	Views per active user	Average engagement time per active user	Event count	Key events	Total revenue	
		All events	All events	All events	All events	All events	All events		
☒	Total	2,933 14.59% of total	902 16.39% of total	3.25 Avg -10.94%	1m 15s Avg -21.49%	8,128 14.4% of total	0.00	\$0.00	
☒	1 /env/stormwater	507	233	2.18	28s	1,383	0.00	\$0.00	
☒	2 /env/stormwater/illit-discharges	292	216	1.35	36s	1,027	0.00	\$0.00	
☒	3 /env/stormwater/maps	272	158	1.72	23s	1,027	0.00	\$0.00	
☒	4 /env/stormwater/construction	225	138	1.63	55s	605	0.00	\$0.00	
☒	5 /env/stormwater/stormwater101	202	162	1.25	25s	546	0.00	\$0.00	
☐	6 /env/stormwater/post-construction-bmps	186	125	1.49	42s	552	0.00	\$0.00	
☐	7 /env/stormwater/training	160	115	1.39	1m 07s	483	0.00	\$0.00	
☐	8 /env/stormwater/storm-drain-marking-program	138	100	1.38	22s	341	0.00	\$0.00	
☐	9 /env/stormwater/program-information	129	92	1.40	15s	251	0.00	\$0.00	
☐	10 /env/stormwater/program-information/kpdes-sms4-permit	124	93	1.33	49s	383	0.00	\$0.00	
☐	11 /env/stormwater/program-information/swqmp	84	65	1.29	39s	224	0.00	\$0.00	
☐	12 /env/stormwater/protecting-our-streams	83	69	1.20	35s	219	0.00	\$0.00	
☐	13 /env/stormwater/educational-resources	74	65	1.14	25s	150	0.00	\$0.00	
☐	14 /env/stormwater/program-information/mcms/mcm5	73	60	1.22	48s	181	0.00	\$0.00	
☐	15 /env/stormwater/program-information/university-operations	57	44	1.30	24s	106	0.00	\$0.00	
☐	16 /env/stormwater/program-information/mcms/mcm4	55	48	1.15	23s	145	0.00	\$0.00	
☐	17 /env/stormwater/program-information/annual-reports	50	33	1.52	16s	124	0.00	\$0.00	
☐	18 /env/stormwater/get-involved	48	43	1.12	52s	81	0.00	\$0.00	
☐	19 /env/stormwater/program-information/mcms	41	37	1.11	25s	75	0.00	\$0.00	
☐	20 /env/stormwater/program-information/mcms/mcm3	37	27	1.37	6s	64	0.00	\$0.00	
☐	21 /env/stormwater/program-information/administrative-regulation-63	27	24	1.13	11s	45	0.00	\$0.00	
☐	22 /env/stormwater/program-information/mcms/mcm1	27	23	1.17	38s	44	0.00	\$0.00	
☐	23 /env/stormwater/program-information/mcms/mcm6	25	23	1.09	7s	50	0.00	\$0.00	
☐	24 /env/stormwater/program-information/mcms/mcm2	16	16	1.00	0s	20	0.00	\$0.00	
☐	25 /env/search/node/CE Hours stormwater	1	1	1.00	8s	2	0.00	\$0.00	

APPENDIX A

Public Education and Outreach

HON 152 – University Drive Restoration Project Assignment & Photos

HON 152 - University Drive Restoration Project Assignment

For this research project, we will collect monitoring data from an experimental restoration project along University Drive, just outside Lewis Hall.

Directions for Data Collection:

- You will perform data collection in groups--group assignments are on the Canvas homepage for today.
- Each group will collect the following data from each of their assigned plots: compaction (using penetrometer), sedge species and height, shrub species and height. Datasheets and clipboards will be provided.
- Digitize your data and share with me--I will compile into a single dataset for us to analyze on Wednesday.

After our analytical work in class on Wednesday Please write a research report on the project:

[Download Neighborhood Level Street Tree Data.xlsx](#)

*Include citations for any ideas that are not your original work. Use a standard references style. Your paper should draw from a few outside sources to help you establish context and relevance for the study.

*Your paper should be double-spaced, written in formal tone, in 12-pt standard font. Include headings for each section (Introduction, Methods, Results, Discussion).

- Title: Come up with a creative title for your research report
- Introduction: Your introduction section should establish appropriate context for our study. Think about the effects of urban development on human and ecological flourishing. In our study site, construction and development likely contributed to devegetation and erosion. What are the implications of this? Also introduce the study interventions--biochar and air tillage--and the study goals: establishing a native plant community in a sort of garden/landscaping context. Find and draw from published studies investigating these interventions (include citations!). At the end of this section, provide a one sentence statement of the study objectives, something like: "this study was initiated to evaluate the effects of air tilling and biochar addition on soil compaction and plant survival and growth after two years."
- Methods: Start with a description of the study site--where it is located, and what you know of site history (I described this in class on Wednesday). Describe the project interventions. Describe our procedure for data collection. For more information, see our [draft manuscript](#) reporting on year 1 data.
- Results: Present key results of the study; use graphs and tables as appropriate. Summarize/highlight key results in text.
- Discussion: Interpret your data. What do these results mean? How/why are these findings significant? What is interesting about them? Relate your findings back to the context you established in the introduction. Do you think biochar addition and air tillage were useful interventions? Do you think the species selected for planting were a good choice? Why or why not? What avenues would you recommend for further research? What next steps would you recommend toward understanding best practices for restoration in this sort of site?



















APPENDIX A

Public Education and Outreach

Cooling Tower Stormwater Harvesting Project Presentation & Case Study



CUP Stormwater Harvesting Project

June 7th, 2024



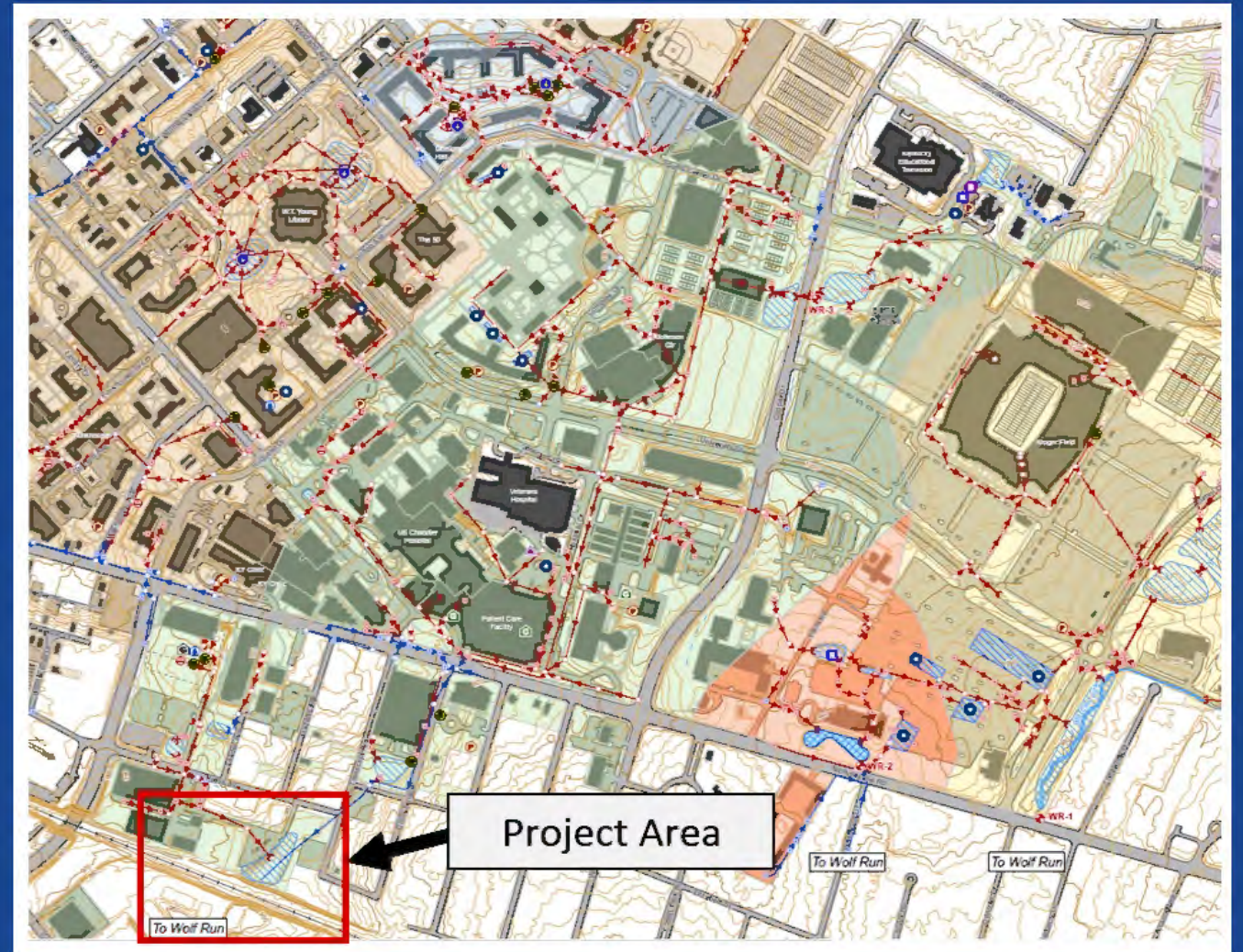
Funded in part by the LFUCG Water Quality Management Fee and Stormwater Quality Incentive Grant Program for Class B Infrastructure Projects

UK Project Team

Name	Title	Role
Graham Gray	Executive Director - Utilities	Leadership and technical support
Britney Ragland	Associate Director - Utilities	Principal Investigator (PI) for Grant, Engineering Support
Carter Whitton	Engineering Support - Utilities	Operational Oversight
Shane Tedder	Sustainability Coordinator - UK Facilities Management	Alignment of project design with campus sustainability strategic priorities; Co-PI
Kevin Lewis	UK Water Quality Compliance Manager, UK's Environmental Management Department	Regulatory support, monitoring of stormwater BMPs
Bell Engineering	Consulting Engineers	Design, Technical assistance as needed

Presentation Outline

- Proposal Summary
- Background and Context
- Timeline
- How It Works
- Photos
- Outreach & Education
- Lessons Learned

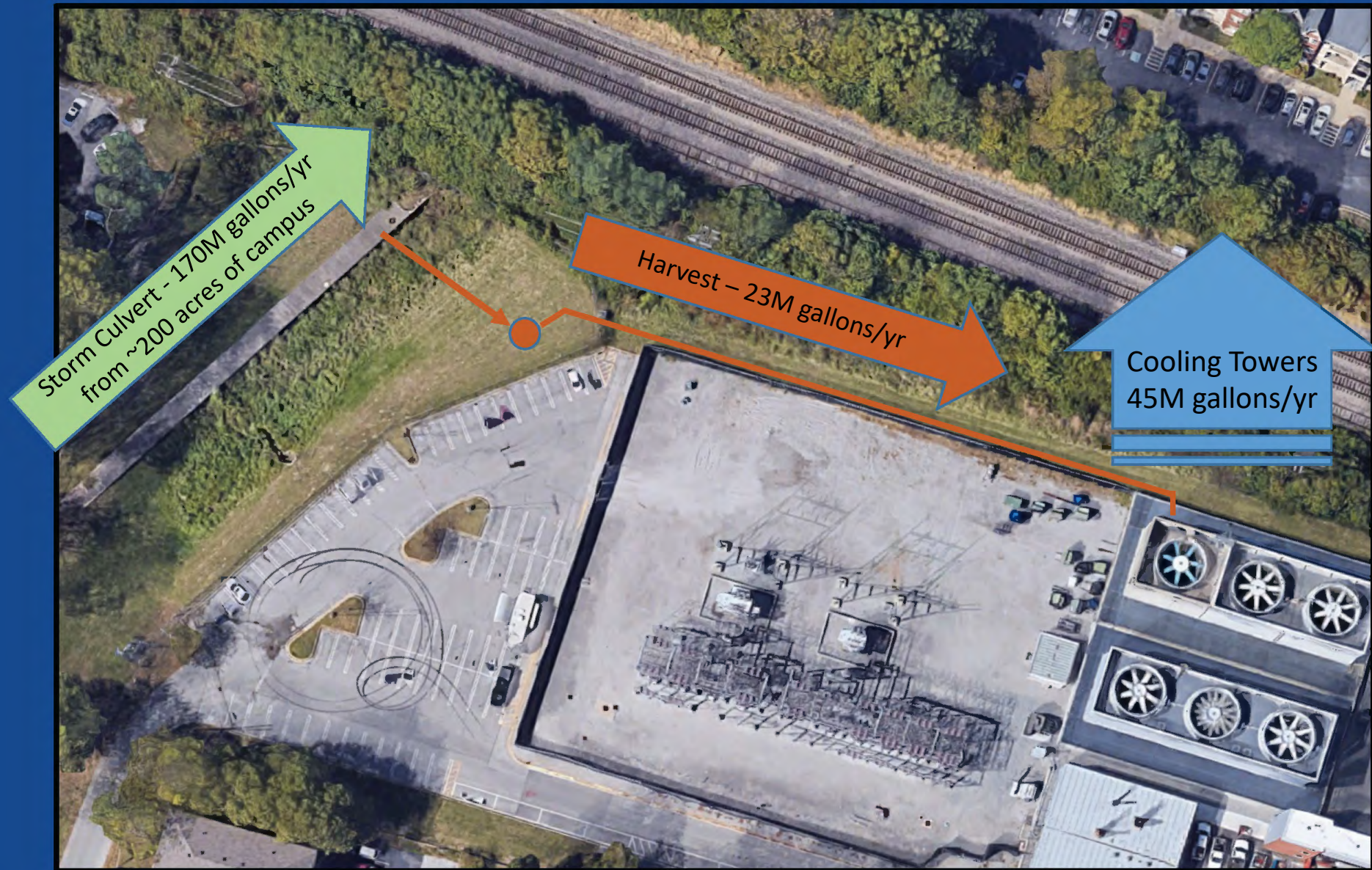


Project Proposal Summary

This project is expected to improve the quality and decrease the quantity of stormwater flowing to Wolf Run Creek.

This project will harvest stormwater for use in the University of Kentucky's Cooling Towers at Central Utility Plant #4 (CUP). This will be accomplished by installing a water harvesting system to remove, filter, and transfer the stormwater to cooling towers for evaporation.

There will also be positive educational benefits and the project will be formally connected with the University's outreach and public education efforts through the Stormwater Quality Plan.



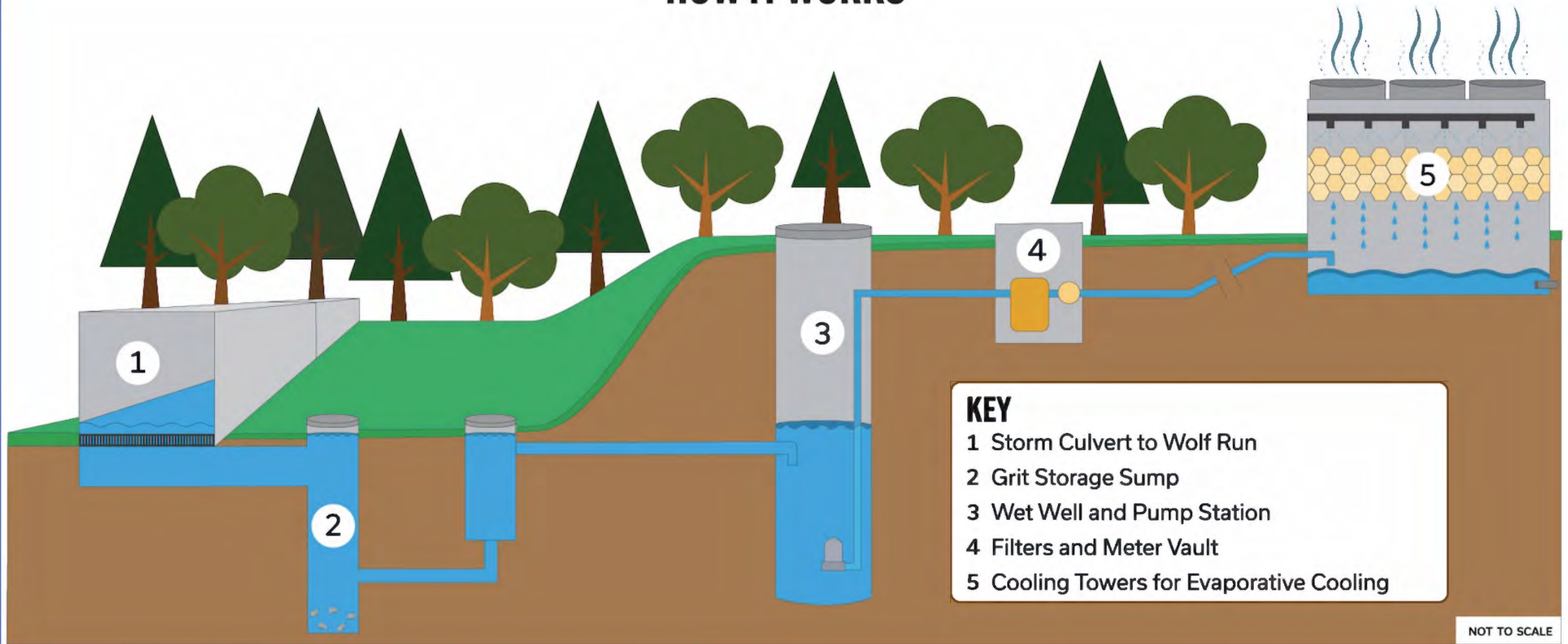
Project Background and Context

- There is a 200-acre campus watershed that drains to Wolf Run via the Simpson Avenue outfall point through an 8' x 8' partially exposed box culvert.
- This area of the campus is intensely developed and more than 50% of the watershed is covered with impervious surfaces.
- The cooling towers in Central Utility Plant #4 consume over 45,000,000 gallons of water per year as of FY21. This plant is adjacent to the Simpson Avenue outfall point.
- The University conducted a feasibility study and found that the flow in this stormwater conduit ranged from 56,000 gallons to 15,500,000 gallons per day between May and October of 2017.
- The University may potentially divert 23,000,000 gallons/year from Wolf Run, assuming a harvesting efficiency of 25% of available flow (170 million gallons).
- Savings for water costs are expected to be \$139,000 and sanitary sewer costs are \$65,000 for a total of \$204,000 in savings annually.

Project Timeline

- 2017 – Study performed; design concept & budget developed
- July 2018 – Project applied for grant
- July 2019 - Project re-applied for grant
- October 2019 - WQFB requested a presentation for clarification and award was made shortly thereafter.
- March 2020 – COVID19 impacts regular operations
- September 2020 – Approved Grant Award Agreement delivered to UK
- Summer 2021 – Completion of project plans by Bell Engineering
- November 2021 – Quotes for project construction obtained at \$650k; project placed on hold for evaluation
- April 2022 – Project issued for bid in parallel with request for additional funding from LFUCG (\$360k at 50/50 match)
- May 2022 – Bid awarded for Construction
- August 2022 – Site mobilization and construction begins
- Spring 2023 – Substantial completion and soft startup after significant supply chain delays
- Fall 2023 – Full startup of system with ongoing tuning

HOW IT WORKS

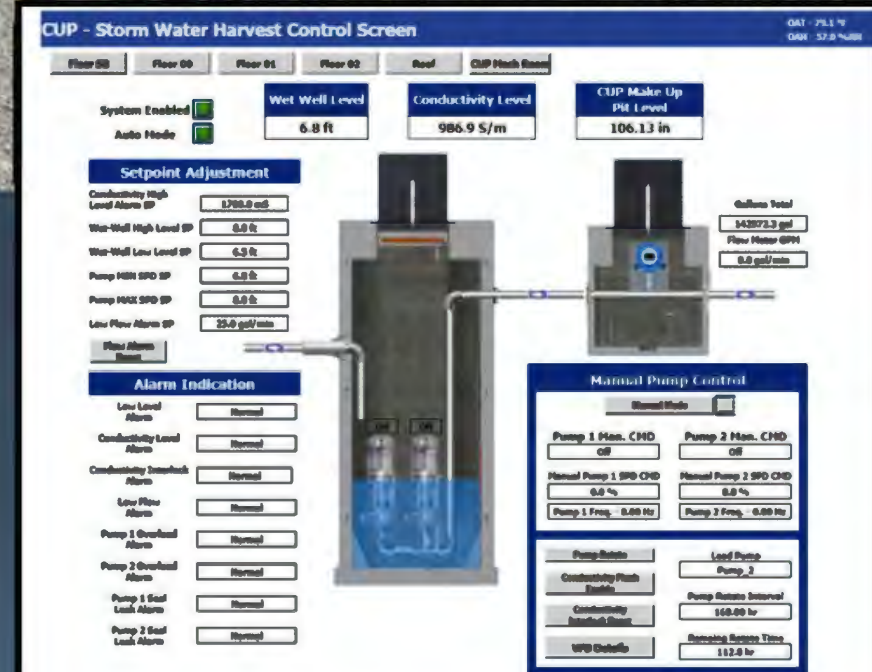




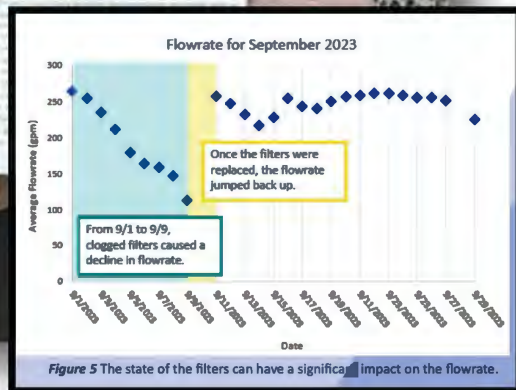
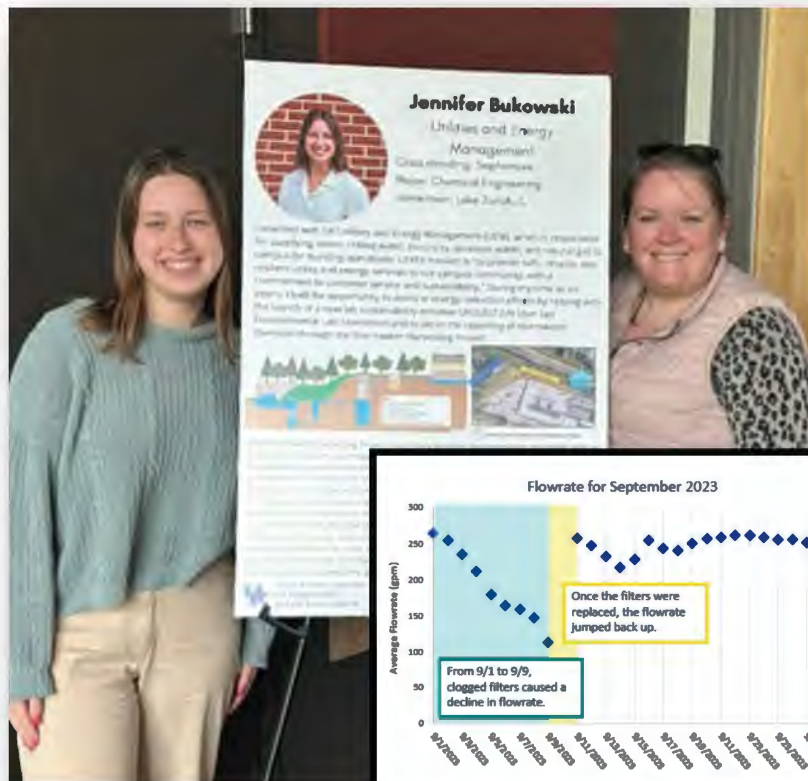
Aerial Project View



Project Photos



Project Photos



WATER HARVESTING

The University of Kentucky uses a lot of water each year, close to 500 million gallons on average. Facilities Management's heating and cooling plants are responsible for about 40% of campus water use and purchasing that water is a significant component of Utilities' overall budget. Our campus also generates tremendous amounts of water during rain events due to all the roofs and paved surfaces that prevent the water from soaking into the ground (infiltration). Much of that stormwater is diverted to an underground storm sewer conveyance system to prevent localized flooding. Those storm sewers eventually flow into local creeks and streams.

The idea for our recently completed stormwater harvesting system at the Central Utility Plant came from the intersection of those two challenges. The new system allows UK to reduce a negative environmental impact (stormwater runoff) while also lowering the water bills for our cooling plant.

The new system includes a pump and filtration system designed to transfer more than 20 million gallons of stormwater to the reservoir for the cooling plant, dramatically reducing the purchased water needed at this facility.

Working in partnership with UK Faculty and our partners at the city, UEM designed the project to be an educational asset for UK courses and student projects, community members, and other entities that are interested in this type of utility infrastructure project.

DID YOU KNOW?
An Olympic-sized swimming pool holds 660,000 gallons of water. The average American household uses about 300 gallons per day or 100,000 gallons of water per year.

HOW IT WORKS: WATER HARVESTING SYSTEM SIMPLIFIED SCHEMATIC

KEY:
1. Stormwater to catchment
2. Grit Storage Basin
3. 1000 Gallon Pump Station
4. Filtration and Motor Head
5. Cooling Tower K-1 Regenerative Cooling

SCAN FOR UK INTERACTIVE STORMWATER MAP



Outreach and Education

What's Going Well

- 2 million gallons harvested & \$30k savings in first 3 months
- No negative impact to chiller condenser tubes
- Education and outreach opportunities

What We're Learning

- Finding the right filtration
- Chemical treatment enhancements
- Bulk water storage would be a benefit
- System tuning ongoing



Questions and Discussion



CUP Stormwater Harvesting Project

Britney Ragland – Britney.ragland@uky.edu

Graham Gray – graham.gray@uky.edu

Cooling Tower Stormwater Harvesting Project

Case Study



Figure 1 The Stormwater Harvesting wet well holds diverted stormwater for use in CUP. Photo taken by Arden Barnes on July 7, 2023.



Figure 2 Cooling towers cool water for operations around campus. Photo taken by Jennifer Bukowski on August 29, 2023.

The Project

The University of Kentucky uses 500 million gallons of water annually, 40% of which is used in Facilities Management's heating and cooling plants. The cooling towers in Central Utility Plant #4 (CUP) annually consume over 45 million gallons of water, crucial for campus-wide operations including cooling and humidity control for healthcare, research, and other facilities.

The University of Kentucky's campus is heavily developed—over 50% of it is covered in impervious surfaces that prevent the natural absorption of stormwater. Within this landscape, a 200-acre watershed area drains stormwater runoff to Wolf Run Creek via the Simpson Avenue outfall point, conveniently adjacent to CUP.

Recognizing the potential of this daily flow of stormwater to trim operational costs while improving stormwater management, the University of Kentucky began development of the CUP Stormwater Harvesting Project.

The Stormwater Harvesting system is designed to pull over 20 million gallons of stormwater from the culvert each year for use in the cooling towers at CUP #4. Featuring a water reservoir and filtration system, the project can significantly reduce the amount of domestic water the plant consumes. The system is also designed to serve as an educational opportunity for students at the University of Kentucky and the wider community.

The Process

In 2017, the University of Kentucky conducted a feasibility study with Bell Engineering to assess the viability of utilizing stormwater in its cooling towers. Their findings revealed a daily flow ranging from 56 thousand to 15.5 million gallons through the culvert between May and October of 2017. Of this water, the University anticipated that up to 23 million gallons per year could be harvested for use in CUP, assuming a harvesting efficiency of 25% of the available flow. Such an endeavor would yield remarkable savings in water expenses and reinforce the University's commitment to sustainability.

With the results of the feasibility study in hand, UK developed a budget to begin work on the project. The University received a grant from Lexington-Fayette Urban County Government's (LFUCG) Stormwater Quality Projects Incentive Grant Program¹ and were eager to begin construction. However, The COVID-19 pandemic and shutdowns in 2020 put the project to a halt for about a year.

When the project was picked back up in 2021, the University realized that some additional scope needed to be added to make the system more functional, specifically in terms of controls infrastructure. Therefore, UK recommenced conversation with LFUCG and ended up maxing out the grant at \$360k and matching it about 50/50, compared to the 80/20 match that was originally planned. The scope changes along with economic turmoil caused by the pandemic more than doubled the cost of the system, resulting in an \$800k total project cost.

Additionally, UK had switched to a new chemical supplier during the year hiatus from the project, spurring further discussion regarding the chemical treatment of the stormwater to prevent biological growth and protect the cooling infrastructure. Additional turnover of personnel at both UK and LFUCG made the planning and budgeting process more complicated, but by the summer of 2022 everything was squared away and construction could begin.

Primarily due to supply chain issues, construction of the system did not reach substantial completion until a year later in the summer of 2023. While the final punch list of items was not completed until the fall of 2023, the system was operational and ran in the summer of 2023 to test and tune the system.



¹<https://www.lexingtonky.gov/stormwater-incentive-grant-program>

Operation

The Stormwater Harvesting System contains a wet well designed to store stormwater diverted from the culvert. Initially, harvested water flows through a grit storage sump, allowing larger particles to settle out before the water enters the wet well. Next, the water accumulates in the wet well until it reaches the desired depth. Once this level is attained, the water is pumped through filters and a meter vault. Following this, the water is sent to the cooling towers for a final treatment to prevent organic growth, pipe scaling, and rusting before evaporative cooling.

One important parameter for assessing the water entering the cooling towers is conductivity, which is a measure of the ability of the water to conduct electricity due to dissolved solvents. In the case of cooling tower water, conductivity can help gauge its purity. Elevated conductivity levels could signify increased impurities, and an increased amount of chemicals needed to treat the water.

When water is cycled through the cooling tower multiple times, the solvents become more concentrated each time as pure water is evaporated off during the cooling process. For the tower to function properly and to preserve the integrity of the piping and structure, a tower conductivity of 1,800 μmhos or below must be maintained. The maximum allowable tower conductivity divided by the make up water conductivity gives the cycles of concentration, or

how many times the make up water can be cycled through the tower before it must be blown down, or purged. This is a constant process of lower conductivity water flowing in and higher conductivity water flowing out while cycles of concentration determine the frequency of blowdown.

Generally, the stormwater entering the cooling tower has a higher conductivity than city water, and results in lower cycles of concentration. Additionally, chlorine and bleach are required to ensure system and regulatory safety. More specifically, bleach acts as an oxidizing biocide that controls the microbial potential for fouling. The cooling tower is also treated weekly with a non-oxidizing biocide to protect the system from slime layers of anaerobic bacteria. Nevertheless, the increased chemical expenses and need for larger makeup water volume are offset by the significant water savings achieved through using diverted stormwater.

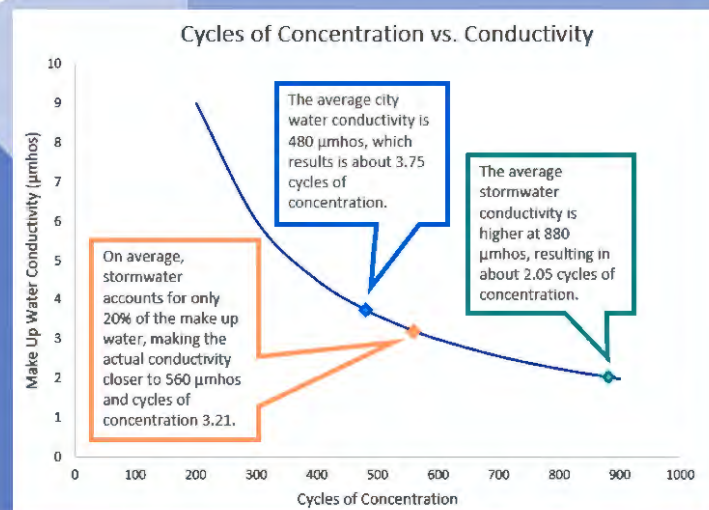
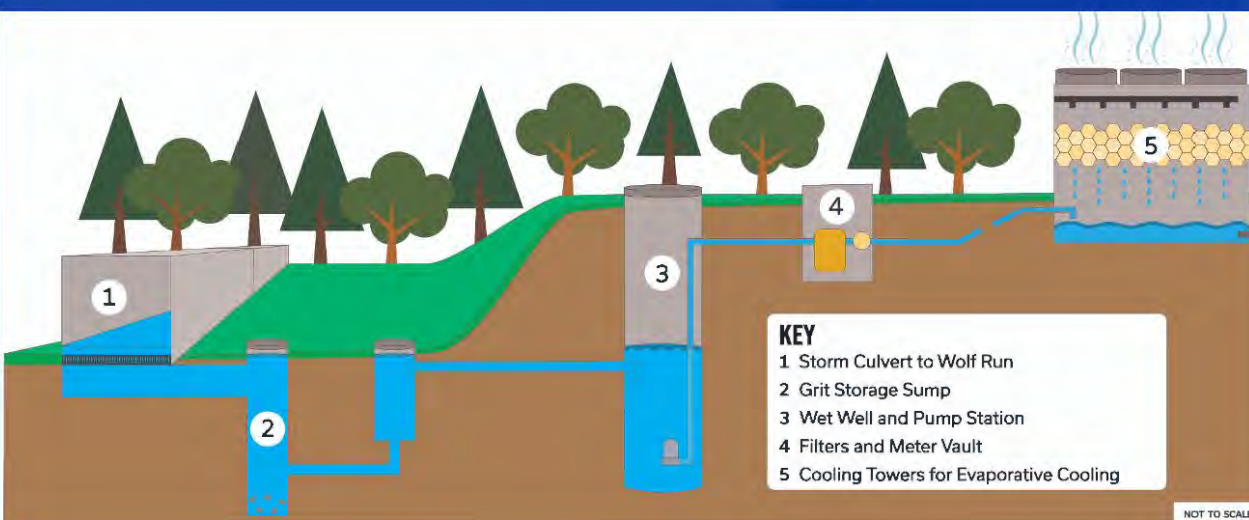


Figure 3 (Above) As the conductivity of the water increases, the cycles of concentration decreases. Conductivity values may vary depending on environmental factors.

Figure 4 (Left) The Water Harvesting System Simplified Schematic highlights the main components of the system. Created by Bree Walton.



Maintenance

For the stormwater harvesting system to operate smoothly, it's crucial to maintain cleanliness in both the grit storage sump and the filters. The grit storage sump is expected to be cleaned approximately twice per season. Additionally, filter replacement occurs every few weeks, varying based on usage frequency and the quality of incoming water. As ongoing monitoring and adjustments are made to the stormwater harvesting system, the maintenance protocol will evolve to incorporate new insights.

One of the main aspects that caused issues early in the operation of the system was debris such as sediment, leaves, and trash. Especially after large rains, additional debris would get into the culvert and disrupt the flow of the system. Initially, the inlet grate was positioned to maximize water flow into the system; however, in this configuration, too much debris was entering into the water circulation. Therefore, the grate position was changed so that the water would flow in without carrying as much debris along with it.

Additionally, the filter size played a role in managing debris within the stormwater harvesting system. Determining the optimal filter size has required some trial and error. Initially, 30-micron filters were used, but they clogged within hours after system activation. Therefore, 50-micron filters were implemented, which allowed for improved performance but were still clogged with debris faster than ideal. Eventually, 100-micron filters were implemented.

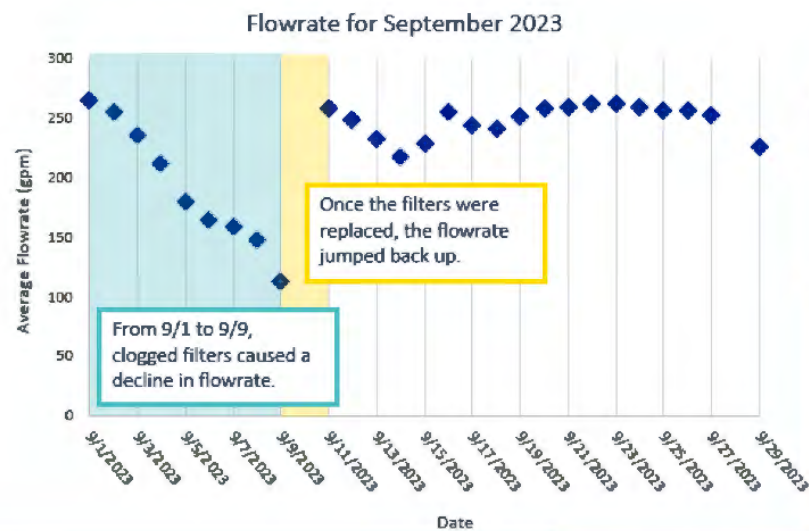


Figure 5 The state of the filters can have a significant impact on the flowrate.



Figure 6 Regular cleaning of the system helps maintain its integrity and improve performance.

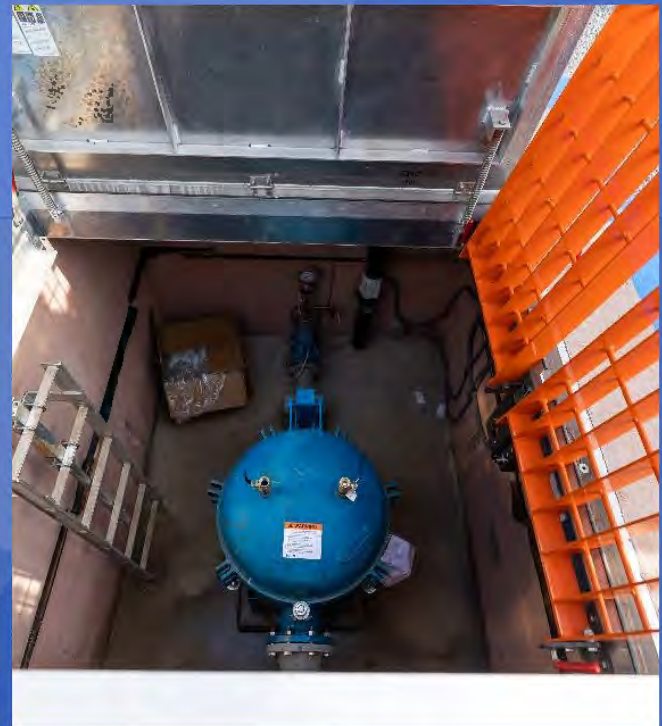


Figure 7 The multibag filter housing holds six filters that are regularly replaced. Photo taken by Arden Barnes on July 7, 2023.

Performance

Between August and October of 2023, the Stormwater Harvesting System operated 60% of the time, for a total of 55 days. It was most active in the warmer months when the demand for chilled water reached its peak for use in air conditioning systems throughout campus. Over this time, an average of 46,974 gallons of stormwater per day was used in the cooling tower for a total of over 2,274,000 gallons of stormwater diverted.

Using stormwater instead of domestic water has resulted in \$38,991.39 in savings for the cost of water and sewer charges. However, due to the lack of chemical treatment in stormwater compared to domestic water, a higher volume of chemicals was used to treat the stormwater compared to water purchased from the water company. Therefore, an additional \$8,020.71 was paid in chemical costs compared to the chemical cost if 100% city water was to be used. Taking both the water and chemical costs into account, the University saved a net \$30,970.68 in the first three months of the stormwater harvesting system's operation. As the system is tuned, these numbers are expected to rise.

**Total Stormwater
Diverted in Fall 2023:
2,274,636 gallons**



Sustainability

One of the goals outlined in the University of Kentucky's Sustainability Strategic plan is to demonstrate "excellence and innovation in water conservation and stewardship." Leveraging the natural water resources available on campus exemplifies a conscientious approach to water diversion and usage. This not only reduces the University's domestic water consumption but also improves the environmental conditions within the watershed.

Looking Ahead

The Utilities and Energy Management team is currently working towards making improvements to the system. One of which is adding a direct line of bleach into the storage wet well to prevent organic growth. Additionally, there is potential to replicate the project and tap into different stormwater lines near Cooling Plant 1 and Cooling Plant 2. The University of Kentucky is eager to see the benefits and growth of the Stormwater Harvesting System in years to come.



Figure 8 One improvement to the system may be adding a chemical line that can treat the water in the wet well. Photo taken by Arden Barnes on July 7, 2023.

APPENDIX A

Public Education and Outreach

BMP Lessons Learned Presentation

Kentucky Stormwater Association Annual Conference
July 11, 2024

Lessons Learned: BMP Inspections, Tracking, and Maintenance Plan Development for the University of Kentucky

Steven Vogel, P.E., Strand Associates, Inc.®
Nathan Weber, University of Kentucky






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Key Topics for Today's Discussion

- Introduction
- History of UK's MS4 Program
- Post-Construction Best Management Practice (BMP) Baseline Condition Assessment
- Update of UK BMP Operation and Maintenance Manual
- Preventative Maintenance Plan Development
- Ongoing Challenges
- Lessons Learned



Alumni Drive Stream Restoration Source: UK




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Speaker Introductions



Steven Vogel, P.E.
Strand Associates, Inc.®
Project Manager
2005 UK Graduate



Nathan Weber
University of Kentucky
Water Quality Compliance Specialist
2007 UK Graduate




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University of Kentucky's MS4 Phase II Permit History

- UK became a Phase II MS4 in 2010
- Fully encapsulated in City of Lexington's MS4 boundary but operates independently
- Program started by various staff and eventually taken over by Kevin Lewis in 2015
- Environmental Quality Management (EQM) manages compliance with the permit, but permit tasks are completed by various groups
 - Utilities, facilities, grounds, athletics, and others



UK MS4 Boundary Map (2024) Source: UK




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Significant Redevelopment of UK Requires Post-Construction Stormwater Control Infrastructure

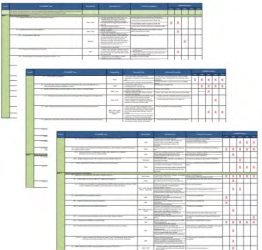
- Since 2012, campus has undergone significant changes
 - Redevelopment – Over \$2.2 Billion in Capital Investment through 2020, additional \$2.5 Billion Ongoing
 - From 37 BMPs in 2012, 151 BMPs in 2020
- Redevelopment term is important because UK adopted LFUCG Stormwater Manual
 - Quantity control of any additional impervious added
 - Reduction of impervious by 20% or quality treatment of 20% of existing plus any additional impervious added, or combination thereof
- Manual also defines acceptable BMPs and submittal requirements, which are supplemented by UK based on preferences
- BMPs are owned by UK and operated by various entities on campus




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Stormwater Quality Management Plan Development

- With issuance of 2018-2023 Phase II Permit, a SWQMP was developed to guide permit compliance throughout the permit term
- Tasks were developed by stakeholder-led Minimum Control Measure subcommittees
- Included 113 tasks with 226 measurable goals
- Management plan was detailed and ambitious
- Stakeholders also engage in tasks above and beyond what is required by the permit






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Strand Associates Provides Ongoing Compliance Assistance

- Strand hired in 2019 through a Request for Proposal to assist
- Initial tasks included:
 - IDDE Plan update
 - Outfall inspections
 - Annual Report preparation
 - Stormwater Quality Management Plan (SWQMP) updates
 - Bulk storage evaluations
 - Post-construction BMP inspections
- The role has changed over time as UK needs and staff have changed
 - Needed to focus on maintenance of infrastructure



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Management of Post-Construction BMP Infrastructure

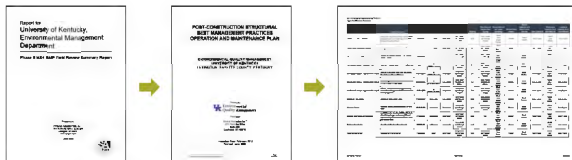
- Task 5.D – Revise long-term post-construction stormwater quality BMP inspection program
- Measurable goals included:
 - Inspect 20% of aboveground post-construction BMP's annually
 - Inspect 100% of underground BMP's annually
 - Develop a preventative maintenance program for all UK owned post-construction BMP's
 - Develop a tracking system to assess long term preventative maintenance (PM) cost
 - Document all inspections and maintenance in the MS4 database or an effective equivalent



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Multiple Steps Towards a Preventative Maintenance Program (PMP) Plan

- A series of significant efforts were required to move towards the end goal of a PMP plan
 - Comprehensive BMP field reviews to create an understanding of the baseline condition
 - Update of the BMP Operation and Maintenance (O & M) Manual
 - Development of a PMP Matrix



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BMP Baseline Condition Assessment

- To develop a maintenance plan, needed the full picture
- Several sources of information including project files, GIS mapping, MS4web
 - Not all matched (location, name, detailed information)
- Didn't have a single location with all O & M information and manuals



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Pilot Study Allows for Refined Inspection Process

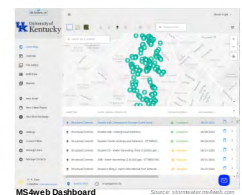
- 151 total BMPs on campus
- A simple process needed to be developed
- BMP types included:
 - Permeable pavers
 - Rain gardens
 - Filter strips
 - Bioretention
 - Vegetated swales
 - Pretreatment devices
 - Green roofs
 - Inlet control devices
 - Detention ponds
 - Class IV injections wells
 - Water harvesting systems
 - Underground detention basins



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Used MS4web as Collection Tool

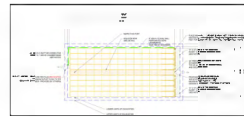
- Detailed data for each BMP including photos, plan drawings, and manuals
- BMP specific inspection forms with PDF output including photos
- Additional supplementary data
 - Access
 - Number of elements
 - Number of staff required



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Pilot Study Findings

- Created additional forms to address differences in BMP inspection types
- Augmented forms to support ease of use in the field
 - Planning for future inspectors
- Consolidated data across all sources
- Highlighted need for design documentation
- Defined need for representative photo to help locate BMPs
 - Coupled with potential change in compliance software, led to stormwater map



College Way ADS Underground Detention Design



College Way Parking Lot



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Stormwater Map Provides Vital Resource

- Identifies location of stormwater infrastructure on an aerial map
- Shows representative photograph
- Publicly available on stormwater website
- Working towards adding links to project documentation, internal only

Link: <https://www.uky.edu/env/stormwater/maps>



UK Stormwater Map



Facility Details



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Comprehensive Post-Construction BMP Inspection

- Took 5 months to avoid weather events, locate and gain access to BMPs, review, and document findings
- Challenges included locating historic documentation
 - Projects from before latest stormwater manual documentation requirements
 - Inconsistent documentation by designers
 - Before MS4/MS4web
 - Loss of institutional knowledge
- Information was distilled and reported to UK stormwater stakeholders at a quarterly meeting



Roselle Hall Inspection Report Photographs



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Baseline Condition Assessment Findings

- Conditions varied widely based on location
 - Areas around the hospital seemed to require more maintenance
- New BMPs that were recently installed were in better shape
- Some BMPs impacted by subsequent construction
- Issues with access and maintainability
 - Required special tools to access
 - Standard equipment not able to inspect
- Unhappy with condition assessment
 - Not enough definition

BMP	Location	Access	Condition	Notes
1	1000 N. 1st St.	Good	Good	
2	1000 N. 1st St.	Good	Good	
3	1000 N. 1st St.	Good	Good	
4	1000 N. 1st St.	Good	Good	
5	1000 N. 1st St.	Good	Good	
6	1000 N. 1st St.	Good	Good	
7	1000 N. 1st St.	Good	Good	
8	1000 N. 1st St.	Good	Good	
9	1000 N. 1st St.	Good	Good	
10	1000 N. 1st St.	Good	Good	

Table 1: BMP Inspection Report Summary Table

Location	Access	Condition	Notes
1000 N. 1st St.	Good	Good	
1000 N. 1st St.	Good	Good	
1000 N. 1st St.	Good	Good	
1000 N. 1st St.	Good	Good	
1000 N. 1st St.	Good	Good	
1000 N. 1st St.	Good	Good	
1000 N. 1st St.	Good	Good	
1000 N. 1st St.	Good	Good	
1000 N. 1st St.	Good	Good	
1000 N. 1st St.	Good	Good	



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Maintenance Recommendation Based on Field Conditions



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Structural Repairs Recommendations Based on Surface Observations



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Ongoing Post-Construction BMP Inspections

- Since 2020, continued with 100% of underground BMPs and 20% of aboveground
- Taken some time to get maintenance scheduled and completed
- Seen significant improvement upon reinspection of maintained BMPs
- Many not acceptable have moved to marginal upon reinspection

Type	Compliant			Marginal			Not Acceptable			Total
	4	5	6	7	8	9	10	11		
Detention Ponds										
Furnishing Ponds	2	60	1	25	1	25	4			
Vegetated Swales	1	50	1	50	0	0	2			
Permeable Pavement	7	50	5	42	0	5	12			
Detention Devices	1	11	1	11	7	76	9			
Underground Detention	18	90	1	5	1	5	20			
Totals	33	63	10	19	9	17	52			

Table 2 BMP Inspection Report Summary Table

Type	Compliant	Percent	Marginal	Percent	Not Acceptable	Percent	Total
Detention Ponds	4	50	1	20	0	0	9
Pervious Pavers	2	50	1	25	1	25	4
Pervious Curbs	1	50	1	50	0	0	2
Permeable Driveways	7	56	5	42	0	0	12
Detention Devices	1	11	1	11	7	78	9
Underground Detention	15	93	1	5	1	5	20
Total	33	63	10	19	9	17	52

Table 2 BMP Inspection Report Summary Table

Update of Post-Construction BMPO & M Manual

- Previous version was from 2012
- Written more for designers than for operators
 - About how they were designed, not about how to operate
- Used examples from around campus rather than around US
- Added appendices with links to manufactured treatment device manuals
- Included additional inspection protocol

The image shows two book covers for a manual titled "POST-CONSTRUCTION STRUCTURAL BEST MANAGEMENT PRACTICES OPERATION AND MAINTENANCE PLAN". The left cover is the front cover, featuring a collage of images related to water management and the University of Kentucky logo. The right cover is the back cover, showing the title, subtitle, and author information.

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2014 Construction Industry Conference and Exposition
CONSTRUCTION & MAINTENANCE PLAN

**POST-CONSTRUCTION STRUCTURAL
 BEST MANAGEMENT PRACTICES
 OPERATION AND MAINTENANCE PLAN**

**ENVIRONMENTAL QUALITY MANAGEMENT
 SYSTEMS FOR ALL-STATE
 LEADERSHIP, FAYETTE COUNTY, KENTUCKY**



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University of Kentucky

UK
KENTUCKY

Office of Environmental
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 Lexington, KY 40506-0001
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|  | UNIVERSITY OF LONDON
Institute of Health Care Management | HBM201-01 |
| | <p align="center">Business Strategy and Planning
 Strategic Planning
 2015-2016</p> | |
| Examinations | <p align="center">Strategic Planning
 2015-2016</p> | |
| Question Paper | <p>The purpose is to assess candidates' ability to plan processes for future success in various situations.</p> | |
| Request | <p>For information about this examination visit the following website: www.uol.ac.uk/Examinations</p> | |
| Recommendations | <p>Exam Session: September, October, January, May, September</p> | |
| Maximum Time | <p>Students have 1 hour to complete the examination.</p> | |
| Examination Type | <p>Open Book Exam</p> | |
| Notes and aids | <p>No printed aids are permitted. Handwritten documents and notes are permitted.</p> | |
| Other notes | <p>No printed aids are permitted. Handwritten documents and notes are permitted.</p> | |
| Examination Questions | <p>1. Question 1 (worth 10% of the total mark) is a short-answer question. It is designed to assess your understanding of the concept of strategic planning and its importance to an organisation.</p> | |
| Examination Questions | <p>2. Question 2 (worth 10% of the total mark) is a short-answer question. It is designed to assess your understanding of the concept of strategic planning and its importance to an organisation.</p> | |
| Examination Questions | <p>3. Question 3 (worth 10% of the total mark) is a short-answer question. It is designed to assess your understanding of the concept of strategic planning and its importance to an organisation.</p> | |
| Examination Questions | <p>4. Question 4 (worth 10% of the total mark) is a short-answer question. It is designed to assess your understanding of the concept of strategic planning and its importance to an organisation.</p> | |
| Examination Questions | <p>5. Question 5 (worth 10% of the total mark) is a short-answer question. It is designed to assess your understanding of the concept of strategic planning and its importance to an organisation.</p> | |
| Examination Questions | <p>6. Question 6 (worth 10% of the total mark) is a short-answer question. It is designed to assess your understanding of the concept of strategic planning and its importance to an organisation.</p> | |
| Examination Questions | <p>7. Question 7 (worth 10% of the total mark) is a short-answer question. It is designed to assess your understanding of the concept of strategic planning and its importance to an organisation.</p> | |
| Examination Questions | <p>8. Question 8 (worth 10% of the total mark) is a short-answer question. It is designed to assess your understanding of the concept of strategic planning and its importance to an organisation.</p> | |
| Examination Questions | <p>9. Question 9 (worth 10% of the total mark) is a short-answer question. It is designed to assess your understanding of the concept of strategic planning and its importance to an organisation.</p> | |
| Examination Questions | <p>10. Question 10 (worth 10% of the total mark) is a short-answer question. It is designed to assess your understanding of the concept of strategic planning and its importance to an organisation.</p> | |

Updated Inspection Protocol, cont.

- Maintenance inspection
 - Completed by operating staff using special form based on BMP type
 - Help to identify and log issues with the BMP or surrounding area
 - Track issues long term to identify maintenance trends
- Compliance inspection
 - Completed by EQM staff or representative for compliance with the Phase II MS4 permit

The image shows a 'BMP Inspection Worksheet' from the City of San Antonio. The form is titled 'BMP Inspection Worksheet' and includes a header with the city logo and name. Below the title, there is a section for 'General Information' which includes fields for 'Date', 'Time', 'Inspector Name', and 'Location'. This is followed by a section for 'Inspection Details' which contains several checkboxes for different types of violations or observations, such as 'No Stormwater Management Plan', 'No Best Management Practices', etc. There are also columns for 'Priority' and 'Status'. The bottom of the form has a section for 'Remarks' where the inspector can provide additional details about the findings.

- UK**
University of Kent
 School of Management

ISS: 2005-01-24

International Accounting and Auditing Course

(For the BSc Accounting and Finance and BSc Accounting and Management)

Module code: ACC10001 2005/2006 1st Semester

Notes: Do not complete the content of a question marked with the letter **B** as this will automatically be marked as incorrect.

Question	Answer	Mark
1 True/False questions		
1.1 The following statement is true or false? 1	Answer: 1	
1.2 The following statement is true or false? 1	Answer: 2	
1.3 The following statement is true or false? 1	Answer: 3	
1.4 The following statement is true or false? 1	Answer: 4	
1.5 The following statement is true or false? 1	Answer: 5	
1.6 The following statement is true or false? 1	Answer: 6	
1.7 The following statement is true or false? 1	Answer: 7	
1.8 The following statement is true or false? 1	Answer: 8	
1.9 The following statement is true or false? 1	Answer: 9	
1.10 The following statement is true or false? 1	Answer: 10	
1.11 The following statement is true or false? 1	Answer: 11	
1.12 The following statement is true or false? 1	Answer: 12	
1.13 The following statement is true or false? 1	Answer: 13	
1.14 The following statement is true or false? 1	Answer: 14	
1.15 The following statement is true or false? 1	Answer: 15	
1.16 The following statement is true or false? 1	Answer: 16	
1.17 The following statement is true or false? 1	Answer: 17	
1.18 The following statement is true or false? 1	Answer: 18	
1.19 The following statement is true or false? 1	Answer: 19	
1.20 The following statement is true or false? 1	Answer: 20	
1.21 The following statement is true or false? 1	Answer: 21	
1.22 The following statement is true or false? 1	Answer: 22	
1.23 The following statement is true or false? 1	Answer: 23	
1.24 The following statement is true or false? 1	Answer: 24	
1.25 The following statement is true or false? 1	Answer: 25	
1.26 The following statement is true or false? 1	Answer: 26	
1.27 The following statement is true or false? 1	Answer: 27	
1.28 The following statement is true or false? 1	Answer: 28	
1.29 The following statement is true or false? 1	Answer: 29	
1.30 The following statement is true or false? 1	Answer: 30	
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1.32 The following statement is true or false? 1	Answer: 32	
1.33 The following statement is true or false? 1	Answer: 33	
1.34 The following statement is true or false? 1	Answer: 34	
1.35 The following statement is true or false? 1	Answer: 35	
1.36 The following statement is true or false? 1	Answer: 36	
1.37 The following statement is true or false? 1	Answer: 37	
1.38 The following statement is true or false? 1	Answer: 38	
1.39 The following statement is true or false? 1	Answer: 39	
1.40 The following statement is true or false? 1	Answer: 40	
1.41 The following statement is true or false? 1	Answer: 41	
1.42 The following statement is true or false? 1	Answer: 42	
1.43 The following statement is true or false? 1	Answer: 43	
1.44 The following statement is true or false? 1	Answer: 44	
1.45 The following statement is true or false? 1	Answer: 45	
1.46 The following statement is true or false? 1	Answer: 46	
1.47 The following statement is true or false? 1	Answer: 47	
1.48 The following statement is true or false? 1	Answer: 48	
1.49 The following statement is true or false? 1	Answer: 49	
1.50 The following statement is true or false? 1	Answer: 50	
1.51 The following statement is true or false? 1	Answer: 51	
1.52 The following statement is true or false? 1	Answer: 52	
1.53 The following statement is true or false? 1	Answer: 53	
1.54 The following statement is true or false? 1	Answer: 54	
1.55 The following statement is true or false? 1	Answer: 55	
1.56 The following statement is true or false? 1	Answer: 56	
1.57 The following statement is true or false? 1	Answer: 57	
1.58 The following statement is true or false? 1	Answer: 58	
1.59 The following statement is true or false? 1	Answer: 59	
1.60 The following statement is true or false? 1	Answer: 60	
1.61 The following statement is true or false? 1	Answer: 61	
1.62 The following statement is true or false? 1	Answer: 62	
1.63 The following statement is true or false? 1	Answer: 63	
1.64 The following statement is true or false? 1	Answer: 64	
1.65 The following statement is true or false? 1	Answer: 65	
1.66 The following statement is true or false? 1	Answer: 66	
1.67 The following statement is true or false? 1	Answer: 67	
1.68 The following statement is true or false? 1	Answer: 68	
1.69 The following statement is true or false? 1	Answer: 69	
1.70 The following statement is true or false? 1	Answer: 70	
1.71 The following statement is true or false? 1	Answer: 71	
1.72 The following statement is true or false? 1	Answer: 72	
1.73		

Preventative Maintenance Program Development

- For each BMP, identified baseline tasks and frequency/schedule
- Organized into matrix by BMP Type
- Integration into Preventative Maintenance system
- Modification to maintenance schedule through ongoing inspections
- Still working on getting this implemented through various departments
- Tracking documentation of maintenance on back end

[illegible]

Ongoing Challenges

- Planning for future BMPs with inspection and maintenance in mind
- Organization system
 - MS4web is being discontinued
 - Evaluated development of GIS based solution
 - Need more than just locations, attributes, and inspection forms
 - Evaluated a variety of packages and moving to a new system
 - Transition is going to be difficult, especially to maintain records
- Ongoing training for self monitoring and compliance

- 4

Lessons Learned

- Importance of record keeping
 - Long term, ongoing record keeping will be important (staff, future projects, etc.)
- Reviewing ALL BMPs are important, even if they are difficult to access
- Instituted Notice of Termination inspections at project closeout
- Maintenance frequency
 - Continues to vary by location and adjacent use
 - Preventative Maintenance Plan must be evergreen
- Messaging towards target audience
 - BMP manual – engineers are not maintaining, operators are
 - Rating system – communicating through clear identifications
- Program is always evolving



APPENDIX A

Public Education and Outreach

UK Facilities Newsletters

Facilities Management is a service organization composed of units that plan, construct, manage, operate and maintain the physical assets (buildings, grounds and utility systems) of the University. Our mission is to provide a physical environment in which staff, faculty and students can achieve excellence in teaching, learning, research and public service.

FACILITIES MANAGEMENT PROFESSIONALS HELP UK: GRADUATE STUDENTS & CARE FOR PATIENTS

Happy Earth Day #55 (1970-2024)

Sustainability, often defined as balancing environmental and social impacts with economic factors, is a year-round priority for the University. UK's efforts are organized by five guiding principles:

- *Making sustainability a part of the student experience*
- *Reinforcing the university's commitments to our people*
- *Decarbonizing our operations*
- *Becoming a zero-waste campus*
- *Modeling environmental excellence*

Earth Day, the international holiday devoted to environmental stewardship, has been celebrated on April 22nd for the past 55 years and is a good opportunity to highlight some of the efforts UK's Facilities Management makes on this front. Year-round our teams are:

- Designing and coordinating the construction of greener buildings.
- Minimizing the waste UK sends to local landfills by recycling, composting, and reusing.
- Caring for more than 400 acres of green space and an urban forest of more than 14,000 trees.
- Optimizing energy use and pursuing a wide range of energy efficiency and conservation strategies.
- Protecting local watersheds and making efficient use of our water resources.
- Supporting students who are interested in pursuing sustainability-related projects.
- And much more

The snapshots below capture a couple of the sustainability-focused initiatives our teams have supported in recent days.



Shaun Lavin, a student employee with UK Recycling and President of the UK Energy Club, stands beside two solar umbrellas that were recently installed on Alumni Commons. The Umbrellas use solar power to provide electricity for charging phones, tablets, and other devices. The Energy Club led the fund raising for this installation.



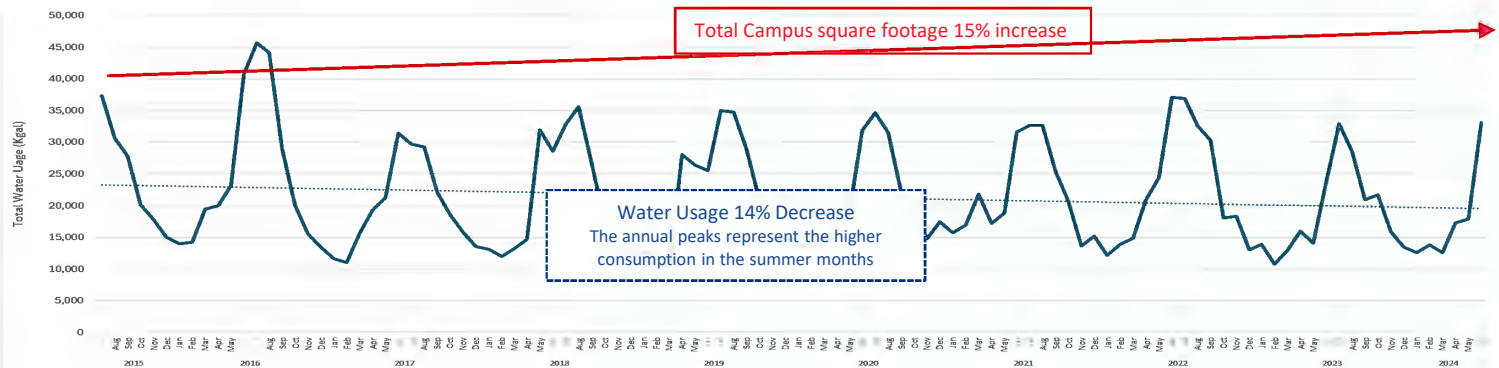
Nic Williamson (left), UK's Arboriculture Superintendent worked with approximately students from the Lewis Honors College to plant ten trees along Alumni Drive. The effort was initiated by Dr. Kenton Sena from the Lewis Honors College and supported by UK Grounds

Facilities Management is a service organization composed of units that plan, construct, manage, operate and maintain the physical assets (buildings, grounds and utility systems) of the University. Our mission is to provide a physical environment in which staff, faculty and students can achieve excellence in teaching, learning, research and public service.

**FACILITIES MANAGEMENT PROFESSIONALS HELP UK:
GRADUATE STUDENTS & CARE FOR PATIENTS**

How We Get it Done:

Decreasing Water Usage During a Time of Significant Growth



Most of the buildings on UK's campus are heated and cooled by steam and chilled water. UK has five heating & cooling plants operated by Utilities and Energy Management (UEM) that produce both steam and chilled water. These processes require a staggering amount of water, hundreds of millions of gallons per year, that is purchased from Kentucky American Water.

Over the past 8 years, UK has experienced a 15% increase in building square footage. Based on this growth, it is easy to think that UEM would need even more water to produce the additional volume of steam and chilled water needed to heat and cool these spaces. However, during this same time, UEM has installed new, more efficient equipment, a large-scale stormwater harvesting system, and focused on optimizing steam and chilled water delivery systems. These efforts, along with efficiencies achieved in building operations, have resulted in a 14% DECREASE in water consumption (see chart above). The pictures below capture some of the large-scale upgrades to the cooling towers that have contributed to this impressive achievement. **Great work, UEM!**

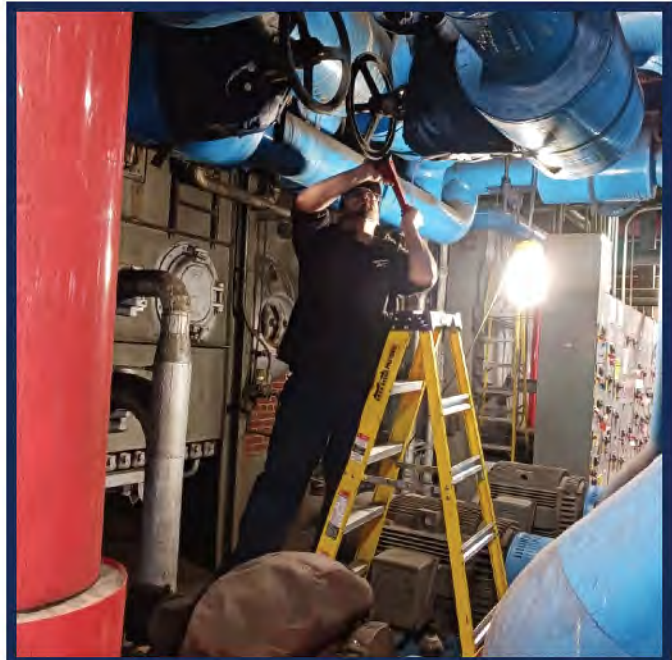
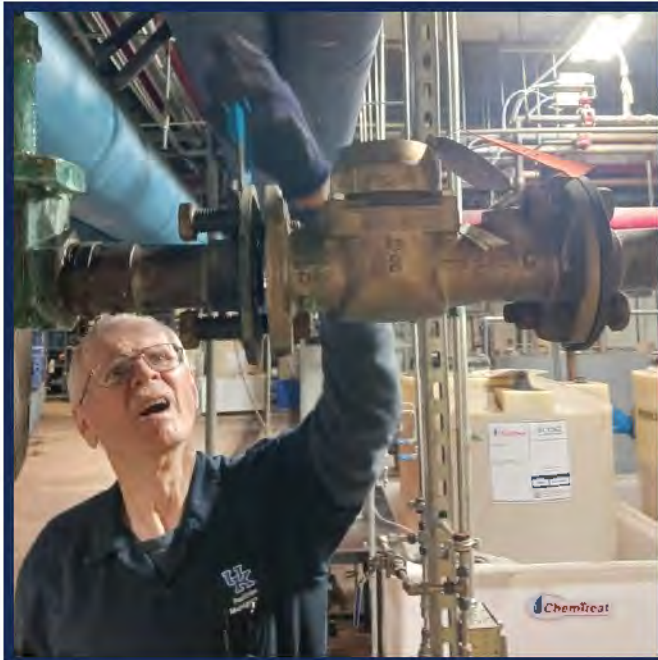


APPENDIX A

Public Education and Outreach

UEM Weekly Wire

UEM Weekly Wire



Top L: Shelby King and Scott Barnes operate switch in E606 for a scheduled power outage at Shively. **Top R:** Carter Whitton and Keren Keener observing stormwater basin fill up after valves were operated for a filter change. **Bottom L:** Jack Baysore installs domestic water supply meter. **Bottom R:** Cody Hopewell reopens feedwater valve after seal repair.

Accomplishments

Distribution

- Shut high-pressure steam and condensate valve feeding Pence Hall in HPS024. Locked valves out and bled steam down and drained condensate line for building renovations.
- Installed new seal, motor, and pump on condensate receiver in Sanders Brown mechanical room.
- Responded to sanitary sewer leak on Oldham Court. Worked with contractor to jet sewer main and got cleaned out.
- Opened valves at stormwater harvesting site and changed the filters.
- Isolated 20" CWS/CWR valves in H-46 and chilled water pits behind Medical Center Heating & Cooling. Installed new 1/2" ball valves on 4 pipes and opened valves back up after work was completed.
- Met with engineers on Farm Road and got into HPS204 & HPS205 to verify pipe layout for future project.
- Completed chilled water pressure test at Memorial Coliseum on attic air handlers 1 & 2.
- Met with Columbia Gas on Graham Avenue to discuss ownership of gas line running to Memorial Hall

Production

- **CUP:** Employees have taken boiler sample cooler lines apart to clean blockage along with fixed leaking ball valve that was not holding. Worked with controls to get PEMS network data collection issues resolved with boilers 2 and 3. Revisited training procedures for power outage/ failures for plant operators, for weather aware days. Reworking drain lines for all system pumps.
- **Med Center:** Staff worked with contractors to install new graphite gaskets and new diaphragms on a low-pressure PR valve to restore function and to repair leaks. Switched

back to feedwater pump 1 after new seals were installed, repairing shaft seal leaks. Verified cold domestic water meter function on DW supply line. Operators worked on TPC modules, ran chillers during unusually warm weather.

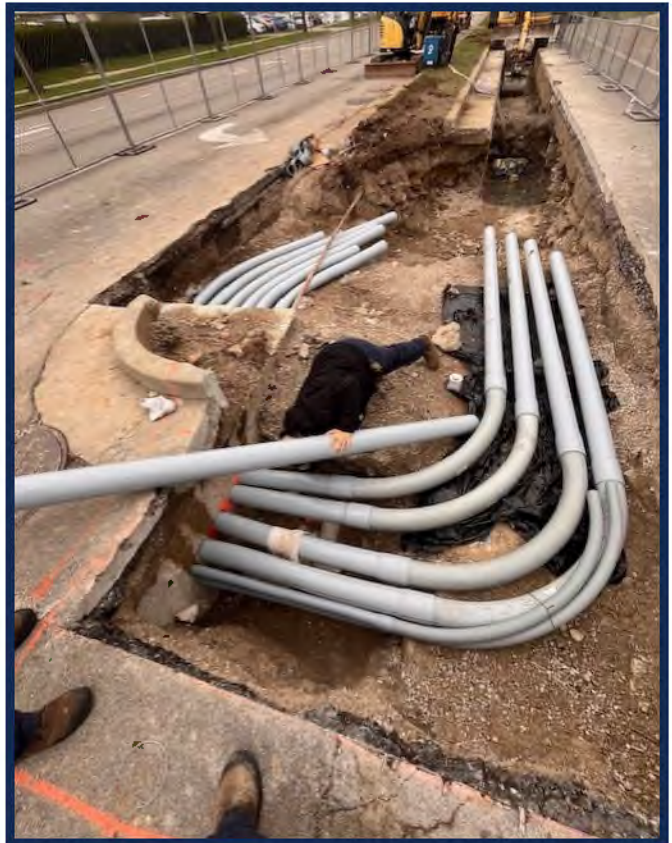
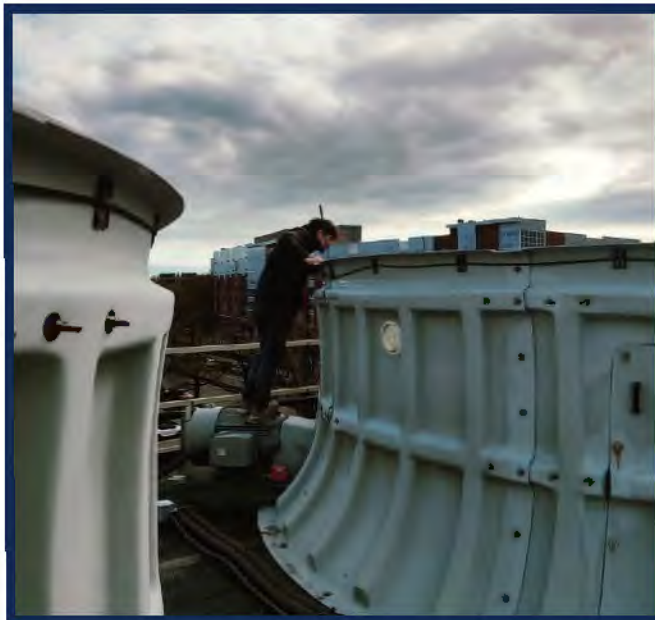
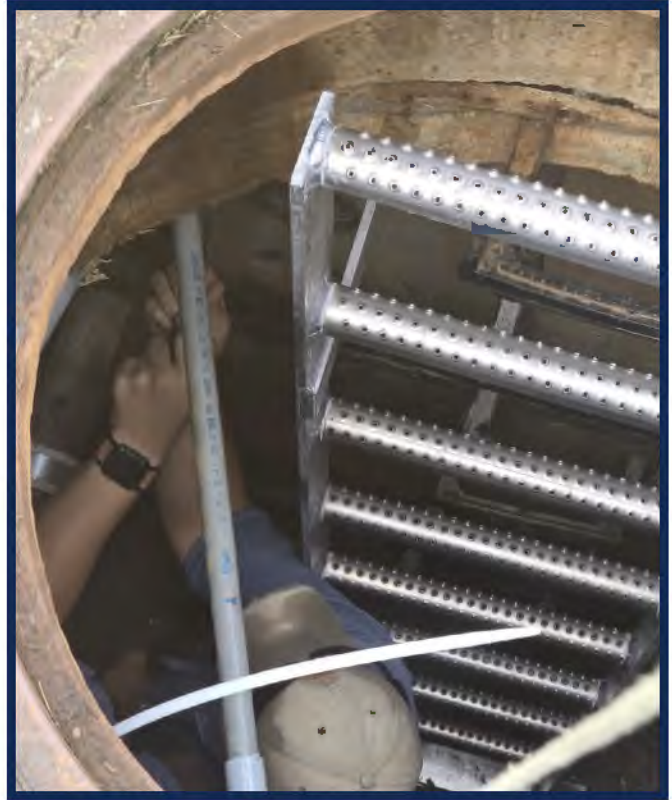
- **Central Heating:** Staff at the plant fixed a leaking gasket on boiler 1 steam drum. Employees also cleaned up some broken window panes that blew out during the storm.
- **Cooling 1:** Cleaned up and inspected plant after this week's storm. Floor preparation being done for a painting project around chiller 2. Chilled water pump #5 was re-insulated. Tower room door was replaced.
- **Cooling 2:** Staff at the plant finished up the clean up from the last bit of PM work. Inspected the cooling towers, roofs, and tower fans to ensure no debris was blow into a tower fan or that the roof was damaged.

High Voltage

- Updated low voltage system in E801
- Performed outage at E606 taking down power to Shively transformer to allow cables to be identified
- 811 locates on Rose/Columbia, Veterans/ Hospital Drive, Hilltop/Woodland, Graham/ Gladstone, Rose/Huguelet
- Work continued on new duct bank coming out of E703 down University Drive for new power feed to Kroger Field
- Worked with contractors hooking up switches at Memorial Coliseum project
- Removed two transformers from site of old Cliff Hagan field, placed in substation to be used for emergency back-ups
- Met with contractor for quote on substation fences that were damaged on Tuesday's windstorm
- Prepared damaged cable to ship back to vendor

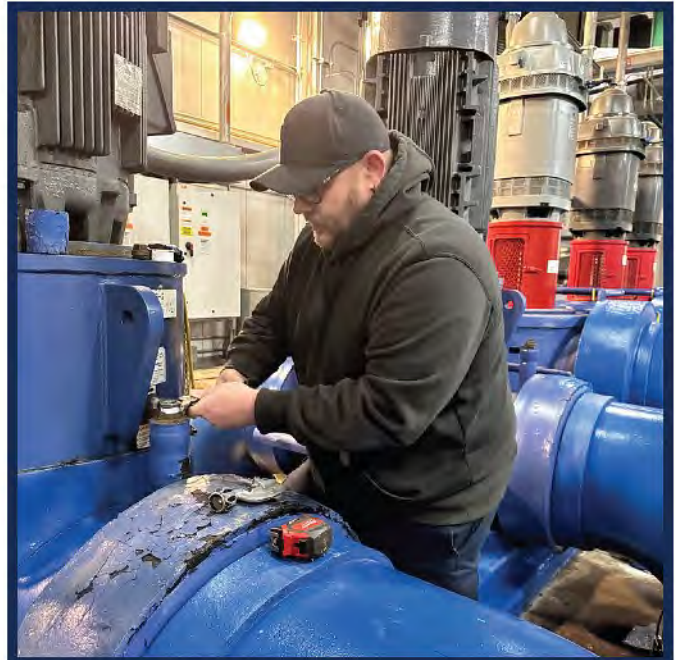
Engineering & Admin

- Post-storm triage after severe thunderstorms caused downed trees across campus as well as a power outage at the med center storage facility
- Met vendor (Solar Energy Solutions) at Davis Marksbury Building, solar panels are repaired and operational.
- Arranged meeting next week with Schneider to discuss substation metering upgrades.



Top L: David Derenge replaces tower room door after it was blown out by strong winds on Tuesday. **Bottom L:** Mr. Derenge inspects tower fans for damage after the storm. **Top R:** Gary Helton adjusts low voltage in E810. **Bottom R:** Mr. Helton inspects new duct bank coming out of E703.

UEM Weekly Wire



Top L: Pat McGuire aligns #10 motor at Cooling 2. **Top R:** UEM Sustainability Intern Jennifer Bukowski presents her year-end poster with mentors Britney Ragland and Lee Poore. **Bottom L:** New High Voltage Electrician Bryan Poe identifies cables and installs fault indicators in E402-1. **Bottom R:** Jon Minton installs packing drain flush line on CUP system pump.

Accomplishments

Distribution

- Shut and locked out high-pressure steam valve in HPS205 and bled steam down in Gluck building for 2-week outage
- Shut and locked out high-pressure return and condensate valves in Gluck mechanical room and drained condensate receiver down to begin replacement of condensate receiver
- Responded to sanitary sewer line that was hit outside of Dimock Animal Pathology
- Pedestal pump gaskets, check valves, and unions were replaced on H-46 condensate receiver
- Installed new pump on condensate receiver in Aquatics
- Pulled condensate receiver motor and pump at Nutter Training
- Completed Area 5 high-pressure steam trap survey
- Replaced stormwater harvest filters

Production

- **CUP:** This week Finney was in to pour concrete pads for new tube cleaning equipment. Plan to set some of this equipment next week. VanNess participated in the new employee/ years of service award lunch. Replacing damaged tools around plant, along with organizing and taking inventory of plant tools. Helped the Distribution team capture 360 degree images of steam pits behind plant area.
- **Med Center:** Cleaning and reorganization in preparation for an inspection walk around by the boiler inspector. Had Campus EPA pick up containers of used oil and empty aerosol cans and restock the plant with new collection containers. Mapped the cooling tower basin seam leaks and began cleaning it for seam sealing. Worked on Plant Temp and Pressure gauge list, replaced broken and missing

gauges. Started cleaning and prepping chiller #2 for painting, had contractor re-insulate damaged and missing chiller evaporators and pipes. Operators continued working on TPC and other training.

- **Central Heating:** Finished replacing old/bad pipe fittings for #3 DA water level control. Repaired leak on #2 BFW pump discharge flange.
- **Cooling 1:** Brought water treatment system into full service by replacing necessary parts and testing. Replaced shear pin on Cell 2 of Tower 1 valve actuator. Welcomed and began training new hire Chris Pelat.
- **Cooling 2:** Replaced drive shafts for tower fans 2A & 2B. When lowering #10 system pump's rebuilt motor, the mechanical seal on the pump failed. Working on replacing that. Cleaned the coils, flushed the chill water lines, changed the air filters and the drive belt for the AHU on the 1000-ton chiller side. Repaired broken bearing cooling line on chiller #3 CHW pump. Reinsulated #3 CHW pump as well.

High Voltage

- Performed rain route checks on entire manhole vault system
- Measured manhole vaults E202-2, E103, E101, E102, E205-2 for new ladders
- Replaced sump pump and installed grate over sump well in E103
- Replaced sump pumps in E907, E417, & E804
- Pumped water out of critical manholes
- Moved light switch in E104 to be accessible from outside of manhole
- Acclimated new High Voltage Electricians Roy Rowlett and Bryan Poe
- Met with contractors for HEB project
- Work began on new duct bank and pad mount switch at HEB job site

- Added fault indicators and identified cables in E402-1
- Installed new cable racking in E401-3
- Identified duct bank in E407
- Met with cable distributor CED and Southwire rep to discuss damaged cable/reels

Engineering & Admin

- Completed steam and chilled water billing for March 2024.
- Strategic chilled water system improvement discussion with Cenergistic and various FM stakeholders.
- KY Pipe Modeling exercise with KFI to determine need for healthcare campus expansion.
- Identified issue with Sub 2 Capacitor Bank controllers and exploring options for replacement or upgraded components.
- Working with ODM Smith to develop a street lighting design upgrade for Alumni Drive
- Developed plan for isolating Breaker 1-9 for potential Greg Page metering opportunity.
- Participated in the year-end Sustainability Internship Program poster presentations with UEM intern, Jennifer Bukowski.



Top R: David Derenge trains new hire Chris Pelat at Cooling 1

Bottom R: Henry Huffines replaces valve shear pin
Left: Contractors pouring concrete for new electrical duct bank at HEB site.

UEM Weekly Wire



Top L: Van Johnson repairs roof leader at Central. **Top R:** Chris Pelat clears blowdown pipe at Cooling 1. **Bottom L:** Payton Cada conducts CGA at Central. **Bottom R:** Gary Helton helps Bryan Poe make wire cutbacks at the High Voltage shop.

Accomplishments

Distribution

- Removed condensate receiver pump/motor at mechanical engineering and took to City Electric for repair of bent shaft
- Met with contractors at corner of Cooper and Nicholasville to verify domestic water lines running through yard near Barnhart building
- Isolated and locked out high-pressure steam and condensate in HPS053 and HPS030. Bled steam down and drained condensate line for contractors to work on the new steam vault at the corner of Washington and Library
- Pumped out HPS054, got sump pump running again after debris had clogged the inlet
- Loaded gilsulate insulation at Vaughn warehouse for contractors to use on exposed piping outside of Gluck
- Made exploratory dig around the circle drive of Gluck. Discovered broken high-pressure steam and condensate jackets and used gilsulate insulation to cover both pipes.

Production

- **CUP:** Calibrated O2 sensors for boilers #2 & #3. Scheduled Grace Consulting to come on June 24th and 25th for the Q2 audit. Worked with Ben Lake (Heimbrock) to address boiler #2 refractory issues. A plan for late next week is set to start working on boiler #2 to implement repairs.
- **Med Center:** Jack Baysore, Matt True and Eric Conner changed the coupling on VFD pump #2. Matt and Jack Howard put up some screen to keep out trash between the Gas House and plant. Dayshift continued to paint and clean the chillers. Matt and Jack cleaned, painted, and labeled the air compressor tank.
- **Central Heating:** Removed boilers #4 & #5 safety relief (pop off) valves to be recertified. Repaired broken roof leader. UK Electricians were able to repair #2 BFW pump motor after

some wiring in the motor conduit box shorted and fused together. Successfully completed Q2 CGA for boilers #1 & #2.

- **Cooling 1:** Roof contractors took initial measurements for materials. Collected scrap metals for recycling pickup. Cleared condenser blowdown valve of rust buildup. Pulled, cleaned, and reassembled condenser debris trap on chiller #1.
- **Cooling 2:** Steve Ryan with UK Plumbing Shop rebuilt back-flow preventer on chilled water make up. Working with UK Electricians to trace down an intermittent tower fan fault. Cleaned and straightened up around plant.

Engineering & Admin

- Presented the CUP Stormwater Harvesting Project to the LFUCG Stormwater Stakeholder Committee
- Central Heating Boiler Upgrade kickoff meeting with KFI and other stakeholders
- Support for intermittent power issue at HKRB
- Ongoing efforts to upgrade Sub 2 meters

High Voltage

- 811 locates: Sports Center Dr, Huguelet, Washington, Funkhouser/Library Dr
- Performed rain routes on critical manholes
- Repaired drain line in vault E310-1
- Connected stock transformer to maintenance bus at Sub 3 to ensure transformer is in good condition to put into service
- Performed high voltage cable cutbacks and terminations, prepped medium voltage cable for transformer testing at Sub 3
- Met with Glenwood at HEB site to discuss next week's outages
- Met with Besco at Memorial coliseum to discuss outage for next week
- Checked in with Dixon electric on new duct bank for Kroger Field. Paving completed on University Dr.

- Moved padmount switch and prepared for delivery to HEB site
- Opened up transformer for HEB contractor
- Welcomed new Technician Will Asher to the team!



Top L: Shelby King and Gary Helton inspect breaker relays at Sub 3. **Top R:** Eric Conner repairs feedwater pump. **Mid R:** Jack Howard installs screen to eliminate animals at Med Center plant. **Bottom:** Britney Ragland leads a presentation about the CUP Stormwater Harvesting System for the LFUCG Stormwater Stakeholder committee meeting.

UEM Weekly Wire



Top L: Will Asher cleaning a transformer at Kroger Field. **Top R:** Henry Huffines surveying new roof installation at Cooling 1. **Bottom L:** Our good friend (and former HV Manager) Moe Barati stopped by for a visit. **Bottom R:** Steve Booth and VanNess Johnson replacing blowdown valve at Cooling 2.

Accomplishments

Distribution

- Isolated chill water and fire service to Scovell Hall
- Met with GIS to review 811 utilities upload process
- Used water key to verify valve positions on (3) 8" domestic water valves on Hospital Dr. due to low water flow on fire service at the VA
- Setup fence panels around domestic water pit on Huguelet Drive and oversaw repair of water meter vault lid. After work was completed, removed fence panels
- Tested for hard water at PAV A, PAV G, CTW, HSRB, Thomas Hunt Morgan, and south side of campus after hard water was reported at CUP
- Worked Saturday steam outage for PAV H. Isolated (3) steam valves supplying the hospital and bled steam down. Replaced 1/4" gauge line with new isolation valve. After contractor completed work, energized steam back to the hospital and equalized valves

Production

- **CUP:** Replaced faulty flow sensor for chiller #4 and now all plant chillers can run. Met with the new EHS safety team members and Joshua Valverde to get fresh eyes on the plant for safety issues that need to be addressed. Replaced drive-belt for electrical room AHU3.
- **Med Center:** Prepared parking areas, blocked off construction zone, and moved materials to the laydown areas for the Cooling Stair Tower Replacement Project. Cleaned up AC unit in operators' office and cleaned office. Repaired the low-pressure steam PRV for the Gas side DA tank. Repaired the basement Air Handling unit.
- **Central Heating:** Working on getting Boiler #1 ready for inspection. Installing a new steam flow transmitter & orifice for boiler 1.



Top: Robbie Hannabach hanging parking signs for the cooling tower stair project at Med Center.

Bottom: Cody Hopewell performing condenser water testing at Med Center.

- **Cooling 1:** Roof progress continues. Tower #1 warranty walk through completed. Chiller # 9 Condenser pump motor dropped off after refurbishment and readied for installation next week.

- **Cooling 2:** Replaced the diaphragm valve and solenoid operated controller for the 5K ton chillers cooling tower blowdown. Got chill water side stream sand filter back together. Discovered sand filter booster pump needs a new wear ring and possibly a new impeller. Training refresher for Steve Booth who has been working at Central Heat for the past couple of years.

Engineering & Admin

- Lunch & learn with ADS regarding stormwater regulations, filtration, and piping.
- Recalibration of capital project timeline versus utility capacities and future growth needs.
- Review of utility line conflicts on Ag Research Facility project.
- Draft development of Stormwater Grant Proposals for Hope Lodge and Athletics Complex Areas.

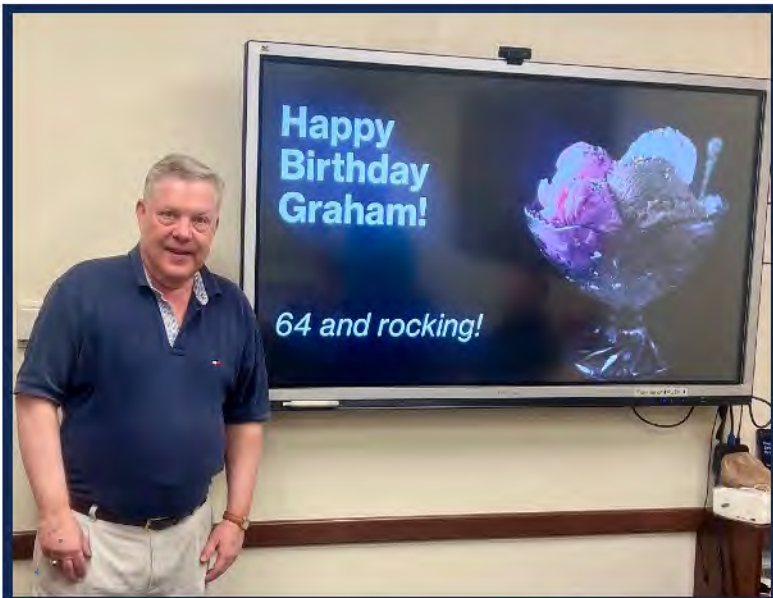
High Voltage

- Annual transformer cleaning and maintenance at Kroger field in preparation for upcoming season
- Worked with contractor to pull new Singletary Center feeders
- Deep cleaned mechanical rm. 121 in Stadium
- Pumped out E303-2
- Replaced broken air vent at E804, new concrete is poured
- Met with contractors on HEB job site to discuss routing of new duct bank
- Work continued on new duct bank across parking lot to University Dr. and from E703-1 to new vault
- Low-voltage feed bored from E703-1 to E703-2



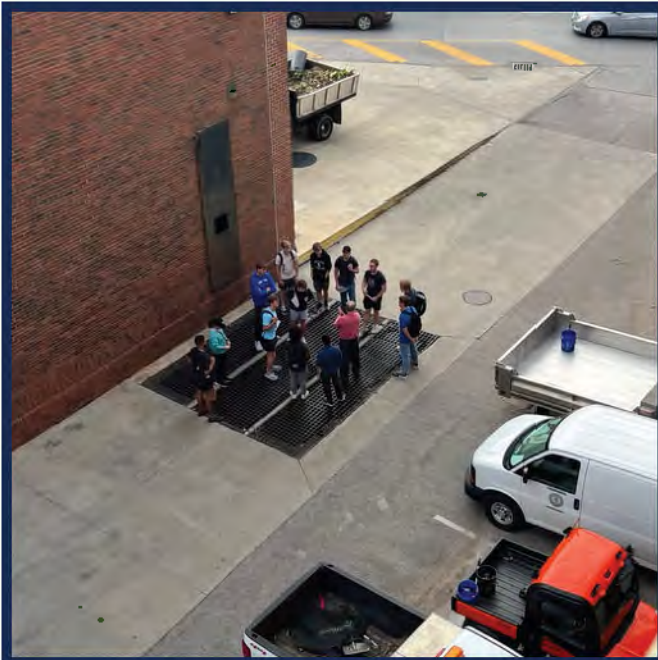
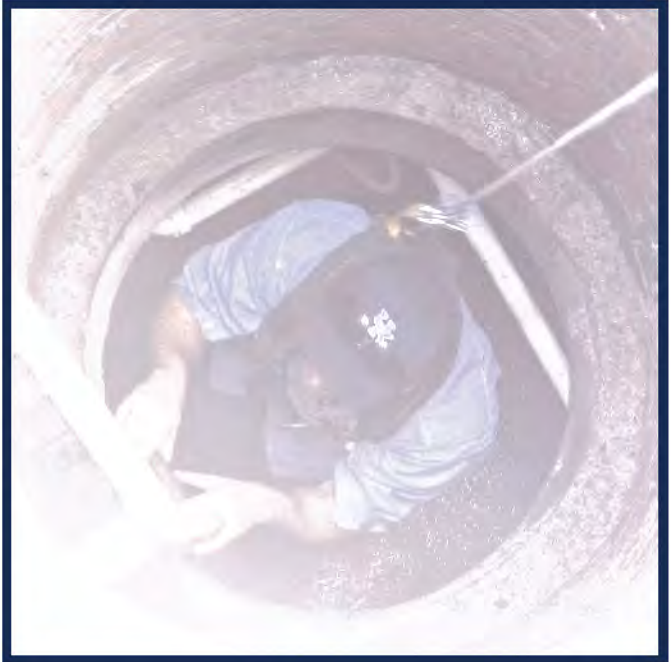
Top: John Nord and Gary Helton coordinate cable cutting in a manhole vault

Bottom: The High Voltage team replaces the cabinet doors on a transformer at Kroger field after annual cleaning and maintenance



Above: UEM Executive Director Graham Gray fell victim to a 'bait and switch' on Thursday. What he initially thought was a very important "Summer Projects" meeting turned out to be a surprise Birthday Ice Cream Social. Happy Birthday, Graham!

UEM Weekly Wire



Top L: Eric Conner addresses water softener issues at the Med Center plant. **Top R:** Bryan Poe enters E703-1A to check on a sump pump after remnants of hurricane Helene doused Lexington. **Bottom L:** Graham Gray explains the Central Heating plant infrastructure to a group of engineering students. **Bottom R:** Jack Howard and Robbie Hannabach on floor drain clean-out duty at the Med Center plant.

Accomplishments

Distribution

- Completed (6) 811 utility locates
- Isolated and locked out 8" high-pressure steam valve and 4" condensate return valve in HPS205 and Plant Science utility tunnel. Bled steam down and drained condensate line for removal of underground piping in the footprint of the new Ag Research building.
- Isolated and locked out 18" chilled water supply and return valves in CW313 and CW312. Drained both valves in Plant Science utility tunnel for contractor weekend outage to install new isolation valves in utility tunnel.
- Worked over the weekend to replace 8" chilled water supply and return valves in Plant Science utility tunnel. Also installed (2) new 1 1/2" ball valves drains.
- Filled 18" chilled water supply and return lines from CW312 up to the new isolation valves in Plant Science utility tunnel and Plant Science building. Opened vent lines to bleed the air out and got the building cooling.
- Responded over the weekend to potential steam leak in front of Sanders Brown. Discovered HPS232/HPS231 sump pumps had failed causing water to get above steam line. Pumped spline tunnel out and got sump pumps running again.
- Worked with UK Grounds to clear clogged grating on storm inlet in the parking lot of Kentucky Tobacco Research after rainfall.
- Worked with Chemtreat and MOHC to locate hard water on the south end of campus and in Pav. A utility tunnel.
- Responded overnight to domestic water leak in P.O.T tunnel. Discovered 6" elbow blew out, isolated valves in the P.O.T tunnel and drained water out of the line. Installed new elbow with mechanical joints. After repairs were made, turned water back on and flushed at the fire hydrant behind Miller Hall.

- Replaced bad check valve on condensate receiver at HKRB.
- Installed new 2" check valve, 2" gate valve, and float switch on condensate receiver at Pav. A mechanical room.

Production

- **CUP:** Removed all buildup in the DA and changed some piping to help prevent future issues. Vendor looked at boiler stacks to get a game plan on adding larger stack caps for each boiler to prevent rainwater from entering. Cleaned and painted in preparation of Oct 14th tour. Replaced a couple valves that would not hold or had packing failures on piping around plant. Some employees completed forklift training at Cooling 2.
- **Med Center:** Staff worked on cleaning out the floor drains. Eric and Jack worked on and repaired a water softener. Employees also did some maintenance on boiler 4.
- **Central Heating:** Got boiler 2 back together after internal inspection. Operators have water in it and are heating it up to be in hot standby. All staff completed and passed the forklift certification test. Assisted plumbing shop in attempting to clear the water softener trough drain.
- **Cooling 1:** Replaced corroded sensor connectors on tower #1 after excessive rain from hurricane Helene. Replaced broken belt on air handler in A-side pump room to manage VFD temperatures. David Derenge and Christian Pelat attended training this week to become forklift certified.
- **Cooling 2:** Operators unmounted and assisted with getting chiller #3's condenser pump motor off of the roof after it failed Monday night. City Electric has it and will be rebuilding it. All employees are now forklift certified. Thanks to the EHS department for helping to get this completed.

High Voltage

- Met with CMTA and vac truck crews from new Cancer Center site to assist with excavation/ locating duct banks under Limestone near Shriners Hospital.
- Monthly meter readings gathered and input on spreadsheet for end of month utility billing.
- Crews started checking critical switch vaults for water after weekend rains.
- Contractors started work on conduit run in Critical Care switchgear.
- Worked w/UEM Engineer Brian Pippen and CUP Supervisor Jacob Hoard to investigate two failed electric meters at CUP.
- Worked w/ contractors pulling in cable at the new Ag research building site.
- Pumped water out of vaults E115-2, E125-1, E301, E703-1A, and E910, replaced failed pumps and repaired drain line connections.
- Assessed aging orangeburg conduits from E703 to Tobacco research, E703-1A to BCTC and E703-1 using SeeSnake conduit camera.
- Unloaded salvaged Scovell Hall transformer and switchgear at Vaughan warehouse.
- Crews will be onsite Saturday morning for scheduled power outage to Plant Science. This outage will move Plant Science to new feed so that old duct banks and vault E705-2 can be cleared for the new Ag building.
- Helped line out contractor on lighting project at the Joe Craft Center parking lot.
- Assisted contractor with new cable pull at HEB construction site.
- Completed (5) 811 locates

Engineering & Admin

- Participated in P3 RFP Pre-proposal conference to answer questions about the project at hand.
- Met with KU's Joe Pierce, KFI, and CPMD to hash out any remaining barriers to moving forward with substation and distribution infrastructure upgrades.

- Chandler Expansion site utilities coordination meeting with consideration for Cancer Center feeds.
- Submission of Title V Air Permit documentation and ongoing analysis of future permit and growth needs.
- Began development of September billing with fresh review of meters in need of repair or replacement.
- Teams review with Mechanical Engineering senior design students regarding potential Stormwater Harvesting filtration solutions.
- October's UKULELE meeting with students and lab stakeholders in pursuit of catalyzing sustainable, energy efficient, and safe lab environments.



Above: Regular collaboration with campus dignitaries like Lee Poore and Hector Hernandez Penagos helps keep UEM leadership out of trouble.

UEM Weekly Wire



Top L: Ron Mercer, Brian Phippen, and John Nord test relays in sub 3. **Top R:** Shelby King, Bryan Poe, and Scott Barnes conduct 5-year breaker tests in sub 3. **Bottom L:** Chris Pelat and Cody Hopewell open chiller #9 condenser. **Bottom R:** Jack Howard show state inspector boiler #3 mud drum.

Accomplishments

Distribution

- Completed (6) 811 utility locates.
- Installed new ladder in HPS098.
- Opened condensate main valves in HPS215 and turned (2) spargers in.
- Responded after hours to trip hazard on corner of Rose St. and Huguelet Dr. Fixed grating over vent on steam/chill water pit.
- Turned condensate back into the plants from D300, B300, and MDS.
- Stayed after hours for domestic water outage. Isolated water to Dimock and Women's Cancer buildings to cap old fire hydrant line. After cap was installed, opened water back up to the buildings.
- Energized 16" high-pressure steam line from inside Central Heating plant through HPS002, HPS006, up to P.O.T. tunnel. Also brought up high-pressure steam to Peterson service bldg. After steam line was energized, opened 16" main in P.O.T. tunnel and equalized the pipe.
- Stayed after hours to work with contractor to clean out sanitary sewer main that backed up into the Med Center plant.
- Isolated condensate main in Cooling 2 coming from Dickey Hall and Taylor Education building for installation of new condensate receiver in Taylor.
- Responded to emergency chilled water leak in P.O.T. tunnel on Little Library side. Isolated 3 buildings and replaced 1/4" vent on 12" chilled water line. After repair was completed, turned water back on to the affected buildings.

Production

- **CUP:** Boiler #2 was put into operation. Boiler #3 was taken down to be clean and inspected. Boiler #3 passed inspection. Had to deal with power outage this week due to a squirrel. Sand filter pump was removed and sent to City to get rebuilt. New seals were installed on

the sump pump discharge check valve to prevent leaking. Eye wash equipment has arrived for the tower chemical setup.

- **Med Center:** Boiler #3 was opened up and cleaned for the state inspection and it passed. Investigated sanitary sewer problem between plant manhole and CCC tunnel, and Distribution team and Buchanan successfully cleaned blockage in the line, so the plant manhole is draining properly. Repaired AHU in bay area of plant in prep for cold weather.
- **Central Heating:** Brought steam back on to the Service building and 16" HPS line from CHP to POT tunnel. The 16" and 12" lines are still separated by a closed valve, but both are on, in the Great Lawn Knuckle Pit. Operators swapped BFW pump #3 with the backup, after a thrust bearing failure. The Central plant Operators were quick to get another boiler online when CUP lost electrical power and both boilers because of a suicidal squirrel. Pressure campus wide only dropped 10 psig. Great job operators, but squirrels please stay off the conductors.
- **Cooling 1:** Inspected and cleaned Tower 3 Basin and Sumps of debris. Isolated and opened Chiller 9 condenser in preparation of shooting tubes. Performed filter service on air dryer for compressor A.
- **Cooling 2:** Received, verified weight, and moved into storage nine 1000-lb cylinders of refrigerant R134A. Worked with Controls Engineering and UK Electricians to get a few Tridium readings working and calibrated. Shooting tubes on CH5 evaporator.

High Voltage

- Performed switching Monday in Substation 3 and E909 to remove load from Transformer 2 for KU maintenance and upgrades.
- Crews performed switching at Chandler Hospital gear rm. H28B and E910A to allow

Dixon Electric to safely remove and replace existing cables.

- Ran SeeSnake camera through duct banks from E407 into Chandler Hospital to verify good path for new cable.
- Removed elbow connections from switch in E910A and capped switch for contractors to safely remove cable.
- Completed monthly substation checks.
- Made temporary repairs to secure Substation 3 fence which was cut into over the weekend, but no missing or damaged UK property.
- Replaced stolen/missing vent cover at E103 located in sidewalk along Upper St.
- Completed large item inventory scans.
- Completed 5-yr testing/maintenance and relay checks on breaker 3-1.
- Completed annual relay testing on main breaker 3-M2.
- Thursday morning crews responded to outage reports across campus. Found source of outage in Substation 3, a squirrel climbing on substation gear caused a fault that took down all breakers in the sub. HV crews replaced two blown PT fuses and restored power to campus facilities.
- Thursday afternoon HV crews performed switching to move Substation 3 back to normal configuration once KU completed scheduled work.
- Crews opened breaker and switches to Med Center Heating and Cooling Chiller 2. Grounded motor leads allowing contractor to safely work on chiller motor.
- HV crews onsite at Kroger Field for this Saturdays football game vs. Murray St.
- (5) 811 locates

Engineering & Admin

- B&D review of hospital site utility plans and proposals for utility expansion
- Visit with Schneider to review services and opportunities for campus electricity
- Review of upcoming service proposals with IC Thomasson

- November UKULELE meeting with lab stakeholders
- Site visit with Bell Engineering and Biosystems and Ag Senior Design team for Cooling 2 stormwater flow study
- Celebrated Kaylee Adams and her sweet baby girl who will be here soon!



Top: Bell Engineering shares info on storm culvert flow metering with Ag senior design team. **Middle/Bottom:** Interdepartmental baby shower for Kaylee Adams. Congratulations Kaylee!!

UEM Weekly Wire



Top L: Mike Smith, Bryan Poe, and Will Asher secure light poles for transport from Cancer Center job site.

Top R: Chris Stewart and Bryan Poe work to remove stubborn lid to an old 4kV vault outside Pence Hall.

Bottom L: Welcome aboard to Matthew Robbins, a new hire at CUP! **Bottom R:** Eric Conner putting a new motor in place of old turbine on spare feed water pump.

Accomplishments

Distribution

- Completed (7) 811 utility locates
- Energized steam line from H-46 to (2) PRV's in the hospital tunnel
- Responded after hours to steam emergency in H-46. Worked with med center staff to troubleshoot steam feeding issues
- Isolated CWS/CWR lines in CW313 to Gluck. Drained water in the pipe for contractors to remove existing piping out of the footprint of the new Ag Research building
- Replaced PRV spring in Sanders Brown mechanical room. Also installed new 3/4" steam trap on the low side. After repairs were completed, energized steam up to the building
- Used locate equipment to uncover sanitary sewer manhole WR6-12A
- Energized high-pressure steam from HPS053 through HPS033 and up to the greenhouse behind Scovell Hall
- After steam was energized to Peterson Service building, tested, and updated status of the new high-pressure steam trap in the SAGE app

Production

- **CUP:** Matthew Robbins a new Operator I, started at the CUP plant Monday. Welcome to the team Matt! Worked with Andrea, and ITS, so we can view live PEMS system data at the plant. This will allow operators to be able to monitor the system every hour. Boiler #3 has been warmed and is ready for the cold weather if needed. Some of the plant operators participated in Lock Out- Tag Out training.
- **Med Center:** Worked with Ware to install new Boiler Feedwater Stop Valves. Cleaned manway lids and installed new gaskets to seal up Boiler #3 after it passed inspection. Worked on Plant organization. Moved 3 VFD

drives to the Bay to prepare for pick-up.

Placed new Electric motor in position for new feedwater pump. Kevin Lewis, his EMQ team, and Gabe Hensley, (the LFUCG sewer Inspector), met with Carter Whitton and Mike Duffy to investigate the sewage and storm outfalls at the Medical Center Heating and Cooling Plant.

- **Central Heating:** Added a trap line to Boiler #1's HPS supply to the header to eliminate need for bleeding water/steam while boiler is not running. Repaired and painted the insulation and lagging on a flanged joint for Boiler #1's HPS supply to the super heater. UK Electricians replaced several light fixtures on the roof. Repaired a few stair treads on the stairway to the roof.
- **Cooling 1:** Completed shooting tubes on Chiller 9 condenser. Moving on to the Evaporator. Further winter preparation, drained exterior water lines to tower and outside building.
- **Cooling 2:** Continued cleaning CH5 evaporator. Replaced oil heater relay on CH4. Getting plant ready for tours and holiday lunch.

High Voltage

- Completed (6) 811 locates
- Assisted contractor with cables pulls and terminations for the Medium Voltage Infrastructure project at E910A and E407.
- Loaded wire for contractor cable pull at Ag R1 job site (E705 to E705-0, E705-0 to E705-1).
- Traced out cable in E910 labeled HC1, verified cable lands on Sw. 2 in PM41 and Sw. 1 in H28B Chandler gear. Spoke with contractor for Medium Voltage Infrastructure project about taking out excess cable/elbows in E910 and replacing with splices to clear up vault for future cable installation.



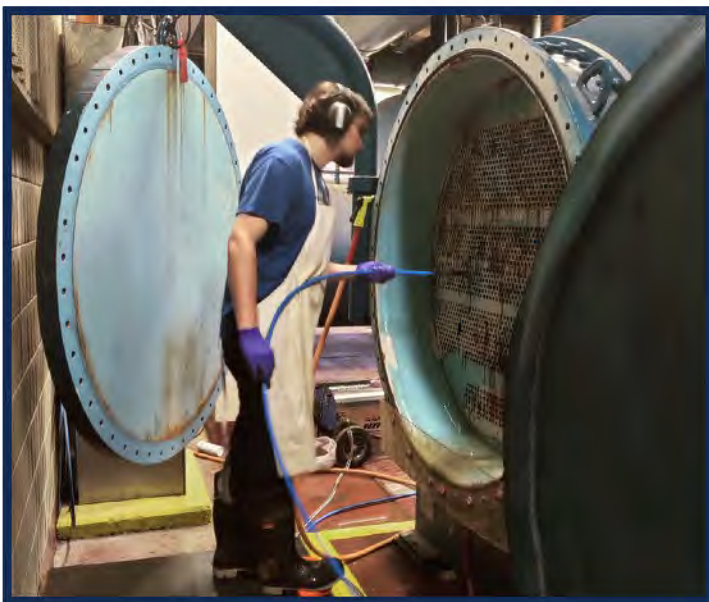
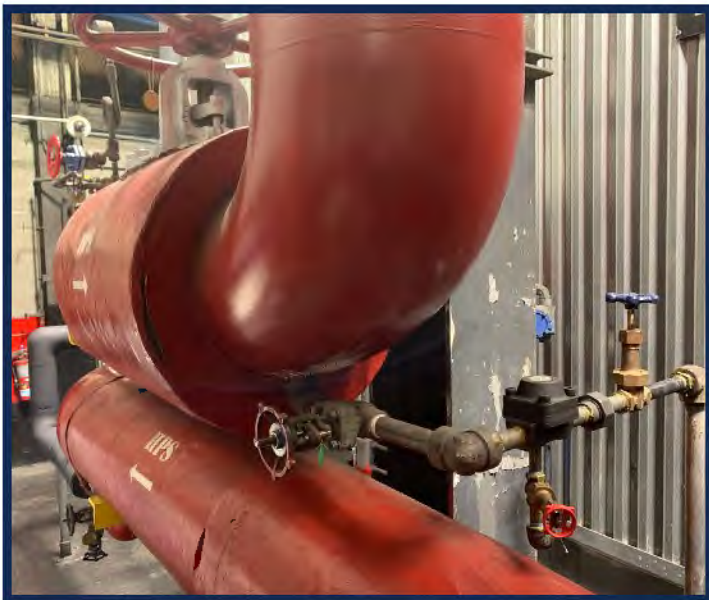
- Met w/ contractor for MIK project. Reviewed sequence for completion next month and cable terminations needed in E301.
- Met w/ electrical contractor for Memorial Coliseum, discussed upcoming schedule for cable removal, installation, termination and testing. Also discussed needs for outage at completion of project.
- Crews picked up poles and lights from Cancer Center site, transported to Substation #3 for storage until they can be repurposed elsewhere on campus.
- Crews captured 360 photos of new manholes 800, 800-1 and updated photos for vaults 801 and 910.
- Attended annual Lock Out/Tag Out class.
- Called to Pence jobsite for another "ductbank" exposed. Crews were able to uncover manhole E302 to verify no duct bank originating from this vault to the Northeast corner area where contractor found suspicious concrete formation. Also checked old 4kv vault on North corner of the building verifying no possible duct bank from this vault to opposite corner of the building.
- Crews switched loads on campus to isolate cables from switches in E310 and E312 feeding the Memorial Coliseum East switchgear. Removed cables and capped switches so contractor may safely remove old cables and install new ones. Also assisted contractor with installation of another set of new cables on switch in manhole E310.

Engineering & Admin

- Review of opportunities for PEMS and CEMS upgrades and support with Environmental Quality Management's Andrea Smith and vendor.
- Discussion with student group about history and future of coal use on campus, along with a brief plant visit.
- Hosted "Sustainable Cold Storage" is possible webinar with UKULELE
- Review of technical opportunities within upcoming P3 utility projects
- Follow-up on meter servicing project with Ameresco to increase meter in-service statistics



Top L: Energy Specialists and FM staff at a "Learning With Larry" seminar regarding steam systems. **Middle R:** VanNess Johnson opening firebox for Boiler #1 at Central Heating.



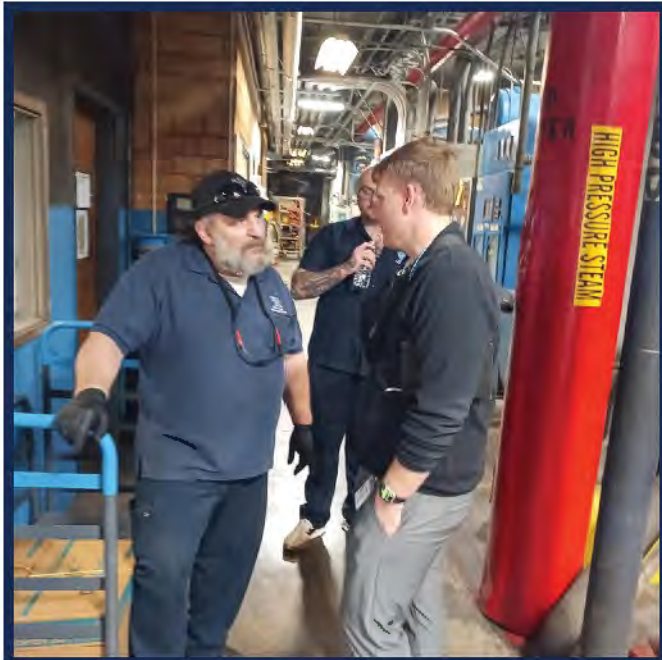
Top L: Central Boiler #1's new trap line.

Top R: Matt True moving VFD for repurposing at Med Center Plant.

Bottom L: David Derenge shooting tubes at Cooling Plant #1.

Bottom R: Chris Pelat removing insulation to open chiller #9's evaporator for maintenance.

UEM Weekly Wire



Top L: Scott Barnes opens feeder breaker at Pav A. **Top R:** Will Asher racks in breaker at Pav A. **Bottom L:** Eric Conner and EHS' Ethan Sheridan doing safety audit at Med Center plant. **Bottom R:** New stack top for CUP boiler #1 stack.

Accomplishments

Distribution

- Completed (6) 811 utility locates
- Scheduled steam outage to Erikson, D.V Terrell, Mineral Industries, and Law Building. Isolated high-pressure steam valve in HPS039 and bled steam down. Replaced 1/2" high-pressure steam trap line due to leaking union. After work was completed, energized steam back to the buildings
- Worked with contractor to camera 72" storm sewer main on Hospital Drive
- Installed new 3/4" high-pressure steam trap line and 1" dirt leg valve in HPS215. Also capped 3/4" bypass line on steam main
- Pumped out HPS205
- Energized high-pressure steam from HPS043 through HPS212, HPS215, HPS043, up to HPS217 and Dimock Animal Path building

Production

- **CUP:** Boiler 2 was inspected and passed. It is buttoned up and ready for startup. It will be put online this weekend, so boiler 3 can be taken down for inspection. Installed new rain cap on boiler 1 to prevent rainwater from entering the stack and damaging economizer. Started phase 2 of the plant heater project, and the first of four new space heaters was installed near chiller 1. Chiller 1 was leak tested and Trane is working on the repair proposal. Ware Company was in to look at economizer replacement project for boiler #1 and will provide a proposal next week.
- **Med Center:** Brought steam back on to the low-pressure main connecting the plant to H46, so the NICU building would have humidity control. Conducted annual plant safety audit with EHS employees Aaron Sisco and Ethan Sheridan. Replaced faulty gauges. Cleaned fabric filters on storm drains.

- **Central Heating:** Assisted KFI with verifying steam, gas, & feed water flow transmitter accuracy for boilers 1 & 2. Helped CP2 replace several sump screens for the 5k ton cooling tower. Put up some temporary lighting over boilers 4 & 5 going toward the cooling water tank. Repaired a bearing cooling line on BFW pump #3.
- **Cooling 1:** Replaced fan motor on B-side heat register. Replaced solenoid valve actuators on condenser valves 8 and 10.
- **Cooling 2:** Shooting tubes on chiller 5 evaporator. Repaired several sump screens on 5k ton cooling tower. Replaced the air pump in one of the tube shooting machines.

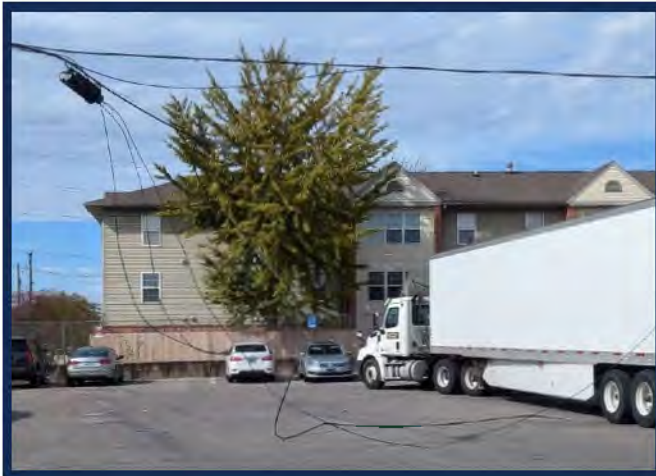
High Voltage

- Scheduled outage at White Hall to allow contractor to work in switch gear
- Tested feeder breakers in hospital (Pav A)
- 811 locates at Funkhouser and Library Dr.
- Inspected terminations at HEB job site
- Loaded switch for Ag job site at Farm Rd.
- Contractor pulled cable from E911 to E912 for infrastructure project
- Put Pav A switchgear 1 back in service
- Took Pav A switchgear 2 out of service, tested all feeder breakers and replaced UPS
- Energized new switch and temporary transformer for HEB job site
- Worked with Brian Phippen and Steven Hughes to replace phase monitor relay in switchgear room in old Chandler Hospital

Engineering & Admin

- Review of proposals for upcoming utility projects.
- Installation of storm culvert metering adjacent to Cooling 2.
- Ongoing work on September steam and chilled water billing.

- Review of upcoming IWMS plans and needed resources.
- Participated in Lab Symposium, sponsored by Air Equipment Company, with several UK speakers.



Top L: "Coach Keith" Vorhoff explaining lab air exchanges with a basketball, which is roughly 1 cubic foot in size. **Top R:** Robbie Hannabach replacing pressure gauge at Med Center Plant. **Middle L:** A semi truck took down some overhead power lines serving S. Broadway facilities on Monday. **Middle R:** Mike Kyrylczuk explaining how Phoenix Fume Hood controllers integrate with the Building Automation System. **Bottom R:** Rocky Moberly and Jack Baysore bringing up low pressure steam with FMMC.

UEM Weekly Wire



Top L: John Nord, Gary Helton, and Steven Hughes decoupling operators during annual 12kV switchgear testing at Pav H. **Top R:** Bryan Poe and Will Asher testing batteries. **Bottom L:** Chiller 8 condenser pump motor reinstallation at Cooling 1. **Bottom R:** Paul Zierer leading the Good Sam DA Tank troubleshooting.

Accomplishments

Distribution

- Completed (10) 811 utility locates
- Scheduled high-pressure steam outage to Chemistry-Physics due to packing leaking on a 2 1/2" 300# gate valve. Isolated steam main to mechanical room and bled steam down. Installed new 2 1/2" gate valve and 2 1/2" strainer. Also replaced blow through high-pressure steam trap. After repairs were made, energized steam back to the mechanical room.
- Responded early morning to high water alarm in HPS232. Came in and got sump running again and worked with electrical contractor to install new electric in the entire vault
- Worked Saturday steam outage at RB2. Isolated high-pressure steam in mechanical room for plumbing shop to install new safety release valve and repair copper recirculating line. Also replaced blow through high pressure steam trap and (2) medium pressure traps. After work was completed, energized steam back to the building
- Worked Saturday steam outage at Gluck and Plant Science. Isolated high-pressure steam in HPS204 and Plant Science tunnel. Oversaw installation of new 8" Adams valve in the tunnel and tie into new steam main running around Ag Research footprint. After work was completed, energized steam from Plant Science tunnel to Plant Science building and Gluck
- Isolated 2" chill water supply and return lines in Two Fans tunnel for renovation of the Starbucks located in Med Plaza
- Pulled condensate pump/motor in College of Nursing mechanical room
- Completed Area 3 high-pressure steam trap survey
- Isolated CWS/CWR lines in KTR utility tunnel. Pumped out CW313 and drained both lines into the vault. After verifying that the valves

held, notified contractors that existing pipe was good for removal

Production

- **CUP:** Cleaned the air compressors. Changed the oil and filters in the air compressors. Cleaned the coils of the air compressors. Ordered new parts to fill in low inventory. Installed new sump pump on in the condenser sump to help deal with overflow issues.
- **Med Center:** Met with Ware contractors to troubleshoot boiler #3, no structure problems found that would be the source of the problem of excessive duct wall movement. Continued fixing air leaks around plant windows to keep the temperature inside normal. Personnel completed Facilities Management Lock Out/ Tag Out and Identifying Confined Spaces and Hazard Awareness training. Cooling 1 personnel new to Med Center Plant shown Steam Production and Plant Operations.
- **Central Heating:** Completed PM on #2 air compressor. Repaired both oil burners & ran boilers #1 & #2 up to 70,000 lb/hr on fuel oil to test the system. Helped Cooling 2 with chiller #5 tube shooting.
- **Cooling 1:** Chillers #2 & #6 condenser tube shooting. Chiller #9 evaporator tube shooting. Chiller #8 condenser pump motor reinstalled after service by City Electric and Dixon. Back-flush of water treatment lines for winter storage.
- **Cooling 2:** Cleaned up from the amazing holiday party. Had all three overhead cable hoists inspected and PM work completed. Cleaning tubes on chiller #5 condenser and evaporator.

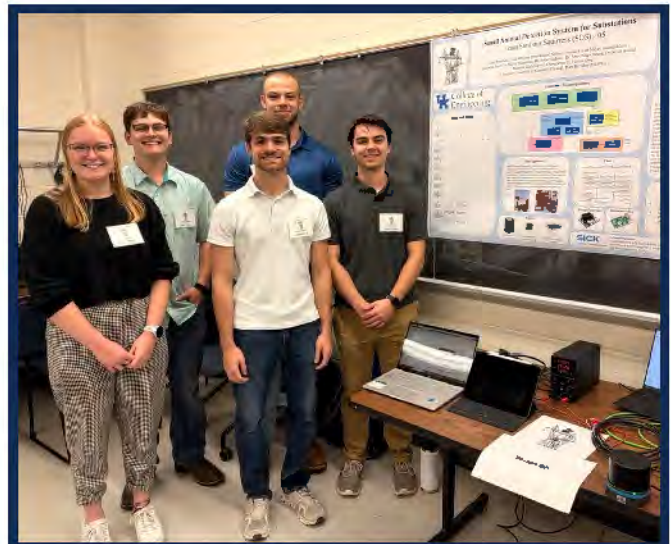
High Voltage

- Monthly substation checks
- Annual automatic gear testing in Chandler PCC (Pav H) and Gill Heart

- Performed rain routes on critical manholes
- 811 locates at Ave. of Champions / Patterson Dr, Library Dr.
- Attended lock-out tag-out class and Trenching and Shoring class
- Relay class/training with Ron Mercer
- Yearly battery testing at Sub 3 and BBSRB generator building completed
- Congratulations Gary Helton on graduating trade school!
- Inspected elbow terminations in E312
- Completed monthly meter readings
- Scheduled outage at Whitehall so contractors can continue work, restored power Sunday
- Inspected terminations in new switch gear in MIK library
- Updated 12kV schematic (draft in review)



Bot L: Mike Duffy and Jacob Hoard share information about plant operations with consultant Henry Johnstone. **Top R:** Jack Howard and Jack Baysore changing a gasket on blowdown line at Med Center. **Mid R:** Biosystems & Ag Seniors Rebecca Stacy, Ashlyn Lippert, Seth Daniel present their initial Cooling 2 Stormwater Harvesting study. **Bot R:** Senior Design group "SOS" (Save Our Squirrels) comprised of Katie Addison, Ethan Green, Carter Mayer, Jason Nichols, and Nathan Haynie show off their project using LIDAR and IR to detect squirrels in substations.



Engineering & Admin

- Participated in P3 consultant interviews with various teams of investors, contractors, engineers, and operational experts.
- Tour of campus heating and cooling plants with B&D Consultant, Henry Johnstone.
- Development of FY24 emissions dataset for annual reporting.
- Visited various senior design year-end student presentations on stormwater harvesting and substation squirrel protection.



Top L: Britney Ragland receives certificate from Dr. Bob DiPaola for graduating the UK WELD program. Congrats!! **Top R:** Brian Phippen supervises and conducts annual 12kV switchgear testing at Pav H. **Mid R:** Chad DeRossitt inspecting rotor and spindle on fuel oil pumps. **Bot:** Ron Mercer leads the High Voltage team in substation breaker relay training.



UEM Weekly Wire



Top L: Will Asher helps Gary Helton out of E312 during hi-pot testing. **Top R:** Kayce Gosney and Henry Huffines share info about Cooling 1 Controls with ICT's Mike Zubia. **Bottom L:** Mike Cummins repairing a feed water pump vent at Central. **Bottom R:** Dixon Electric working on Cooling 1's switchgear serving condenser pump 8.

Accomplishments

Distribution

- Completed (8) 811 utility locates
- Completed Area 3 high-pressure steam trap survey
- Opened 6" domestic water valve in P.O.T tunnel to give more flow to the surrounding buildings and fire hydrants after decrease in pressure was discovered
- Replaced blow through high pressure steam trap in White Hall mechanical room. Tested and updated trap status in SAGE app after install
- Met with contractors at new dorm project on Complex Drive over unknown clay pipe that was discovered. Verified piping was abandoned and told contractors to proceed with removal
- Oversaw hydro-excavation of 6" domestic water line feeding Seaton Center after leak was discovered. Isolated water main in the domestic water pit and installed 6" repair band over cracked pipe. After repair clamp was installed, turned water back on and flushed the building
- Verified steam jacket pressure test on new steam line at Ag Research construction site
- Responded to steam emergency at Chemistry-Physics. Worked with Area 2 maintenance staff to diagnose PRV issues
- Responded over holiday break to condensate backing up into H-46 mechanical room in the hospital. Traced condensate lines and found a hose being used to dump the main line was clogged. Installed new hose and got water flowing out of the main And resolved issue
- Pulled condensate motor/pump on receiver at College of Nursing mechanical room due to broken recirculating line
- Repaired trip hazard on Bilco hatch at HPS066

Production

- **CUP:** Chiller #3 tubes have been brushed and the heads have been reinstalled. Chiller is back in normal operation. New paint and waxing going on around plant. RATA was done and completed on both boilers 2 & 3. State EPA inspector was in to watch over the RATA testing and checked our logging paperwork. Also completed the annual SPPO inspection at the plant.
- **Med Center:** Ware inspected Gas Boiler #3 and didn't see anything structural as the source of the ductwork vibration and verified that it is not a fuel air mixture problem. Boiler is in stand by and can run if needed. Maintenance project on the 4-cell cooling tower is starting on the 23rd. New Drift eliminators will be installed under the Fan Deck, to bring the Tower back to peak cooling capacity and efficiency. Plant staff is working diligently on the current Safety Audit to bring all areas of operations and occupancy into the highest levels of compliance. Safety is always the highest priority. Completed the annual SPCC inspection. From the entire crew of the Med Center Heating and Cooling Plant - Merry Christmas.
- **Central Heating:** Completed the annual RATA, emissions monitor audit, for boilers 1 & 2. Replaced sight glass in #1 DA. Had a chance to work on some TPC trainings. SPCC inspection went well.
- **Cooling 1:** Continued tube shooting on Chiller 9. Dixon and City Electric finished installation and testing of Condenser pump 8. Prepped secondary chilled water pump #6 for seal and bearing service. Completed SPCC annual inspection.
- **Cooling 2:** Completed the PM and inspection of the 4-ton overhead hoists. Had a SPCC walkthrough with UK EHS. Still happily shooting tubes.

High Voltage

- Cable and elbow termination training
- Scheduled outage at White Hall
- Assisted campus electricians with faulty breaker at Cooling 1
- Outage at MIK/Maxwell place to energize temporary transformer for switch over
- Hi-pot tested cables from E310 to E312
- Inventoried fault indicators on new switches across campus
- Energized new feed and switch at Ag R1 project. Energized temporary transformer.
- Completed (4) 811 locates
- Removed graffiti from Gray Design transformer
- Met with contractors to discuss new wire pull at Gill Heart upcoming this weekend
- Met with contractors to discuss sequence of upcoming outages
- Performed rain routes and checked critical switching vaults
- Published 12kV schematic update

Engineering & Admin

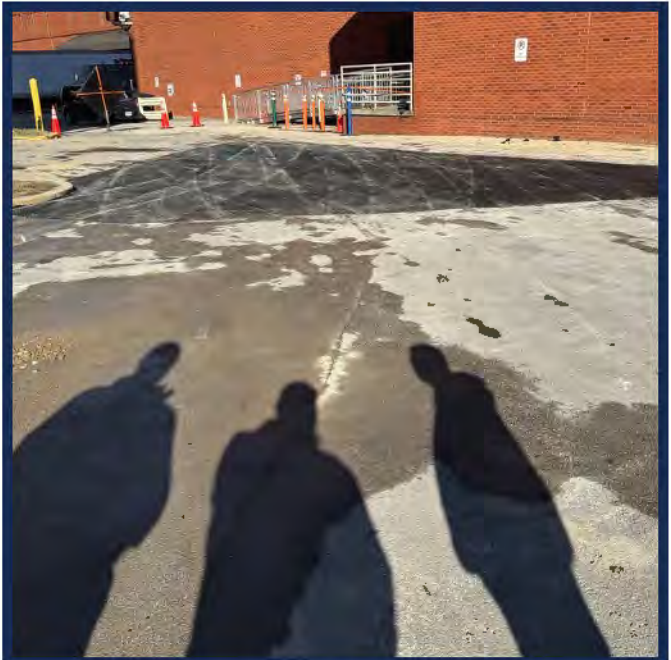
- Supported RFP Phase 2 development for P3 process.
- Hosted engineers with IC Thomasson from Nashville, TN to review opportunities for Cooling 1 controls upgrades.
- Preview of Hospital Expansion tunnel infrastructure with KFI.
- Review of Boiler RFP submissions and air emissions implications with Trinity Consultants.
- Attended the Stormwater Stakeholder Meeting with EQM and various campus stakeholders.
- Compiled Scope 1 and Scope 2 GHG Emissions reporting for FY24.

Top: Welcome to the world, Raegan Elaine Adams!!!
The daughter of Kaylee Adams, Raegan was born on December 17th and weighed 7lb 5oz.

Middle: David Derange clearing drain to isolate secondary pump #6. **Bottom:** The MCHC kitchen shined up and ready for a new year!



UEM Weekly Wire



Top L: The early morning water leak Monday outside Med Center Heating. **Top R:** Marcelo Campos cleans out a circuit breaker cabinet at CUP **Bottom L:** Matt True putting skid in storage area as part of spring cleaning. **Bottom R:** Long shadows against fresh asphalt after a couple busy days repairing the water leak.

Accomplishments

Production

- **CUP:** We continued the plant beautification process for the visit of the B&D team. Worked with Trane on Chiller #1 repairs and met with their new account manager. Continued to revamp our training processes. Worked with UK IT and Chemtreat to get our Chemical interface operational. Coordinated with UEM engineers and UEM High Voltage Team to repair and replace Transformers and metering on CUP's EM switch gear.
- **Med Center:** Plant Operators several loads of spare materials to the Vaughn Warehouse for storage. Maintained the plant operations during the water main break. Verified the plant had water during the isolation of leak process. Worked with Distribution to make sure when the main water feed to the plant was reenergized and that all systems were functioning properly.
- **Central Heating:** Brought new DA back online after addressing the overflow trap issue. Successful completion of the 1st quarter Certified Gas Audit for boilers 1 & 2 stack gas analyzers. Prepping the water softener tanks for a fresh coat of paint. Continued plant cleaning.
- **Cooling 1:** Held pre-bid meeting for the Cooling Plant 1 roof replacement Project. Chiller # 8 condenser tubes shooting continues. Changed air handler filters in the Plant in preparation for upcoming season.
- **Cooling 2:** Changed the oil in chiller 1 tower fan gearbox. Cleaned out the 1000-ton units cooling tower basin. Pulled #10 system pump motor to have rebuilt.

Distribution

- Responded to early morning domestic water leak between VA hospital and Med Center heating & cooling. Isolated 4 main valves and

got water to stop and setup cones and barricades to block traffic. Worked with contractor to dig down to pipe and installed new isolation valve with new spool pieces. After work was completed, opened water line back up and flushed the line

- Worked with locate company to identify utilities on farm road. Hooked on to high-pressure steam, condensate, and CWS/CWR lines in HPS205 & CW313
- Replaced motor and seal on condensate receiver #3 at Plant Science
- Installed new pump on condensate receiver at Davis Marksbury
- Verified chill water supply/return pressure test on new piping inside Memorial Coliseum
- Completed Area 1 condensate receiver review
- Located utilities around gate 3.5 at Kroger Field after contractors ran into water pipe
- Met with contractors on Rose St./Washington to discuss ladder placement in new vault

High Voltage

- 811 locates: emergency locates at VA/ Med center HC plant, emergency locate University drive and Alumni, Complex and University drive, Kroger Field/BOTC
- Low-voltage repairs in vault 907-2, installed new LED light and ran new duct work
- Removed ladder in vault 401-1 for repairs, UEM welder Hezekiah Davis made the repairs and crews reinstalled ladder same day
- Moved and updated low voltage in vault 501-1 in preparation for new duct bank that is part of the new HEB construction site.
- Cleaned out vault 906 and prepared it for low voltage repairs and upgrades
- Met with KFI to discuss health education building electrical infrastructure
- Coordinated with ABB service tech to repair 2 mains and 1 tie breaker on CUP emergency power gear

- Worked with UEM engineer Brian Phippen to diagnose meter issue on CUP emergency gear
- Work started on Kroger Field on replacement feed to the north side switchgear

Engineering & Admin

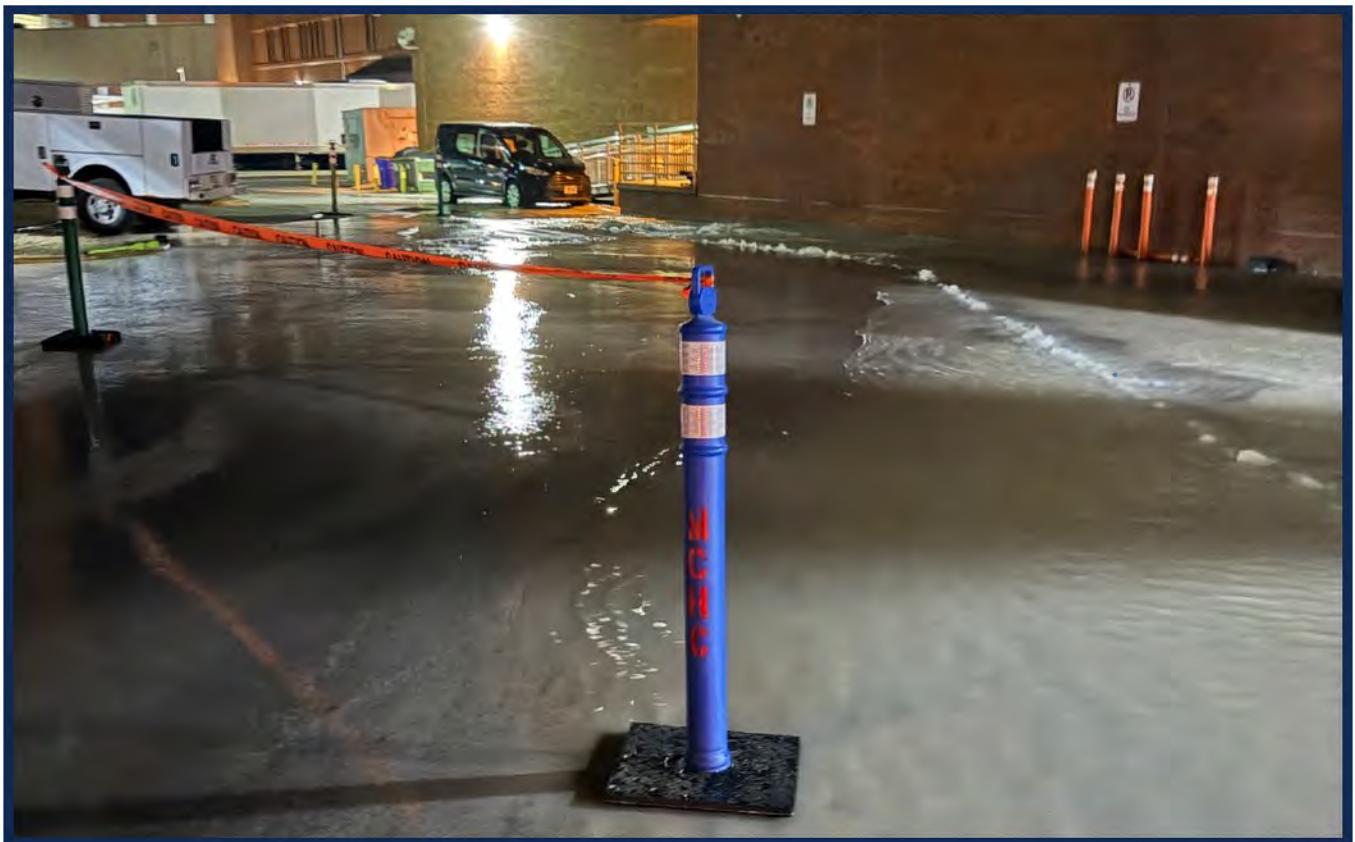
- Completion of January Steam and Chilled Water billing.
- Graham Gray attended IDEA Campus Conference in San Francisco, CA.
- Review of Infrastructure Study with B&D and prep for upcoming site visit.
- Support for breaker maintenance at CUP.
- Ongoing training and performance evaluation work.



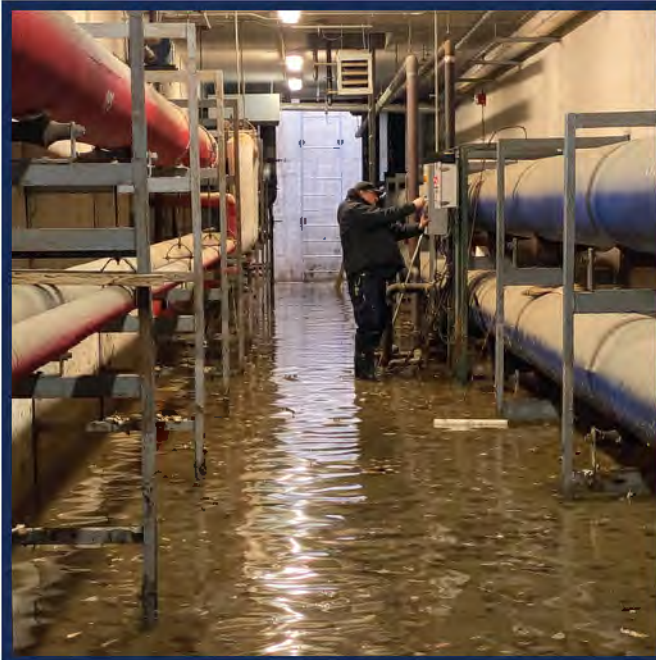
Top: Gary Helton secures electrical panel box in vault E501-1.

Right: Mike Cummins and Rob Wheaton unloading spare parts at Vaughn Warehouse.

Bottom: Rising water outside MCHC and The VA



UEM Weekly Wire



Top L: Orion Saunier, John Tucker, and Adam Drury overseeing Buchanan's sanitary repairs **Top R:** Paul Zierer and Steve Drury at Cooling 2 working on chiller #5 control valve equipment **Bottom L:** Eric Paullin troubleshooting sump pump control box in Plant Science tunnel **Bottom R:** Kevin Willhoite corrects label on manhole lid at vault E407

Accomplishments

Production

- **CUP:** Celebrated Joshua Combs's and Jonathan Minton's 5-year service awards and Templeton's 10-year service award. Worked on repair of secondary air dryer for the air system in plant. Painting around plant continues and organizing of plant tools. In process of updating plant teams page with more user-friendly information that is available to help employees keep up with Testing/Training requirements. Repaired an oil leak on air compressor #2.
- **Med Center:** Removing old floor finish by stripping and scraping continues as preparation for the total Plant floor painting. Steam has been isolated in preparation for leak repair, diaphragm replacement, and welding of steam flow sensing line for Coal Boiler #2. Worked with new hires on SOP courses and tests, scheduled and held interviews for Op II positions. Checked salt brine pit tanks and topped up water levels. Assembled new work platform safety cage.
- **Central Heating:** Helped Cooling 2 personnel with the pump and motor PM's. Replaced a section of chemical feed tubing for the BL1253 oxygen scavenger feed to the gas boilers. Lucas Saunier cleared obstructions from around the float mechanism and removed debris around the condensate room's sump pump to get it working properly.
- **Cooling 1:** Worked with Contractors repairing the handrailing around the old ceramic tower roofs. Painting floors and finishing up chiller #10 tube cleaning.
- **Cooling 2:** Changed the oil in the reservoirs for chillers 1-4 chill water pump motors. Still shooting tubes on chiller 4 evaporator. Almost finished with chiller 3 evaporator. Thanks to Steve Drury for helping us identify a failed electropneumatic transducer that sends a signal to chiller 5's chilled water control valve.

Distribution

- Tested all high-pressure steam traps in Ingels, Baldwin, & Smith tunnel
- Pulled condensate receiver pump at Lee Todd Jr. mechanical room
- Replaced seal on condensate receiver in Patterson Hall. Also installed (2) new check valves
- Worked with KY American to locate and read fire service water meter in basement of Jacob Science building
- Pumped out HPS218 and installed new sump pump
- Pumped out Plant Science utility tunnel, troubleshooted control box, and replaced both check valves on sump pumps and got pumps running again
- Oversaw excavation and replacement of broken 8" sanitary sewer line outside of Cooling 2
- Responded to "gas leak" at Scovell Hall

High Voltage

- Repaired sump pumps and drain lines in vaults 115-2, 417, and 303-1
- Scoped faulty drain line and prepared plan of action at vault 303-2 on Alumni Commons
- Inspected new duct bank from vault 310-1 to new pad mount switch at Memorial Coliseum project, concrete was poured and backfilled
- Measured vault dimensions in 911, 907-4, 102, and 410 for new ladders
- 811 locates on Library Dr, Farm Road, Huguelet, and University
- Replaced saline reservoirs at Sub 3 battery house and generator rooms, restocked supplies at Sub 3 battery house in preparation for upcoming battery testing
- Brian Bayer, Kevin Willhoite and Gary Helton completed mandatory yearly electrical retraining

- Inspected spare transformer inventory to find suitable transformer to loan to CAFE R1 construction site
- Pumped out vaults 115-2, 303-1, and 417
- Removed graffiti and repainted PM11
- Walked route from Sub 3 to vault 912 in front of Pav A ER entrance with contractors for upcoming infrastructure project
- On-site meeting with contractors and UK personnel for stadium infrastructure project

Engineering & Admin

- Gathering of data and documentation for B&D Consultants
- Investigation of metering upgrade needs at Substation 1
- Approval of SKM software through new IT process



Top: Henry Huffines celebrates 10 years of service! Thanks, Henry!

Bottom L: Shelby King repairing a water pump **Bottom R:** David Derenge trimming floor paint in Cooling 1

UEM Weekly Wire



Top L: Kelly Cronk and Will Tyree repairing sight glass at CUP Plant. **Top R:** Kevin Willhoite moves a reel of 12kV wire at Vaughan. **Bottom L:** Adam Drury and John Tucker work to install new gaskets on steam valve in Breckenridge Hall. **Bottom R:** New electric duct bank at Kroger Field getting concrete.

Accomplishments

Distribution

- Responded to high-pressure steam leak at Breckenridge Hall. Discovered 3" high-pressure steam gasket blew out in the basement mechanical room. Shut steam off to Breckenridge, Kinthead, and Bradley Hall in HPS029. Installed (3) new 3" metal gaskets and energized steam back to the affected buildings after work was completed
- Tagged and tested low pressure steam traps in Plant Science, Good Barn, Kentucky Tobacco research and Gluck
- Installed new motor & seal on condensate receiver in Bradley Hall
- Took down and picked up fence panels in front of Cooling 2 and Phi Sigma Kappa fraternity after grounds completed sod work
- Met with engineers on Farm Road to pull vault lids on steam/chill water vaults to update drawings for new expansion of Plant Science building
- Opened 6" domestic water valve in NICU/PICU mechanical room supplying Medical Center Heating & Cooling after no leak was discovered on the line
- Installed new seals and gaskets on condensate receiver in Charles T. Wethington mechanical room

Production

- **CUP:** Grace Consulting completed the RAA test for Boilers 2 and 3. Worked with Bobbie Tincher team to overcome a PEMs server/data Acquisition issue. Shut down Boiler #2 and replaced the sight glass, restored water, and put unit in standby. Rebuilt old sight glass for future use. Discovered a pin hole leak in the feedwater piping system to boiler #1, that required a plant shutdown for a few hours to repair. The leak was welded up and the boiler

is now back online. Condenser tube shooting on Chiller #2 is still in progress.

- **Med Center:** Repaired the level Controller on the new DA tank. Worked with Lagco on the Blowdown Heat recovery exchanger and are in the process of ordering a new stainless-steel coil. Filled up the chilled water mains that were drained for the 10" valve replacement by the Distribution team. Ran an additional boiler to cover CUP plant Boilers 2&3 being taken offline due to the emission data not recording properly. Boiler 2&3 will be left off until the problem is corrected but are ready to run should they be needed.
- **Central Heating:** Replaced the sump pump located in the bucket elevator/coal conveyor room. New DA water level transmitter was calibrated. Cleaned/painted some handrails. Cleaned up the floors around the air compressors.
- **Cooling 1:** City Electric finished installing secondary chilled water Pump #5 and now the system is filled, pressure tested and ready to run. Organized A-side pump room and reconnected the cooling system for the drives and pumps. Continued cleaning and prepping the B-side floors for painting.
- **Cooling 2:** Finished draining oil from 5K ton chiller cooling tower fan gearboxes. Replaced belts on several plant exhaust fans. Cleaned out storage area.

High Voltage

- 811 locates: Pieratt Intramural Field/Seaton Storage Building, Kelly Building/Health Education job site, Ag Motor Pool/Sports Complex Dr. , Gladstone/Library Dr.
- Relocated new pad mount switches to High Voltage storage area @ Vaughan Warehouse.
- Met w/distributor to discuss/assess recent damaged cable reels.

- Updated 360-degree photo files for vaults 091, 091-1, 702-1, 801, 906 and 910A.
- Completed interviews for open HV Electrician positions.
- Gray Design / Reynolds Exterior punch list walkthrough.
- Inspected new duct bank and concrete pour at Kroger Field.
- Worked w/ Memorial Coliseum project contractors, providing cable and terminations to avoid project delays due to excessive lead times. Cable termination at new pad mount switches, existing manhole switch and building switchgear completed. Cable/termination testing scheduled for Monday.
- Met with engineers and contractors to discuss Health Education Building work sequencing to avoid power interruptions in surrounding buildings.
- Bid Farewell to HV Technician Kevin Willhoite! We wish Kevin good luck with his new endeavors!

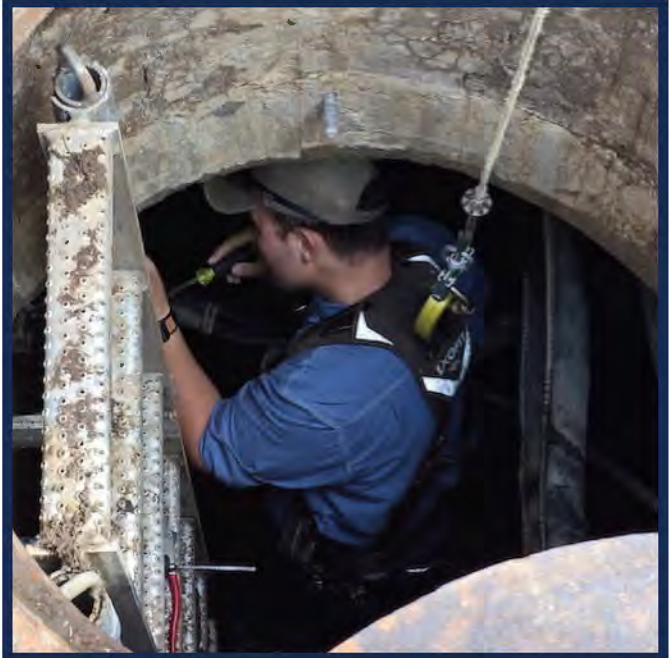
Engineering & Admin

- KY Pipe Training Session with KFI and Cenergistic
- Shawneetown Stormwater Project update meeting, with feedback for plan development
- Development of Alumni Drive Street light upgrade concept
- Spring startup of Stormwater Harvesting System at CUP
- Specification review of TH Morgan and Seaton 3-way chilled water valve project
- Meeting with Solar Energy Solutions on repairs needed for Marksbury Solar Arrays
- Review and negotiation of pricing for Panama Canal Steam and Innovas Tube Cleaning bids
- Ongoing review of capital projects including Ag Research and Funkhouser



Top: Chad DeRossitt and Scott Walters replacing 2" ball valve at C2. **Middle:** Lagco welder repairing feed water pipe leak on Boiler 1 at CUP. **Bottom:** Med Center Cooling's new structure and pipe coating progress.

UEM Weekly Wire



Top L: Long-timer Ron Mercer and short-timer Jesse Wilson both lament busted brackets. **Top R:** Gary Helton works on low-voltage systems in vault E701. **Bottom L:** David Derenge slinging the bad color at Cooling #1. **Bottom R:** Eric Conner adjusts a DA tank level control valve.

Accomplishments

Distribution

- Responded to natural gas emergency at Vocal Arts center on Rose St. Checked gas readings inside and outside the building and got the all clear from the fire department.
- Used thermal camera and ground mic on high-pressure steam line running from HPS098 to Gluck building.
- Replaced broken 10" chilled water return valve in CW104. Opened chilled water valves back up in CCC tunnel and Med Center Heating & Cooling after repairs were completed
- Tested low pressure steam traps at Aquatics, Seaton, & Johnson center
- Replaced leaking high-pressure steam trap in CCC tunnel

Production

- **CUP:** Worked with David Tyler to locate and address roof leaking issues. Installed new blowdown line on boiler #2, to repair a crack that was causing water to leak out during manual blowdown. Installed new drains on the chiller pumps to prevent them from backing up. Repaired low water cutout sensor gasket for boiler #3. Gave tour of the plant to students from KOTCS of Mt Sterling. Storm water system was brought online for the year, and it collected 5,047 gallons this week.
- **Med Center:** Isolated the high-pressure steam line to the middle PRV station in preparation for the new diaphragms and flange gasket installation next week. Repaired severed control air lines on the gas side D/A tank valve controller. Ordered charts and pens for circle chart steam flow feed water flow chart recorders. Set up new vendor to supply a new heat recovery coil for the Blowdown Heat Recovery System. Worked with City Electric on installing new shaft seals

on coal side feedwater pump, also ordered more spare seals.

- **Central Heating:** Employees mounted a chemical pump and fixed a chemical feed line for the 1342 boiler chemical feed. Repaired the feed line for the 1253 chemical feed to the new DA tank. Helped complete the last of the PM oil changes at cooling 2. Worked on organizing and cleaning up inside Central Heating plant and at cooling 2.
- **Cooling 1:** System pump #5 rebuild is complete and finished up with new insulation. Chiller #7 Oil and filter service. Floor around Chiller #1 prepped and sealed with fresh coat of paint.
- **Cooling 2:** Employees finished changing the oil in the last bits of equipment before the start of the cooling season. Staff in the plant have been tidying up the plant and organizing it. Flange on the spool piece for the tower make up water was repaired.

High Voltage

- Completed monthly meter readings and reporting
- Added new aluminum ladder in vault 801, replacing the older rung-style steps
- Oversaw testing of cables at Memorial Coliseum renovation project
- Fabricated and replaced handles for manhole lids at vaults 906 and 126
- Inspected and planned new design for low voltage electric in vault 801
- 811 locates: Library Dr, Shawneetown building F, Graham/Gladstone
- High Voltage infrastructure project moved to cooper and university drive intersection; new duct bank work started
- Updated low-voltage in vault 701
- Updated 360-degree picture in vault 701
- Inspected damaged cable reel, prepared cable to be shipped back to manufacturer

Engineering & Admin

- Met with Brown & Kubican at the Med Center Cooling Tower Coating job site to review the condition of the structural steel and come up with a plan on how to proceed with repairs
- Follow up meeting with CPMD engineering team to finalize changes to the university mechanical and civil utilities design standards
- Completion of February steam and chilled water billing
- Various capital project reviews sessions, including the Hospital Drive Water Line project
- Collaboration on FM-wide Preventive and Predictive Maintenance Initiative



Top L: Mike Duffy hams it up while meeting with PM and structural engineers about Med Cooling tower structures. **Bottom L:** CUP plant's Jerry Phillips giving KCTCS students a tour. **Top R: (2)** Chris Stewart inspects as Dixon Electric installs new duct bank for Kroger Field out of vault E703 (University/Cooper Dr. intersection). **Bottom R:** New switches at Memorial Coliseum with 12kV cables tested and ready to land.

UEM Weekly Wire



Top L: Cooling 2 crane work for fan repair. **Top R:** Matt True grinding on Ch8 at Cooling 1. **Bottom L:** Chris Stewart gets a bit doused while pumping out vault 415. **Bottom R:** High Voltage team inspects new duct bank at Kroger Field after concrete poured and dyed.

Accomplishments

Distribution

- Worked with Buchanan contracting to inspect, excavate and repair 6" sanitary sewer line coming from Phi Sigma Kappa fraternity after a sewage backup was reported in the basement of the building
- Installed new motor on #1 condensate receiver and pulled second motor/pump for rework at Plant Science
- Greased float switches on condensate receivers at Chemistry-Physics & Parking Structure 2
- Tested high & low pressure steam traps at Dental, Medical Science, Charles T. Wethington Building, & RB2
- Met with engineer at domestic water pit on Farm Road. Pumped pit out and got sump pump working again. Took photos inside the pit and verified pipe sizing for addition to Plant Science
- Fabricated new ladders for E-407, E-409, and E-410
- Worked with Ghosh Engineering to correlate and locate potential water leaks on domestic water mains outside of Medical Center Heating & Cooling, Farm Road, & Ben F. Roach Cancer Facility
- Pumped out (3) chill water vaults behind Medical Center Heating & Cooling. Discovered 10" chill water return line was leaking from the flange and flooding the pit and coming in the basement of Medical Center Heating & Cooling. Isolated chill water supply and return valves in CCC tunnel, heating plant, and surrounding chill water vaults. Valves are ordered and will be replaced when they arrive.
- Used a ground mic to listen to fire hydrants around the Medical Center Heating & Cooling and found a hydrant that was not seated properly. Actuated valve inside of the fire

hydrant and got water to quit leaking into vaults and heating plant

Production

- **CUP:** Organized plant and collected all used oil and scheduled UK Waste management to come pick up the full used oil drums. Repainted the sewer grates in basement to prevent rust or corrosion. Locked out and drained Chiller 2 for tube cleaning. Completed the LED light project, and all lighting in plant is now LED.
- **Med Center:** Worked with Distribution to identify the water that was leaking into Med Center chiller basement. Performed PM on basement sump pumps. Rerouted the auto blowdown discharge water from the leaking coil inside the heat recovery unit to the main flash tank, until the heat recovery tank can be completely isolated and repaired. Cleaned up the water from the chilled water leak. Continued plant painting and organization. Met with the Project Manager of Cooling Tower Structural Steel and Piping Repair/Repaint project to discuss repair options for holes in the piping that have developed during metal preparation.
- **Central Heating:** Staff in the plant cleaned up the coal pile area and the storm drains that are near the coal pile. Employees helped with changing the oil in some gear boxes at cooling 2. Helped with managing the job site at cooling 2 when the crane was onsite.
- **Cooling 1:** Filled lines and got the B- side of the plant back in service. Chillers 1,4,5,6 are ready for the cooling season. Chiller 8 condenser divider plate repaired. Inspected and cleared tower basins of debris. Started chiller#6, the first chilled back up and running since winter.
- **Cooling 2:** The oil was changed in the gearbox for chillers 3 and 4. Crane work was

done on Tuesday. Two recently serviced tower fan motors were put back in place for cells 2A and 2B. Chiller 2's new gear box base plate was installed. The failed gear box for tower fan 1A was swapped out with a new one we had onsite. Drive shafts for these tower fans and gear boxes were aligned. All chiller tubes have been punched in the plant. Waiting on Trane to put the bulkhead doors back on chiller 4. Once we get the gasket material from York, Chiller 3 will be put back together and the old side of the plant will be completely ready to run.

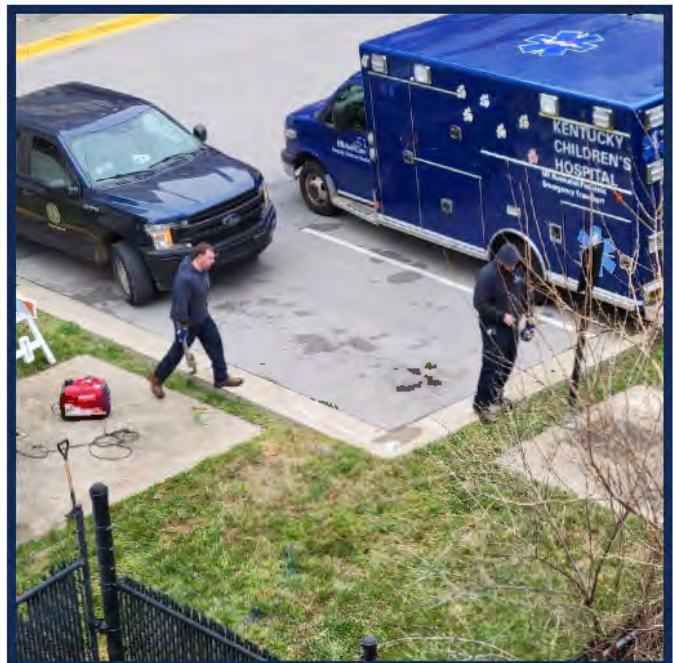
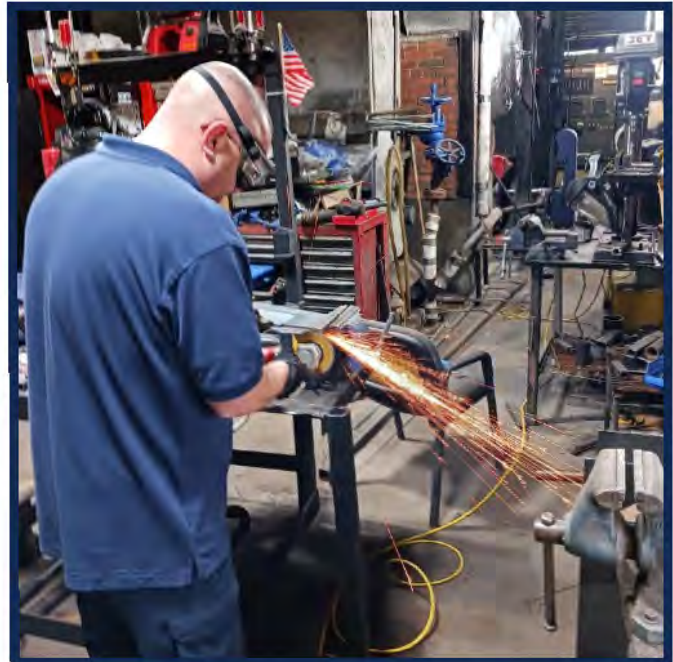
High Voltage

- Reconfirmed cables are de energized in vault 415
- Investigated issue with battery charger inside CUP generator building, consulted with Ron Mercer and Brian Pippin on further course of action
- Moved light switch to be accessible from above and re-secured ladder in vault 910A
- Rebuilt low voltage in vault 801 added new light and moved light switch to be more accessible
- Identified circuits on one line drawing in Cooling 1
- Meet with contractor and supervised duct bank pouring for new duct bank feed to north side of stadium for high voltage infrastructure feed upgrade
- Met with contractor to discuss new manhole locations for new Health Education Building project
- Pumped vaults 310-1 and 415
- Met with contractor at Alice Chalmers to supervise digging

Top: Mike Cummins grinding shim for condenser pump #6.

Middle: John Tucker and Adam Drury work to isolate a chilled water valve leak.

Bottom: David Derenge bringing Cooling 1 B-Side back into service.



Engineering & Admin

- Short list meeting for Central Heating Boiler Project, with consultant interviews planned for week 3/14.
- UKULELE meeting covering topics on efficient ULT Freezer cost share and fume hood trending.
- Planning session for Greg Page metering project.
- Permitting visit with US Army Corps on University Ct. Stream Restoration project.
- Introductory discussions with networking team on path forward for substation metering.

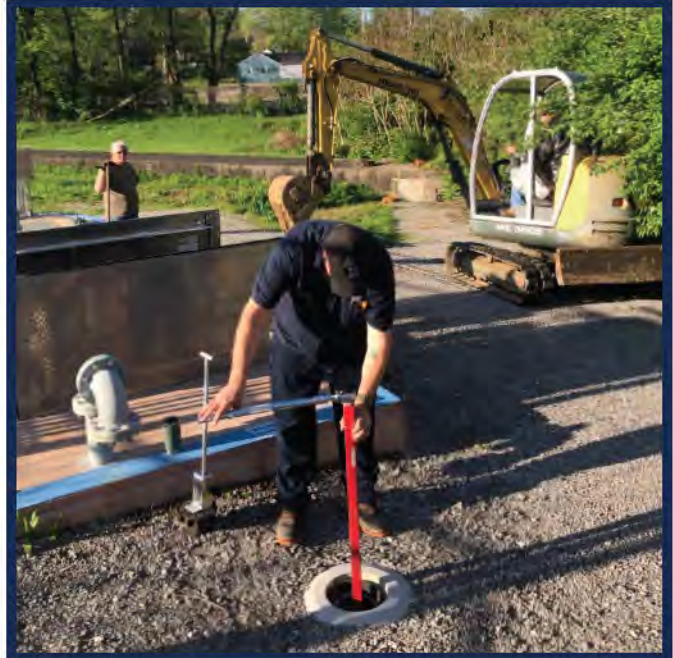
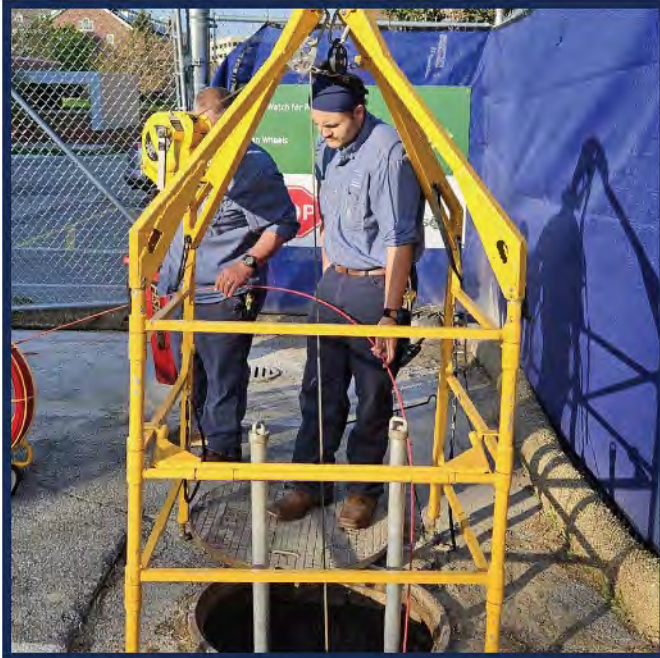


Top: "So fresh and so clean clean" at the CUP Basement.

Bottom: Med Center Cooling Tower steel with a fresh coat of primer after metal prep work.



UEM Weekly Wire



Top L: Scott Barnes and Gary Helton trace an abandoned duct bank outside Pence Hall. **Top R:** Eric Paullin prepare to perform maintenance on the Stormwater Harvesting System. **Bottom L:** Eric Connor installs new oiler on feed water pump #1. **Bottom R:** Steve Booth replaces valve on BFW recirculating line.

Accomplishments

Distribution

- Installed new gasket on condensate receiver #1 in Plant Science mechanical room
- Met with KY American Water and UK healthcare staff in Pav A mechanical room to discuss isolating a valve to take water down to the utility tunnel to replace leaking 8" butterfly valve supplying the hospital
- Worked with contractor to jet sanitary sewer line on Conn Terrace after backup issues were reported
- Completed Area 2 high-pressure steam trap survey
- Pumped out HPS209 and installed new sump pump
- Installed new seals on condensate receiver in H-46 mechanical room
- Leak detection on UK owned fire hydrants

Production

- **CUP:** Contractor started the start layout and installation process for the new tube cleaning system on chiller 5 and 6. Working with Joshua Valverde to make sure this equipment is placed in proper locations, since existing disconnects, require 36 inches of clearance in all directions. Completed RAA testing on boilers 2 and 3. Started getting AHU filters changed and new ones ordered.
- **Med Center:** Shut down boilers to allow some personnel to be moved to Cooling #1 to help staff night shift. Located and isolated the pressure reducing station that was allowing steam to overpressure the low-pressure steam system, by manually isolating the 8 PRV stations one at a time. Worked with contractor to isolate and get the new Blowdown Heat recovery coil installed. Cleaned up the old cooling tower so that leaks can be sealed when the weather is dry. Working with High Voltage and the starter



Top: Lucas Saunier empties coal barrel into loader.

Bottom: New duct bank from E703 headed down University Drive to enable new feed to Kroger Field and future south campus expansion

manufacturer to get Boiler #4 fan soft starter repaired, as it was tripping the breaker.

- **Central Heating:** Replaced all sight glasses and valves on #3 DA tank. Replaced leaking pipe fittings on #3 DA water level control assembly. Replaced a faulty check valve on

the condensate receiver discharge piping in the coal transfer pit. Cleaned up the coal transfer pit.

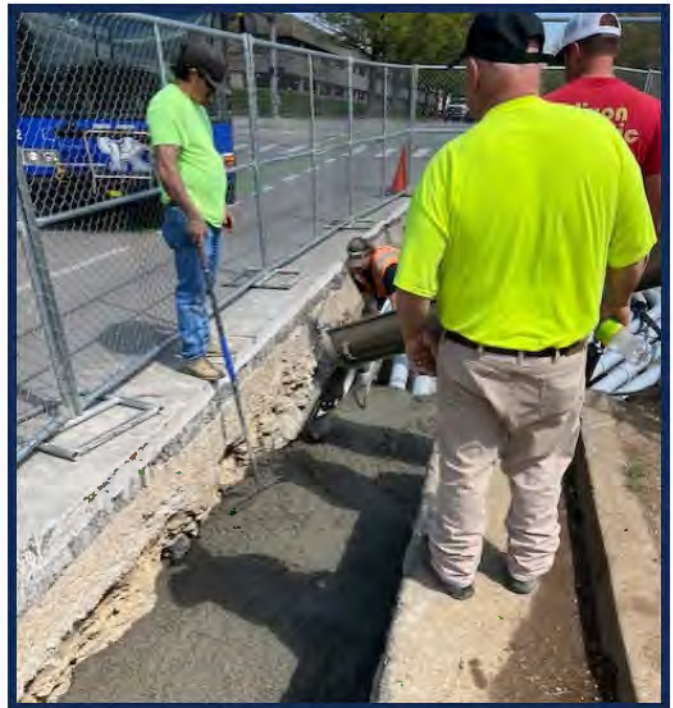
- **Cooling 1:** Ran the plant all week as weather required additional cooling production to meet demand, and startup of night shift operation. Continued floor painting and working on Side B. Shut steam off to all the unit heaters to conserve energy during summer months.
- **Cooling 2:** While lifting #10 system pump motor, to set it back on the pump, the wire rope on the 4-ton hoist was damaged. A new rope will be installed next week. The hoist and #10 system pump should then be available. Gathered all used oil from winter maintenance to have it recycled. Replaced the pressure transducer that monitors the plant air pressure. Hopefully, we will stop getting alarms. Electric Shop connected the rebuilt motors for tower fans 2A & 2B.

High Voltage

- Assisted Med Center Heating in electrical troubleshooting issue
- 811 locate at Pence Hall construction site to trace abandoned duct bank for contractor
- Completed rain route on critical manhole switching points
- Replaced sump pump in vault 703
- Supervised and inspected new duct bank from vault 703
- Received and allocated new shipment of manhole vent rims and lids
- Assisted contractor in getting pad mount switch size measurements for Health Education Building project

Engineering & Admin

- Cooling 2 and Central Heating Tour with Dr. Tagghadosi's Thermo 2 class
- Various work sessions with P3 Consultant, B&D
- Worked with FM team to develop first draft of Predictive Maintenance program
- Discussion with Clemson about their Optimum Energy program
- Breaker design discussion with CMTA's Alan Kellum
- Ongoing improvements to the Stormwater Harvesting system



Top: New University Drive electrical duct bank

Bottom: Same duct bank being encased in concrete

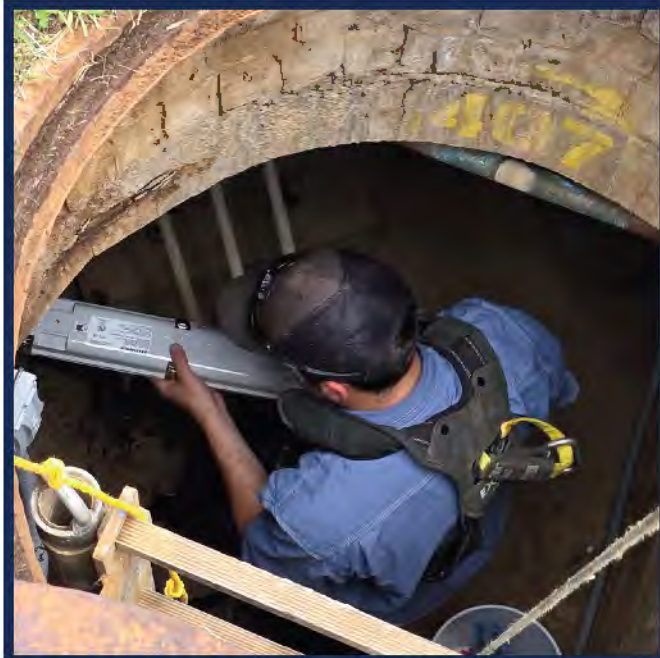
A little footnote to end this issue of The Wire...

Congratulations to Graham Gray who was appointed as permanent Executive Director of Utilities and Energy Management this week!

Here are some shots of “Graham in Action” over the years.



UEM Weekly Wire



Top L: Joe Cafego prepping Med Center's #2 Chiller for paint. **Top R:** Gary Helton inspects new electrical duct bank along University Dr. **Bottom L:** Bryan Poe installs new LED fixture in E407. **Bottom R:** Scott Walters showing off the new whip at Central and Cooling 2 (and farewell little green fork truck).

Accomplishments

Distribution

- Troubleshoot condensate receiver at Gatton B&E after reports of malfunction
- Completed punch list on Washington Avenue/Rose Street high-pressure steam vault
- Valved off condensate main valve in HPS098 going to Gluck and hooked up domestic water line to the pipe. Used leak detection equipment and determined that multiple leaks were present underground. Excavation is upcoming to repair leak points
- Replaced condensate motor at Little Library
- Oversaw installation of new condensate receiver, 6" weld in high-pressure steam valve and dirt leg in the mechanical room of Gluck. Verified x-ray weld test results with contractor and boiler inspector
- Drained water out of high-pressure steam dirt legs in HPS098. Energized high-pressure steam from HPS205 through HPS098 to the Gluck building
- Tagged and tested new high-pressure steam trap in Gluck building after steam was energized to the building
- 3D photographed several steam vaults on central campus moving us closer to a complete inventory of digitally mapped steam vaults.

Production

- **CUP:** Cleaned up around and in the plant. Chiller #5 & 6 tube cleaning system installation continues. Repaired and replaced drain piping on chiller pumps that were faulty. Ordered caution signs for wet floors and for heavy equipment operations. Mowed the grass between the tracks, the plant, and the stormwater harvesting station.
- **Med Center:** Prepared Multi-Port valve for pickup to be rebuilt. Started tube shooting on Chiller 3B evaporator, began washing Chiller

#5 in preparation for painting. Continued prep and began painting Chiller #2. Shut Boiler #4 Non-return and header valve in preparation for installation of new VFD Drive. Finished detail work on chiller insulation. Installed new Low Pressure Steam Trap on LP Header Pipe behind Chiller #6. Shut a high-pressure steam valve in preparation for stem packing. Tighten loose bolts on chiller condenser piping.

- **Central Heating:** Replaced the BFW pump bearing oil reservoirs. Replaced anode rod and flushed water heater out to get it working properly. Out with the old and in with the new – replaced our little green forklift with a little white forklift. Received back up pump and motor for BFW transfer pump and hoisted it up to the second level for next week installation.
- **Cooling 1:** Assisted Nevin of York in removing refrigerant charge from Chiller #8 to perform service and repairs. VFD for System pump #4 was repaired and is now working. Repaired leak in condenser water treatment system.
- **Cooling 2:** Cleaned 5K ton chiller cooling tower primary sump and catch troughs. Filled 5K ton chiller cooling tower. Pulled chiller 3 evaporator head to check divider plate gasket. Scoped CHW supply to chiller 3 to inspect butterfly valve. Replaced anode rod and flushed water heater.

High Voltage

- 811 Locates: Farm Rd/Veterans Dr, S. Limestone/Cooper Dr., New Health Education Building job site, Avenue of Champions/Lexington Ave., Library Dr/Funkhouser Dr
- Rebuilt low-voltage in E407. Replaced wiring, conduit, outlets and switches. Installed new LED lighting.
- Re-fed low voltage power to E503, E402-1, E904-1, E904-2 and E904-3. These vaults are located along Huguelet, Rose, and

Washington, and were previously fed from the Kelley building.

- Duct bank work continued on the Medium Voltage Infrastructure project. New duct bank was installed, concreted in and covered along University Dr. near Cooper Dr. Blacktop was replaced returning most of the roadway back to normal traffic.
- Friday morning High Voltage crews took down power for the final time to Kelley Building. Cables were removed from the padmount switch through E501 and into the building so that demolition work would not disrupt remaining circuits in the area. Crews also removed low voltage feeds to several manholes in the area to avoid issues with demolition of the building. Worked with HEB project contractors on a plan to re-feed these manholes permanently from other sources.

Engineering & Admin

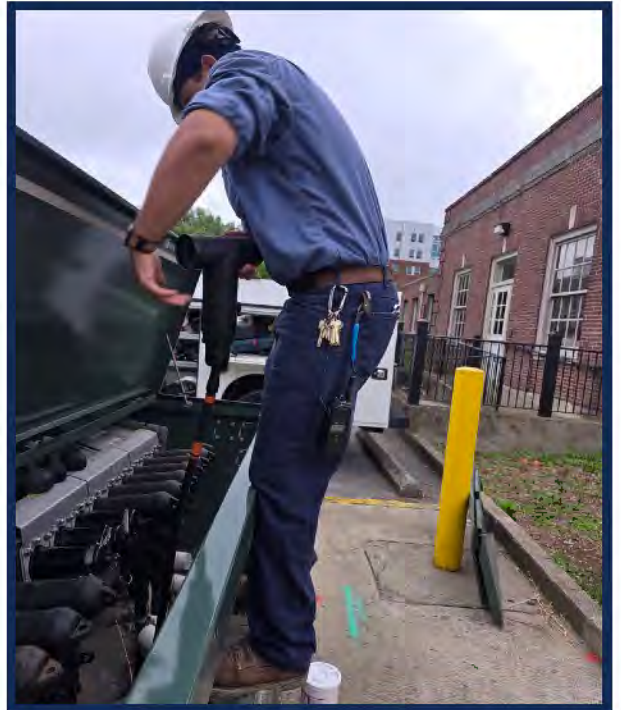
- Discussion with purchasing about developing a cooling plant optimization RFP.
- May's UKULELE meeting with lab stakeholders to develop programs for lab safety, environmental stewardship, and efficiency.
- Support for the Memorial Coliseum utilities infrastructure startup plan.
- Planning and preparation for starting up Chillers 5/6 at Cooling 2.
- Weekly progress meetings with B&D regarding P3 pathways for utility infrastructure development.
- Review of Alumni Drive Street light upgrade proposal.

Top: Cooling 2's Matt Sanford securing Chiller 3's evaporator head.

Middle: Henry Huffines repairing the chemical treatment system at Cooling 1.

Bottom: Jon Minton taking care of the back 40 at CUP.



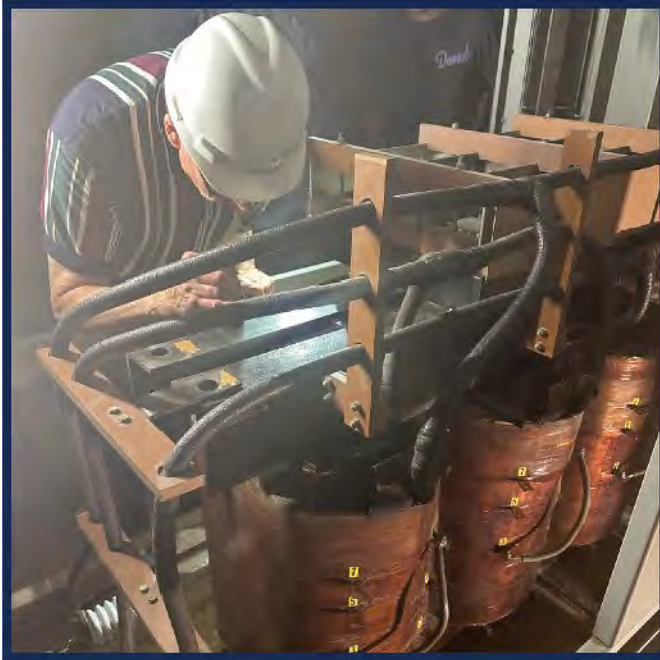


Top L: Kayce Gosney tracing out some stuck data points on the cooling plant summary.

Top R & Middle: The High Voltage department teams up to remove utility power from Kelley Hall permanently at the HEB site.

Bottom L: Med Center's Eric Connor and Robert Hannabach taking a turn at shooting tubes.

UEM Weekly Wire



Top L: Ron Mercer inspecting the failed transformer at Animal Pathology. **Top R:** Chris Pelat changing filters out at Cooling 1. **Bottom L:** Contractors working to install Pump #9 at Cooling 1. **Bottom R:** Tracy Brown of Med Center practicing a new water test.

Accomplishments

Distribution

- Tested high-pressure steam traps in Mechanical engineering mechanical room and mechanical engineering/ASTeCC tunnel
- Shut and locked out 3" high-pressure steam valve in HPS212 feeding HPS215. Bled steam line down along with Dimmock Animal Pathology building so contractors could cap old steam line feeding Kelley Hall
- Shut and locked out 8" condensate valves in HPS215 for installation of sparger
- Pumped out stormwater harvest pit to install chemical line for treatment
- Energized high-pressure steam to Memorial Coliseum attic for use in the air handlers
- Pulled manhole lids on South Limestone between Lee Todd and College of Medicine building to look for flooded vaults
- Scheduled domestic water outage to Miller Hall. Closed and locked out (2) 6" domestic water valves in P.O.T tunnel. Drained water down and installed saddle tap and drain valve. Valves did not hold enough to install new valve so opened valves back up and will schedule a later outage with more buildings affected
- Cleaned out storm in front of Chandler hospital with Buchanan



Production

- **CUP:** The installation of the Chiller Cleaning Balls project seems to be going well. A big Y Strainer was installed on Thursday.
- **Med Center:** Staff at the plant practiced and trained on a new chill water chemical test. Matt and Eric finished up shooting tubes on chiller 3B.
- **Central Heating:** Unclogged a drain for one of the older DA tanks. Staff in the plant worked on organizing and clean up projects. External Boiler inspection for Boilers 1 and 2 went well on Monday.

Top: A new vault is set for the electrical duct bank project along University Drive.

Bottom: Pippen, Mercer, and Hughes meeting with KFI to discuss Chandler Expansion electrical plans.

- **Cooling 1:** Chiller 9 Condenser water pump was installed. Air handler filters were changed in the pump room.
- **Cooling 2:** New operator training on the 5K ton chiller has been in progress now that those units are on. Electric shop repaired a vibration sensor on tower fan 2B. General clean up at this plant as well.

Engineering & Admin

- Completion of Steam & Chilled Water billing for April 2024
- Review of plan for electrical service for Chandler Expansion with KFI
- Ongoing planning sessions with B&D for potential utility plant infrastructure partnership
- Begin development of RFP language for Cooling Plant Optimization solutions
- Support for Animal Pathology extended outage after transformer failure

High Voltage

- 811 Locates for the week: Memorial Coliseum/Avenue of Champions, Farm Rd/ Gluck Equine
- Pumped water from manhole E307, found bad check valve on sump pump line. Replaced check valve and tested pump for proper operation.
- Work continued on the Medium Voltage Infrastructure project. New duct bank install continued along University Dr, new manhole was installed near the intersection of Farm Rd and University Dr.
- Worked with Cooling 2 staff Monday investigating cause of a "Motor Stator High Temp Alarm" on Chiller 5.
- Met with Electrical Contractor for Memorial Coliseum project to discuss timing of cable



Top: John Nord and Gary Helton work out a plan for moving the Animal Pathology transformer with American Industrial Contractors while Zach Saunier of the Electric Shop hooks up the Emergency Generator.

Bottom: Gary Helton enjoying his treasures from 2024 Employee Appreciation Day.



install and vac pack switch removal.

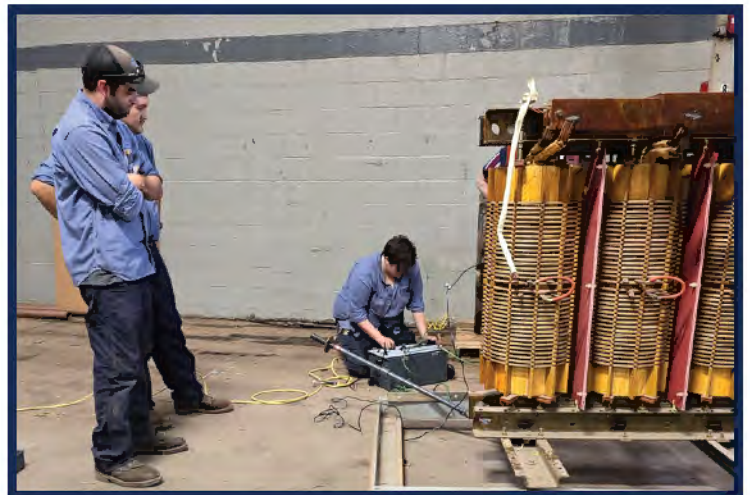
- Scheduled out Tuesday morning for Annex 5, Med Behavioral Science and Dimock Animal Pathology. Worked with contractors to permanently disconnect Annex 5 power at padmount transformer. Restored power to Med Behavioral Science and Dimock Animal Pathology. Transformer at Dimock suffered immediate failure upon return of power. HV crews determined failure to be in the secondary windings of transformer. While Facilities Management Electricians worked to hook up a portable generator, providing temporary power to the building, HV crews tested one of our spare transformers stored in Vaughan warehouse and determined it was fit for service. Assisted contractors with the pickup of the spare transformer, removal of failed unit. Worked late into the night Tuesday and all day Wednesday to install the spare transformer. Restored utility power to Dimock Animal Pathology around 8pm Wednesday. **Thanks goes out to Facilities Management Electric Shop and Area 2's Jim Blackwell and David Johnson for assisting with the temporary generator power so that work could continue in Animal Pathology while the transformers were switched out.**

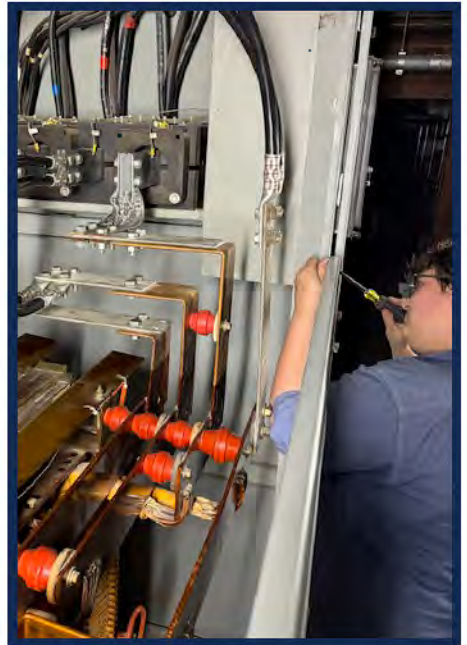
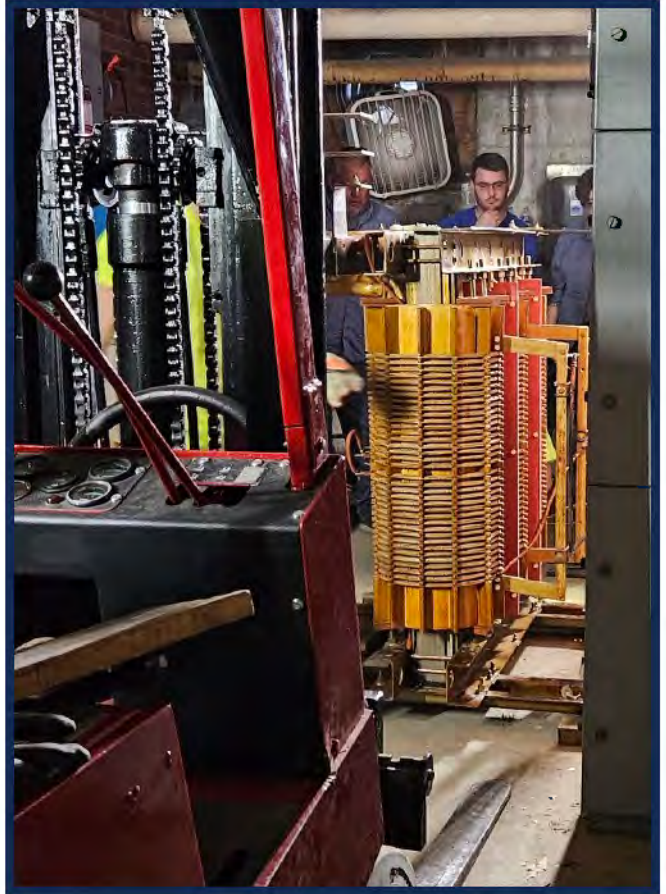
GREAT JOB EVERYONE!

Top: Marcelo Campos assists with removing the failed transformer from the Animal Pathology basement.

Middle: Bryan Poe and Gary Helton standby as Shelby King performs testing on spare transformer to confirm readiness as a replacement.

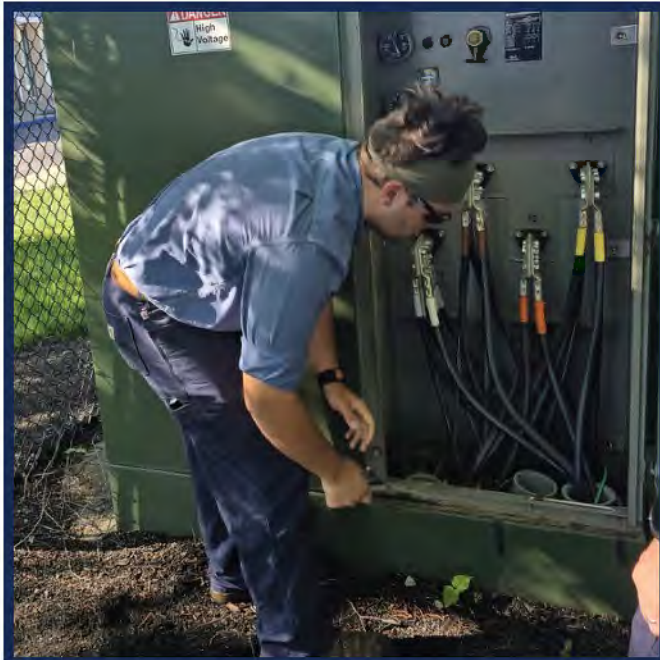
Bottom: Scott Barnes and John Nord work with the contractor to trim down the transformer framing to fit into the basement.





Top L: Shelby King assists John Nord in suiting up for throwing the switch to energize replacement transformer. **Top R:** Steven Hughes watches as the new transformer is shifted into place. **Bottom L:** Marcelo Campos assists with forklift navigation through a cramped basement. **Bottom M:** The emergency generator keeping lights up to Animal Path against a backdrop of Kelley Hall destruction. **Bottom R:** Shelby King assists with buttoning up the enclosure around the transformer.

UEM Weekly Wire



Top L: Mike Cummins, Rob Hannabach, and Rob Wheaton preparing MC #3 for paint. **Top R:** Shelby King and Scott Barnes remove bird nest debris from Substation 3. **Bottom L:** Gary Helton opens a transformer at the Soccer/Softball complex to trace out a circuit. **Bottom R:** Jacob Hoard showing off his sweet new baby girl, Lyla Caroline, born May 1st!

Accomplishments

Distribution

- Replaced stormwater harvest filters
- Installed new condensate motor at Little Library
- Pumped out HPS049 and installed new sump pump
- Installed new 1/2" drain line on condensate receiver in College of Nursing mechanical room
- Met with Ky American at UK Hospital to discuss water meters supplying PAV A

Production

- **CUP:** Completed the PM's on all plant Air Handlers (filters, belts, greasing and alignment of drive motors). Kelly Cronk and Will Tyree attended the Tridium Operator training. Well, done! Replaced blowdown valve on #1 boiler. Worked with Contractor and Carter on the installation of the tube cleaning systems for Chillers #5 & 6.
- **Med Center:** Replaced control devices (straw bales and filters) in storm drains. Got meter readings and entered data for H&C monthly report. Utilized new lockout tagout covers for MCC push buttons. Installed new air hose reels. Worked with the State Boiler Inspector on the exterior inspection of all Med plant boilers and the inspection report was good.
- **Central Heating:** Checked all the traps on the HPS lines to find possible failed traps. Found 1 inverted bucket and 1 thermodynamic trap had failed open. Performed PM on #1 boiler feed water pump. Crossed trained a few employees at Cooling 2.
- **Cooling 1:** Continued training new hire Chris Pelat. Cleared remaining building materials, tools, and random items from roof in preparation for roof replacement. Began operating under 2024 Summer running guidelines.

- **Cooling 2:** #10 system pump's mechanical seal was replaced, motor was set, and now we are waiting for electricians to get the electric connected. Basement AHU was reassembled with new bearings and pulley on the blower shaft. Draining CH3 to check the evaporator divider plate gasket after losing control of the evaporator supply and return pressure differential.



Top: Cody Hopewell checking water conductivity at Cooling #1.

High Voltage

- Updated low voltage in E604 and E407
- Assisted contractors in working on medium voltage infrastructure project, assisted in getting measurements for wire pulls
- Added support strut to cables in E402-1
- Met with contractors for HEB project
- Took down power to chiller #2 and med center heating and cooling for chiller maintenance and repair

- 811 locates at Library Dr near Funkhouser, soccer/softball complex
- Sub 3 cleared plastic and bird nest debris from main bus to prevent outage
- Duct bank work continued along university drive and HEB project
- Updated manhole 360 pictures in E103, 104, 604, 105, 402-1
- Practiced cable outbacks on high voltage cable
- Completed monthly meter readings and input them into the billing system

Engineering & Admin

- Reconvened the regular UEM & Controls Huddle to work through outstanding concerns and issues
- UEM Big Rocks meeting to catch up on progress with various initiatives such as the Dig Policy, OHS Risk Matrix, and Smart Metering Roadmap
- Year-end service center budget review and rate discussion for FY25

- Support for troubleshooting Alumni Commons lighting issues
- Specified and ordered replacement relay for Chiller 5 at Cooling 2

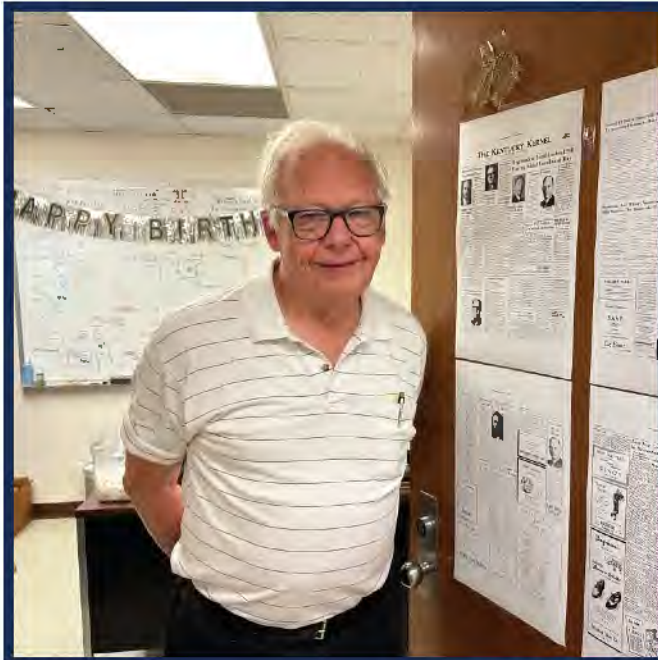


Top: Cooling 1's Chris Pelat checking corrosion coupon rack.

Bottom: Roy Rowlett and Bryan Poe learn medium voltage cable cutback methods from Scott Barnes and Shelby King in the High Voltage shop.



UEM Weekly Wire



Top L: Glenwood setting high voltage pad mount switch for HEB project. **Top R:** Jack Howard cleaning up after trimming the trees around the Coal Pile. **Bottom L:** Ron Mercer celebrating 83 years of living! **Bottom R:** Mike Duffy refereeing the corn hole tournament during FM Employee Appreciation.

Accomplishments

Distribution

- Shut and locked out high-pressure steam feeding Charles T. Wethington for Area 5 steam outage
- Installed new seals & fittings on condensate receiver #1 at Charles T. Wethington mechanical room
- Installed new pumps & discharge lines on condensate receiver in HPS030
- Oversaw excavation of more areas around Gluck parking lot condensate/high-pressure steam line. Once pipe was exposed, turned condensate on in HPS098 and found leak on piping
- Removed old piping and pressure tested the existing pipe running to the vault and into the Gluck building to verify there were no more leaks
- After new piping was installed, oversaw gilsulate insulation was put down around existing pipe and backfill of the exposed pipe
- Energized high-pressure steam to Charles T. Wethington building after steam line repairs were completed in the mechanical room

Production

- **CUP:** This week we cleaned up around plant. Painters are finishing up on the tube cleaner project. Heimbrock replaced refractory in boiler 2, and our operators will start the refractory curing (burn in) process this weekend. Hearing test was completed for the plant along with uniform fittings. Ordered a new condensate receiver pump. Restarted boilers and chillers after power blink.
- **Med Center:** Storm drain filters were removed and cleaned and new oil absorbent pillows were installed. Cleaned 3A chiller condenser water strainer. Trash and tree limbs were cleaned up at Med Center Coal stockpile. Met with Precision Cooling Tower

builders and ran old tower to show flow for a maintenance quote. Matt True, Robbie Hannabach, and Robert Wheaton turned off LPS to heaters for the summer. Jack Baysore cleaned the FD fan louvers. Jumpstarted our dump truck and frontend loader. Chiller #2 was successfully started and is running for the first time this season. High voltage checked out Chiller #1's broken starter charge handle. Plant personnel completed annual hearing testing. Went to uniform fittings Monday and Wednesday. Brought plant equipment back online after power blink.

- **Central Heating:** Finished removing safety relief valves and got them lowered to the ground level. Replaced CL14134 feed pump for cooling water. Quickly got Boiler #1 back up after the power blink.
- **Cooling 1:** Continued to remove scrap metals from tower and roof from previous construction. Trouble shot condenser pump #1 that had quit working and found a bad fuse, replaced faulty fuse, and put the unit back on.
- **Cooling 2:** Got all four 5K tower fans working. Hosted the UEM audiometric hearing test that was conducted by Examinetics. Got the 5000-ton machine back up quickly after power blink.

Engineering & Admin

- Monthly energy program review and cost avoidance discussion with Cenergistic
- Preliminary completion of May billing for Steam and Chilled Water
- Review of year-end funding needs and allocations
- Audiometric testing for UEM employees

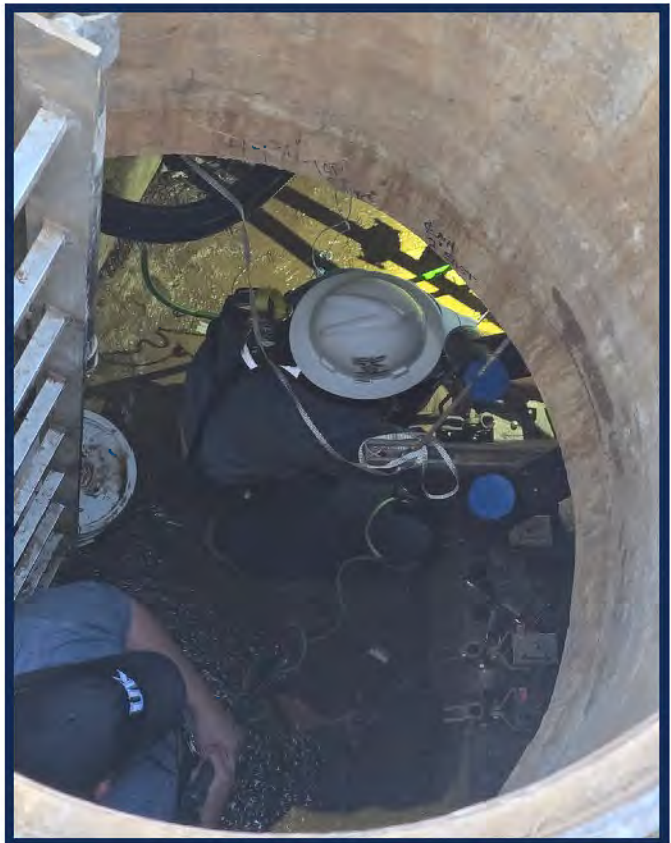
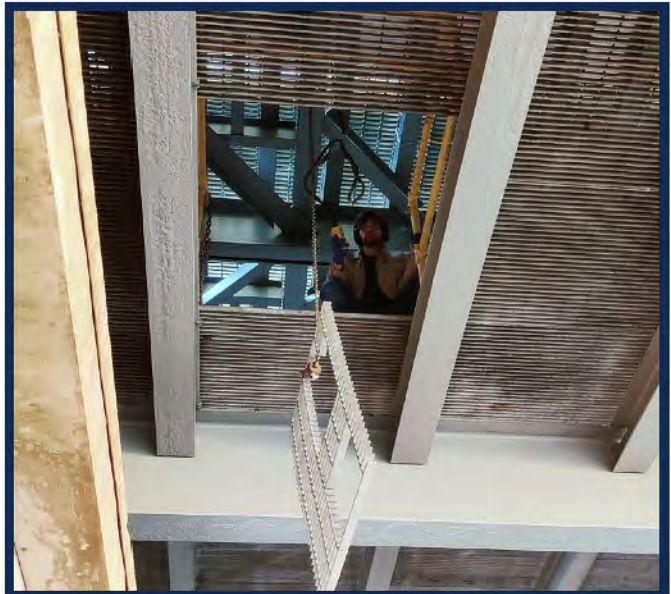
High Voltage

- Located for Columbia gas Columbia Terrace
- Located for new construction on Farm Rd.
- Located for the remodel on Pence Hall

- Did emergency locate on new construction for HEB
- Oversaw concrete being poured for new duct bank for Kroger field
- Scoped out duct banks for the temporary redundancy feed to HEB
- Outage for Memorial Coliseum to clean new switch gear before going into permanent service
- Wednesday had outage for new construction on HEB building to provide power to temporary feed for MH501-1
- Moved DLAR feed in MH501-1 from SW2 to SW1 for Glenwood construction to be able to install temporary feed
- Phased new cables landed for temporary feeds to ensure proper installation
- Thursday removed cables in 124 for Glenwood construction to be able to land cables for new temporary for behavioral science and Animal Pathology
- Checked to rotation in Animal Pathology and Behavioral Science to ensure proper installation after outage to replace feeds
- Had outage at Animal Pathology and Behavioral science to attempt to run temporary feed to new switch and back feed



Top R: William Asher enjoying his first outage on the High Voltage crew. **Bottom L:** CUP crew Jodie Harris, Jacob Hoard, and James Reynolds having some Mr. Softee on the Peterson Front Lawn. **Bottom R:** Lucas Saunier clearing sand filter PD lines.



Top L: Rocky Moberly and Luke Rodgers starting up Chiller #2 at Med Cooling. **Top R:** Chris Pelat clearing out some scrap materials at Cooling 1. **Bottom L:** Mike Cummins removing pop off. **Bottom R:** Roy Rowlett and Gary Helton grounding elbows for DLAR power swap.

UEM Weekly Wire



Top L: Duct bank installation continues for the HEB project. **Top R:** Gary Helton operates a high voltage switch at electrical vault E122 while Marcelo Campos assists. **Bottom L:** Jack Baysore doing some housekeeping around the Med Center coal bunker. **Bottom R:** Joe Cafego opening non-return valve on MC Boiler #3.

Accomplishments

Distribution

- Replaced (3) seals on condensate receivers at Charles T. Wethington
- Installed new 3/4" high-pressure steam trap line in HPS030
- Installed new 2" sump discharge and 2" sump pump in HPS054
- Worked with med center staff to troubleshoot chill water supplying air handlers in the operating rooms
- Responded to domestic water issue at Sloan building. Contractor snapped inlet gate valve while isolating the meter. Contacted water company and got water restored

Production

- **CUP:** This week we replaced a condensate receiver pump and finished the bake in process for the new refractory in Boiler 2. Worked through a few Tridium glitches that shut down the plant system pumps randomly. CUP was the sole supplier of steam to Campus this week. Boiler 2 is back up to pressure and ready to operate if necessary.
- **Med Center:** Painting on Chiller #1 continued along with repairs to damaged insulation. Cleaned up coal fine collection areas outside the plant for the EMQ Stormwater Protection Assessment which involved sweeping up loose coal pieces, cleaning out the storm drain basin filters, installation of new oil absorption pillows, and replacement of straw bales that protect storm drain main inlet. Changed air filters in both AHU's in chiller basement, Supported Patriot Services during the Chiller pump #5 and System Pump #3 re-insulation projects. Received large Bleach delivery Friday due to high usage during long heat stretch. Kept boiler #3 in stand-by during the repairs at Central Heating Plant.

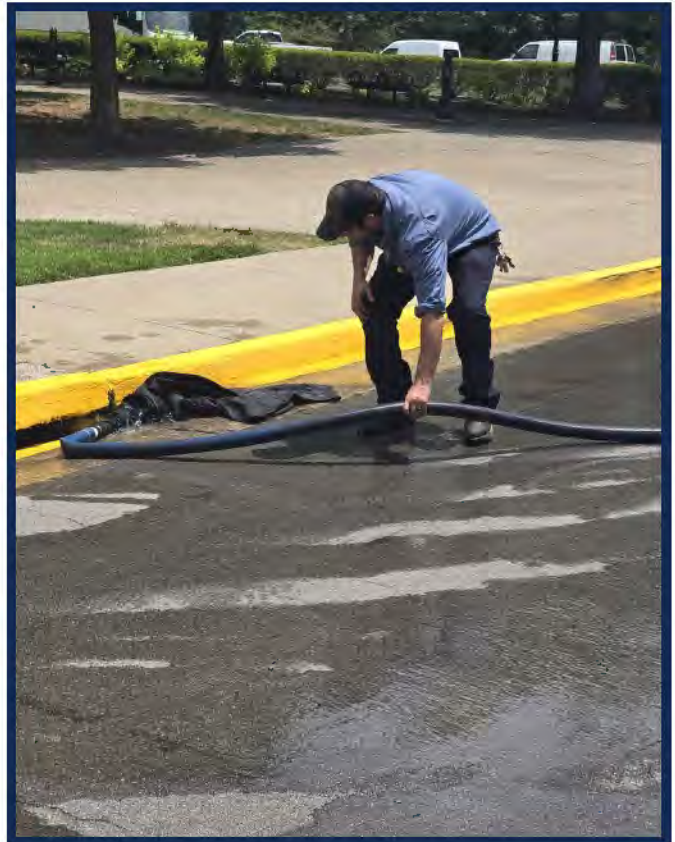
- **Central Heating:** Shut down plant to repair leaking water line and leaking flange on the multiport low pressure relief valve. Completed water line repair and worked on the multiport, and plan to finish its installation, then start the plant backup on Saturday
- **Cooling 1:** HECO picked up Condenser pump #9 motor for refurbishment and testing. Carrier finished repair on Chiller #4 and put it back into service. Fine-tuned the condenser water makeup to keep up with the hot weather and heavy chiller loads this week.
- **Cooling 2:** Kept #5 chiller on all week with no electrical miscues. Changed out the bleach pump.

Engineering & Admin

- Completion of May Steam & Chilled water billing
- Site visit to spot-check Memorial Coliseum chilled water usage
- Ongoing discussions with KU about options to feed Prall Street from alternate path to allow for overhead line removal

High Voltage

- College of Medicine/ Animal path outage for cable work
- Traced duct bank from MH E125-2 to MH E125-1
- Provided and loaded high voltage cable to contractor for HEB project
- 811 locates at cooper dr/plant science
- Preliminary counts for fiscal year end of year inventory
- Monthly Sub station checks completed
- Duct bank work continued on medium voltage infrastructure project in stadium parking lot
- New duct bank installation continued on HEB project job site
- Pumped out manholes E121 and E112



Top L: Jack Baysore getting stormwater protection measures in place. **Top R:** Brian Poe pumping groundwater out of electrical vaults. **Bottom L:** Steven Hughes inspecting a transformer. **Bottom R:** David Derenge tuning the Cooling Tower water makeup operations at Cooling 1.

UEM Weekly Wire



Top L: Ron Mercer and Steven Hughes inspecting Sub 1 after the latest squirrel harvest. **Top R:** Cooling 1's Chris Pelat checking the tower temperature sensors. **Bottom L:** Will Tyree and Jon Minton enjoying an FM appreciation donut. **Bottom R:** Bryan Poe and Gary Helton replace damaged post insulator in Sub 1.

Accomplishments

Distribution

- Installed new seal on condensate receiver at Roach
- Changed stormwater harvest filters
- Removed old float bulb hanging on float switch on condensate receiver in Charles T. Wethington building
- Used ground mic on high-pressure steam line from HPS098 to Gluck building to check for potential steam leaks
- Flushed chill water coils 5, 6, & 7 on 2nd floor of PAV A hospital
- Fabricated supports for HPS070 due to lid of vault not closing properly
- **Congratulations to Carter Whitton who has been promoted to the UEM Distribution Manager position!**

Production

- **CUP:** Chiller #2 was filled after tube brushing and is back in operations this week. Worked with Carter Whitton and Emerson Company to locate and plan the new condensate return meter installations. IAC was in to work on air compressors. Ran all six chillers at CUP plant to keep campus chilled water supply constant during the electrical outage that was caused by an unfortunate squirrel. The subsequent short knocked off a Sub 1 transformer and took the Med Cooling and Cooling 1 chillers down. Successfully completed the Relative Accuracy Audit (RAA) of the Predictive Emission System (PEMS) for Boilers 2 & 3, and then tested the emergency stops for both boilers.
- **Med Center:** Worked on the gas side DA tank. Improved plant ventilation for the hot summer. Replacing bad blowdown lines on boilers 3 & 4. Replacing top steam drum gasket on #3 boiler. Got Chillers and pumps back up when power was restored after squirrel incident.

- **Central Heating:** Worked with CUP plant to ensure steam production operations went smoothly during RAA testing. Revisited some training points and operational strategies to achieve the most efficient results. Cleaned up in and around the coal pile. Also helped clean up at Cooling 2.
- **Cooling 1:** Bleach line repair and replacement of ORP sensor to better maintain tower water chemistry. The air handler fans belts were replaced. Cleaned and checked Tower 1 temperature sensors to get them working. Sprayed pigeon deterrent on towers and roof areas to keep pigeons away. Got machines up quickly after squirrel incident.
- **Cooling 2:** Monitored equipment closely during this hot spell. Word with the electrical shop to repair the high air pressure control air sensor in the basement. Currently working with the electrical shop to discover why the tower fan motor for chiller 1 is tripping.

Engineering & Admin

- Year-end scramble to close out project plans, billing, budgets, and so forth.
- Review of metering needs with Cenergistic.
- Ongoing training plan activities, including Fire Safety with UK's Fire Marshal.

High Voltage

- End of fiscal year inventory completed
- Monthly meter readings completed and input in to Excel document
- Scheduled outage to connect new feeds to Dimock Animal Pathology and Medical Behavioral Science buildings, assisted contractors in pulling in new cables and completed terminations to new pad mount switch and energized it (future HEB source)
- Cleared cables in E122, E501, E501-1, E502 and E502-2 to allow contractors to continue site demolition for HEB project

- Responded to sudden outage on Wednesday which was caused by a squirrel at Substation 1 around 9am, performed switching to restore power to all affected buildings by 10am
- Replaced damaged main bus post insulator in Sub 1 caused by the animal encroachment
- KU replaced substation differential relays in Sub 1 that did not work correctly
- Switching was completed returning campus power grid to normal configuration by 8pm



Top L: Robert Hannabach locking out boiler #4 at Med Center. **Top R:** The High Voltage team prepares PM50 for removal from HEB construction site. **Bottom L:** KU's relay and control group diagnoses issues with the bus differential CTs at Sub 1 after the squirrel incident. **Bottom R:** Before/after showing damage to the post insulator by the squirrel and the refurbished replacement insulator in service a few hours later.

UEM Weekly Wire



Top L: Cooling 1's roof upgrade is finally underway! **Top R:** New combination duct bank along Waller towards Elizabeth street for the Cancer Center project. **Bottom L:** William Asher working in E119. **Bottom R:** Eric Conner replacing the diaphragm on a low pressure station PRV at the Med Center Plant.

Accomplishments

Distribution

- Responded to sewer back up in Barnhart building. Stayed after hours to excavate around sewer pipe and repair broken line
- Pulled manhole lid outside Dental building and verified piping. Worked with contractor to camera sewer pipe to update drawings
- Tested high and low pressure steam traps in Mechanical Engineering mechanical room and penthouse
- Isolated and locked out high-pressure steam and condensate going to Scovell Hall for renovations
- Changed stormwater harvest filters
- Removed concrete pads outside of Roselle Hall to complete routine checkup and clean out of sewer pipe
- Isolated domestic water to College of Nursing in water meter pit on 4th of July for Area 5 outage

Production

- **CUP:** Installed testing sample line for newest condensate line coming into building. Completed and closed out some PM work around plant. Cleaning the plant and organizing hazards to prepare for next week's safety walk-around. Employees signed up for Confined Space training.
- **Med Center:** Matt and Jack cleaned over at the coal pile and started the loader. Matt and Eric work on replacing the diaphragm on a PRV for low pressure station. Employees signed up for Confined Space training.
- **Central Heating:** Getting boiler 1 cleaned and prepped for annual insurance inspection. Had DCW line insulated (repaired a couple weeks ago). Modified weigh larry for removing coal from overhead bunker. Employees signed up for Confined Space training.

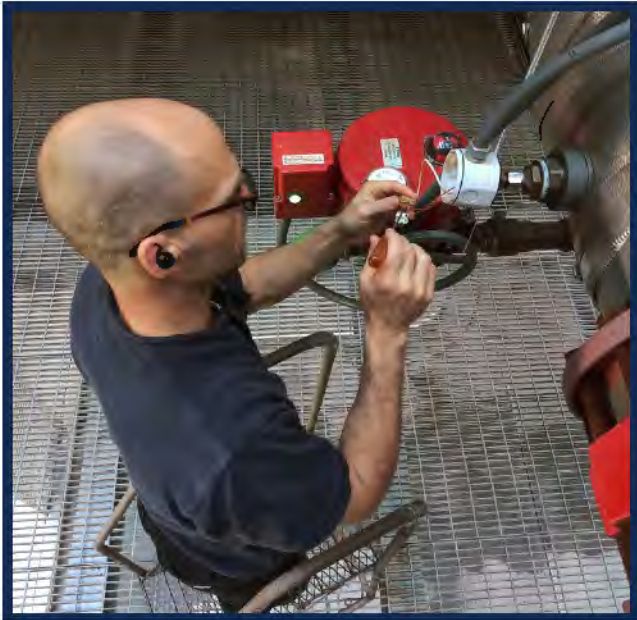
- **Cooling 1:** Roof construction underway. Replaced corroded contacts on towers 1 and 2. Signed up for Confined Space training.
- **Cooling 2:** Fluffed the filtering sand in the CHW side stream filter to eliminate suspected channeling. Replaced belts, filters, and cleaned the coil in the 1K ton chiller side AHU. Signed up for Confined Space training.

Engineering & Admin

- Completion of June steam and chilled water billing to close out the fiscal year.
- Draft development of cooling plant optimization RFP.
- July's UKULELE meeting, with a review of My Green Lab's freezer challenge and upcoming website development.
- Review of Energy Program cost avoidance and development of presentation for administration.

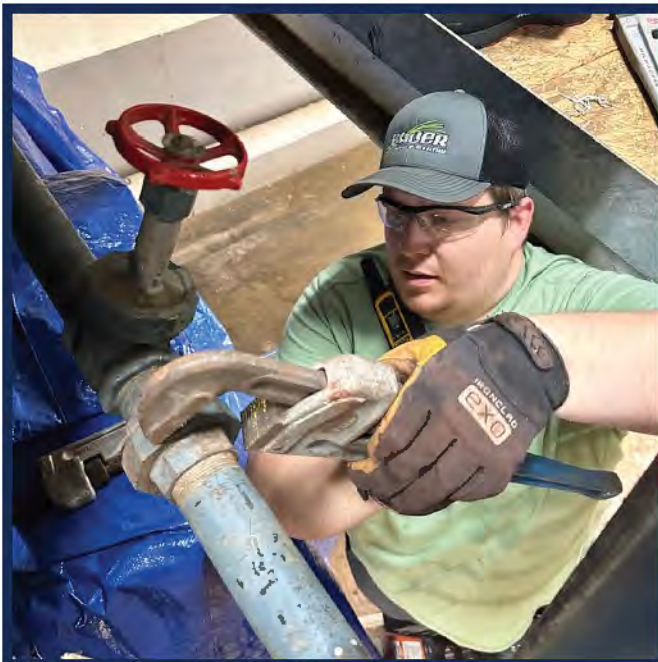
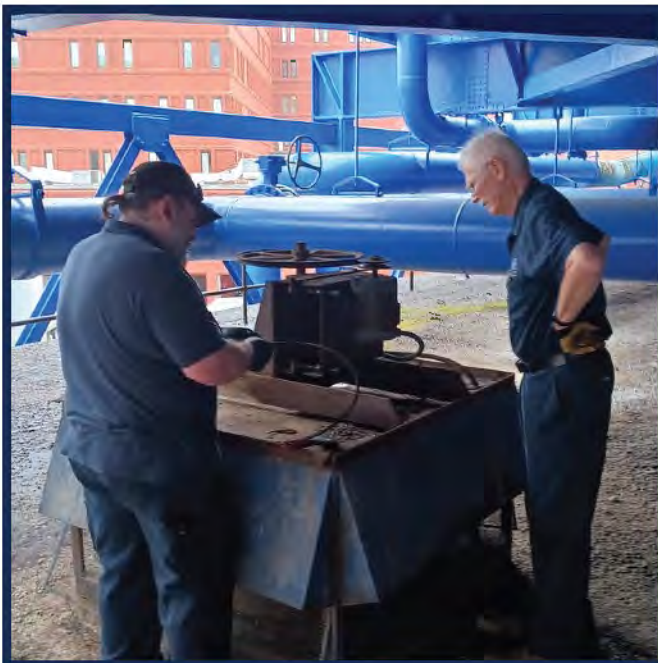
High Voltage

- Completed monthly substation breaker and relay checks
- 811 locates: Farm Road area and Parking 7
- Duct bank installed and concrete poured at stadium for infrastructure project
- Drain line repairs at E301
- New pump and light installed in E119
- New wire pull secured in E310-1
- Provided contractor with manhole vent parts
- Prepared the lid of E310-3 for new ID numbers to be welded on
- Met with engineers on University Drive to discuss new manhole installation
- Pumped out and replaced pump and check valve in MH E703
- Scoped duct bank from E312 to E313 to find out condition and material of conduit
- Fixed new pad mount switch enclosure at HEB job site and labeled switches



Top L: Henry Huffines changing contacts on a sensor at Cooling 1. **Top R:** Jack Baysore working on the coal loader. **Bottom L:** Steven Hughes giving a tour of Sub 1 to Electrical Engineering Professor, Dr. Regina Hannemann. **Bottom R:** New duct bank and switch vault being installed outside Kroger Field

UEM Weekly Wire



Top L: John Nord, Marcelo Campos, Brian Phippen and Ron Mercer watch 'see snake' camera at MH E911.

Top R: Eric Conner and Jack Baysore working on exhaust fan at Med Center. **Bottom L:** Mike Cummins repairing cracks inside Boiler 1's mud drum at Central. **Bottom R:** Jodie Harris putting CUP's DA level control piping together after cleaning it out.

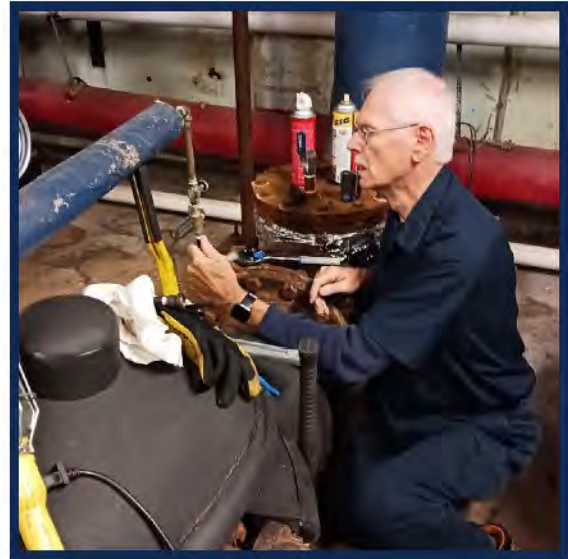
Accomplishments

Distribution

- Completed (6) 811 utility locates
- Worked Saturday domestic water outage with Area 4 and Ky American. Isolated domestic water to ASTeCO in water meter pit. Turned water back on after new meters were installed and new isolation valves were installed in the building
- Isolated high-pressure steam to HSRB in HPS210 for weekend steam outage. Energized steam back to the building after work was completed
- Attended confined space training at Willy T. Young
- Used ground mic on 12" domestic water line on Hospital Dr. after reports of low water flow at VA hospital

Production

- **CUP:** Worked with Johnson Control to complete quarterly PMs on chillers 4&5. Worked with Trane was to complete quarterly PMs on chillers 1&2. Unstopped the DA Level control line, which required shutting the CUP boiler plant down and coordinating with Med Heating Plant to bring their boiler on. Unstopped the pipe and added a means to clean it out with the DA online, so the plant will not have to be shut down the next time it gets clogged.
- **Med Center:** Coordinated the cooling tower stair tower replacement project. Repaired the differential pressure piping on chiller #6 chiller pump. Brought boiler #3 online so CUP plant could shutdown to make DA tank repair.
- **Central Heating:** Worked on patching refractory on cracks around the mud drum and steam drum for boiler #1. Cleaned up plant for CBMI tours. Finishing up the prep work for the state boiler inspection for Boiler #1.



- **Cooling 1:** Roof progress continues. Chiller #9 Condenser pump motor installed and tested, and during testing found a few problems that still need to be corrected, so

Top: Jack Baysore replacing a valve on a pump differential line.

Bottom: Carter Whitton and Matt True getting brushed up on Confined Space safety.

the pump replacement project is not complete. Repaired the air dryer for the plant control air.

- **Cooling 2:** Rebuilt 4" diaphragm valve that was removed from 5K ton cooling tower blowdown. Working with ChemTreat to replace pumps and tubing on cooling tower bleach feeds. Cleaned up plant for CBMI tours.

Engineering & Admin

- Completed & submitted two grant applications for LFUCG's Stormwater Quality Projects Incentive Grant program that would benefit areas near Hope Lodge and the Barnhart Athletics Complex.
- Completion of Q2 and 1st Half EPA Title V Air Permit reports in conjunction with Environmental Quality Management's Andrea Smith.
- Ongoing review of plant operational costs including commodity and labor analysis.
- Assisted with CBMI tours for Facilities Management.
- Draft development of Prall Street power feed re-routing proposal.
- Hosted key utility providers to share future plans for campus expansions and projected growth in load.
- Confined space training with Occupational Health and Safety.

High Voltage

- Assisted in repairing chiller motor at cooling 1
- Snaked and traced duct bank from MH E911 for cancer center connection
- Completed new elbow terminations in MH E310 for new feed on ave of champions
- New vault placed for stadium project, new duct bank poured, work continued
- Met with contractor to discuss new duct bank location for New Agricultural building
- Completed annual confined space training
- Met with contractors to discuss new duct bank installation at HEB



Top: Will Asher tapes connections at Cooling 1.

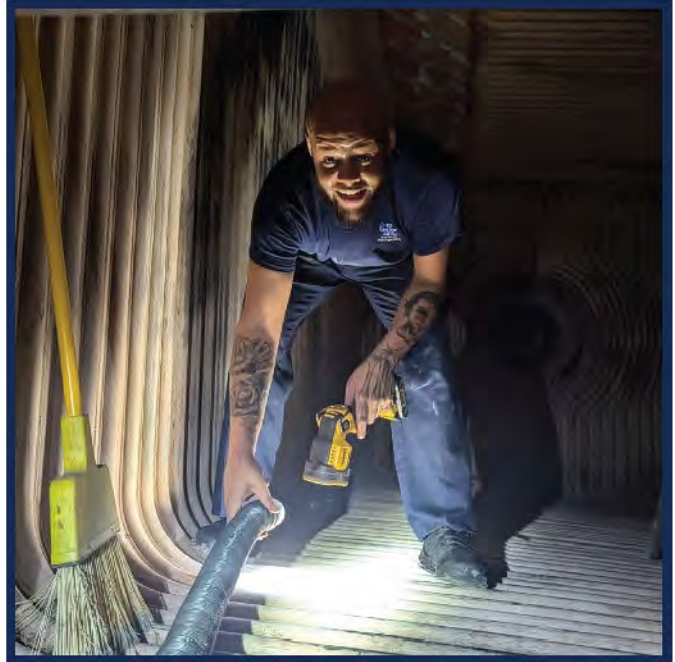
Bottom: A new high voltage vault at the stadium.

- 811 locates Rose st and Patterson Dr, Rose st and Colombia Ave, Funk Houser and Library Dr
- Inspected MH E707 and created plan to get low voltage power back to it
- Inspected work to be done in MH E804 and E806 and created game plan to accomplish it
- Sent damaged high voltage cable back to manufacturer to be re-spooled



Above: The old wooden stair tower from Med Center Cooling was hoisted down for retirement and replaced with a new and improved fiberglass tower set.

UEM Weekly Wire



Top L: David Derenge working with a condenser water flow meter at Cooling 1. **Top R:** Central Heating's Austin Brown cleaning Boiler #1 Firebox. **Bottom L:** Gary Helton going the extra mile to fix the Track & Field power meter. **Bottom R:** New hire Spencer Parker adding salt to the brine tank. Welcome to the team!

Accomplishments

Distribution

- Completed (4) 811 utility locates
- Worked with contractor to camera storm sewer lines in the parking lot of Track and Field
- Worked with Spindletop Hall to verify location of isolation valves supplying the mansion in water meter pits
- Isolated high-pressure steam to Singletary Center and Panama Canal in HPS015. Bled steam down and oversaw installation of 6" cap on steam line. Verified pressure test with boiler inspector and energized steam back to Singletary Center
- Tested for hard water in Area 5 and south campus after hard water was reported at CUP. Found condensate receiver in Nutter Training with hard water. Dumped and locked out receiver and notified Area 3/Athletics
- Located roof leaders at Good Barn with locate equipment
- Isolated high-pressure steam to Sloan building in HPS030 for installation of new vault outside the building

Production

- **CUP:** Nightshift completed pump repair for basement water pump. Trained James on the nightshift water testing protocols, now that he has moved from days to nights. Working with High Voltage team to prepare for the half of the plant cooling shutdown that will be taking place on Saturday, 8/10/24. Continued creating task list for PM program for CUP.
- **Med Center:** Worked with Precision Cooling Tower to get the big cooling tower distribution piping and nozzles flowing properly and to add new access flanges for future cleaning/unclogging. Coordinated with Med Hospital and VA hospital personnel to get a crane setup approved, so next week these repairs

can be implemented. Repaired the basement AHU squirrel cage and insulated the duct work. Had boiler #3 running and ready to put out steam during the Central plant shutdown for the Generator Transfer switch diagnostics.

- **Central Heating:** Getting boiler 1 put back together after a successful internal inspection. Operators did a great job recovering the plant after a faulty automatic transfer switch on the emergency power led to several power outages. Welcome aboard new hire Spencer Parker. Got the continuous blow down valve (CBD) for boiler 2 rebuilt due to excessive leak through.
- **Cooling 1:** B-side refrigerant leak detection system calibrated. Parts storage area cleaned, organized, and light bulbs replaced. Flow meters on Chiller 10 inspected and cleaned.
- **Cooling 2:** Replaced the auxiliary sump pump and motor for the 5K ton cooling tower. Repaired and replaced a couple of ice maker and water fountain water filters and filter housings. Responded quickly to a leaking CHW chemical feed line.

High Voltage

- Hi Pot tested new cables from MH E310 to E312
- Welcomed new high voltage electrician Mike Smith
- Investigated malfunctioning meter at new track and field complex
- See snaked duct banks in MH E202-2 to E202-3
- Met Dixon at Sub 3 to drop off new Sub Surface switch lid for switch 115-1A
- Assisted with reinstallation and starting of chiller at Cooling 1
- Duct bank poured at new AG building site, work continued



UEM Garden Gallery

Kevin Lewis of EQM had a fruitful season for raspberries, blackberries, grapes, and flowers, in spite of the heat.



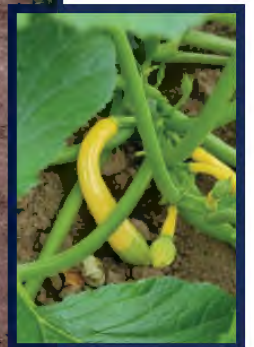
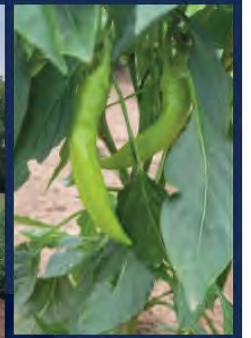
Shawn Altizer going for an Olympic Gold in growing zucchini!



Britney Ragland's son, Alexander, picking a snack-sized harvest of green beans and new potatoes.



Jacob Hoard's garden had a great start but hasn't had much luck since the dry weather streak.



- Duct bank poured at new Cancer Center site, work continued
- Duct bank poured at University Dr, work continued
- 811 locates, MH E310-1 to 310 at Memorial Coliseum construction site

Engineering & Admin

- Indoor Track and Field Meter has wiring issues, will need to schedule outage to correct and verify operation
- Hospital Pavilion A: Maintenance work is scheduled 11/4 – 11/8. Existing WO to test the 12KV gear may have to be postponed to after this work is completed
- Ongoing 'deep dive' meetings with B&D for future Utility Plant RFPs
- Review of Cooling 1 points with adjustments to trends to ensure data capture



Mike Duffy's 'wild tomatoes' growing around the back of his house.

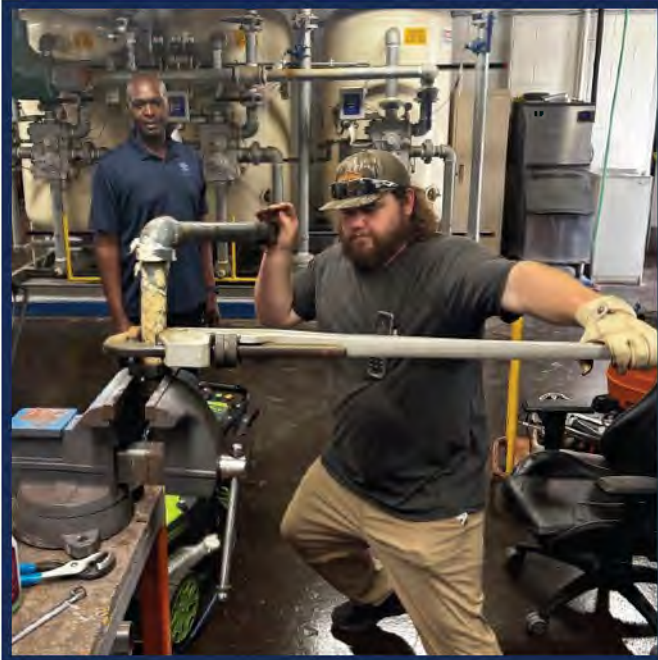


John Nord's backyard garden with a few 'almost ready'.



Marcelo Campos' thriving tomatoes and flowers.

UEM Weekly Wire



Top L: Jacob Hoard and Cory Chenault breaking loose DA tank level control piping that was leaking at threads **Top R:** Will Asher tracing out lighting circuit behind University Flats **Bottom L:** Bryan Poe removing ladder in E116 to send off for repair **Bottom R:** New hire Azariah Saunier cleaning at the coal pile

Accomplishments

Distribution

- Completed (4) 811 utility locates
- Worked with Med center staff to test tube bundles on heat exchangers in Combs
- Tested tube bundles for hard water at Med Plaza
- Worked with Area 5 to isolate high-pressure steam to PRV in RB2 mechanical room
- Worked with contractor to clean out student center storm water protector
- Responded to domestic water leak at helipad behind Kroger Field. Isolated domestic water line and dug out around the broken pipe. Capped old line, turned water on, and checked for leaks
- Stayed after hours and worked with contractor to clean sanitary sewer manholes behind Med Center Heating & Cooling after back up was reported
- Replaced high-pressure steam trap and installed 2nd trap in Singletary mech room
- Responded to high-pressure steam emergency in BBSRB penthouse
- Worked with construction crews at Healthy Education Building to mark high-pressure steam and condensate lines around job site after pipe was exposed with pot holing

Production

- **CUP:** Completed electrical box tie-in on MCC-1B switchboard for tube cleaning system. Worked with electricians to solve power issue on feedwater pumps and found problem to be faulty 200-Amp fuse. Replaced leaking DA control piping without shutting the plant down. Worked with Med Heating and Central to ensure there was no loss of steam pressure on campus during this DA repair.
- **Med Center:** Put boiler #3 online to ensure CUP plant could shut down if the necessary during the DA level control piping repair. Did

PM work on the air compressors. Worked on storm drain BMPs and cleaned up the coal pile area. Worked with High Voltage on chiller #1 breaker replacement project.

- **Central Heating:** Got boiler #1 put back together—it is now available for steam production if needed. The Automatic Transfer Switch for emergency power was repaired (shoutout to Ken Reeder for his help!) An isolation valve for the domestic water line that feeds softener 3 was repaired. The employees went ahead and swapped out a similar valve on softener 2 to eliminate any future issue. Transferred some coal over to the stockpile. Cleaned storm drains. Worked with contractor to get safety railing installed.
- **Cooling 1:** Cleaned and calibrated condenser water storage tank ultrasonic depth sensors. Cleaned and flushed coil on office air handler. Applied bird deterrent to roof areas where birds try to nest. Worked with Dixon Electric, Onan Glass, and the rigging contractors to set the plan for the condenser pump #8 motor rebuild and starter replacement project that begins on Monday.
- **Cooling 2:** Worked with the electric shop to get a good game plan together to repair the tower fan for chiller 1. Looking to have it repaired next week. Organized the plant. Installed auxiliary sump pump for the cooling tower by the substation. Also worked with Ken Reeder and electronics to begin repair of a pressure switch for the fire suppression for the cooling tower by the substation.

High Voltage

- Checked rain route of critical switch vaults
- Pumped E305-2 and reattached drain line
- Assisted in marking lighting circuit for contractor behind University Flats
- Worked with contractor to replace breaker for chiller #1 at Med Center plant

- 811 locates: University and Cooper
- Removed ladder in E116, had it sent for repair, then reinstalled
- Verified low voltage feed in E205-3
- Pumped E303-2
- Contractors uncovered unknown duct bank on HEB job site, traced and verified it is abandoned

Engineering & Admin

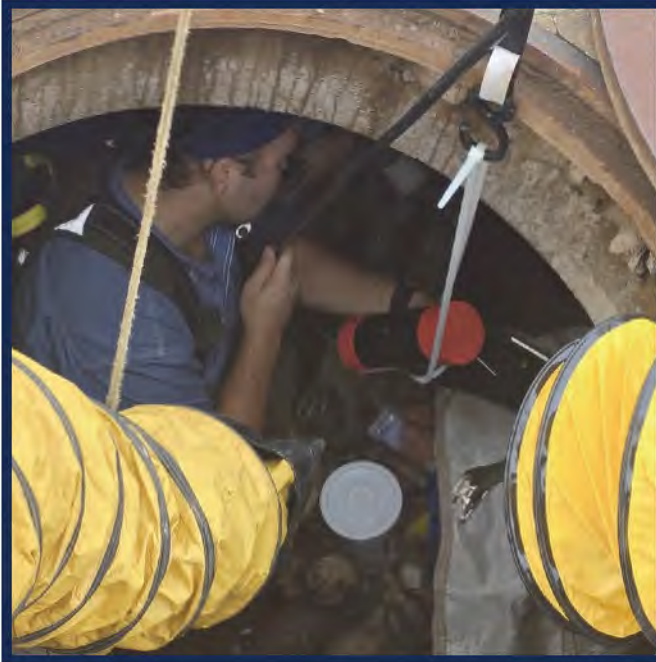
- Met with KU and KFI about major upcoming projects and substation expansion
- Participated in Mulch Monday
- Reviewed progress and highlights for the Energy Program at Cenergistic's bi-monthly stakeholder meeting
- Reviewed KU's updated fuel costing method



Top: Rob Hannabach and Azariah Saunier removing hay bales from storm inlet **Bottom L:** Mike Smith, John Nord, and Gary Helton turning on a chiller at Med Center H/C **Bottom R:** Bi-monthly Cenergistic energy conservation program update meeting



UEM Weekly Wire



Top L: Gary Helton heat shrinks new elbow termination in E312. **Top R:** Carter Whitton giving a tour of the CUP Stormwater Harvesting system to Engineering Faculty and other stakeholders. **Bottom L:** Cody Hopewell performs inspection on air compressor at Cooling 1. **Bottom R:** John Nord and Bryan Poe use mobile thermal camera to check terminations in Pigman Hall transformer.

Accomplishments

Distribution

- Replaced stormwater harvesting filters
- Installed new pump on condensate receiver in Roach mechanical room
- Tested and turned condensate in at CTW
- Responded to steam blow out at Med Plaza mechanical room. Valved off 1/4" gauge line
- Responded to emergency locate at Corner of Conn Terrace and Elizabeth Street. Updated locate information in smart sheet
- Completed (4) 811 utility locates

Production

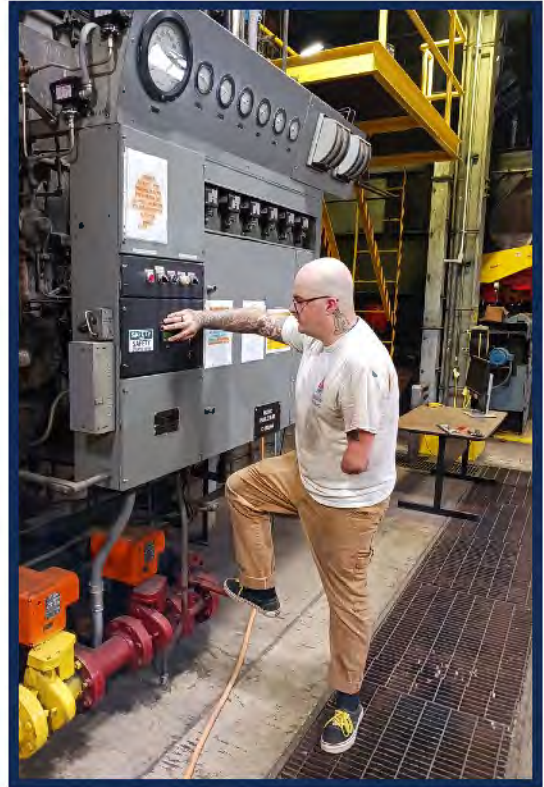
- **CUP:** Cleaned up the grounds around the stormwater harvesting system and showed the system operating to UK and city officials. Working on task list for PMs. Received a 20-ton salt truck delivery. Cleaned sight glasses on surge tank and DA. Recycling was in to pick up some old pallets. Electricians are working on tube cleaning system and about to finish up the project.
- **Med Center:** Kept Boiler #3 ready to run all week. Brought chiller #3B back online after tube cleaning.
- **Central Heating:** Opened #3 DA to inspect the spray nozzles and water trays. Replaced pilot drive assembly for #1 water softener. Assisted Cooling 2 with the LP steam repair. Putting the finishing touches on boiler #1 for inspection next week.
- **Cooling 1:** Did service checks on air compressors. Cleaned and reset tower water depth sensors. Roof project nearing completion, final coating in progress.
- **Cooling 2:** Started using the digital logs this week. There are a few bugs to work out, but transition is smooth so far. Replaced a 4" Y-strainer and several unions on the 1/3, 2/3 PRV stations that feed steam to Cooling 2, Taylor Education Building, & Dickey Hall.

Engineering & Admin

- Discussed energy usage and carbon footprint study with Gray Design faculty and students
- Various discussions with B&D to develop information for potential P3 RFP
- Hosted visit from Superior Boiler in advance of Central Heating upgrade
- Tour with UK Faculty and City officials for Stormwater Harvesting
- Review of Natural Gas Nomination tool and pending updates needed
- Support for Pigman Hall supplemental cooling project
- Scoping of potential improvements to nuisance poles on Lexington Ave
- Training session on PM Work Orders with Kevin Cheser
- Received certificate after helping pilot UK's Sustainable Office Certification program
- Welcomed Utility Systems Analyst Kaylee Adams to the team!

High Voltage

- Completed elbow terminations in E312 for new high voltage feed to Singletary
- Repositioned cables in E705 to protect them from new core drilling into vault
- Traced out feeds and duct banks outside Pigman hall for temporary cooling unit
- Meeting to discuss upcoming preventive maintenance documentation in SAP
- Monthly meter readings completed & logged
- All duct banks in stadium parking lot are now complete, along with new low voltage conduit
- New duct bank poured and final high voltage vault installed at HEB job site
- Work on duct banks continued at E705-2 and E705 for new Ag building on Farm Rd
- Verified low voltage conduit from E205-4 to Joe Craft center for future lighting project
- Completed inventory of high voltage cable



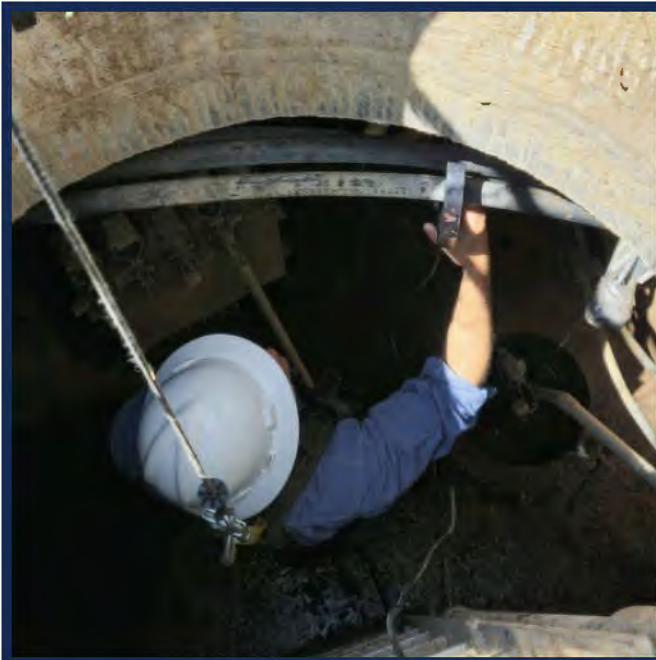
Top L: Cooling 2 was the pot of gold at the end of a rainbow Thursday morning.

Bottom L: Eric Connor opens non-return on boiler #3 at Med H/C plant.

Top R: Jack Howard starts boiler #3.

Bottom R: Jack Bullock and Keith Vorhoff of Cenergistic work with Steve Fornash and Tommy of AEC to troubleshoot a humidity issue at Anthropology.

UEM Weekly Wire



Top L: John Nord, Gary Helton, and Bryan Poe remove faulty low voltage breaker at the Med Center plant.

Top R: Mike Cummins and VanNess Johnson work on boiler 1 mud drum blow down. **Bottom L:** Bryan Poe clips onto a high voltage circuit to trace it out of E705-1. **Bottom R:** Jack Baysore teaches Robbie Hannabach and Azariah Saunier how to rebuild a sight glass for boilers.

Accomplishments

Distribution

- Completed (8) 811 utility locates
- Worked with Med Center staff at KY Clinic to fix steam leaks in Ky Clinic mechanical room
- Oversaw installation of new sanitary sewer manhole ring between Parking 2 and Mines and Minerals due to trip hazard being discovered
- Changed filters at stormwater harvest
- Replaced alternator on condensate receiver in B300 mechanical room at Med Plaza
- Isolated high-pressure steam to HPS030 from HPS029. Bled steam down for contractors to pressure test steam and condensate line from new vault on Washington
- Installed new 3/4" high-pressure steam trap line, 1" dirt leg valve, and 1/4" gauge line in Sloan mechanical room
- Worked with contractor to camera sewer line in CCC utility tunnel

Production

- **CUP:** Columbia Gas was in to test/calibrate gas meter at plant. Alpha was in to start repair work on boiler #1 economizer tubes. Completed RAA on boiler #2 and #3. Trane completed some PM work on chillers 1, 2, 3.
- **Med Center:** Staff worked with new hires and got computer logins to emails, dashboards and learning courses established. Worked with Nevin Gasparac and Steven Williams of JOI York to get the 10-ton York AC unit back online that cools the switchgear room. New Hires learned how to rebuild boiler site glasses. Worked on coal hopper dump door hook, reinstalled keyway key and set screw. Worked with High Voltage to get new chiller #1 contactor installed and brought the chiller online. Insulated temp probe for Chill water return to plant. Strengthened the base of the Chilled water system pump #1's coupling

guard. Cleaned muddy floor in the Chiller basement switch gear room. Cleaned AHU #2 coils and installed new filters.

- **Central Heating:** Electric Shop installed conduit for new O2 probe monitors on boilers 1 & 2. Replaced a section of the mud drum blow down line on Boiler 1. Hauled more coal to the stockpile from the overhead bunker.
- **Cooling 1:** Attended employee luncheon where Patrick Spickard was awarded 10-year service pin. Repaired faulty valve actuator solenoid on chiller #9. Chiller #3 oil sensor repair was completed, and it is now back in service.
- **Cooling 2:** Organized small brass/copper fittings. Electric Shop wired 5K cooling tower auxiliary sump pump motor. Worked on getting some of the outside air dampers open to get more air flow when exhaust fans are running.

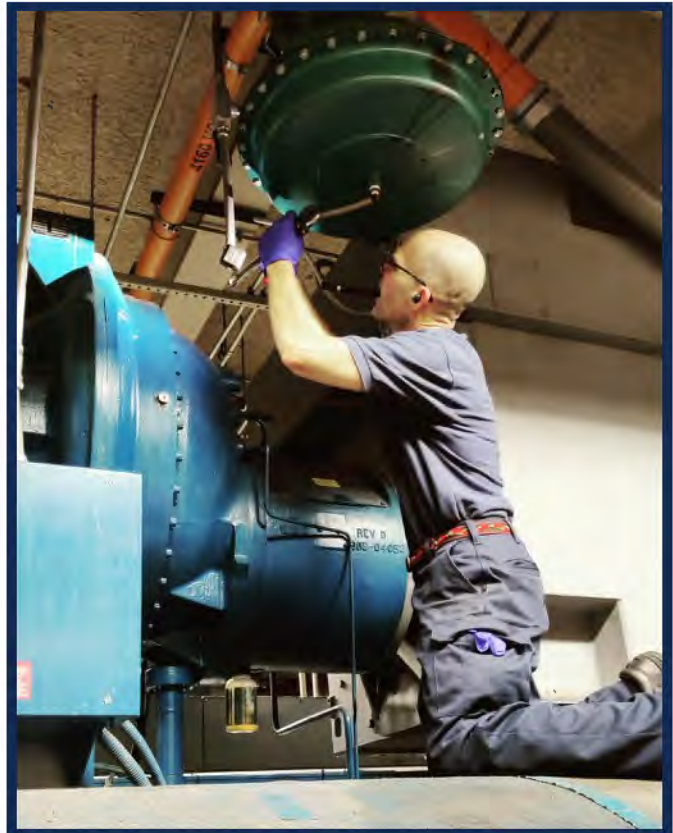
High Voltage

- Completed monthly meter readings and uploaded them into the meter sheet
- See-snaked and verified duct bank from E313 to E310
- 811 locates: S Limestone in front of hospital, Farm rd., Lexington Ave, along sidewalk at Bowman statue
- Pad installed for new breaker at sub 3, cable pulls started for medium voltage infrastructure project
- Worked with ABB Technician to remove faulty breaker and install refurbished breaker for chiller #1 at Med Center plant
- Met with contractor at Scovell job site to discuss placement of new pad mount switch
- Met with contractors at Barnhart job site, located capped off duct for contractors to tie into for new transformer
- Inspected new duct bank and conduits to new switch pad at HEB job site

- Met with contractor to discuss temp power to new dorm job site
- Verified 12kV switch stock at Vaughan 5
- Met with contractor at new Ag building to discuss upcoming outages
- High Voltage crews on site at this weekends football game

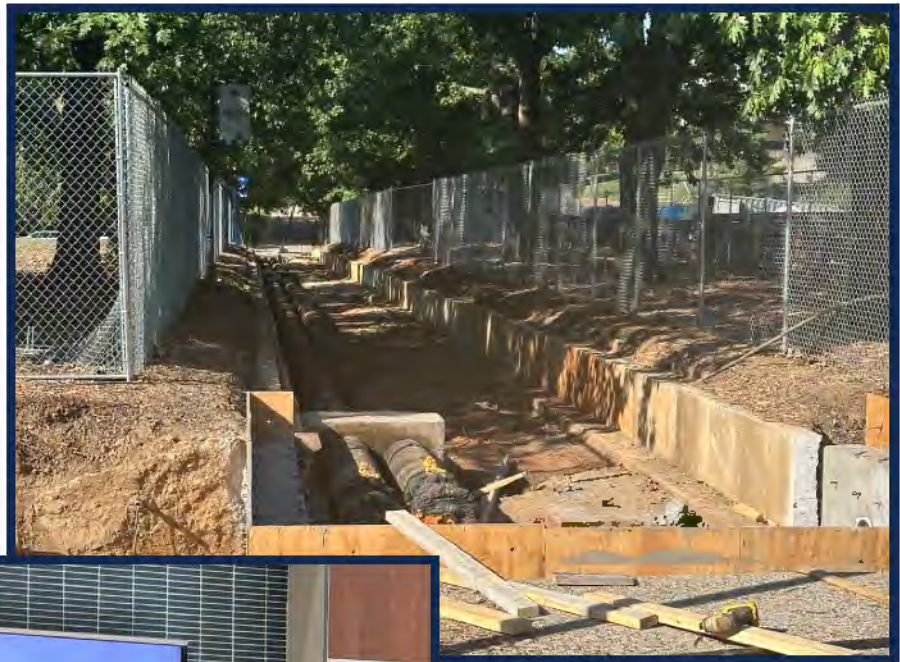
Engineering & Admin

- Finalized July steam and chilled water billing
- Continued adding BAS trends and updating points for cooling plant equipment
- Narrowing down field of 21 candidates for electrical engineering intern interviews
- Shared conceptual Cooling #2 stormwater harvesting project idea with Biosystems and Ag Engineering senior design class
- Ongoing project review meetings, including Funkhouser, Washington Drive, and others



Top: Henry Huffines replaces solenoid. **Bottom L:** New hire Jared Christopher learning about the weigh larry on the coal bunker. **Bottom R:** Matt True and Jack Baysore fabricating a new safety guard for VFD pump #3.

The northernmost section of the "Panama Canal" sidewalk between Patterson Drive and Avenue of Champions has been opened up to work towards upgrading and expanding steam and chilled water lines feeding north campus.



John Nord is congratulated by Graham Gray for his 10-year anniversary at UK. John currently serves as the High Voltage supervisor and is a tremendous asset to the UEM team.

An overnight car accident on Waller Avenue near Elizabeth Street led to an extended road closure on Friday morning as KU worked to repair the circuit. Several campus facilities were intermittently impacted by the power outage, and certainly many UK employees and students were impacted by the resulting traffic jam.



UEM Weekly Wire



Top L: John Michael Covington (ITS GIS), Eric Paullin, Kevin Hough (ITS GIS), and Graham Gray on site for a drone inspection of the new north campus utility infrastructure. **Top R:** Jack Howard cleaning MC Chiller 3A's evaporator. **Bottom L:** Bryan Poe and Will Asher inspecting 12kV wire during a wire pull. **Bottom R:** Chad DeRossitt hauling away ash from Central's silo.

Accomplishments

Distribution

- Completed (5) 811 utility locates
- Shut and locked out high-pressure steam valves in Seedhouse basement and HPS218 feeding the Barnhart building. Bled steam down for contractors to install new piping in the mechanical room and outside the building
- Worked with central plumbing group to install all new isolation valves on the high side and low side in the Barnhart mechanical room
- Worked Saturday domestic water outage for Main building and installed (4) new 2" isolation valves in the water meter pit
- Responded to Sunday issue with condensate still not being drained in piping coming from Barnhart. Isolated main condensate valve in Plant Science tunnel and dumped the Plant Science building to get water to stop. Drained remaining condensate in the line after valves held
- Replaced bad 4" 150# condensate valve in HPS218
- Assisted GIS with locating fiber optic duct bank at Healthy Education Building job site
- Pumped out HPS218 and installed new sump pump
- Shut and locked out 8" high-pressure steam valve in Plant Science tunnel to HPS218. Bled steam down for contractors to install pressure test skillet on the main steam valve

Production

- **CUP:** Alpha was in to start repair on boiler 1 economizer. Installed a trap door for future RAA testing cables to prevent having to leave doors open during testing. Took resin samples for Chemtreat to check softeners at plant. Started to diagnose rainwater issues with economizers.
- **Med Center:** Worked with Lagco to install new feedwater valves on boilers 3&4. Made

new bracket for the coupling guard on system pump #3. Worked with DJ Enterprises to replace fuel tank sensors. Got boiler #4's new VFD fan drive working with the supply contractor and Larry White.

- **Central Heating:** Started emptying the coal ash silo. Railing around roof of new DA finished. Demo of concrete pad on loading dock began.
- **Cooling 1:** Lightning rods system being added to the old side roof after roof construction. Air compressor and air dryer leaks were located, repaired and units were returned to service. #9 chiller chilled water pipes were re-insulated after condenser pump project.
- **Cooling 2:** Restarted chiller 5 after shutdown for cold weather over the weekend. Thanks to Brian Pippen, John Nord and crew, and JCI, for helping with an electrical issue that caused the chiller not to start after shutdown. Got level probes hooked up to 5k ton auxiliary sump pump. Replaced several old/bad gauges on chillers 3 and 4.

High Voltage

- 811 locates on Farm rd, Scott street, memorial coliseum and ave of champions
- Assisted in Dixon E800-1 to sub surface switch, from sub surface switch to stadium switch gear
- Attempted to pull wire with Elliot from E705-3 to E705-2, discovered issues with wire and had to abort
- Assisted with startup of Chiller 5 at Cooling 2
- Team attended discussion led by Jeff Zumwalt of University of New Mexico to discuss recent outage at UNM
- Received left over wire from Elliot and loaded up wire for them
- Assisted Dixon electric in measurements to ensure proper installation of switch at stadium

- Outage discussion meeting for AG project
- Updated switch positions for 12kv line drawing

Engineering & Admin

- Progress on updating meter & billing process for chilled water and steam.
- Site visit and overview meetings with Civil and Mechanical engineering capstone groups for Stormwater Harvesting improvements.
- Support for RFP development for upcoming utility plant expansions.
- TEAMS meeting with Jeff Zumwalt of the University of New Mexico to discuss their recent power outage and lessons learned.
- Vendor meetings with Frew Process Group, Air Equipment Company, and IC Thomasson.

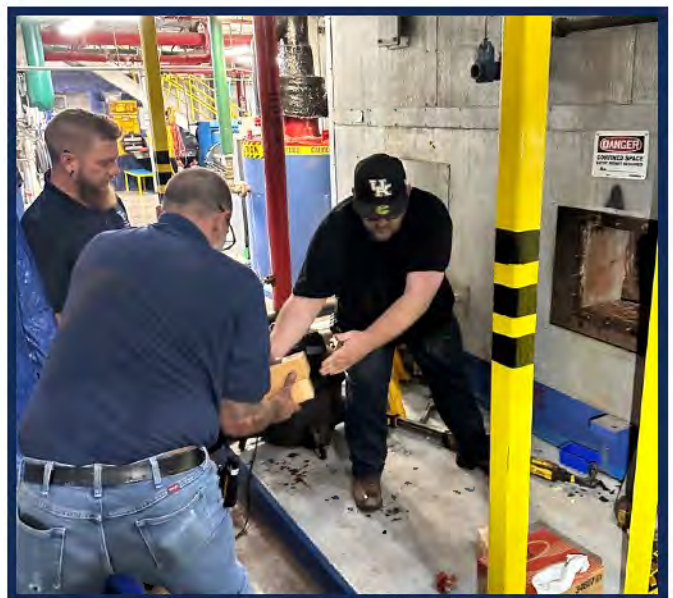
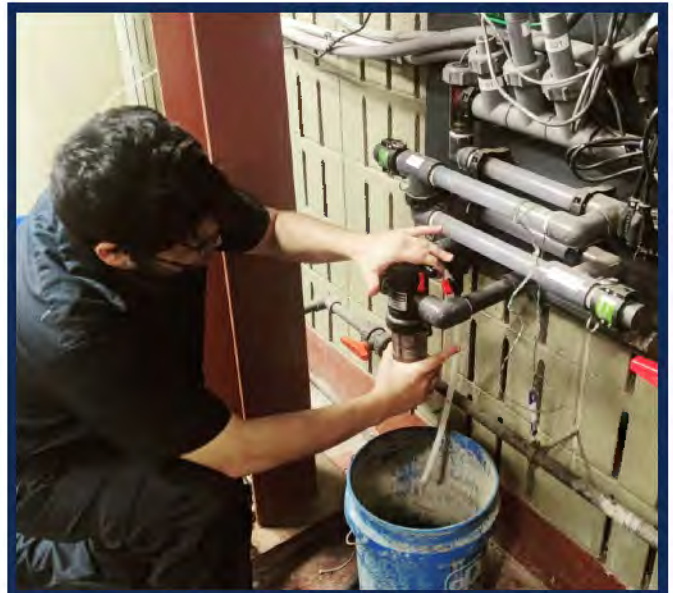


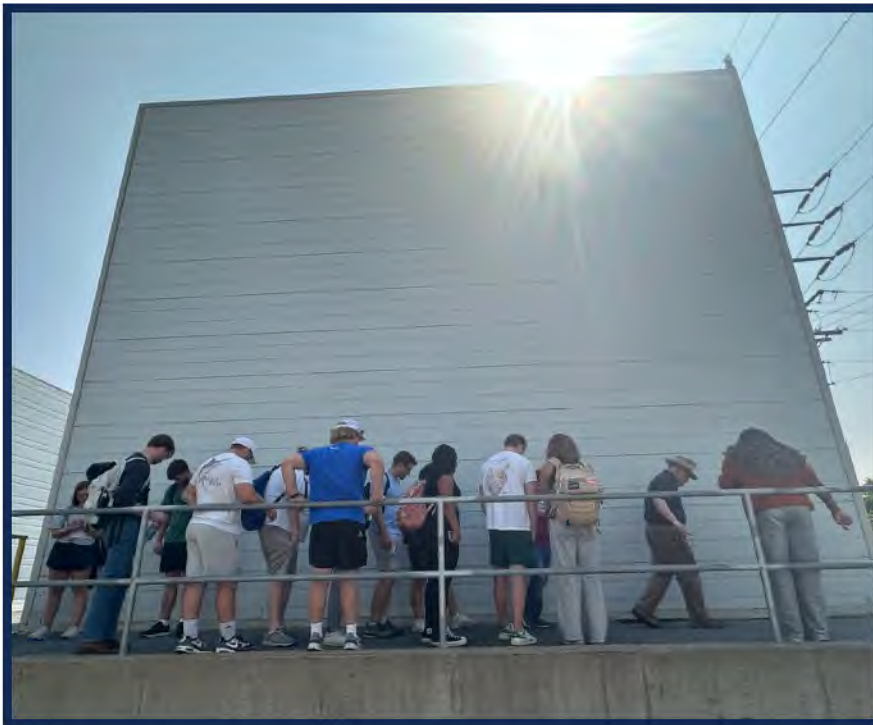
Above: Jack Baysore tidying up outside the Med Center Plant.

Top R: Jodie Harris of CUP installs a trap door for RAA testing cables.

Middle R: Cody Hopewell doing maintenance on water treatment system.

Bottom R: Will Tyree, Kelly Cronk, and Jon Minton installing fire brick to seal up CUP's #1 boiler firebox.





Top L: Gary Helton unloads wire from Elliot while Scott Barnes and Mike Smith offer moral support. **Top R:** Chris Keely and Chad DeRossitt contemplating life and plans for unloading the ash silo. **Bottom L:** Graham Gray gives tour of CUP cooling tower & stormwater system to Civil Engineering senior design students. **Bottom R:** Matt True of Med Center fabricating a bracket of a pump coupling guard.



Top L: John Nord's snapshot of Friday morning's rainbow over the Singletary Center. **Top R:** Chris Keely caught the rainbow over Central Heating's boiler stacks. **Bottom:** With the help of ITS Infrastructure Operations GIS, UEM and CPMD gathered images of the new north campus utility infrastructure being installed in support of the Memorial Coliseum renovation. The drone images are then integrated into a GIS software model for future reference.

UEM Weekly Wire



Top L: Orion Saunier sharing information about air monitoring for confined spaces with an engineering senior design team. **Top R:** John Nord and Bryan Poe operate a breaker at substation #3. **Bottom L:** Scott Barnes and Shelby King operate an overhead disconnect ("knife switch") at substation #3. **Bottom R:** Jon Minton and Will Tyree taking old DA pump out for service.

Accomplishments

Distribution

- Completed (6) 811 utility locates
- Responded to potential steam leak between Mines and Minerals and Boone Faculty Club. Discovered condensate main had failed and was dumping water onto a high-pressure steam main line. Dumped condensate receivers at Willy T. Young, Mines & Minerals, and Boone Faculty Club. Isolated and locked out condensate main in HPS107
- Stayed after hours for domestic water outage for Plant Science. Isolated domestic water valve in water meter pit and direct bury valve on Farm Road. Bled pressure off and oversaw installation of new water main feeding the building. After work was completed, turned water on and flushed the building
- Isolated chill water valves in Seedhouse basement, CW312, and direct bury valves outside of EQMC. Drained water and bled pressure off at Barnhart for weekend chill water outage to abandon existing pipe
- Energized HPS from Plant Science tunnel through HPS218 to Barnhart building
- Filled chill water lines supplying Barnhart building after weekend outage to tie in new pipe was completed. Bled air out of the system in the building after lines were filled
- Insulated 6" high-pressure steam bypass line in HSRB mechanical room

Production

- **CUP:** Applied fresh caulking around all extruding piping on roof, to prevent any roof leaks. Working on preventing rainwater from entering boiler 1 stack, contractors will be in on Monday to address issues. Removed faulty feedwater pump from the old DA tank and sent it to City Electric to rebuild the pump and motor. Working on Boiler 1 to get it ready for boiler inspection on the Sept 24th. Finney is

scheduled for Monday to start working on stormwater tie in for Chemtreat system.

- **Med Center:** Put Med Heating Plant boilers 3 and 4 back in production so boilers could be taken down for annual inspections at CUP and Central. Cleaned up storm inlet system and entrance drive for the Med Plant coal pile. Continued cleaning evaporator tubes on chiller 3A. Worked with City Electric to repair feedwater pump seals. Repaired O2 sensor on #4 boiler.
- **Central Heating:** Locked out and Tagged out Boiler 2. Began the process of getting boiler 2 ready for inspection. Continued coal removal from storage bunkers. Repaired the water box door on the older operational DA. Worked with new employees on fundamental elements of operations in the plant. Worked with concrete contractors on tunnel repair project.
- **Cooling 1:** Contractors finished installing lightning rod system to new roof. Began prepping B-side floor for next phase of painting. Collected serial numbers and other related data for updating PM Work Orders in SAP. Found and repaired leak in Chilled water pressure sensor line.
- **Cooling 2:** Safety Railing at Cooling 2 was installed on the lower roof.

High Voltage

- Responded to outage at sub 3 on Tuesday morning caused by squirrel, power was restored in under an hour.
- A second smaller outage due to a raccoon was addressed on Wednesday for Stadium View facilities.
- 811 locate from E705-1 into plant science
- Assisted Dixon Electric on wire pulls from Kentucky Clinic to Parking 6
- Identified, spiked, and prepared old cables to be removed in E909, E910, E911, E407



Top L: Various lab and facilities personnel participated in a UKULELE sponsored training about maintenance of ultra-low temp freezers for sustainable cold storage.

Top R: Brian Phippen and Steve Drury review drawings to solve an issue with electrical supply.

Middle L: Jodie Harris sealing pop-off vent flashing on the CUP roof.

Bottom R: Contractors before & after pouring concrete in the Peterson / Central Heating utility tunnel repair.

- Confirmed clear path for cable pull from E410 to Critical Care switchgear
- Received and staged 12kV switch at Vaughan warehouse
- Met with utilities engineers and engineering student senior design team “SOS” (“save our squirrels”) at Sub 1
- Replaced old meter in sub 2 metal clad gear with engineers Ron Mercer and Brian Pippen
- Pumped water out of E120-1 and E907-2
- Replaced busted check valve and bad pump in E907-2
- Crews staffed for football game this weekend

Engineering & Admin

- Support for final development of plant expansion RFP documentation.
- Response to and development of incident report for Sub 3 and PavA power outage.
- Site visit with senior design teams for CUP stormwater harvesting filter change and startup.
- First review for Chandler Expansion site logistics for utilities tie-ins, demolition, and rebuilding to support healthcare campus evolution.
- Vendor visit with Adams Valves reps.

Top R: Cooling 1 lighting rods being installed by contractors. **Middle R:** Ron Mercer and KFI's Gerry Donahue discuss plans for expansion of substation #1 to accommodate future campus growth.

Bottom R: Engineering student senior design group “SOS” gets an initial tour of substation #1 from Ron Mercer and Steven Hughes **Bottom L:** UEM’s “Least Valuable Players” of the Week. Suzy Squirrel from Tuesday and Randy Raccoon from Wednesday.



UEM Weekly Wire



Top L: Mike Smith operating 12kV switch to permanently disconnect old feeder to Scovell Hall. **Top R:** Robbie Hannabach checking out the Med Center Plant coal pile. **Bottom L:** Spencer Parker opening wind box inspection plate at Central Htg. **Bottom R:** KU contractor replacing fuse to restore power to Eastern State Hospital.

Accomplishments

Distribution

- Completed (6) 811 utility locates
- Responded to high-pressure steam leak at Ag South. Got steam outage for the building and isolated steam valve and bled steam down in Ag South and EQMC. Replaced broken 1 1/4" nipple on steam train. After repairs were made, energized steam back to both buildings
- Met with contractors on-site at new UK Cancer building to discuss placement of temporary water meter for domestic water at job trailer
- Worked with electrical contractor at HPSO30, P.O.T tunnel, and HPS210
- Tested and turned condensate receiver in at HPSO30
- Pumped out CW313 to check valve arraignments feeding Plant Science utility tunnel
- Installed new seal on condensate receiver at Miller Hall
- Replaced fuses and repaired motor on condensate receiver in Roach mechanical room

Production

- **CUP:** Worked with Andrea Smith to find solutions on PEMS system failures. Drained DA to service and clean inside of tank. Boiler 1 passed inspection along with starting the process to get it back together. Alpha is in to continue work on boiler 1 economizer as well. Working with Finney to install Chemtreat chemical pumps for storm water system. Plant heaters have been installed and insulation will be finished up soon.
- **Med Center:** Both gas Boilers are ready to run if needed. Installed new Vent piping and flashing on the Old side DA steam vent. Discovered the mysterious filling of boiler #4 while it was offline, turns out the continuous

blowdown and bottom blow have a connection valve that was unknowingly opened. Worked with Distribution and found hard water that was returning the plant south campus return line.

- **Central Heating:** Had a successful annual state boiler inspection on boiler 2. Working on a few touchup items in the firebox and steam drum before getting boiler 2 ready to put back into service. In preparation for the upcoming tours, we are cleaning the plant after removing about 200 tons of coal from the overhead storage bunker.
- **Cooling 1:** Shut down chillers 3 & 6 when high heat was sensed in the electrical gear for the machines. Worked with our High voltage team to isolate the problem. High voltage is in process of getting a new breaker to get the machines back up and running. The lightning protection contractor has nearly finished installing the lightning protection on our new roof.
- **Cooling 2:** Replaced the main air dryer for the plant. Kept all water separators clear of build-up-up. Finished installation on the roof railing/ladder project. Installing new inline water filter to feed relocated ice maker.

High Voltage

- Cleaned dirt and debris from E122
- Verified conduits from E304 to E305/E303
- Held department cable and elbow termination training
- Continued work on plant one-line drawings for update to arc flash study
- Annual Pavilion A switchgear testing (also replaced faulty UPS for switchgear controls)
- Contractors removed old cables from E910, E911, E909, and E407 to clear paths for new cable installation
- Responded to outage at Eastern State Hospital to provide support to hospital

Engineering & Admin

- Completed billing of steam and chilled water, along with initial deployment of updated chilled water billing sheet.
- Extended discussions surrounding upcoming emissions growth and Title V permit changes.
- Review of Central Heating boiler project upgrade design documents and RFP for early purchase on boiler.
- Keren Keener presented a poster about the CUP Stormwater System and watershed model at the Kentucky Water Resources Annual Symposium in downtown Lexington.
- Site visit to CUP Stormwater Harvesting and Cooling 2 for Biosystems and Ag Engineering Senior Design team.

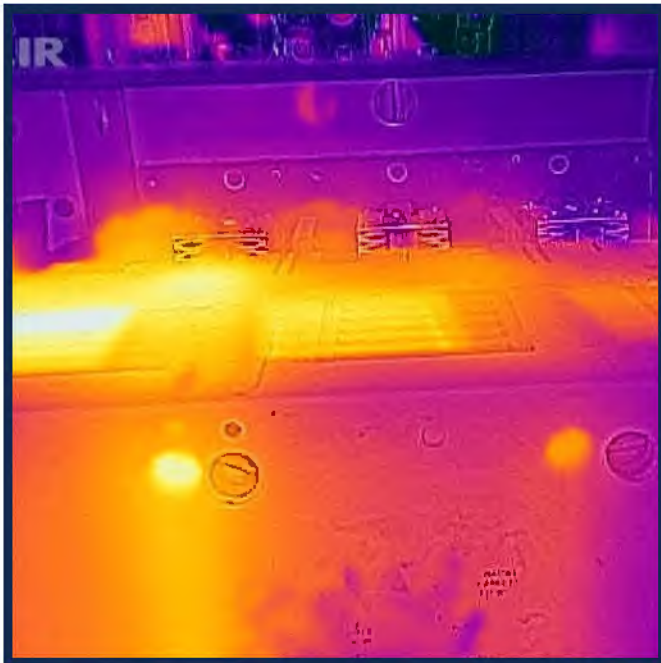


Top Left: The new and improved vent for the old DA tank at the Med Center plant. **Right:** David Derenge clearing the automatic blowdown at Cooling 1.

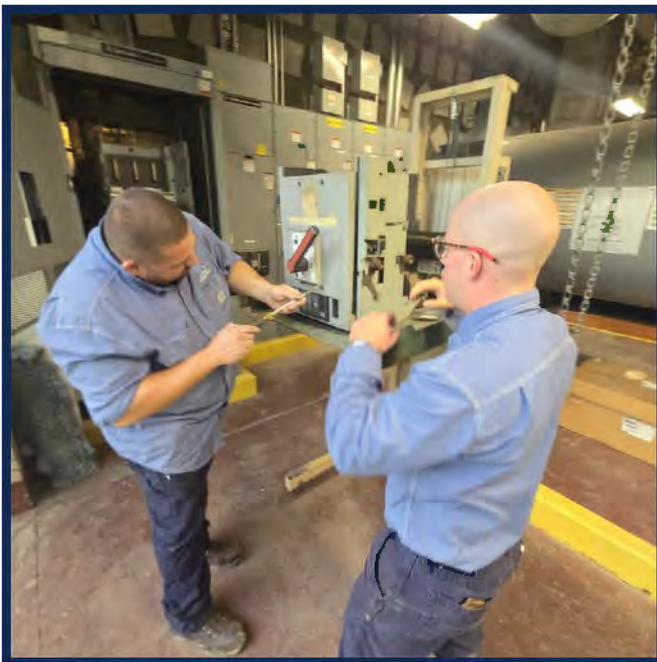
facilities personnel and coordinate communication with KU

- Checked status of low voltage power in vaults at health education building job site
- Responded to call from Henry Huffines at Cooling 1 who was concerned with heat and smell coming from secondary breaker for chillers 3 and 6; took temperature readings and removed breaker from service, upon further inspection found breaker was near point of failure
- 811 locates at Washington Ave at college of health building
- Crews performed scheduled power outage at 6am Thursday to separate power feed to Scovell and Erikson hall, feed to Scovell was permanently removed, power was restored promptly to Erikson
- Crews returned to Cooling 1 to perform thermal scans of 5 similar breakers to assess condition

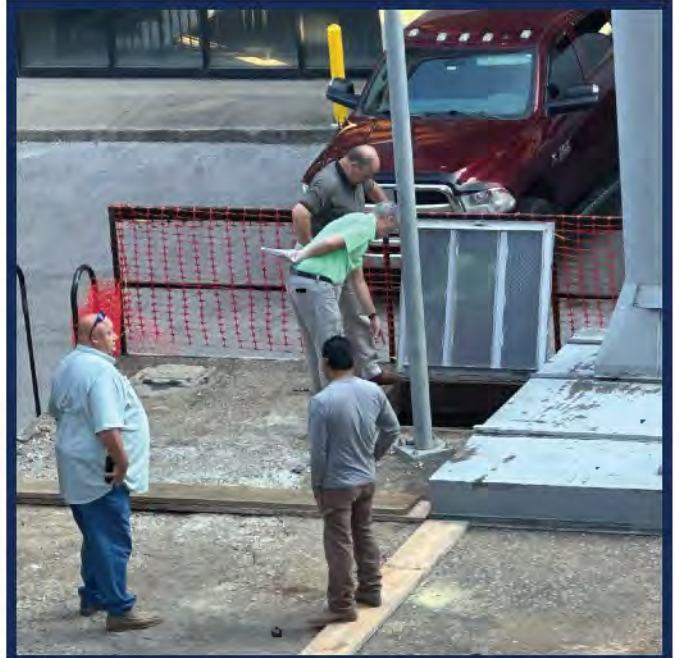




Top L: Not to be confused with Hurricane Helene on radar—thermography of a large chiller circuit breaker in Cooling 1 revealed unusually high and unbalanced temperatures. Shoutout to plant staff for noticing a potential issue and alerting the high voltage team so that the breaker could be safely removed from service before causing any damage to surrounding gear! **Top R:** The high voltage team removing the suspicious breaker from its cabinet. **Bottom R:** Mike Smith and Will Asher opening the breaker for inspection after removal from service.



UEM Weekly Wire



Top L: Gary Helton talks with local Southwire rep about blemished CPE wire jacket. **Top R:** The High Voltage team works with Dixon Electric on a wire pull at the University/Cooper intersection. **Bottom L:** Robbie Hannabach and Eric Conner working on pump seal. **Bottom R:** Mike Duffy and PM Boyd Gambrel make a game plan to protect steam infrastructure while repairing concrete loading dock and tunnel.

Accomplishments

Distribution

- Completed (4) 811 utility locates
- Isolated high-pressure steam late Friday afternoon to BBSRB in old spline tunnel for weekend outage. Bled steam down for work to be completed in the penthouse
- Energized high-pressure steam back to BBSRB Monday morning
- Energized high-pressure steam from HPS053 through HPS031, HPS030, and HPS029. After steam was energized, opened, and equalized high-pressure steam valve in HPS029
- Isolated high-pressure steam valve in HPS031 and HPS053 after steam leak was discovered. Bled steam down and fixed steam leak on 3/4" nipple. Re-energized steam line and equalized the line
- Shut and locked out high-pressure steam valves in HPS217 and HPS043. Bled steam down for contractors to move steam line from the footprint of the new Healthy Education Building
- Worked with contractor to excavate water main behind Kroger Field to repair leak. While the pipe was exposed, installed yard hydrant for watering of new sod around the parking lot
- Installed all new electric in CW099

Production

- **CUP:** Finney is starting the heater installation for boiler side of plant. IAC was in to continue working on air compressor issues. Planning the installation of a low control air-pressure alarm that will alert operators when control air pressure is dropping. Discussed new uniform plan. Working with Trane on getting new control panels for chillers 2 & 3.
- **Med Center:** Worked with contractor on drift eliminator design/proposal for the large four cell tower. Vacuumed chiller side of plant, mopped stairs and bathroom. New coupling

on #1 system pump, checked coupling on #5 condenser pump. Repaired seal flush line on same pump. Positioned new feedwater valves near boilers, trouble shot new VFD. Replaced sheared roll pin on condenser water valve handle on #5 condenser water line. New hire attended Tridium class. Shane Woodrum celebrates 15 years of service this month at Med Center.

- **Central Heating:** Hauled more coal to the stockpile. Shut down 16-inch HPS line to ensure a safe work area for the contractors working on the loading dock area.
- **Cooling 1:** Worked with Finney and Heco to get chiller #9 condenser pump motor set, pump sealed, and motor wired up. Chiller #9 was put into operation. Verified water meter pit valves were all open.
- **Cooling 2:** Staff have been organizing the plant and tools. Planning on shutting the 5000-ton machine down Saturday night with possible record low temperatures forecasted.

High Voltage

- 811 locates completed at Plant Science/Ag Research job site, Avenue of Champions/Panama Canal steam project.
- Medium Voltage Infrastructure project continued with cable pulled in from E703 to new vault E800 along University Dr. HV crews assisting with cable pull noticed issues with cable outer jacket, Utilities System Manager Steven Hughes inspected onsite. Called area rep for Southwire, who came to the job site for inspection of cable.
- Met with contractors from the HEB construction project, building occupants and other UK FM personnel to discuss plans for an upcoming power outage at HKSR-Bosomworth bldg.

- Met with contractors from the Ag Research project to discuss upcoming cable pulls and outage planning for Plant Science.
- Walked route of a new duct bank project at Singletary Center w/potential contractors to discuss project scope. Waiting on quotes.
- HV Crew oversaw installation and wiring of pump motor at Cooling 1.
- Identified conduit path from E703 to E702 , verifying clear path for upcoming cable pull.
- Crews worked to document aging Orangeburg conduits on campus, identifying problem areas in need of replacement. Crews ran the conduit camera in duct banks in E305 and E306 feeding into Old Fine Arts and Sturgill Development Center.
- Congratulations and thank you to Roy Rowlett and Christopher Stewart for 19 years of dedicated service at UK! Here's to 19 more!



Engineering & Admin

- Received feedback from first draft of "PM How To" document developed for UEM.
- Interviewed 5 students for the open Electrical Engineering Internship position.
- Fall kickoff meeting for UKULELE program with plans for how to impact energy efficiency and safety in the lab environment.
- Developed draft proposal for funding required for FM Preventive and Predictive Maintenance program implementation.
- Coordinating with OSF construction team to replace the street lights along Sports Center Drive.
- Initiating August chilled water and steam billing process.



Top: Steven Hughes inspects cable during installation. **Middle:** A sample view of the new control panel for CUP Chillers 2 & 3. **Bottom:** Contractors finish installation of C1 Chiller 9 Condenser pump.

Employee Shoutout!

Fun Fact:

19 years ago both Roy Rowlett (left) and Christopher Stewart (right) were hired on the very same day. That has worked out well for us here at Facilities Management. Both have extensive knowledge of the electrical systems of campus and are key players in our High Voltage team today.



Patrick Spickard (left) recently celebrated his 10 year anniversary with UK. Patrick has spent time in both the heating and cooling plants and currently works night shift at Cooling 1 keeping campus running smoothly while most of us sleep. Outside of work, Patrick is a dedicated husband and father and has turned his hobby into a side-business called "Morphing Time Exotics". His company provides reptile education, sales, and photo op services. We appreciate your 10 years of dedicated service!

APPENDIX A

Public Education and Outreach

Facilities Management Training Newsletter

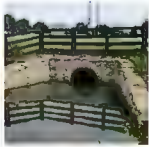
Unconscious Bias Update

Facilities Management will **no longer mandate** Unconscious Bias training for new employees. This decision aligns with President Capilouto's recent campus-wide e-mail on August 20, 2024, where he stated, "We will not mandate diversity training centrally or at the college or unit level."

While Unconscious Bias classes are no longer required, anyone who is interested may still participate in the remaining scheduled virtual sessions. Access the available classes [here](#). Please note these classes are now optional and are subject to cancellation.



Water Quality Training Reminder



Every year (and upon hire), Facilities Management employees are required to take web-based training to ensure compliance with regulatory requirements for protecting groundwater and stormwater.

- **General Stormwater Training** **IS REQUIRED FOR ALL FACILITIES MANAGEMENT EMPLOYEES** and can be accessed on MyUK Learning [here](#).
- **Spill Prevention Control & Countermeasures and Groundwater Protection Plan** is required for all Grounds and Garage employees as well as any employees who handle oil, pesticides, fertilizers, or deicing agents. Training can be accessed on MyUK Learning [here](#).

Supervisors are encouraged to tailor individualized safety quick tips to the tasks performed by their teams and present them ahead of peak seasonal operations. For assistance with creating these quick tips, or for additional information on these courses, visit the Environmental Quality Management – Water Quality website [here](#) or contact Kevin Lewis (kevin.lewis@uky.edu) or Nathan Weber (nathan.weber@uky.edu).

Supervisor or manager approval is required for all trainings.

eComm for UK Employees (Virtual)



Virtual eComm training is offered for all UK employees on a monthly basis. UK Facilities Management's Capital Planning, Design and Construction area uses eComm to electronically manage information for UK construction projects. This includes design documents and construction plans. The eComm program is web-based and easy to learn. This course is recommended for UK employees who are new to eComm or those wanting to learn more about it.

Date	Time	Register
9/17/2024	9:00 am – 10:00 am	Click here to register for this session
10/15/2024	9:00 am – 10:00 am	Click here to register for this session

Supervisor or manager approval is required for all trainings.

NEW EMPLOYEE TRAINING: Facilities Customer Service and Communications



Facilities Customer Service and Communication will be offered in person. All new employees as well as any Facilities Management employee who has not yet taken this training is required to sign up to attend.

Date	Time	Location	Register
10/9/2024	8:00 am – 11:00 am	Student Center	Click here to register for this session

Supervisor or manager approval is required for all trainings.

September is Suicide Prevention Awareness Month



September marks Suicide Prevention Awareness Month, with a special focus on Construction Suicide Prevention Week from September 9-13, 2024.

UK Human Resources is offering a free online training course designed to equip our employees with life-saving skills. This research-backed program is called Question, Persuade, and Refer (QPR), simplifying suicide prevention into three easy-to-learn steps with a clear mission: reducing suicidal behaviors and saving lives through innovative, practical, and proven training.

If you need mental health assistance, please contact UK's Office of Work Life at <https://www.uky.edu/hr/work-life-and-well-being/mental-health> (if the website redirects, click on Work-life and Well-being and then click Mental Health), the national suicide and crisis lifeline at 988, or 911 for emergencies.

Access the QPR web-based training on the Office of Work Life website above. Supervisor or manager approval is required for all trainings.

Fall 2024 Employee Education Program



Employees taking classes at UK this semester using the Employee Education Program (EEP) are required to send a copy of your EEP form to Jen Smith at jennifer.smith1@uky.edu for your Facilities Management Personnel file.

For questions about or help with the EEP program, contact Jen Smith at (859) 218-3159 or in Peterson Service Building Room 214.

BENEFITS CORNER: UK Working Parents Network



The Working Parents Network at the University of Kentucky offers valuable support and resources for employees balancing work and parenthood. This network provides a space for parents to connect, share experiences, and access helpful tools for managing family and professional responsibilities. It offers monthly meetings, workshops, and discussions on topics like child care, work-life balance, and parenting challenges. New parents may find information on campus lactation locations, flexible breaks, and insurance-covered pumps. You can even connect with a UK student to help with occasional caregiving for children and pets via the Big Blue Family Care referral service. For more information, visit <https://hr.uky.edu/work-life-and-well-being/working-parents/working-parents-network>.



For more information, contact:

Jen Smith

Facilities Training and Development Specialist

Peterson Service Building Room 214

(859) 218-3159

jennifer.smith1@uky.edu

APPENDIX A

Public Education and Outreach

UK Now Articles

Celebrate Earth Day at UK

By Morgan Luster Monday



Kenton Sena hosted a tree-planting for his ecology of middle-earth class and environmental and sustainability studies on April 16, 2024. Mark Cornelison | UK Photo

LEXINGTON, Ky. (April, 22, 2024) — Today marks the 55th annual celebration of Earth Day, the worldwide event that raises awareness of the need to protect Earth’s natural resources for future generations.

University of Kentucky’s Campus Sustainability Officer Shane Tedder says that although sustainability is a year-round effort for UK, during April the university hosts various environmentally focused events that bring the community together.

“Earth Day is a catalyst and inspiration for organizations both on campus and in the community to host events that highlight and promote environmental awareness and environmental stewardship. It’s great opportunity for everyone to be a part of sustainability-related solutions,” Tedder said. “In the two decades that I’ve been here, I have seen sustainability shift from a primarily student driven priority to something that is really fully integrated across the various activities of the university.”

The remaining [UK Earth Month Events 2024](#) include litter clean-ups, film screenings, terrarium workshops and more. The UK and Lexington communities are invited to take part in all of these

events.

"While I strive to celebrate and appreciate the Earth each and every day, I believe that Earth Day can be an important tool in creating the spaces people need to start getting involved," said Callie Dickman, director of sustainability for the UK Student Government Association. "I am excited to be planning a showing of Wall-E on campus for Earth Day, as well as a Picnic for the Planet later that week. The picnic will feature a climate card game that walks people through a conversation about climate change, and I think Earth Day is all about creating those safe spaces for people to talk openly about their fears and hopes around climate to find resiliency."

Events can also be found in the Lexington community [here](#).

"Earth Day is a bit of a phenomenon and has certainly grown over the last five and a half decades to be a global rallying point for people to tune in on environmental issues," Tedder said. "I think it still has a place of importance as being a day that can highlight that."

Outside of the Earth Day celebrations and events, UK Sustainability is working on an updated sustainability plan. The intent is that it be released to campus for review and carried out through 2030.

Guiding principles of the plan include:

- Making sustainability a part of the student experience
- Reinforcing the university's commitments to our people
- Decarbonizing our operations
- Becoming a zero-waste campus
- Modeling environmental excellence

Additionally, student-run groups, such as the Energy Club, have been working to receive funding to install additional solar picnic tables to go on Alumni Commons.

Visit UK's sustainability blog [WholeSum](#) for updates on all Earth Day events happening this month.

As the state's flagship, land-grant institution, the University of Kentucky exists to advance the Commonwealth. We do that by preparing the next generation of leaders — placing students at the heart of everything we do — and transforming the lives of Kentuckians through education, research and creative work, service and health care. We pride ourselves on being a catalyst for breakthroughs and a force for healing, a place where ingenuity unfolds. It's all made possible by our people — visionaries, disruptors and pioneers — who make up 200 academic programs, a \$476.5 million research and development enterprise and a world-class medical center, all on one campus.

*In 2022, UK was ranked by Forbes as one of the "Best Employers for New Grads" and named a "Diversity Champion" by INSIGHT into Diversity, a testament to our commitment to advance Kentucky and create a community of belonging for everyone. While our mission looks different in many ways than it did in 1865, the vision of service to our Commonwealth and the world remains the same. We are the University **for** Kentucky.*



Radtke honored as University Research Professor

Rebekah Radtke's research explores the role of design in creating sustainable climatic futures in Eastern Kentucky and beyond. [MORE >>](#)

UK HIGHLIGHTS

[2024-2025 Student residential parking permit sales](#)

[2024-2025 commuter permit renewal](#)

[Alumni Association clubs honored for outstanding contributions](#)

[UK faculty advocate for a wide, diverse knowledge curation in chemistry](#)

[Sunshine Day delivers memorable day for special needs youth](#)

[Social Work faculty advances research on digital postpartum support](#)

CAMPUS EVENTS

[UK HR Health and Wellness: Radical Self-acceptance](#)

July 11 | 3 p.m. | Zoom

Did you know?

Plastic Free July is a time dedicated to teaching people about sustainability and challenges people to avoid plastic for a month. UK Passes on Plastic is a campaign aimed at reducing plastic pollution on campus.

[Read more about UK POPs here.](#)

Read more news at UKNow >>

Campus News | Student News | UK HealthCare | Research
UK Happenings | Arts & Culture | Professional News

Blogs | Media Statements | COVID-19 Response



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APPENDIX B

Public Involvement and Participation

Included Documentation

Water Week 2024

Alumni Drive Tree Planting

CE 429 Central Utility Plant Senior Design Class Submittals

UEM Intern Stormwater Case Study

APPENDIX B

Public Involvement and Participation

Water Week 2024



Menu



[Home](#) / Page not found

Water Week

March 16 – 23, 2024

Water, water, everywhere – though oftentimes unseen! Lexington will celebrate the fifth annual Water Week this spring. Kentucky has over 90,000 miles of surface rivers and streams. Natural, underground waterways are also present in much of the state, including in Central Kentucky.

Water Week is sponsored by the UK College of Agriculture, Food and Environment, the City of Lexington and local watershed groups.

Saturday, March 16

Join us in celebrating the importance of water and our role in protecting it. It's a week of activities for all ages, abilities and interests.

Creek Critters

Junior Naturalist

Everybody Lives in a Watershed!

Take a Hike at Hisle

Death with a Doula

Water bugs

Waters of Idle Hour

Rain garden & streamside buffer workshop (with mini grants up to \$650 available!)

Contact

Environmental Services

200 E. Main St.
Lexington, KY

Hours:

Monday – Friday: 8 a.m. – 5 p.m.

✉ livegreen@lexingtonky.gov

☎ (859) 425-2800

f Facebook

🐦 Twitter

📷 Instagram

10 a.m. – noon
835 National Ave.

Host: Bluegrass Greensource

Bluegrass Greensource is hosting a Rain Garden and Streamside Buffer workshop and giving away mini grants of up to \$650 for Lexington residents. Workshop attendance is required to be eligible for funding. No pre-registration required.

Sunday, March 17

UK Stream Restoration Bioblitz

The South Elkhorn: A Wet and Wild Watershed

2 – 4 p.m.
Wellington Park | 565 Wellington Way
Parking at entrance. Program at picnic shelter.

Host: Neighbors United for South Elkhorn Creek (NUSEC)

The South Elkhorn Creek flows through Wellington Park as part of the S. Elkhorn Watershed. NUSEC's displays and hand-on activities will teach you about the wet and wild aspects of a watershed. The wet side includes water testing and demonstrations showing stream anatomy, water flow, and riparian zone erosion. The wild side includes studying stream macroinvertebrates and live, native plants needed to prevent streambank erosion. There is much to learn about this wet and wild watershed!

Monday, March 18

Stormwater Grants Q&A

6 – 7 p.m.
Online event

City staff will give a rundown about grants available to improve water quality, reduce stormwater runoff and educate citizens about our community's stormwater and water quality issues. This Q&A focuses on the neighborhood grants for neighborhood and homeowner associations, and education grants for educational projects in schools, churches and businesses. This is an online event.

Zoom 



Wednesday, March 20

UK Stream Restoration Bioblitz

Stormwater Grants Q&A

Greenways Management Plan - Ecology Forum

5 – 7 p.m.

McConnell Springs | 416 Rebmann Lane

Host: Lord Aeck Sargent (Greenways Management Plan – Design Team)

Come join us to learn more about the Lexington Greenways Management Plan & Ecology Forum! The Greenways Management Plan is a comprehensive document to help the city create a usable and connected system of parks, trails, and green spaces. The plan will assess important ecological corridors and connections, identify areas that need protection and conservation, as well as recreational uses. It will also include a guidebook for residents, including homeowners and neighborhood associations on best management practices for Greenways to ensure good stewardship.

Thursday, March 21

Stream Clean with Students at Community Montessori School

Creek Critters Stream Walk

The Water Trail

6:30 – 7:30 p.m.

Jacobson Park, 4001 Athens Boonesboro Road

Host: Friends of Jacobson Park

Please meet at the pedestrian bridge that connects the marina and playground at Jacobson Park at 6:20 p.m. A self-guided walking tour of temporary interpretive signage around Jacobson Lake, developed by the Friends of Jacobson Park in coordination with Kentucky American Water Company.

Information will include:

- The story of Lexington's Water History, which is Kentucky American Water's history.
- The importance of clean water, and what Lexington was like before we had it. (Based on documentation from The Rainfall Harvest Book.)
- Current day engineering and piping of the Kentucky River to Reservoir 4, and then onto the water company for treatment.
- Understanding a watershed, each person's impact on it, and why we
- Hickman Creek, part of Lexington's drinking water is impaired as most r waterways are, why and what is being done to help that. An emphasis on what individuals in Lexington can do to assist, as well as

info about the consent decree, and how LFUCG has been and will be fixing leaking/aging/failing infrastructure to repair the damage that is happening in our waterways.

Saturday, March 23

Reforest 5K

All About Rain Gardens!

Watercraft Extravaganza!

Macro Mayhem

2 – 3:30 p.m.

Raven Run Nature Sanctuary | 3885 Raven Run Way

Host: Raven Run Nature Sanctuary*

Creek critters can tell us a lot about the quality of our waters. Join us in investigating aquatic macroinvertebrate specimens while we learn about their tolerance to pollution and how to use them to assess water quality. Afterwards, we will take a leisurely hike down to the creek to observe their habitat.

While you're here, visit the Raven Run Nature Center! We will have a special Water Week table set up featuring freshwater biofacts: pelts, skulls, shells, creek critters and more!

Adults and kids Ages 10+.

Register



Self guided

Wolf Run Watershed Greenways Self-guided Tour

Geocaching challenge!

Stencil a stormdrain

How can storm drain stenciling help?

Many people mistakenly believe that storm drains empty into the same sewer system that carries wastewater from toilets and sinks, but this is not true. Storm drains lead directly to our streams and the Kentucky River.

Storm drain stenciling helps educate residents about water quality and tells people not to pour any chemicals or wastes down storm inlets or drains. The stencil also provides a constant reminder that our storm drains lead straight to local waterways and that dumping can pollute those



For teachers and schools

Thank you to Fayette County Public Schools for participating in Water Week! FCPS is hosting educational events and litter cleanups for teachers. They have also curated a list of [water-themed books](#) and created a [Lexington water-themed web quest](#) for teachers to use in the classroom.

Your hosts

Thank you to all our community members and organizations for hosting Water Week events! Hosts with an * by their name are members of our [Green Check](#) program which helps businesses take steps to become more sustainable.



[Suggestions or problems with this page?](#)



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APPENDIX B

Public Involvement and Participation

Alumni Drive Tree Planting

Tree Planting along Alumni Drive





























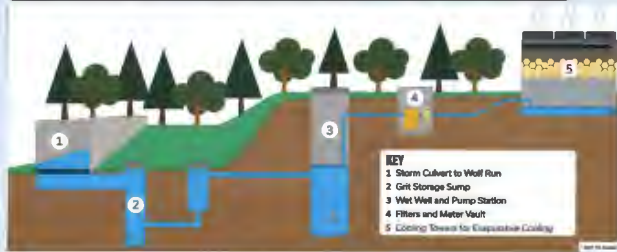
APPENDIX B

Public Involvement and Participation

CE 429 Central Utility Plant Senior Design Class Submittals



Background



Source: University of Kentucky Facilities Management

Currently the system faces two major issues:

Water Quality

The system was designed to remove pollutants and debris such as trash, sediment, and branches, however some of these pollutants still make their way to the wet well and filters in the meter vault causing issues when water needs to be pumped.

Storage of Available Water

During drier periods of the year with low rainfall there have been issues with the lack of water available in the wet well to be pumped to the cooling towers.

CAN Engineering's solution consists of:

- expanding the grit storage sump and wet well of the current system, with periodic chemical treatment of the water
- removal of the current filtration system and the implementation of an innovative technology, the CDS concentrator

This solution would allow for:

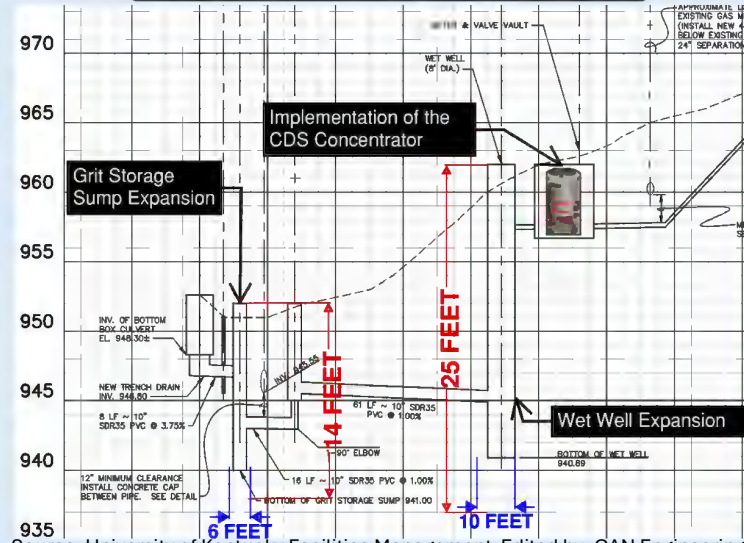
- better sedimentation of heavy pollutants before reaching the wet well
- better filtration of pollutants that make it into the wet well before water is pumped
- more volume for storage of water during periods of low rainfall

Sustainability

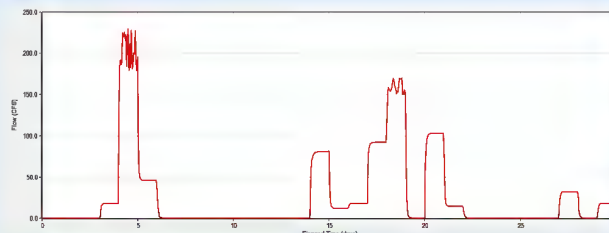
The project team is taking steps to ensure that the health, safety and welfare of the community and environment remains unharmed. The goal of this project by working together with all stakeholders is to:

- Create a greater opportunity for renewable energy by increasing the water storage available.
- Reduce emissions by reducing water bought from Kentucky American Water Company
- Using High-Density Polyethylene (HDPE) for the grit storage sump and wet well because it is recyclable and produces less energy and emissions to produce.

Component Design



Hydraulic Analysis



Source: Keren Keener – Undergraduate Worker

The current detention basin is designed for the 100-year design storm, because our design made no changes to the size or shape of the basin and the culvert the basin and culvert will still be adequate.

The increased grit storage sump and wet well will provide extra protection from flooding due to increased capacity.

The current basin is 25,562 sq ft or 0.59 acres.

To the left is Unit Hydrograph for the watershed with a time of concentration around 1.5 days



Arial view of the project area
Source: Google Earth

Grit Storage Sump

The volume expansion helps increase the sedimentation of heavy particles from the harvested water at the bottom of the chamber as the turbulent flow makes its way through the system.

Expansion: 4' wide x 12' deep to 6' wide x 14' deep

Wet Well

The expansion of the wet well allows for more storage. This allows the availability of water to be more reliable, especially during drier periods of low rainfall.

Expansion: 8' wide x 21' deep to 10' wide x 25' deep

CDS Concentrator

Allows for better filtration of remaining pollution and waste. The system uses the flow of the water to create a vortex "spinning" out the pollutants. This allows for a more efficient routine maintenance and cleaning process



45% increase water to the cooling towers



The Stormwater Harvesting Project Site

Cost

Activity	Cost
Geotechnical Assessment	\$3,000.00
Demo of Existing Wells	\$14,937.60
Excavation	\$4,792.50
Enlarging the Wet Well	\$32,188.00
Enlarging the Grit Storage Sump	\$32,188.00
CDS Concentrator	\$236,000.00
Total	\$323,106.10

This is the preliminary cost estimate for the proposed design of increasing the wet well sizes and implementation of the CDS concentrator.

Camille Dyer Alex Warren

Nathan Maynard, CAN Engineering



The University of Kentucky's Central Utility Plant (CUP) #4 uses over 45 million gallons of water annually for cooling operations. The CUP Stormwater Harvesting Project was developed to capture runoff from a nearby 200-acre watershed and provide up to 20 million gallons of stormwater each year for use in the cooling towers. The system has not yet achieved this goal due to limitations in the filtration system, which results in water loss and limits flow. This project focuses on improving the filtration system to minimize waste and increase stormwater flow, ultimately enhancing system efficiency and supporting the university's sustainability objectives.

The University of Kentucky's campus is part of the Wolf Run Watershed, which includes both permeable and impermeable surfaces. On campus, there are about 19 million square feet of permeable areas, like grass and soil, and 17 million square feet of impermeable surfaces, such as roads and buildings [1]. These impervious surfaces don't allow water to seep into the ground, leading to runoff that can cause flooding and pollution. The CUP Stormwater Harvesting Project was created to capture and store runoff water. The system filters the stormwater and directs it into the cooling towers, reducing the need for municipal water. It helps conserve water, limit runoff, and contributes to the university's sustainability goals.



Figure 1: Impervious & Pervious Surfaces UK Main Campus

The proposed stormwater harvesting system will integrate a CDS (Continuous Deflective Separation) concentrator to manage stormwater runoff. This technology is known for efficiently trapping debris, sediment, and pollutants such as oil and grease, while preventing clogging. The concentrator's design ensures 100% removal of floating materials and neutrally buoyant debris. The CDS concentrator will effectively manage runoff during different storms which allows efficient treatment and sustained flow capacity. In addition to the concentrator, a 180 GPM pump station will be installed downstream to help transfer treated water into storage tanks. This pump station is crucial for ensuring the continuous operation of the system because it allows the system to handle strong storms. Previously these strong storms were bringing too much water into the culvert at a time so this pump station should help keep continuous flow through the system without wasting as much water.

Earthworks (Excavation, Backfill): \$10,000
CDS Concentrator: \$15,000
New Piping: \$7,500

The total estimated cost of the system is around \$250,000, which covers all of the main components and their installation.

The main parts of the CDS concentrator, such as the separation cylinder, treatment screen, and inlet flume, are shown [2]. These components have a major impact in maintaining the system's pollutant removal efficiency, which ensures the system's effectiveness in treating stormwater.

The stormwater harvesting project enhances lives in three ways: purpose, well-being, and community. The purpose of the system is to manage the stormwater runoff effectively and efficiently to save money for the university by reducing the need for expensive water use. In terms of well-being, the system encourages better access to more sustainable resources, thus helping to contribute toward an eco-friendlier campus environment. In terms of community, the system enhances local infrastructure and supports the long-term sustainability goals of the university.



Figure 3: Envision

The proposed stormwater harvesting system will ensure effective management of the resulting runoff from stormwater at the University of Kentucky, help save water costs and ensure sustainability in the long run. The proposed stormwater reuse system consists of a CDS concentrator, a pump station rated for 180 GPM, and new piping to treat stormwater and store it for future use. The proposed design will promote alleviation of water scarcity, offer an environmental solution, and will also contribute to the betterment of local infrastructure. All major components added, with installation costs included are projected to cost approximately \$250,000 altogether. This system will make the university campus much more sustainable, economical, and resilient over the long term.

1. CDS Guide. (n.d.).
<https://www.conteches.com/media/3ewim51d/cds-design-guide.pdf>
2. UKTechMemo StormwaterHarvest2018 Complete.pdf
3. UK Stormwater Harvesting Project – Record Drawings.pdf
4. Spaces_Surfaces_2021_24x36.pdf
5. Overview - Institute for Sustainable Infrastructure. Institute for Sustainable Infrastructure -. (2024, July 24).
<https://sustainableinfrastructure.org/envision/about/#:~:text=Envision%20provides%20a%20consistent%2C%20consensus-based%20framework%20for%20assessing,higher%20performance%20through%20better%20choices%20inn%20infrastructure%20development.>

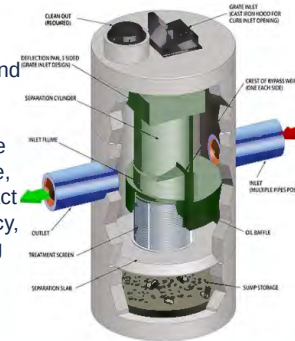


Figure 2: CDS Concentrator

Introduction:

Nonstop Engineering



1
Jordan Williams

2
Connor Roberts

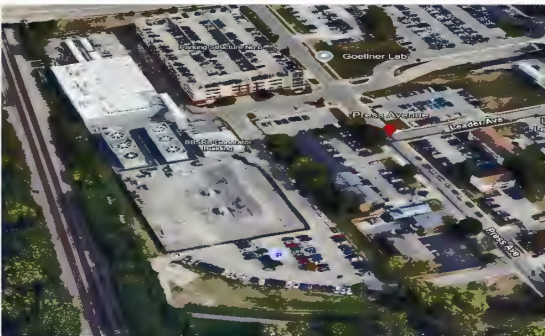
3
Jazmyn Fields

Background:

Who? University of Kentucky Utilities Management

Where? 761 Press Avenue

Why? Let Nonstop Engineering tell you about it!



Hydraulic Analysis:

The previous basin volume was 157 thousand gallons. The new Bioretention Basin has a volume of 500 thousand gallons. The new system will take 6 hours to fully saturate producing 900 GPM. The water will drain into pipes that are gravity fed into the wet well where two 350 GPM pumps will move the water into the plant.



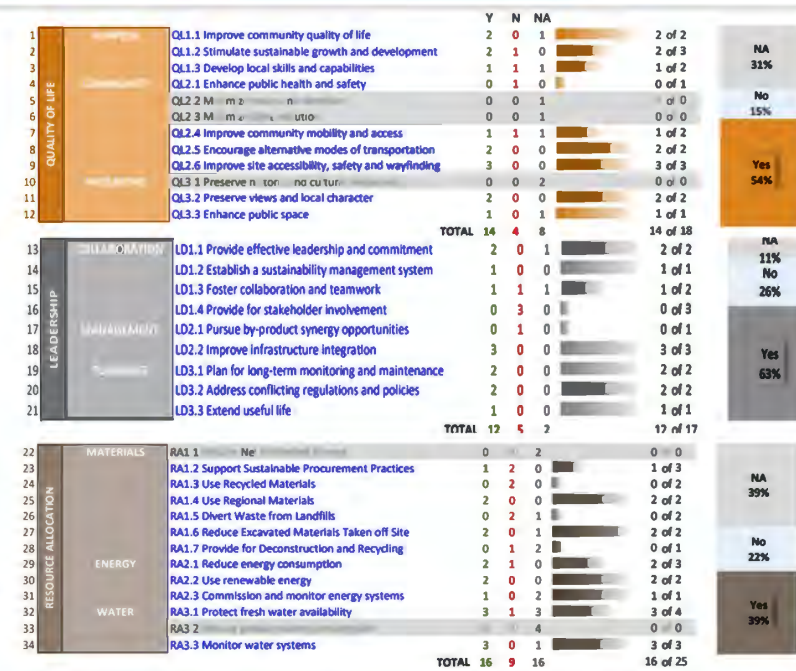
Water Cooling Tower CUP 4

Picture of The Design For The Bioretention Basin



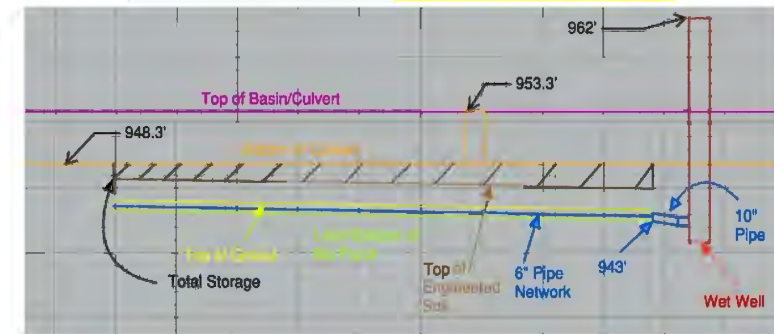
Sustainability:

Envision and the team's strengths!



System Design and Cost:

	Unit Price	Quantity	Total Price
Excavation	\$100/ cyd	1993 cyd	\$199,300.00
Engineered Soil	\$50/cyd	35,400 cyd	\$1,770,000.00
Stone	KY #2 \$36.40/ton	6,352 ton	\$234,400.00
	KY#57 \$45.23/ton	10,661 ton	\$482,200.00
Pipe Material	6" PVC SCH 40 \$125.60/20'	360'	\$2,260
	10" PVC SCH 40 \$257.40/20'	60'	\$775
Culvert Demolition	\$100/ft	200'	\$200,000
New System Cap-Off	\$16,420	1	\$16,420
20 mil Reinforced Polyethylene Uliner	\$0.41/sqft	24692 sqft	\$10,124
Total Cost Of Construction			\$2,915,479.00



Section View of Bioretention Basin

Summary of Recommendations:

The conclusion of our presentation shows that the best option evaluated by the team was the bioretention pond!



- Sustainable!
- Fulfills the owner's wants!
- Increases Efficiency
- Reduced Maintenance

Future Steps:

- Gain fanatical support
- Make construction documents
- Begin construction and build
- Completion

Background

The Stormwater harvesting project is located behind the University of Kentucky's Central Utility Plant (CUP) No. 4 on Press Avenue. The project is aimed at diverting stormwater runoff from a culvert into a wet well for filtration and use in the cooling towers. This initiative supports the University's sustainability objectives by decreasing reliance on municipal water, reducing operating costs, and enhancing stormwater management.

Recomendations

Our team recommends adding in 4 outlets with trash grates onto the current culvert, and having it outflow into a 45,684 CFT detention pond. This detention pond will then store and provide water to the current stormwater harvesting system. To keep the water from flowing downstream into Wolf Creek, a weir wall of an elevation equivilant to the design elevation of our pond is to be implemented at the back end of the culvert.

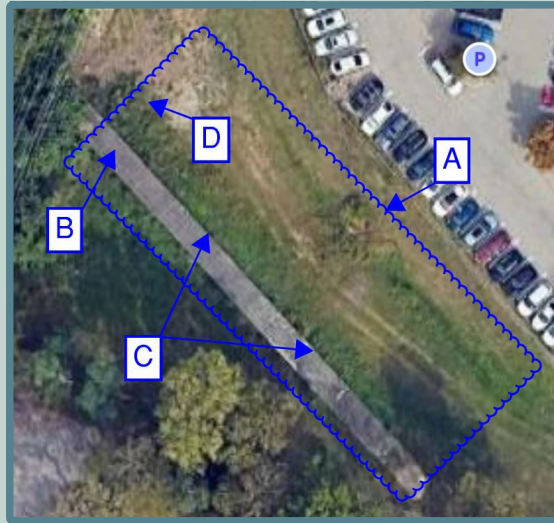
Project Goal

Increase the stormwater storage of the current harvesting system and decrease the maintenance required. This in return will decrease the amount of water having to be purchased by the University, creating immense savings.

Cost Breakdown

Item	Amount	Unit Cost	Total Cost
Betonite Clay	14,300 LB	\$0.41/LB	\$5,863
Excavation	1060 CYD	\$150/CYD	\$159,000
Culvert Drains	4	\$705.83	\$2,823.32
Pond Liner	12,400 sq ft	\$0.58/sqft	\$7,192
Wier Wall	1	\$900	\$900
Pond Outlet Structure	1	\$905.83	\$905.83
System Connection	1	\$20	\$20
Construction Cost	45% of Material		\$87,252.714
Total Cost			\$263,956.86

Site Layout



Sustainability Analysis

We conducted a sustainability analysis using the Envision self-assessment checklist. We decided on the following recommendations:

- Ensure safety training will be implemented
- Refine end-of-life considerations such as pond liner removal and backfill.
- Use excavated soil in soil-blended pond liner, and the rest can be used for other projects by the University.

Hydraulic Analysis

To conduct our hydrologic analysis, we chose a 10-year, 24-hour design storm with a rainfall intensity of 2.5" per hour. The project site is not within a floodplain, and special consideration was given to ensure flooding does not occur downstream. Our analysis led to the conclusion that a detention pond would be the best route moving forward. This will allow large storage in the case of a large rain event, while also allowing the stormwater harvesting system can continue operating in drought conditions as well.

Function

To add additional stormwater storage to decrease UK CUP's reliance on purchased and imported water.

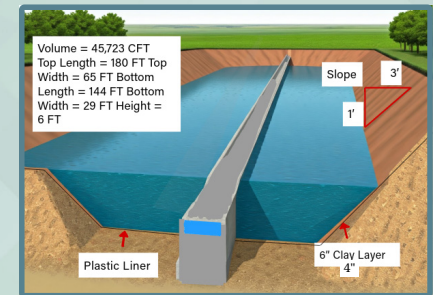
Maintenance

Inspect, remove sedimentation, and monitor vegetation growth, every 3-5 years.

Details

HDPE liner and a 4" compact soil at 95% existing soil and 5% Bentonite Clay.

Pond (A)



Weir Wall (B)

Function

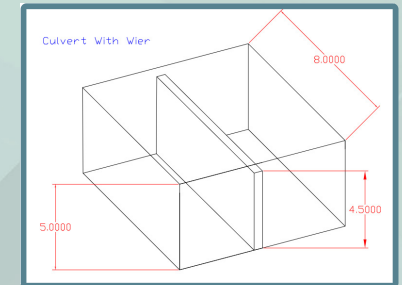
To keep the stormwater from outputting downstream into Wolf Creek, until the pond is at max capacity.

Maintenance

Inspect for debris accumulation, erosion, or damage yearly.

Details

The Weir Wall is set at a height of 4.5' to align with the maximum pond design height.



Culvert Outflow (C)

Function

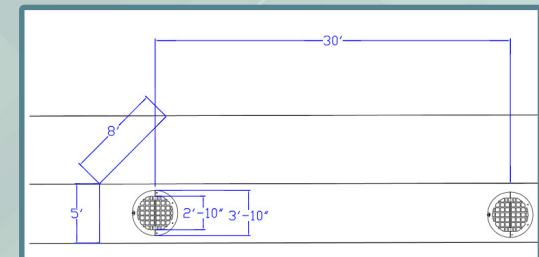
Outlet water from the Culvert into the detention pond.

Maintenance

NONE.

Details

4, 3'-10" Diameter trash grates will be place on either side on the culvert.



Collection Inlet (D)

Function

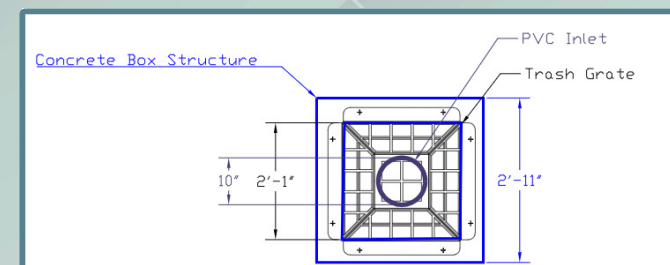
Drain water from the detention pond into the current stormwater harvesting system.

Maintenance

Inspect for clogs and blockages monthly or post storm.

Details

A Trash Grate protects the 10" PVC pipe, which connects to the current stormwater system.





Optimization of Stormwater Harvesting

Keegan Justice, Sam Johnson, Sam Parker and Sam Tipton



Project Background

The stormwater harvesting system is designed to divert 20 million gallons of stormwater from the culvert each year for the use in cooling towers at CUP #4. UEM is seeking engineering services to improve the current Cooling Tower Stormwater Harvesting Project. Our project is within the Wolf Run Creek watershed area and the CUP collects stormwater within the MS4 region surrounding campus. The current system operates concurrent with the image to the right.



When looking at the problem with the current Storm Water Harvesting facility, we want to answer two questions.

- 1.) How much storage is needed to meet the needs of the facility year-round?
- 2.) How can we improve filtration to meet the cleanliness standards while still being able to filter waste efficiently?

Three alternatives were considered to achieve the 2 goals mentioned above. After discussion with the client, our alternatives have been modified to achieve greater storage and filtration to optimize the current system.

Maintenance Plan

The maintenance of the stormwater harvesting system will involve conducting bi-weekly inspections of the Jellyfish Filter and trash traps to ensure efficient flow throughout the system.

The trash trap disposable mesh nets provide an efficient solution for capturing and removing larger debris from stormwater. By regularly replacing these nets, maintenance personnel can ensure the continued performance and longevity of the filtration components.

Sustainability Features

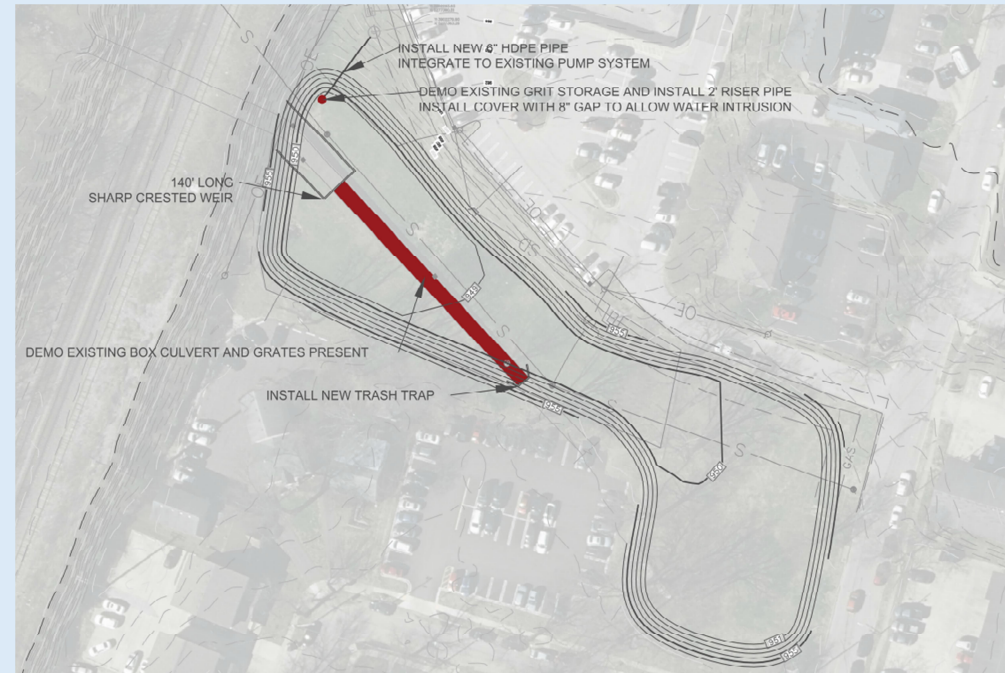
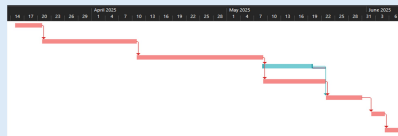
We have conducted a sustainability assessment using the Envision checklist. We have cited NW 2.1 as our primary sustainability consideration. This consideration is relevant as one of the goals of our project is to provide an alternative that significantly improve water storage capacity. We at Sam's & Associate are fully committed to minimizing the impact of infrastructure on stormwater runoff quantity and quality.

System Elements and Cost

Our construction procedure involves the following steps:

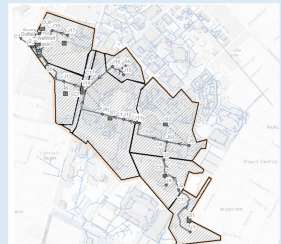
- Demolition of existing box culvert and grit storage chamber
- Excavation of current retention pond to be upsized
- Installation of new liner
- Installation of pipe riser and 6" HDPE pipe to be connected to existing system
- Backfill with stone to cover liner and bottom of pond

Pre-Construction Submittals	5 days	Sat 3/15/25	Thu 3/20/25
Demo Box Culvert and grit storage	15 days	Fri 3/21/25	Thu 4/10/25
Excavation	20 days	Fri 4/11/25	Thu 5/8/25
Install Trash Trap and Protect	7 days	Fri 5/9/25	Mon 5/19/25
Install liner and backfill	10 days	Fri 5/9/25	Thu 5/22/25
Install piping to existing system	6 days	Fri 5/23/25	Fri 5/30/25
Testing and Educate Maintenance staff	3 days	Mon 6/2/25	Wed 6/4/25
Closeout Submittals	3 days	Thu 6/5/25	Mon 6/9/25



Hydraulic Analysis

Our retention pond is designed to capture and hold stormwater during heavy rainfall, reducing the risk of downstream flooding. By collecting water during large storm events, the pond allows for gradual release, preventing rapid water flow into nearby drainage systems or water bodies. We considered impervious surfaces that may increase runoff volume in our design. The project site is not within a flood plain and we have ensured that the pond integrates with the existing system while considering flood control and other factors.



Next Steps

The next steps for our project include:

- Finalization of storage capacity .
- Flow Rate Calculation.
- Conduction of an Environmental Impact Assessment
- Coordinate with local authorities for permits and site access.
- Construction Preparation

	Unit (CY)	Cost per Unit	Total Cost
Earth Excavation (CY)	5037	\$15	\$75,555
Rock Excavation (CY)	103	\$157	\$16,171
HDPE Geotextile Liner (SY)	6776	\$660 per 200 sq. ft	\$231,247 (including \$30,000 install)
Stone Backfill (TON)	678	\$37	\$25,086
6" PVC Piping (FT)	51	\$25	\$1,275
Trash Trap	1	\$145,000	\$145,000
Weir	1	\$61,800	\$61,800
Total Project Cost	XXXX	XXXX	\$556,134

APPENDIX B

Public Involvement and Participation

UEM Intern Stormwater Case Study

Cooling Tower Stormwater Harvesting Project

Case Study



Figure 1 The Stormwater Harvesting wet well holds diverted stormwater for use in CUP. Photo taken by Arden Barnes on July 7, 2023.



Figure 2 Cooling towers cool water for operations around campus. Photo taken by Jennifer Bukowski on August 29, 2023.

The Project

The University of Kentucky uses 500 million gallons of water annually, 40% of which is used in Facilities Management's heating and cooling plants. The cooling towers in Central Utility Plant #4 (CUP) annually consume over 45 million gallons of water, crucial for campus-wide operations including cooling and humidity control for healthcare, research, and other facilities.

The University of Kentucky's campus is heavily developed—over 50% of it is covered in impervious surfaces that prevent the natural absorption of stormwater. Within this landscape, a 200-acre watershed area drains stormwater runoff to Wolf Run Creek via the Simpson Avenue outfall point, conveniently adjacent to CUP.

Recognizing the potential of this daily flow of stormwater to trim operational costs while improving stormwater management, the University of Kentucky began development of the CUP Stormwater Harvesting Project.

The Stormwater Harvesting system is designed to pull over 20 million gallons of stormwater from the culvert each year for use in the cooling towers at CUP #4. Featuring a water reservoir and filtration system, the project can significantly reduce the amount of domestic water the plant consumes. The system is also designed to serve as an educational opportunity for students at the University of Kentucky and the wider community.

The Process

In 2017, the University of Kentucky conducted a feasibility study with Bell Engineering to assess the viability of utilizing stormwater in its cooling towers. Their findings revealed a daily flow ranging from 56 thousand to 15.5 million gallons through the culvert between May and October of 2017. Of this water, the University anticipated that up to 23 million gallons per year could be harvested for use in CUP, assuming a harvesting efficiency of 25% of the available flow. Such an endeavor would yield remarkable savings in water expenses and reinforce the University's commitment to sustainability.

With the results of the feasibility study in hand, UK developed a budget to begin work on the project. The University received a grant from Lexington-Fayette Urban County Government's (LFUCG) Stormwater Quality Projects Incentive Grant Program¹ and were eager to begin construction. However, The COVID-19 pandemic and shutdowns in 2020 put the project to a halt for about a year.

When the project was picked back up in 2021, the University realized that some additional scope needed to be added to make the system more functional, specifically in terms of controls infrastructure. Therefore, UK recommenced conversation with LFUCG and ended up maxing out the grant at \$360k and matching it about 50/50, compared to the 80/20 match that was originally planned. The scope changes along with economic turmoil caused by the pandemic more than doubled the cost of the system, resulting in an \$800k total project cost.

Additionally, UK had switched to a new chemical supplier during the year hiatus from the project, spurring further discussion regarding the chemical treatment of the stormwater to prevent biological growth and protect the cooling infrastructure. Additional turnover of personnel at both UK and LFUCG made the planning and budgeting process more complicated, but by the summer of 2022 everything was squared away and construction could begin.

Primarily due to supply chain issues, construction of the system did not reach substantial completion until a year later in the summer of 2023. While the final punch list of items was not completed until the fall of 2023, the system was operational and ran in the summer of 2023 to test and tune the system.



¹<https://www.lexingtonky.gov/stormwater-incentive-grant-program>

Operation

The Stormwater Harvesting System contains a wet well designed to store stormwater diverted from the culvert. Initially, harvested water flows through a grit storage sump, allowing larger particles to settle out before the water enters the wet well. Next, the water accumulates in the wet well until it reaches the desired depth. Once this level is attained, the water is pumped through filters and a meter vault. Following this, the water is sent to the cooling towers for a final treatment to prevent organic growth, pipe scaling, and rusting before evaporative cooling.

One important parameter for assessing the water entering the cooling towers is conductivity, which is a measure of the ability of the water to conduct electricity due to dissolved solvents. In the case of cooling tower water, conductivity can help gauge its purity. Elevated conductivity levels could signify increased impurities, and an increased amount of chemicals needed to treat the water.

When water is cycled through the cooling tower multiple times, the solvents become more concentrated each time as pure water is evaporated off during the cooling process. For the tower to function properly and to preserve the integrity of the piping and structure, a tower conductivity of 1,800 μmhos or below must be maintained. The maximum allowable tower conductivity divided by the make up water conductivity gives the cycles of concentration, or

how many times the make up water can be cycled through the tower before it must be blown down, or purged. This is a constant process of lower conductivity water flowing in and higher conductivity water flowing out while cycles of concentration determine the frequency of blowdown.

Generally, the stormwater entering the cooling tower has a higher conductivity than city water, and results in lower cycles of concentration. Additionally, chlorine and bleach are required to ensure system and regulatory safety. More specifically, bleach acts as an oxidizing biocide that controls the microbial potential for fouling. The cooling tower is also treated weekly with a non-oxidizing biocide to protect the system from slime layers of anaerobic bacteria. Nevertheless, the increased chemical expenses and need for larger makeup water volume are offset by the significant water savings achieved through using diverted stormwater.

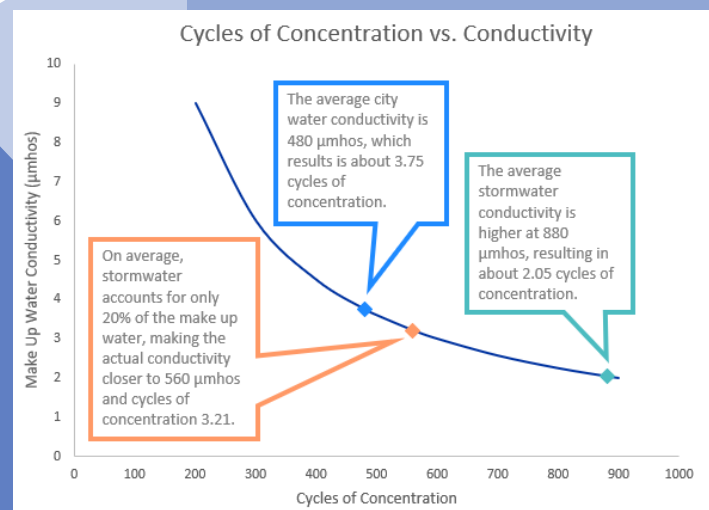
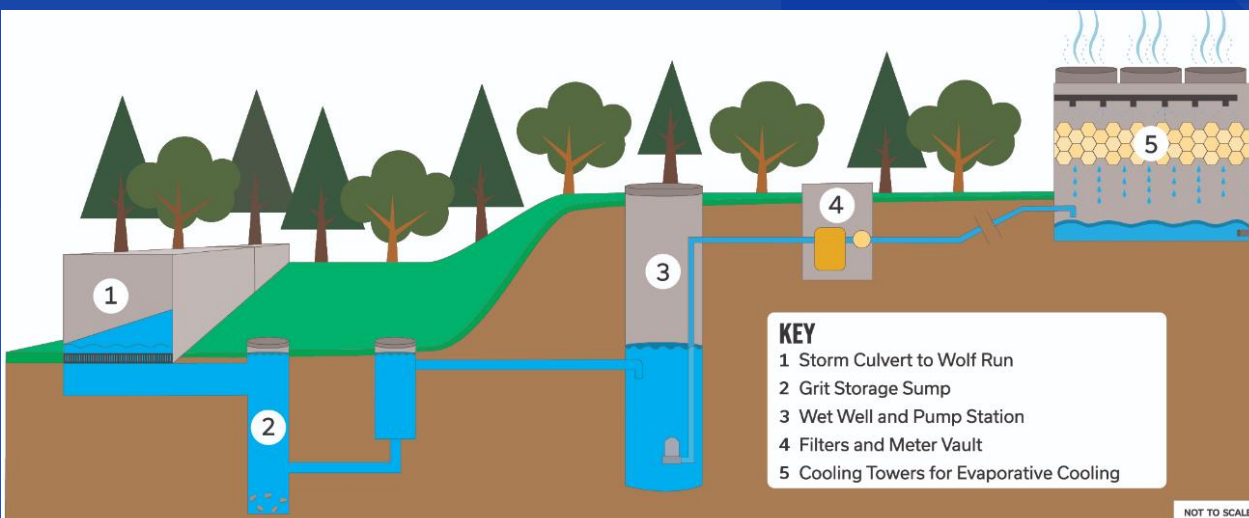


Figure 3 (Above) As the conductivity of the water increases, the cycles of concentration decreases. Conductivity values may vary depending on environmental factors.

Figure 4 (Left) The Water Harvesting System Simplified Schematic highlights the main components of the system. Created by Bree Walton.



Maintenance

For the stormwater harvesting system to operate smoothly, it's crucial to maintain cleanliness in both the grit storage sump and the filters. The grit storage sump is expected to be cleaned approximately twice per season. Additionally, filter replacement occurs every few weeks, varying based on usage frequency and the quality of incoming water. As ongoing monitoring and adjustments are made to the stormwater harvesting system, the maintenance protocol will evolve to incorporate new insights.

One of the main aspects that caused issues early in the operation of the system was debris such as sediment, leaves, and trash. Especially after large rains, additional debris would get into the culvert and disrupt the flow of the system. Initially, the inlet grate was positioned to maximize water flow into the system; however, in this configuration, too much debris was entering into the water circulation. Therefore, the grate position was changed so that the water would flow in without carrying as much debris along with it.

Additionally, the filter size played a role in managing debris within the stormwater harvesting system. Determining the optimal filter size has required some trial and error. Initially, 30-micron filters were used, but they clogged within hours after system activation. Therefore, 50-micron filters were implemented, which allowed for improved performance but were still clogged with debris faster than ideal. Eventually, 100-micron filters were implemented.

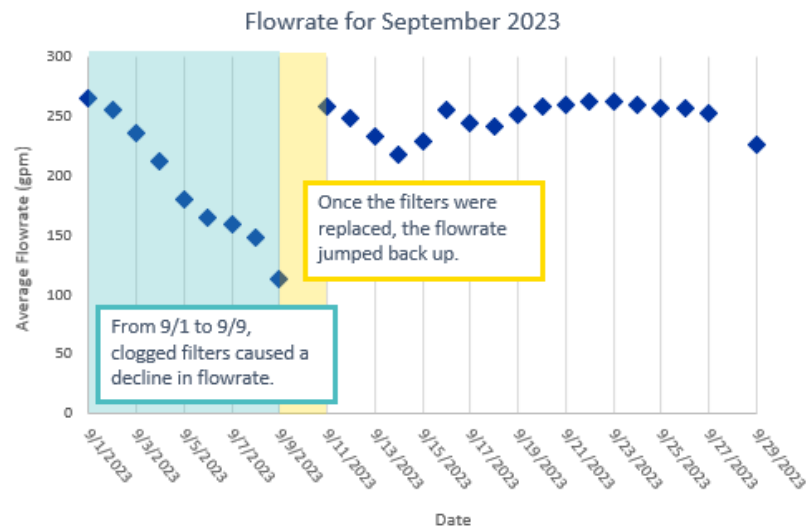


Figure 5 The state of the filters can have a significant impact on the flowrate.



Figure 6 Regular cleaning of the system helps maintain its integrity and improve performance.

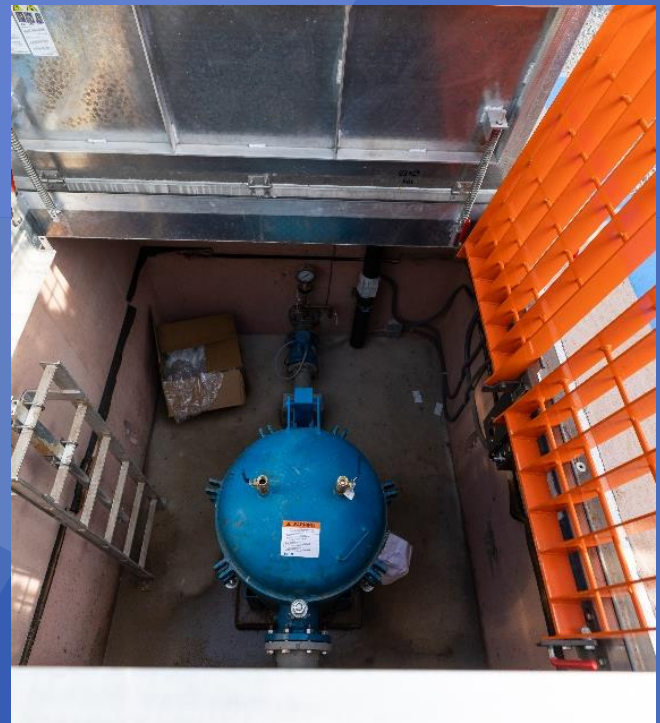


Figure 7 The multibag filter housing holds six filters that are regularly replaced. Photo taken by Arden Barnes on July 7, 2023.

Performance

Between August and October of 2023, the Stormwater Harvesting System operated 60% of the time, for a total of 55 days. It was most active in the warmer months when the demand for chilled water reached its peak for use in air conditioning systems throughout campus. Over this time, an average of 46,974 gallons of stormwater per day was used in the cooling tower for a total of over 2,274,000 gallons of stormwater diverted.

Using stormwater instead of domestic water has resulted in \$38,991.39 in savings for the cost of water and sewer charges. However, due to the lack of chemical treatment in stormwater compared to domestic water, a higher volume of chemicals was used to treat the stormwater compared to water purchased from the water company. Therefore, an additional \$8,020.71 was paid in chemical costs compared to the chemical cost if 100% city water was to be used. Taking both the water and chemical costs into account, the University saved a net \$30,970.68 in the first three months of the stormwater harvesting system's operation. As the system is tuned, these numbers are expected to rise.

**Total Stormwater
Diverted in Fall 2023:
2,274,636 gallons**



Sustainability

One of the goals outlined in the University of Kentucky's Sustainability Strategic plan is to demonstrate "excellence and innovation in water conservation and stewardship." Leveraging the natural water resources available on campus exemplifies a conscientious approach to water diversion and usage. This not only reduces the University's domestic water consumption but also improves the environmental conditions within the watershed.

Looking Ahead

The Utilities and Energy Management team is currently working towards making improvements to the system. One of which is adding a direct line of bleach into the storage wet well to prevent organic growth. Additionally, there is potential to replicate the project and tap into different stormwater lines near Cooling Plant 1 and Cooling Plant 2. The University of Kentucky is eager to see the benefits and growth of the Stormwater Harvesting System in years to come.

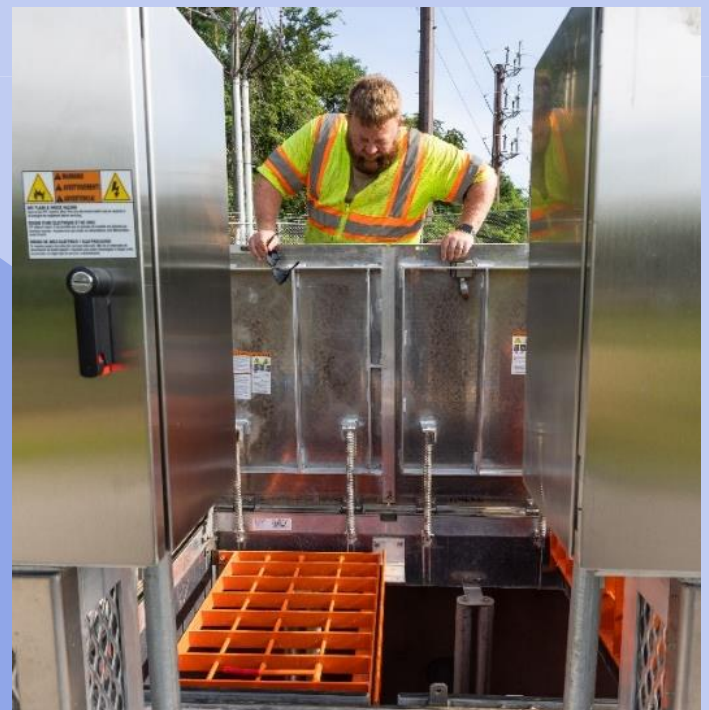


Figure 8 One improvement to the system may be adding a chemical line that can treat the water in the wet well. Photo taken by Arden Barnes on July 7, 2023.

APPENDIX C-1

Illicit Discharge and Stormwater Complaint Reports

EMD Illicit Discharge Report

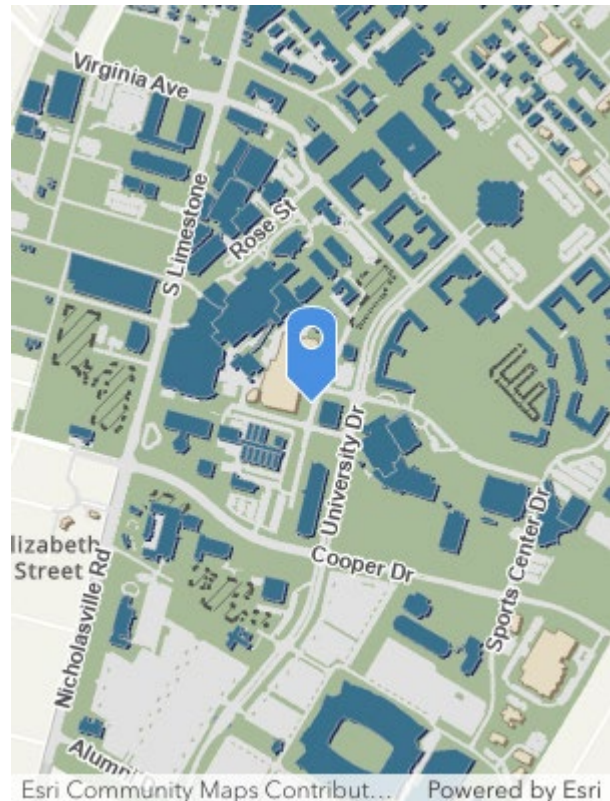
Reported Issue

Reported Description	Construction mud discharging to storm drain.
Date and Time Observed	December 12, 2024 3:04 PM
Location Description	From Health Education Building construction area tracking down Veteran's Dr. into storm drain in front of VA Hospital.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Sediment laden runoff from construction site entering storm sewer.
Investigation Findings	UK employee reported mud from Health Education Bldg tracking down Veteran's Drive into storm drain. Contractor reported employees washing wheels at construction entrance with runoff flowing down the street.
Corrective Action	Contractor installing additional stone at construction entrance, waddles at curb inlets, and employees instructed to wash wheels further in the site. Mud cleaned from street.

Photo



Location

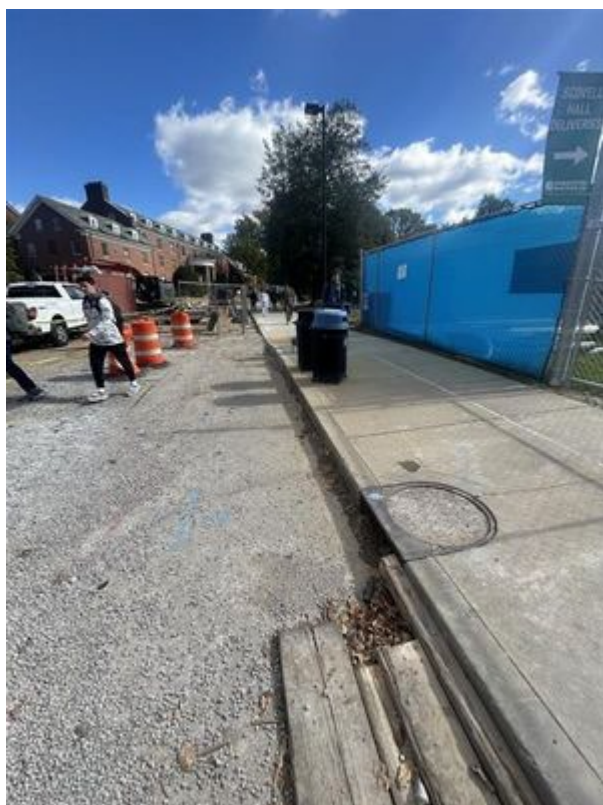


EMD Illicit Discharge Report

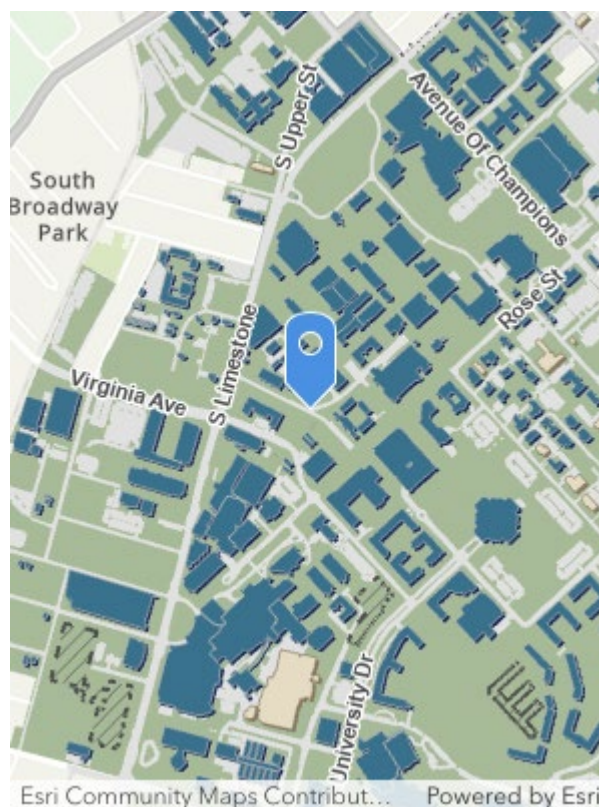
Reported Issue

Reported Description	EQM Water Quality Intern reports appearance that no BMP installed to nearby curb inlet and inlet grate in roadway. General construction gravel/dirt is sprawling and debris could impact stormwater with next rainfall.
Date and Time Observed	October 18, 2024 12:46 PM
Location Description	Curb inlet near intersection of Washington Ave/Library Dr. - ongoing construction near Scovell (Sanitary line renovation project)
Confirmation	Confirmed - Discharge/Issue Present
Official Description	No BMPs installed near Washington sanitary line renovation area.
Investigation Findings	Gravel/debris in roadway. No curb inlet BMP installed, but filter present in roadway drain.
Corrective Action	Stormwater Inspector (Richard McClure) contacted by EQM to inspect the area. CM Supt. to sweep gravel, add curb inlet protection, & clean/replace street inlet fabric.

Photo



Location



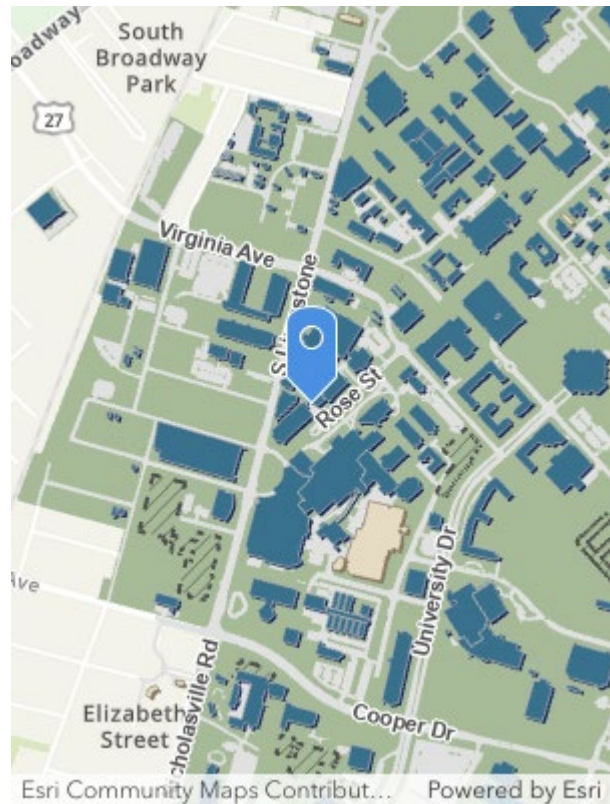
EMD Illicit Discharge Report

Reported Issue

Reported Description	Facilities staff rinsing drum out at Wethington loading dock area into trench drain. Water appeared dirty.
Date and Time Observed	February 23, 2024 3:57 PM
Location Description	Loading dock between Wethington and Nursing.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Potential drum/trash can wash out in loading dock area.
Investigation Findings	Washout no longer taking place at the time of investigation. Loading appeared wet.
Corrective Action	

Photo

Location



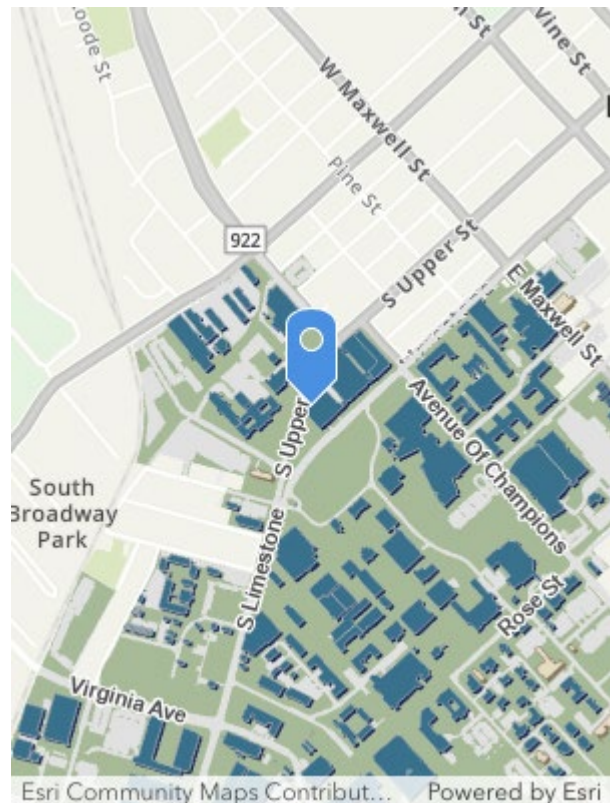
EMD Illicit Discharge Report

Reported Issue

Reported Description	UK Mechanic staff reported UK Grounds personnel vehicle washing outside of containment area & discharged to storm drain and Upper Street.
Date and Time Observed	December 12, 2024 11:48 AM
Location Description	Parking area in front of Peterson Garage.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Vehicle washing discharged to storm and street.
Investigation Findings	Wash water observed on multiple occasions entering area storm drains.
Corrective Action	Facilities/Grounds contacted. Signage installed to guide employees to designated washing area that discharges to sanitary. Employees to receive reminder to use designated area.

Photo

Location



EMD Illicit Discharge Report

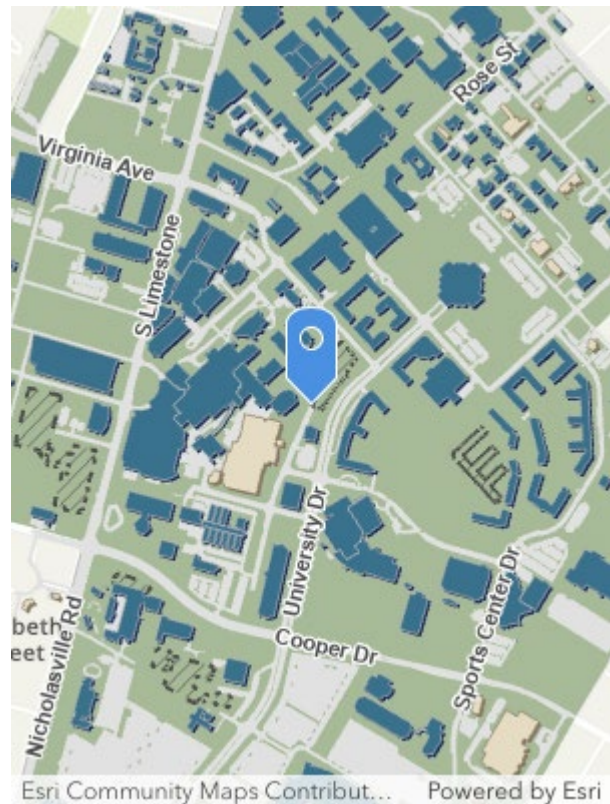
Reported Issue

Reported Description	Dirt/mud tracking onto roadway, potential to impact stormwater.
Date and Time Observed	November 15, 2024 10:00 AM
Location Description	Starting from Health Education Bldg. tracking down Veteran's Drive, Complex Drive, and onto University Dr.
Confirmation	Invalid - Unrelated Issue
Official Description	Dirt tracking from construction site.
Investigation Findings	Construction project tracking dirt (mud) along Veteran's Drive, Complex Drive, and University Drive after significant rainfall event. Crews were applying #2 stone to site and tracking was not in excess. PM to be contacted but not further action required.
Corrective Action	

Photo



Location



EMD Illicit Discharge Report

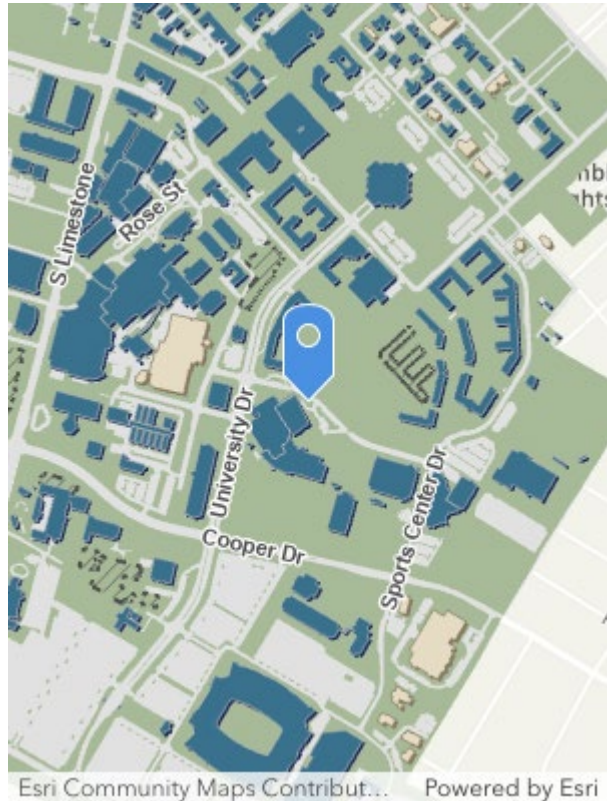
Reported Issue

Reported Description	UK OHS Aaron Sisco reported possible paint splash discharge into storm drain near Aquatics Center.
Date and Time Observed	October 28, 2024 3:18 PM
Location Description	Along landscaped area in between Lancaster Aquatics Center pedestrian entrance & driveway to Johnson Center. Line of site from grate is directly across from Turner Construction Gate 9.
Confirmation	Invalid - Unrelated Issue
Official Description	Green paint splashed onto electrical access grate
Investigation Findings	EQM investigated report of paint discharged to storm drain. Paint was was not fresh, only exists on grating. Grate in question is electrical access, not stormwater related. Issue is closed.
Corrective Action	

Photo



Location



EMD Illicit Discharge Report

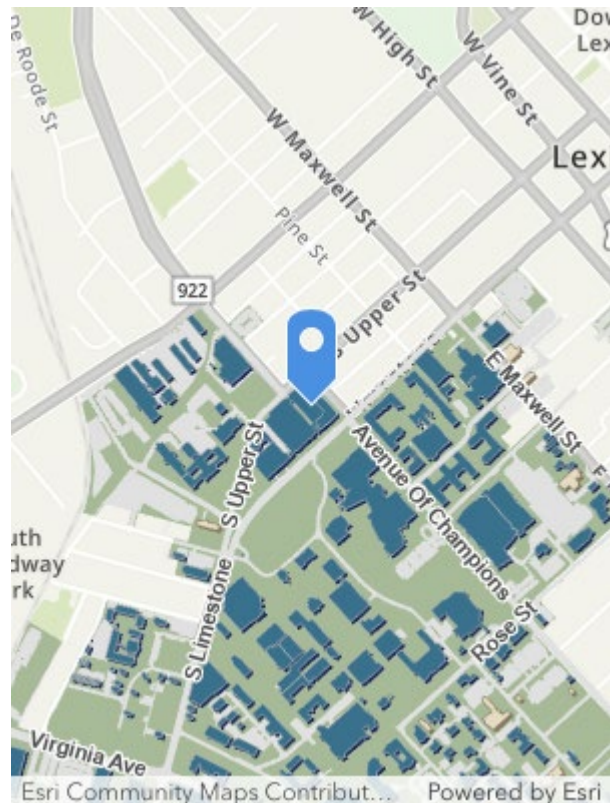
Reported Issue

Reported Description	Anti-freeze leaked from vehicle broken hose and small amount entered storm drain.
Date and Time Observed	October 24, 2024 8:46 AM
Location Description	4th level of new addition of the Cornerstone Garage located on S Limestone.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Anti-freeze leaked from vehicle broken hose into storm drain.
Investigation Findings	EQM responded to reported vehicle anti-freeze leak at parking garage. Staff visually confirmed an undetermined amount of liquid entered adjacent storm drain. Contacted vehicle owner arrived to inspect engine compartment to confirm broken coolant line.
Corrective Action	EQM staff applied stay dri absorbent to affected area. Absorbent was swept up, bagged, & disposed to off-site dumpster. No further action required.

Photo



Location

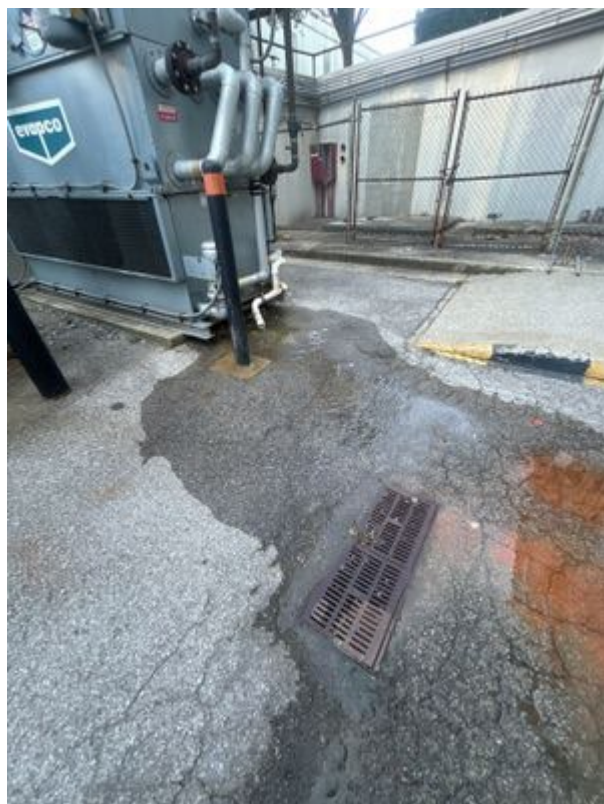


EMD Illicit Discharge Report

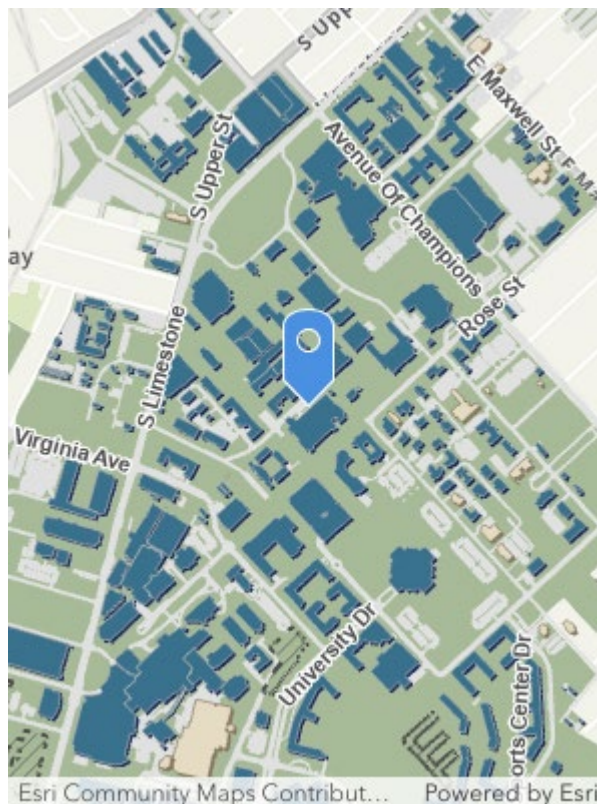
Reported Issue

Reported Description	Fluid coming from machinery behind Chem-Phys going directly into drain.
Date and Time Observed	October 25, 2024 11:34 AM
Location Description	Drain behind chem phys building in loading area
Confirmation	Declined - No Evidence of Discharge/Issue
Official Description	Condensate from cooling/freezing machine draining to storm drain.
Investigation Findings	EQM Intern observed liquid discharging from EVAPCO to storm drain. EQM confirmed (9/31/24 related report) condensate is an exempt, appropriate discharge to storm.
Corrective Action	

Photo



Location



EMD Illicit Discharge Report

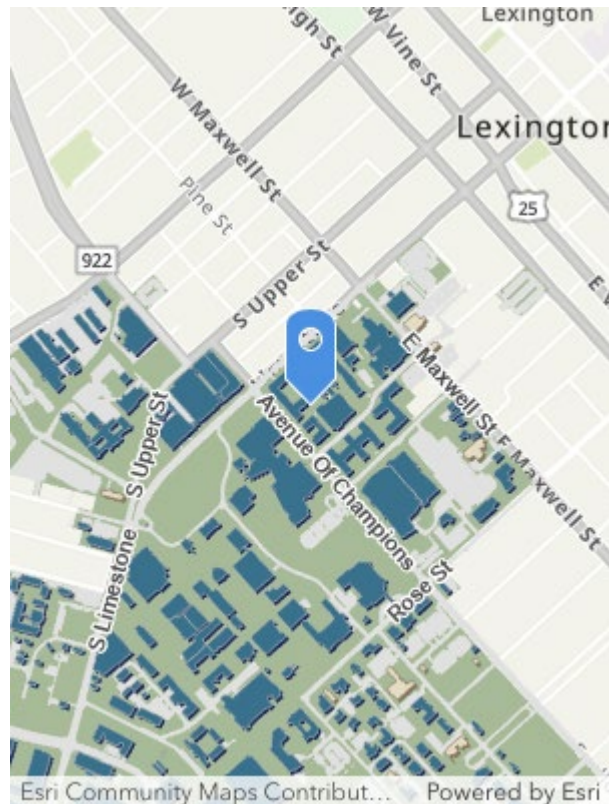
Reported Issue

Reported Description	UK Grounds staff reported hydraulic hose leaking oil from a garbage compactor outside Holmes Hall. Oil spill entered the trench drain behind compactor but did not extend further into the stormwater system.
Date and Time Observed	October 17, 2024 11:59 AM
Location Description	Within the trash/recycling compactor enclosure located on southeast corner of Holmes Hall entering into trench drain behind garbage compactor.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Hydraulic oil spill from trash compactor line.
Investigation Findings	Waste hauler failed to disconnect lines from compactor prior to removal. Hydraulic fluid spilled onto concrete pad with a small amount entering trench drain at the back of the pad.
Corrective Action	Trench drain inspected & confirmed oil entered but contained within trench. Oil absorbent applied to impacted area (and removed) by Grounds staff.

Photo



Location



EMD Illicit Discharge Report

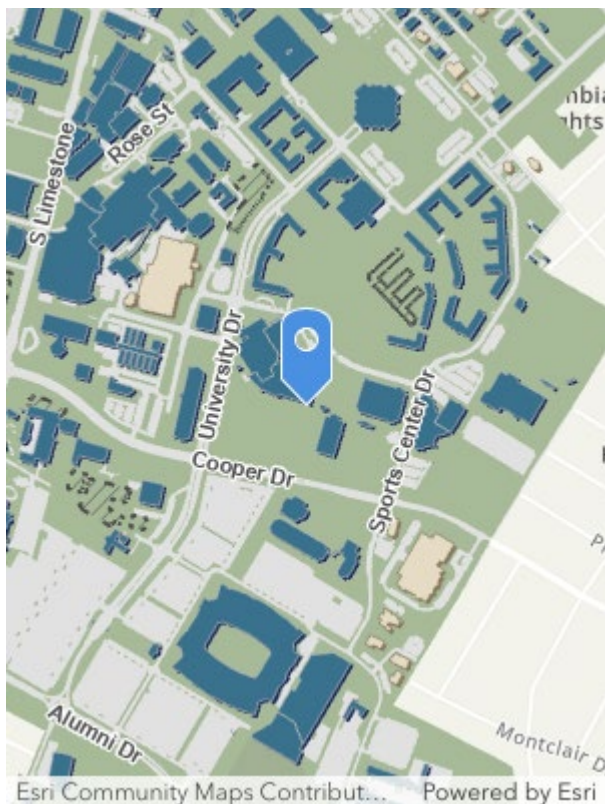
Reported Issue

Reported Description	Flow present in drain in Pieratt Fields
Date and Time Observed	October 4, 2024 9:55 AM
Location Description	Drain is in Pieratt Fields next to walk way to Boone Center. Drain is in the side of the mound
Confirmation	Declined - No Evidence of Discharge/Issue
Official Description	Dry weather flow in storm drains adjacent to building.
Investigation Findings	Area drains carry natural groundwater flow as has been determined from previous studies.
Corrective Action	

Photo



Location



EMD Illicit Discharge Report

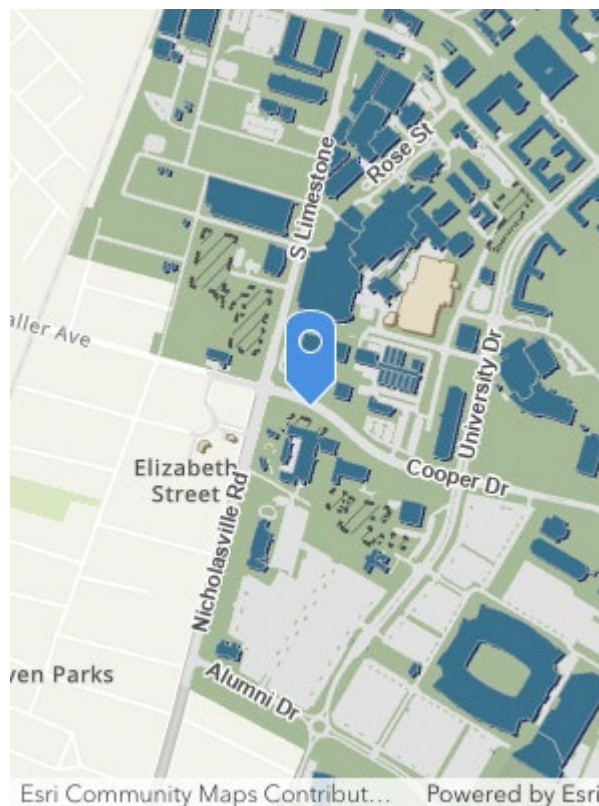
Reported Issue

Reported Description	A large volume of bore drilling slurry (Tru-Bore mixed with water) spilled onto the sidewalk and street and entered two storm drains. The stormwater system is under LFUCG ownership and information was forwarded for follow-up and enforcement.
Date and Time Observed	October 11, 2024 2:12 PM
Location Description	Slurry spilled onto Cooper Drive sidewalk/street and entered two storm water drains along Cooper Drive and Nicholasville Road.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Drilling sediment slurry entered storm drain.
Investigation Findings	Issue originally reported to LFUCG via 311 and referred to UK via Gabe Hensley on 10/10/24 @ 0906. EQM Nathan Weber sent to investigate. LFUCG contractor spilled drilling slurry while installing fiber optic line. Sidewalk, road, and storm drains impacted.
Corrective Action	Photographs were taken of the spill area and & contractors interviews were conducted. Information was forwarded to LFUCG for follow-up investigation and enforcement as the road and storm drains are under LFUCG ownership.

Photo



Location



EMD Illicit Discharge Report

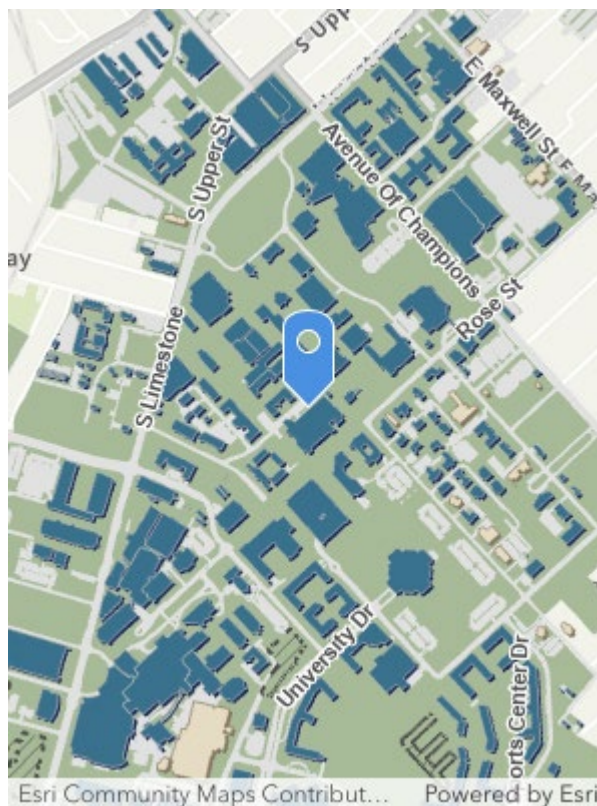
Reported Issue

Reported Description	Evapco machine behind chem phys is discharging fluid to drain also there is orange substance next to drain
Date and Time Observed	September 30, 2024 4:41 PM
Location Description	Behind Chem Phys on library drive next to back door entrance by machinery
Confirmation	Declined - No Evidence of Discharge/Issue
Official Description	Condensate from Evapco Unit.
Investigation Findings	Investigation found condensate from cooling unit intentionally discharging to drain under normal operation. Met technician who confirmed.
Corrective Action	

Photo



Location



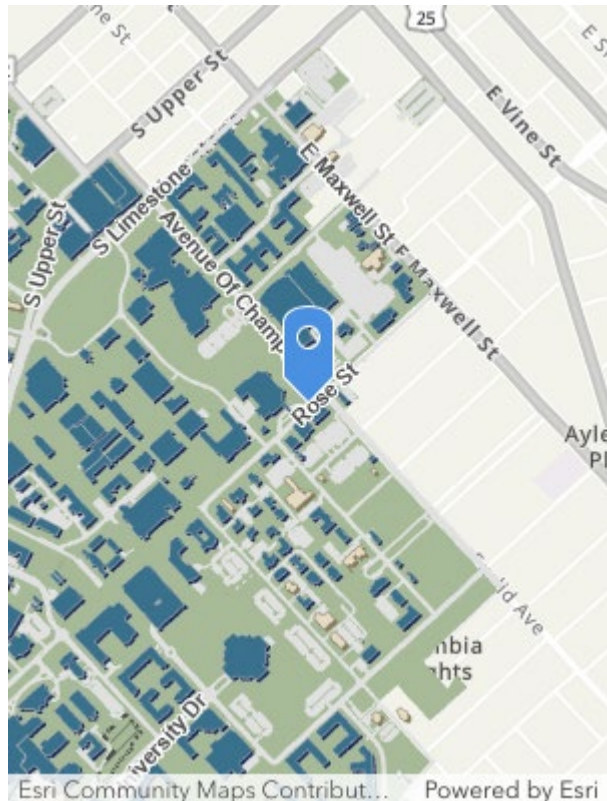
EMD Illicit Discharge Report

Reported Issue

Reported Description	Fertilizer was spread all over the sidewalk and street along Rose street and Avenue of Champions when fertilizer was applied to grass. The entire sidewalk and half the street was covered in fertilizer pellets.
Date and Time Observed	September 25, 2024 12:50 PM
Location Description	Entire length of rose street from avenue of champions to the presidents house and along avenue of champions in front of the Singletary center.
Confirmation	Declined - No Evidence of Discharge/Issue
Official Description	Granular fertilizer on sidewalks and road.
Investigation Findings	9/26/24 1008: Upon survey over the reported description, no findings observed. Sidewalks and road clear of granular fertilizer.
Corrective Action	

Photo

Location



EMD Illicit Discharge Report

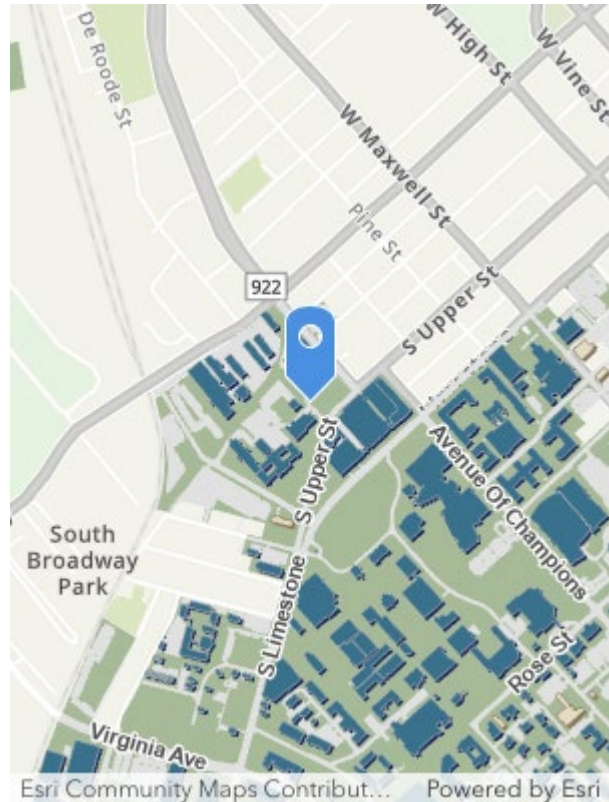
Reported Issue

Reported Description	Illicit material shimmering in drain
Date and Time Observed	September 18, 2024 2:03 PM
Location Description	Drain is at entrance to CP 2 across from water treatment
Confirmation	Declined - No Evidence of Discharge/Issue
Official Description	Oil sheen in stormwater BMP adjacent to coal pile.
Investigation Findings	Area experienced recent rainfall which debris has accumulated in the storm drain inlet filter BMP. The sheen is from organic litter decomposition, not petroleum. Recommend appropriate staff check BMP to see if maintenance/replacement.
Corrective Action	

Photo



Location



EMD Illicit Discharge Report

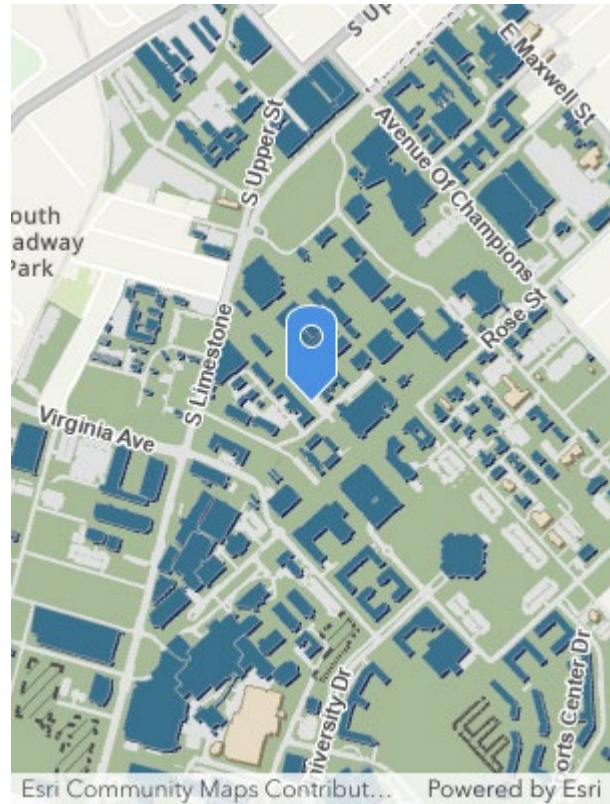
Reported Issue

Reported Description	Drain seems clogged and over filling in front of funkhouser
Date and Time Observed	September 16, 2024 12:49 PM
Location Description	In front of funkhouser and parking lot to the left of the building
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Storm drain clogged with debris including sediment and leaves
Investigation Findings	Storm drain clogged preventing stormwater from properly draining
Corrective Action	Drain assessed and marked clogged in storm tracker. Grounds notified. Inlet does not drain properly, historical issue. Will possibly be repaired during renovation.

Photo



Location



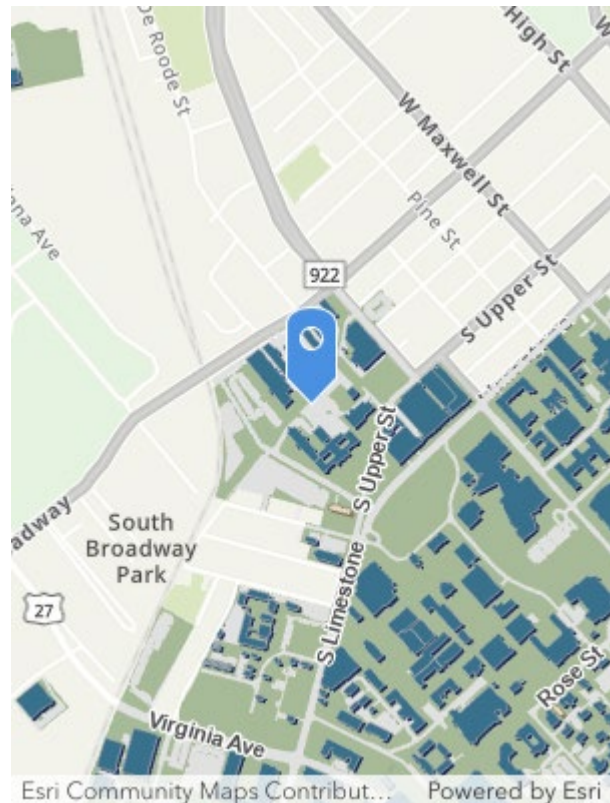
EMD Illicit Discharge Report

Reported Issue

Reported Description	A metal, maybe galvanized open bucket containing some sort of oil has been reported to be sitting in the E parking lot behind Dickey/Taylor Ed.
Date and Time Observed	April 15, 2024 1:19 PM
Location Description	Dickey/Taylor Ed. E parking lot along back edge adjacent to walking path/former train tracks.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Oil filled bucket found sitting in parking space and crushed by car. Evidence of larger oil spill (staining) observed on asphalt in surrounding area.
Investigation Findings	Oil staining in parking lot and on surrounding roadways suggest leak from large vehicle or piece of equipment. Bucket found in area thought to be associated with spill. Anecdotal information puts bucket and staining in place for two weeks.
Corrective Action	Oil containing bucket collected. Absorbent applied to spilled oil. Staining on asphalt soaked in. Facilities and CPMD personnel notified of spill, asked for any information, and reminded of need for proper spill containment, clean up, and notification.

Photo

Location



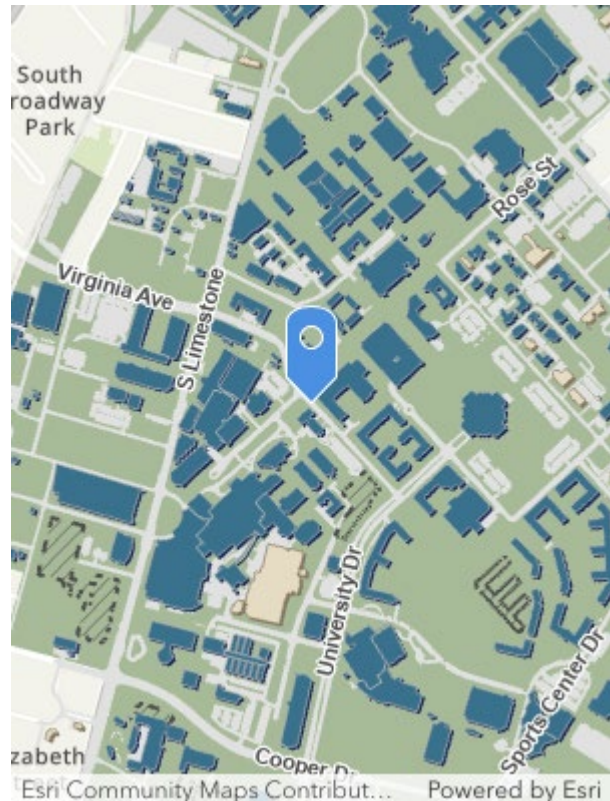
EMD Illicit Discharge Report

Reported Issue

Reported Description	Utility construction trench being dewatered without BMPs in place. Sediment laden water being discharged down street.
Date and Time Observed	February 23, 2024 4:26 PM
Location Description	Corner of Rose Street and Huguelet Drive adjacent to Cooper Bldg.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Sediment laden stormwater being pumped from construction trench.
Investigation Findings	Contractor dewatering utility construction trench without using required BMPs. Sediment laden water discharging down street towards storm drain.
Corrective Action	UEM notified of issue. On 6/30 contractors were observed pumping stormwater into nearby steam vault with sump pump to sanitary. Contractor instructed to discharge to storm sewer while using dewatering bag.

Photo

Location



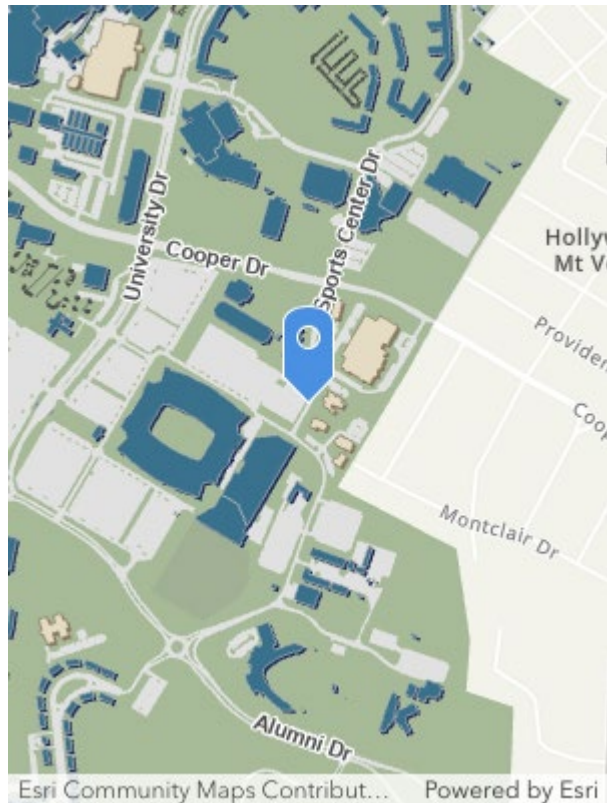
EMD Illicit Discharge Report

Reported Issue

Reported Description	Water bubbling from the ground near the Ronald McDonald House along the roadway. Gravel is being washed into the roadway.
Date and Time Observed	February 23, 2024 1:12 PM
Location Description	Along Sports Center Drive in the grass swale along the roadway between RMH and K Club.
Confirmation	Invalid - Unrelated Issue
Official Description	Water bubbling from ground along roadway
Investigation Findings	Stormwater moving through stone placed in grass swale and popping up on other side of grass pathway. Swale capacity reduced due to rock lining causing overflow onto roadway. Remediation required.
Corrective Action	

Photo

Location



EMD Illicit Discharge Report

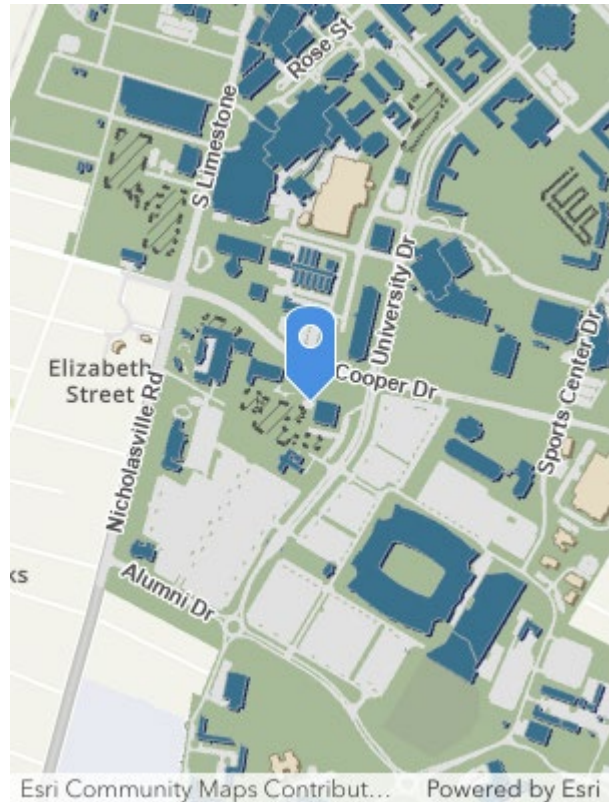
Reported Issue

Reported Description	Paint spill at Tobacco Research loading dock area.
Date and Time Observed	February 23, 2024 12:38 PM
Location Description	Begins at Tobacco Research loading dock area and tracks towards roadway.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Paint spill caused by improper disposal.
Investigation Findings	Improper disposal of paint by contractor during renovation work. Water soluble paint requiring clean up.
Corrective Action	UK Facilities contacted. Paint required to be cleaned up properly without discharge to storm sewer.

Photo



Location



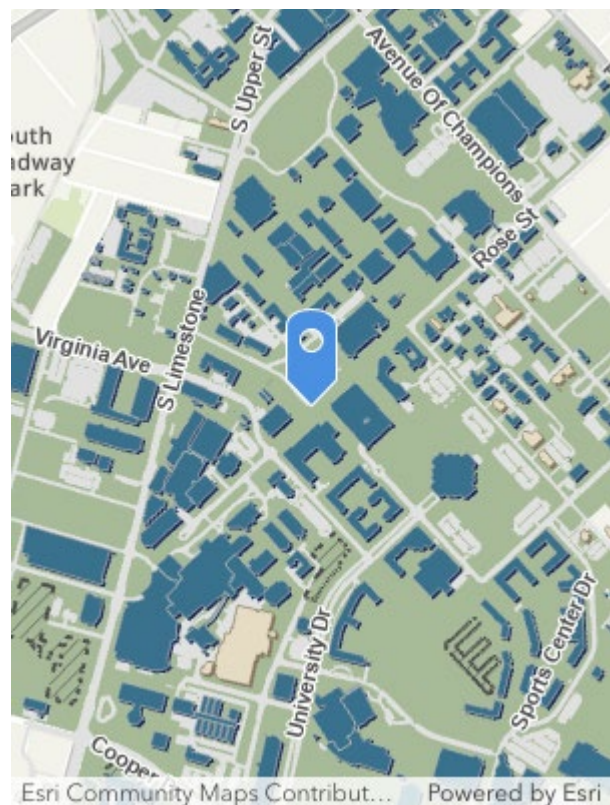
EMD Illicit Discharge Report

Reported Issue

Reported Description	Waterline break on Rose/Washington - water and sediment flowing down Washington Ave.
Date and Time Observed	February 23, 2024 12:05 PM
Location Description	Intersection of Washington and Rose at Rose Street Beautification Project.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Water line break as a result of construction activities releasing water and sediment onto roadway.
Investigation Findings	Contractor hit water line during Rose Street Beautification construction project. Majority of sediment remained in trench. Sediment being tracked on roadway.
Corrective Action	Contacted UEM (Graham Gray) and CPMD (Richard McClure). Richard to follow-up and have contractor clean roadway.

Photo

Location



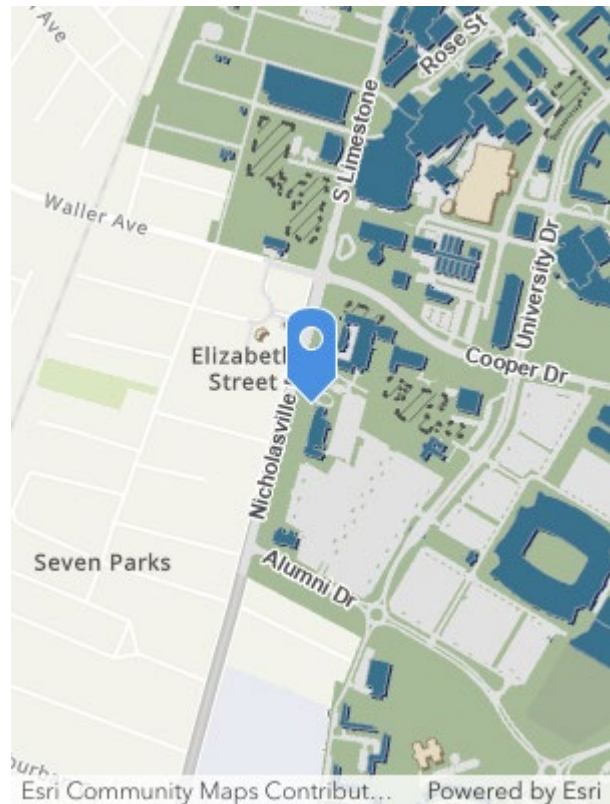
EMD Illicit Discharge Report

Reported Issue

Reported Description	Hot water observed entering Gluck Pond adjacent to main entrance
Date and Time Observed	February 23, 2024 9:57 AM
Location Description	Inlet to Gluck Pond adjacent to main building entrance
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Heated groundwater entering pond due to contact with steam line.
Investigation Findings	Faulty sump pump in utility vault causing ground water levels to rise and contact steam line. Pump brought online and is pumping heated water to pond.
Corrective Action	Pump repaired/replaced lowering groundwater levels in steam line trench preventing contact with steam pipe.

Photo

Location



EMD Illicit Discharge Report

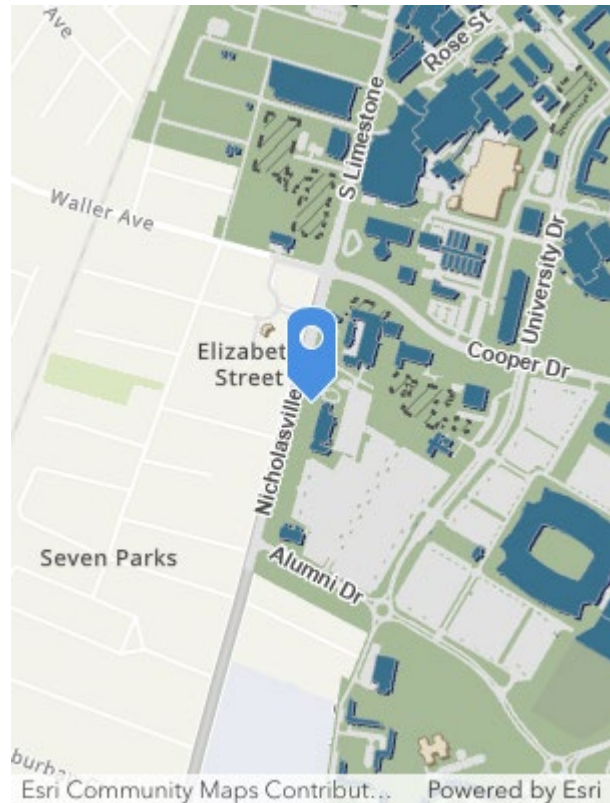
Reported Issue

Reported Description	Strong oil/diesel odor and sheen on and around Gluck Pond.
Date and Time Observed	February 23, 2024 10:04 AM
Location Description	Northern end of Gluck Pond near main Gluck Building entrance.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Diesel odor and oil sheen on Gluck Pond.
Investigation Findings	Strong diesel odor and sheen found on pond. Source unidentified after extensive investigation. Entire pond impacted. Dead fish present.
Corrective Action	Oil absorbing booms placed at pond inlets, outfall, and across pond. Contractor hired to vacuum excessive sheen from pond. Soil samples collected from pond perimeter. Impacted vegetation removed. Extensive investigation performed to identify source.

Photo



Location



EMD Illicit Discharge Report

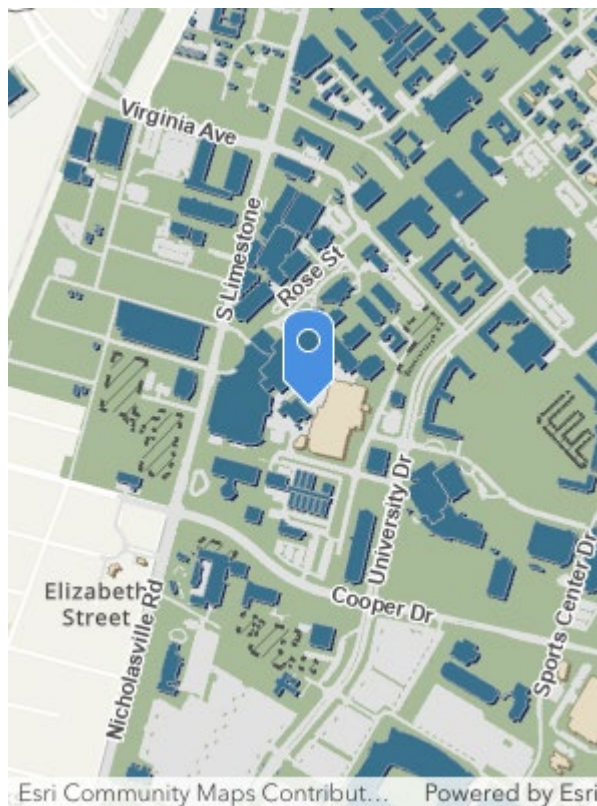
Reported Issue

Reported Description	Med Center Heating Cooling Condenser Tank overflowing white substance on ground and into adjacent storm drains.
Date and Time Observed	February 21, 2024 2:51 PM
Location Description	Blue tank at the back of Med Center Heating and Cooling between Pav A and the VA.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Med Center Heating and Cooling Condenser Water Tank overflowing and entering storm sewer.
Investigation Findings	Tank overflowing and entering storm sewer.
Corrective Action	Mike Duffy - UEM contacted to resolve issue

Photo



Location



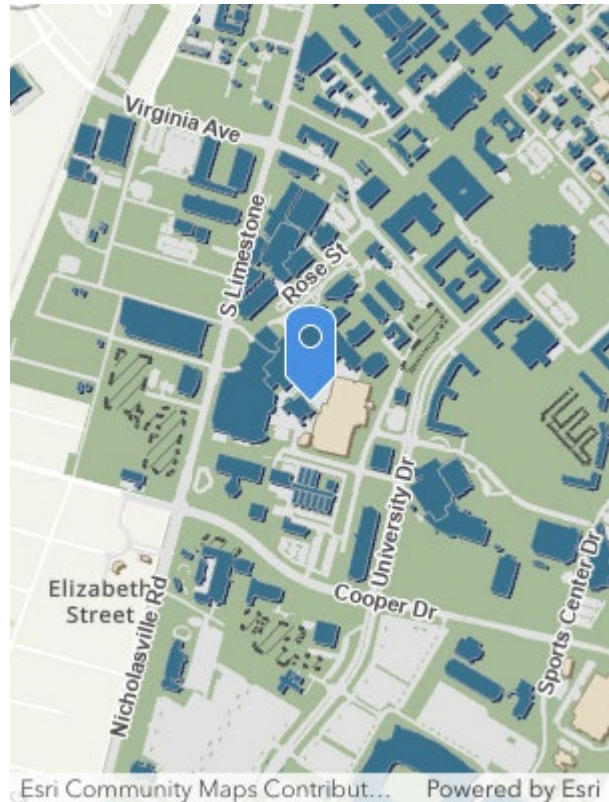
EMD Illicit Discharge Report

Reported Issue

Reported Description	Blue tank behind Med Center Heating and Cooling overflowing and foam on ground.
Date and Time Observed	February 21, 2024 12:48 PM
Location Description	Tank located behind Med Center Heating and Cooling between Pav A and VA.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Cooling Tower Condenser Tank overflowing.
Investigation Findings	Treated water and foam overflowing from top of tank (bypassing overflow)
Corrective Action	Contacted Mike Duffy with UEM.

Photo

Location



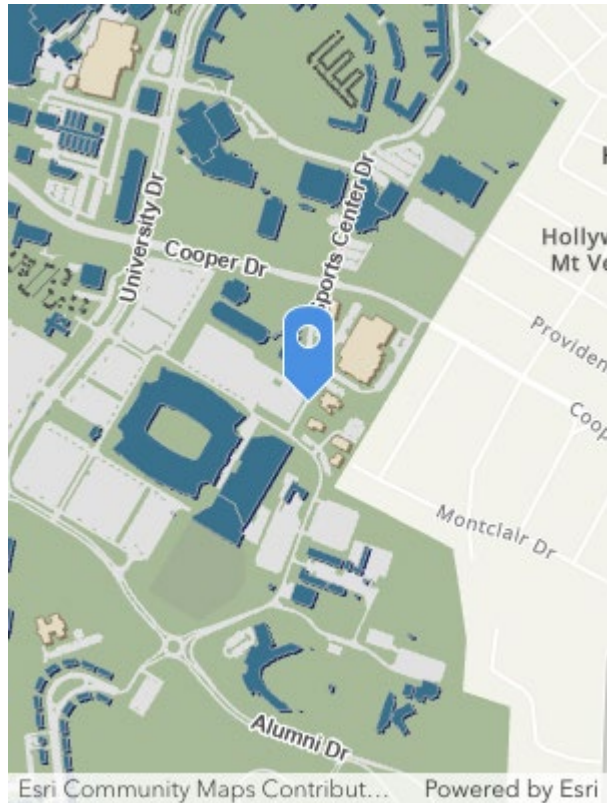
EMD Illicit Discharge Report

Reported Issue

Reported Description	Water bubbling up from ground near Ronald McDonald House adjacent to roadway and gravel washing out in road.
Date and Time Observed	February 21, 2024 12:01 PM
Location Description	On side of Sports Center Drive between Ronald McDonald House and K-Club
Confirmation	Invalid - Unrelated Issue
Official Description	Rainwater flowing through rocks and popping up on the downstream side of grass pathway giving appearance of water/sanitary leak.
Investigation Findings	Rainwater back up due to swale being filled with stone and forcing the water out on the opposite side of grass pathway. Excess liner rock filling swale along roadway limiting capacity causing ponding and overflow issues.
Corrective Action	

Photo

Location



EMD Illicit Discharge Report

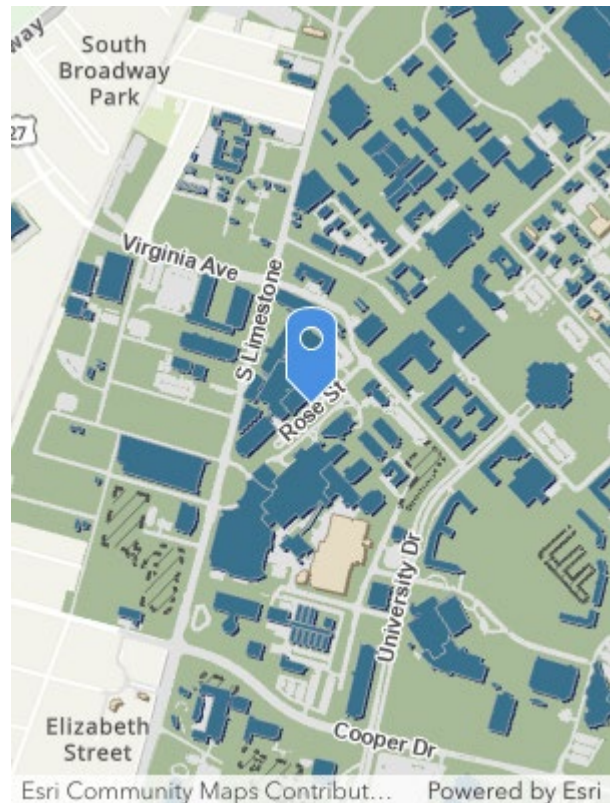
Reported Issue

Reported Description	Spray chalk and color run bombs on sidewalks and roadways at various locations throughout campus.
Date and Time Observed	February 21, 2024 9:04 AM
Location Description	Various sidewalks and roadways throughout campus including those near Wethington, College of Nursing, Huguelet Dr., Rose, Haggin Hall, and Alumni Commons.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Large amounts of colored corn starch dispersed at locations throughout campus along 5K route as part of Color Run event. Spray chalk was also employed to mark the event route.
Investigation Findings	Color run event held without prior approval from University and without appropriate stormwater controls/clean-up plan in place as required. As a result, color packets were dispersed in multiple locations throughout race route requiring pressure washing.
Corrective Action	Grounds staff deployed stormwater BMPs and cleaned impacted areas. UK Events Management staff alerted to issues caused by event. Organization fined (required to pay for clean-up) for failure to follow provided protocols.

Photo



Location



EMD Illicit Discharge Report

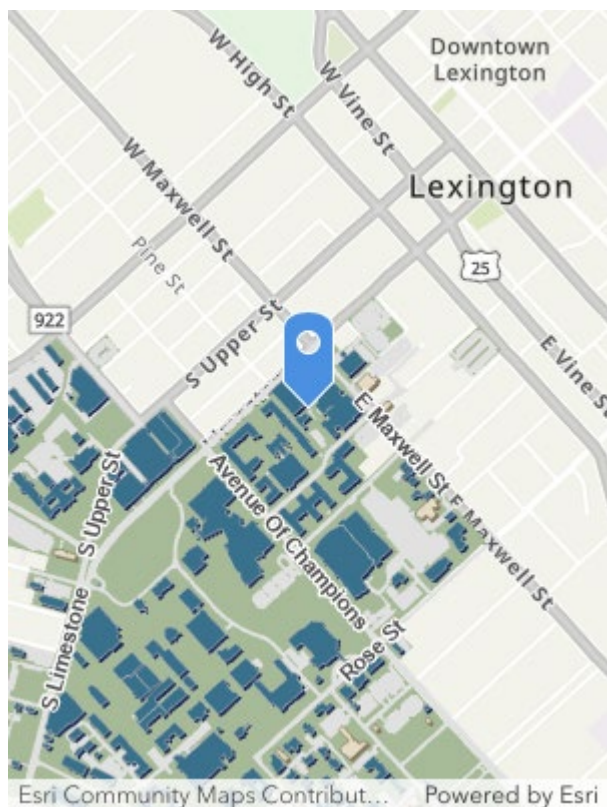
Reported Issue

Reported Description	Waste leaking from construction dumpster into storm drain outside of Good Samaritan Hospital Parking Garage
Date and Time Observed	February 20, 2024 4:13 PM
Location Description	Good Samaritan Parking Garage exit adjacent to Good Samaritan Chiller Building
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Waste/leachate from construction dumpster leaking into adjacent storm drain
Investigation Findings	Waste associated with construction/remodeling appears to have either leaked from adjacent dumpster or have been dumped into storm drain.
Corrective Action	CPMD contacted - contractor removed dumpster containing concrete waste and replaced with lined dumpster. Storm drain protection (liner) also installed.

Photo



Location



EMD Illicit Discharge Report

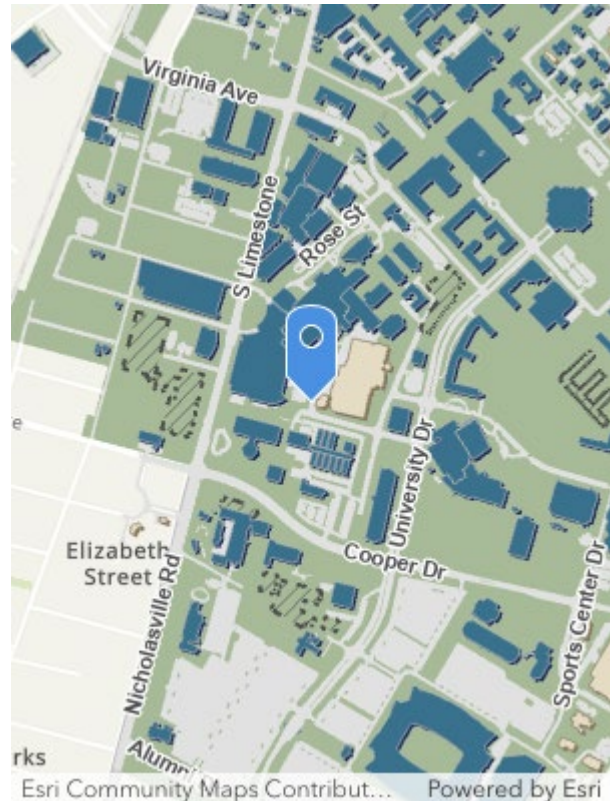
Reported Issue

Reported Description	Sediment along Hospital Drive flowing from Greenhouses to culvert behind Pav A and Med Center Heating and Cooling.
Date and Time Observed	February 20, 2024 3:39 PM
Location Description	Sediment in Hospital Drive roadway and flowing along curb towards storm inlet located between Pav A, Med Center Heating and Cooling, and the VA.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Sediment in roadway, along curbing, and impacting storm drains in area behind PAV A.
Investigation Findings	Sediment caused by 12" water line break in island adjacent to Hospital Drive. Area storm drains impacted, however, BMP's in place provided some protection.
Corrective Action	UK UEM contacted. I

Photo



Location



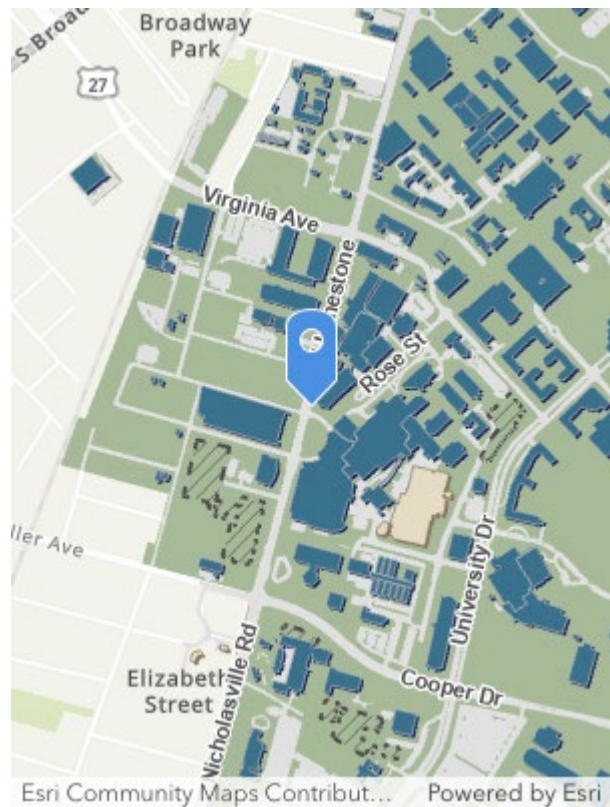
EMD Illicit Discharge Report

Reported Issue

Reported Description	Leaves obstructing a storm water drain near Speedway on Limestone.
Date and Time Observed	February 1, 2024 5:46 PM
Location Description	On hospital side of limestone. Corner storm drain.
Confirmation	Invalid - Unrelated Issue
Official Description	Clogged Drain Reported - No Illicit Discharge Present
Investigation Findings	Maintenance request forwarded to UK Grounds.
Corrective Action	

Photo

Location



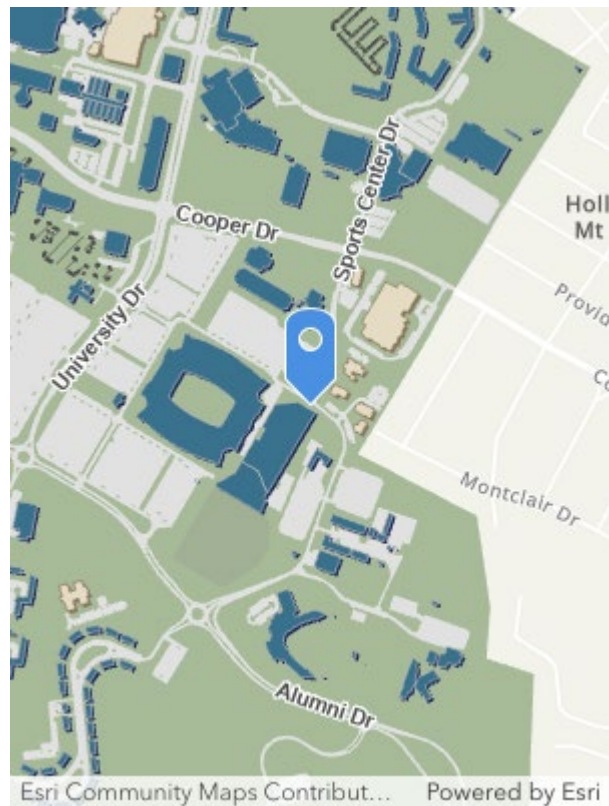
EMD Illicit Discharge Report

Reported Issue

Reported Description	Contractor washing paint off of tools into storm drain at Nutter Field House between building and road on north side.
Date and Time Observed	January 8, 2024 11:15 AM
Location Description	Nutter Field House storm drain on north side of building between building and roadway.
Confirmation	Confirmed - Discharge/Issue Present
Official Description	Contractor washing paint/spackle from tools into storm drain.
Investigation Findings	Actions witnessed by UK Grounds personnel on 1/4/24 and again on 1/5/24. According to Grounds, only small amount of liquid entered inlet.
Corrective Action	In both instances, CPMD Project Manager was notified. Project Manager discussed issue with contractor.

Photo

Location



APPENDIX C-2

UK MS4 Boundary Map & Surface Calculations

DRAFT

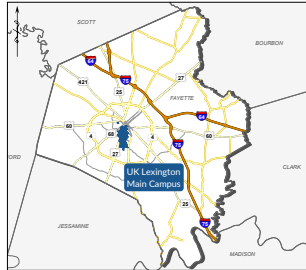
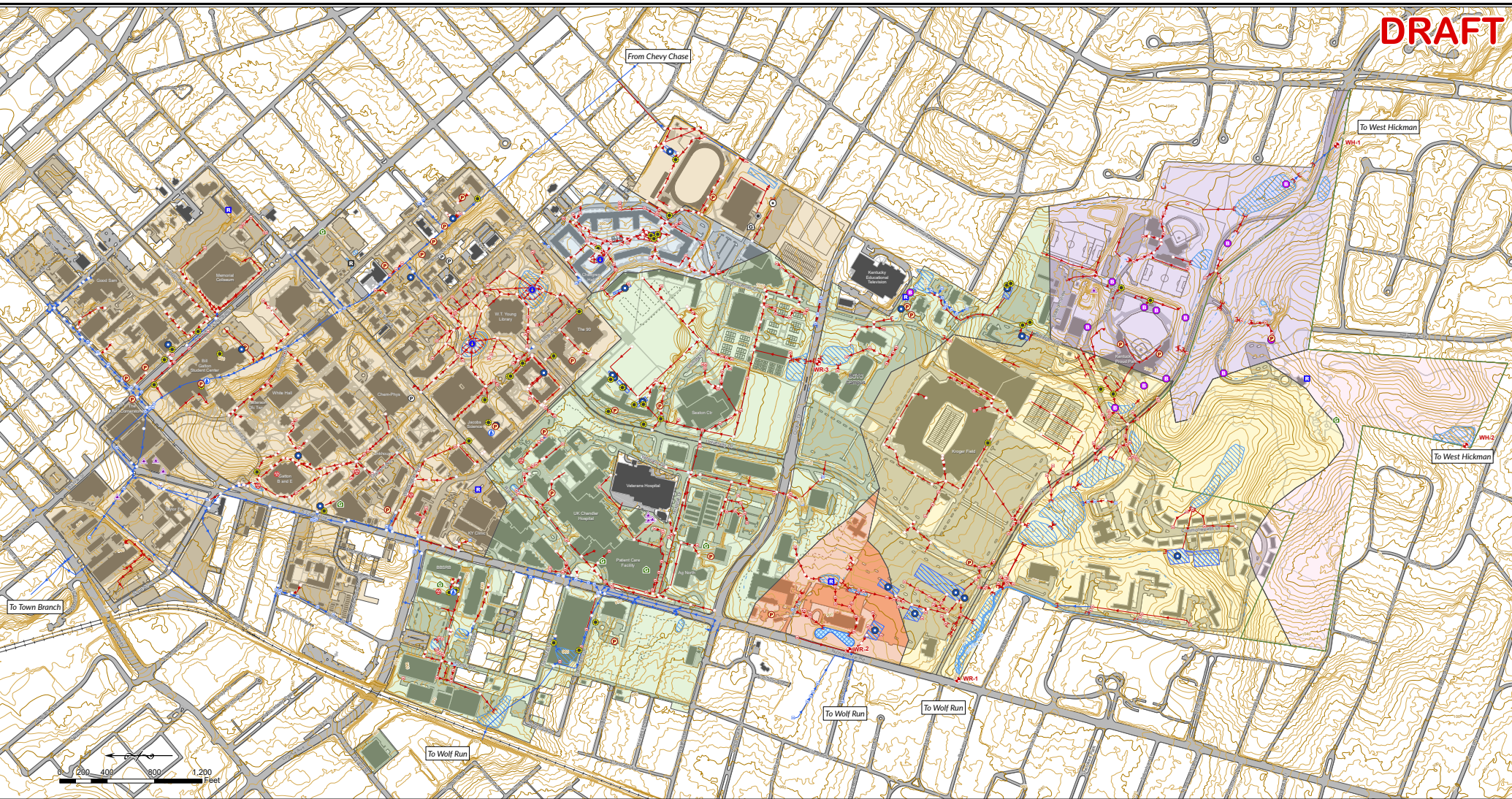


Figure 1:
UNIVERSITY OF KENTUCKY
Municipal Separate Storm Sewer Systems (MS4)
~ Boundary Map ~

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.

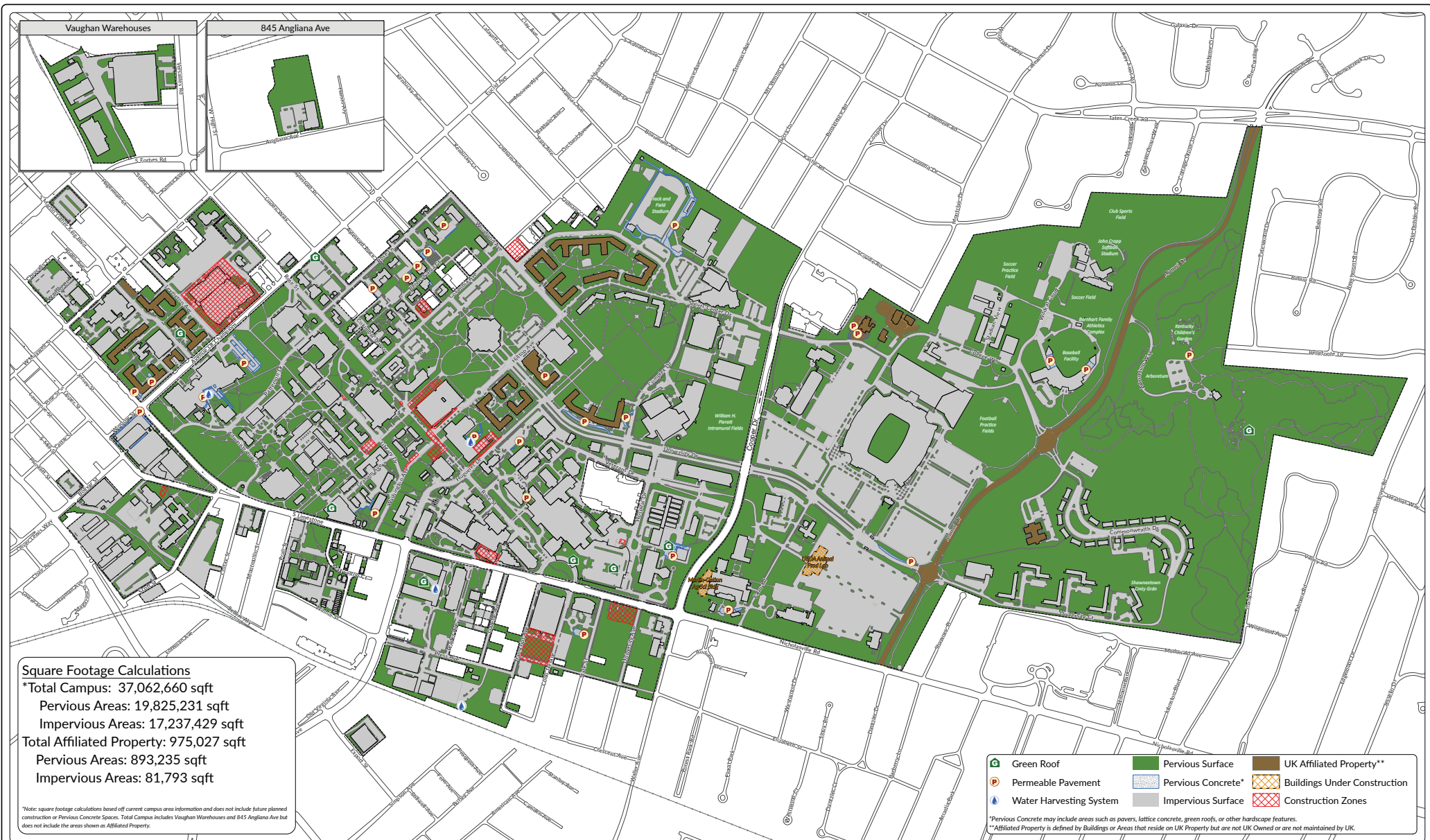
Storm Control	Storm Water Features	MS4 Boundary	Campus Map	
- Bioretention - Class V Injection Well - Green Roof - Inlet Control - Permeable Pavement - Pretreatment Device - Rain Garden - Underground Detention - Water Harvesting System	- Cave - Outfall - UK Drain - Non-UK Drain - UK Headwall - Non-UK Headwall - UK Manhole - Non-UK Manhole	- UK Storm Line - Non-UK Storm Line - Stream Segment - Intermittent Flow - Sinkhole - Detention Basin - Retention Basin - Underground Detention	- 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)	- 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 Management Services
Geographic Information Systems
REV. 20200818

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.



Created by UK Facilities Information Services
 Data Source: UK Facilities Management (2024)
Geospatial.Requests@uky.edu
 REV: 20240322

Impervious & Pervious Surfaces

UK Main Campus



APPENDIX C-3

Major Outfall Inspection Reports



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

Outfall Screening

University of Kentucky

Outfall Details

Location:	WH-1 (Alumni Drive @ Tates Creek Dr.)	Compliance:	Compliant
Added:	12/31/2011	Previously Inspected On:	07/28/2023
Tracking ID:	n08e20sw13dG03DP1		

Inspection Properties

Inspector:	Charlie Starzman	Inspection ID:	O-50466
Inspection Type:	Outfall Screening	Inspection Date:	06/11/2024
Scheduled Inspection Date:	NA	Compliance Status:	Compliant
Time In:	9:20 AM	Time Out:	9:26 AM
Follow Up Inspection Date:	NA		

Section 1 - General Information

Land Use in Drainage Area:	Institutional	Additional Comments:	NA
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Section 2 - Outfall Physical Condition

Is Outfall Submerged in Water:	Partially	Is Outfall Submerged with Sediment:	No
Is there Flow Present (If no, skip to section 5):	Yes	Flow Description (If Present):	Trickle
Additional Comments:	NA		

Section 3 - Water Quality Parameters

Are there any field water quality parameters that may be tested? (If No, skip to section 5):	No	Chlorine Test Results:	NA
Water Temperature Test Results:	NA	pH Test Results:	NA
Ammonia Test Results:	NA	Specific Conductance Test Results:	NA

Total Dissolved Solids (TDS) Test Results:	NA	Additional Comments:	NA
--	----	----------------------	----

Section 4 - Flow Indicators

Are Any Physical Indicators Present in the Flow? (If No, skip to section 5):	No	Odor Description:	NA
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Odor Relative Severity Index (1-3):	NA	Color Description:	NA
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Color Relative Severity Index (1-3):	NA	Turbidity Relative Severity Index (1-3):	NA
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Floatables Description:	NA	Floatables Relative Severity Index (1-3):	NA
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Suds Description:	NA	Suds Relative Severity Index (1-3):	NA
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Additional Comments:	NA
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Section 5 - Physical Indicators

Are any Physical Indicators that are not related to flow present? (If No, skip to section 6):	No	Outfall Damage Description:	NA
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Deposits/Stains Description:	NA	Abnormal Vegetation Description:	NA
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Poor Pool Quality Description:	NA	Pipe Benthic Growth Description:	NA
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Additional Comments:	NA
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Section 6 - Recommendations

Recommended Actions/Actions Taken:	No Action Necessary	Additional Comments:	NA
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Section 7 - Outfall Characterization

Overall Outfall Characterization:	No Evidence	Additional Comments:	NA
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Additional Information

Weather

Weather Condition:	Clear	Temperature (F):	60
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Precipitation (in):	0	Precipitation Last 72 Hours (in):	0.01
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Precipitation Last 24 Hours (in):

0

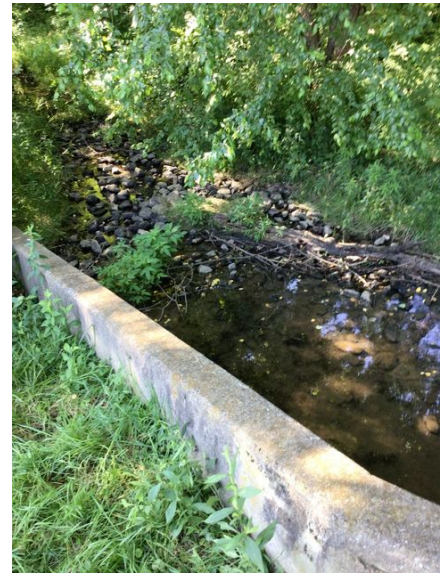
Contacts

No contacts to display.

Location

No location to display.

Photos





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

Outfall Screening

University of Kentucky

Outfall Details

Location:	WR-1 (STR-1) (Nicholasville Rd. @ Alumni Dr.)	Compliance:	Compliant
Added:	12/31/2011	Previously Inspected On:	07/28/2023
Tracking ID:	n08e20sw13aE05DP1		

Inspection Properties

Inspector:	Nathan Weber	Inspection ID:	O-50467
Inspection Type:	Outfall Screening	Inspection Date:	06/11/2024
Scheduled Inspection Date:	NA	Compliance Status:	Compliant
Time In:	2:37 PM	Time Out:	2:44 PM
Follow Up Inspection Date:	NA		

Section 1 - General Information

Land Use in Drainage Area:	Institutional	Additional Comments:	NA
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Section 2 - Outfall Physical Condition

Is Outfall Submerged in Water:	Partially	Is Outfall Submerged with Sediment:	No
Is there Flow Present (If no, skip to section 5):	Yes	Flow Description (If Present):	Trickle
Additional Comments:	NA		

Section 3 - Water Quality Parameters

Are there any field water quality parameters that may be tested? (If No, skip to section 5):	No	Chlorine Test Results:	NA
Water Temperature Test Results:	NA	pH Test Results:	NA

Ammonia Test Results:	NA	Specific Conductance Test Results:	NA
Total Dissolved Solids (TDS) Test Results:	NA	Additional Comments:	NA

Section 4 - Flow Indicators

Are Any Physical Indicators Present in the Flow? (If No, skip to section 5):	NA	Odor Description:	NA
Odor Relative Severity Index (1-3):	NA	Color Description:	NA
Color Relative Severity Index (1-3):	NA	Turbidity Relative Severity Index (1-3):	NA
Floatables Description:	NA	Floatables Relative Severity Index (1-3):	NA
Suds Description:	NA	Suds Relative Severity Index (1-3):	NA
Additional Comments:	NA		

Section 5 - Physical Indicators

Are any Physical Indicators that are not related to flow present? (If No, skip to section 6):	No	Outfall Damage Description:	NA
Deposits/Stains Description:	NA	Abnormal Vegetation Description:	NA
Poor Pool Quality Description:	NA	Pipe Benthic Growth Description:	NA
Additional Comments:	NA		

Section 6 - Recommendations

Recommended Actions/Actions Taken:	No Action Necessary	Additional Comments:	NA
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Section 7 - Outfall Characterization

Overall Outfall Characterization:	No Evidence	Additional Comments:	Significant amount of algae present, but still flowing.
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Additional Information

Weather

Weather Condition:	Clear	Temperature (F):	74
Precipitation (in):	0	Precipitation Last 72 Hours (in):	0.01
Precipitation Last 24 Hours (in):	0		

Contacts

No contacts to display.

Location

38.022867315955494, -84.5122499966041

Photos





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

Outfall Screening

University of Kentucky

Outfall Details

Location:	WR-2 (STR-2) (Gluck Pond)	Compliance:	Compliant
Added:	12/31/2011	Previously Inspected On:	07/13/2023
Tracking ID:	n08e20sw13aF02DP1		

Inspection Properties

Inspector:	Nathan Weber	Inspection ID:	O-50468
Inspection Type:	Outfall Screening	Inspection Date:	06/11/2024
Scheduled Inspection Date:	NA	Compliance Status:	Compliant
Time In:	2:50 PM	Time Out:	NA
Follow Up Inspection Date:	NA		

Section 1 - General Information

Land Use in Drainage Area:	Institutional	Additional Comments:	NA
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Section 2 - Outfall Physical Condition

Is Outfall Submerged in Water:	No	Is Outfall Submerged with Sediment:	No
Is there Flow Present (If no, skip to section 5):	Yes	Flow Description (If Present):	Trickle
Additional Comments:	NA		

Section 3 - Water Quality Parameters

Are there any field water quality parameters that may be tested? (If No, skip to section 5):	No	Chlorine Test Results:	NA
Water Temperature Test Results:	NA	pH Test Results:	NA
Ammonia Test Results:	NA	Specific Conductance Test Results:	NA

Total Dissolved Solids (TDS) Test Results:	NA	Additional Comments:	NA
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Section 4 - Flow Indicators

Are Any Physical Indicators Present in the Flow? (If No, skip to section 5):	NA	Odor Description:	NA
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Odor Relative Severity Index (1-3):	NA	Color Description:	NA
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Color Relative Severity Index (1-3):	NA	Turbidity Relative Severity Index (1-3):	NA
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Floatables Description:	NA	Floatables Relative Severity Index (1-3):	NA
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Suds Description:	NA	Suds Relative Severity Index (1-3):	NA
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Additional Comments:	NA
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Section 5 - Physical Indicators

Are any Physical Indicators that are not related to flow present? (If No, skip to section 6):	No	Outfall Damage Description:	NA
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Deposits/Stains Description:	NA	Abnormal Vegetation Description:	NA
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Poor Pool Quality Description:	NA	Pipe Benthic Growth Description:	NA
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Additional Comments:	NA
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Section 6 - Recommendations

Recommended Actions/Actions Taken:	No Action Necessary	Additional Comments:	NA
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Section 7 - Outfall Characterization

Overall Outfall Characterization:	No Evidence	Additional Comments:	NA
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Additional Information

Weather

Weather Condition:	Clear	Temperature (F):	74
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Precipitation (in):	0	Precipitation Last 72 Hours (in):	0.01
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Precipitation Last 24 Hours (in): 0

Contacts

No contacts to display.

Location

38.02505796757604, -84.51158829541933

Photos





WR-3 (BCTCS)

Outfall Screening

University of Kentucky

Outfall Details

Location:	WR-3 (BCTCS)	Compliance:	Compliant
Added:	12/31/2011	Previously Inspected On:	07/13/2023
Tracking ID:	n08e20sw13bB01PE1		

Inspection Properties

Inspector:	Nathan Weber	Inspection ID:	O-50469
Inspection Type:	Outfall Screening	Inspection Date:	06/11/2024
Scheduled Inspection Date:	NA	Compliance Status:	Compliant
Time In:	3:54 PM	Time Out:	NA
Follow Up Inspection Date:	NA		

Section 1 - General Information

Land Use in Drainage Area:	Institutional	Additional Comments:	NA
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Section 2 - Outfall Physical Condition

Is Outfall Submerged in Water:	No	Is Outfall Submerged with Sediment:	No
Is there Flow Present (If no, skip to section 5):	NA	Flow Description (If Present):	NA
Additional Comments:	NA		

Section 3 - Water Quality Parameters

Are there any field water quality parameters that may be tested? (If No, skip to section 5):	NA	Chlorine Test Results:	NA
Water Temperature Test Results:	NA	pH Test Results:	NA
Ammonia Test Results:	NA	Specific Conductance Test Results:	NA

Total Dissolved Solids (TDS) Test Results:	NA	Additional Comments:	NA
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Section 4 - Flow Indicators

Are Any Physical Indicators Present in the Flow? (If No, skip to section 5):	NA	Odor Description:	NA
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Odor Relative Severity Index (1-3):	NA	Color Description:	NA
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Color Relative Severity Index (1-3):	NA	Turbidity Relative Severity Index (1-3):	NA
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Floatables Description:	NA	Floatables Relative Severity Index (1-3):	NA
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Suds Description:	NA	Suds Relative Severity Index (1-3):	NA
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Additional Comments:	NA
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Section 5 - Physical Indicators

Are any Physical Indicators that are not related to flow present? (If No, skip to section 6):	No	Outfall Damage Description:	NA
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Deposits/Stains Description:	NA	Abnormal Vegetation Description:	NA
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Poor Pool Quality Description:	NA	Pipe Benthic Growth Description:	NA
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Additional Comments:	NA
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Section 6 - Recommendations

Recommended Actions/Actions Taken:	No Action Necessary	Additional Comments:	NA
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Section 7 - Outfall Characterization

Overall Outfall Characterization:	No Evidence	Additional Comments:	NA
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Additional Information

Weather

Weather Condition:	Mostly Cloudy	Temperature (F):	75
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Precipitation (in):	0	Precipitation Last 72 Hours (in):	0.01
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Precipitation Last 24 Hours (in):

0

Contacts

No contacts to display.

Location

38.02585243001065, -84.50394038081275

Photos





WH-2 (UK Abor.)

Outfall Screening

University of Kentucky

Outfall Details

Location:	WH-2 (UK Abor.)	Compliance:	Compliant
Added:	12/31/2011	Previously Inspected On:	07/13/2023
Tracking ID:	n08e20sw13cJ06DP1		

Inspection Properties

Inspector:	Nathan Weber	Inspection ID:	O-50470
Inspection Type:	Outfall Screening	Inspection Date:	06/12/2024
Scheduled Inspection Date:	NA	Compliance Status:	Compliant
Time In:	11:37 AM	Time Out:	NA
Follow Up Inspection Date:	NA		

Section 1 - General Information

Land Use in Drainage Area:	Institutional	Additional Comments:	NA
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Section 2 - Outfall Physical Condition

Is Outfall Submerged in Water:	No	Is Outfall Submerged with Sediment:	No
Is there Flow Present (If no, skip to section 5):	NA	Flow Description (If Present):	NA
Additional Comments:	NA		

Section 3 - Water Quality Parameters

Are there any field water quality parameters that may be tested? (If No, skip to section 5):	NA	Chlorine Test Results:	NA
Water Temperature Test Results:	NA	pH Test Results:	NA
Ammonia Test Results:	NA	Specific Conductance Test Results:	NA

Total Dissolved Solids (TDS) Test Results:	NA	Additional Comments:	NA
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Section 4 - Flow Indicators

Are Any Physical Indicators Present in the Flow? (If No, skip to section 5):	NA	Odor Description:	NA
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Odor Relative Severity Index (1-3):	NA	Color Description:	NA
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Color Relative Severity Index (1-3):	NA	Turbidity Relative Severity Index (1-3):	NA
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Floatables Description:	NA	Floatables Relative Severity Index (1-3):	NA
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Suds Description:	NA	Suds Relative Severity Index (1-3):	NA
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Additional Comments:	NA
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Section 5 - Physical Indicators

Are any Physical Indicators that are not related to flow present? (If No, skip to section 6):	No	Outfall Damage Description:	NA
---	----	-----------------------------	----

Deposits/Stains Description:	NA	Abnormal Vegetation Description:	NA
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Poor Pool Quality Description:	NA	Pipe Benthic Growth Description:	NA
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Additional Comments:	NA
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Section 6 - Recommendations

Recommended Actions/Actions Taken:	No Action Necessary	Additional Comments:	NA
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Section 7 - Outfall Characterization

Overall Outfall Characterization:	No Evidence	Additional Comments:	NA
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Additional Information

Weather

Weather Condition:	Clear	Temperature (F):	73
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Precipitation (in):	0	Precipitation Last 72 Hours (in):	0.01
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Precipitation Last 24 Hours (in): 0

Contacts

No contacts to display.

Location

38.01016135974598, -84.50615833088132

Photos



APPENDIX D-1

Active Construction Map

Current Construction Projects:

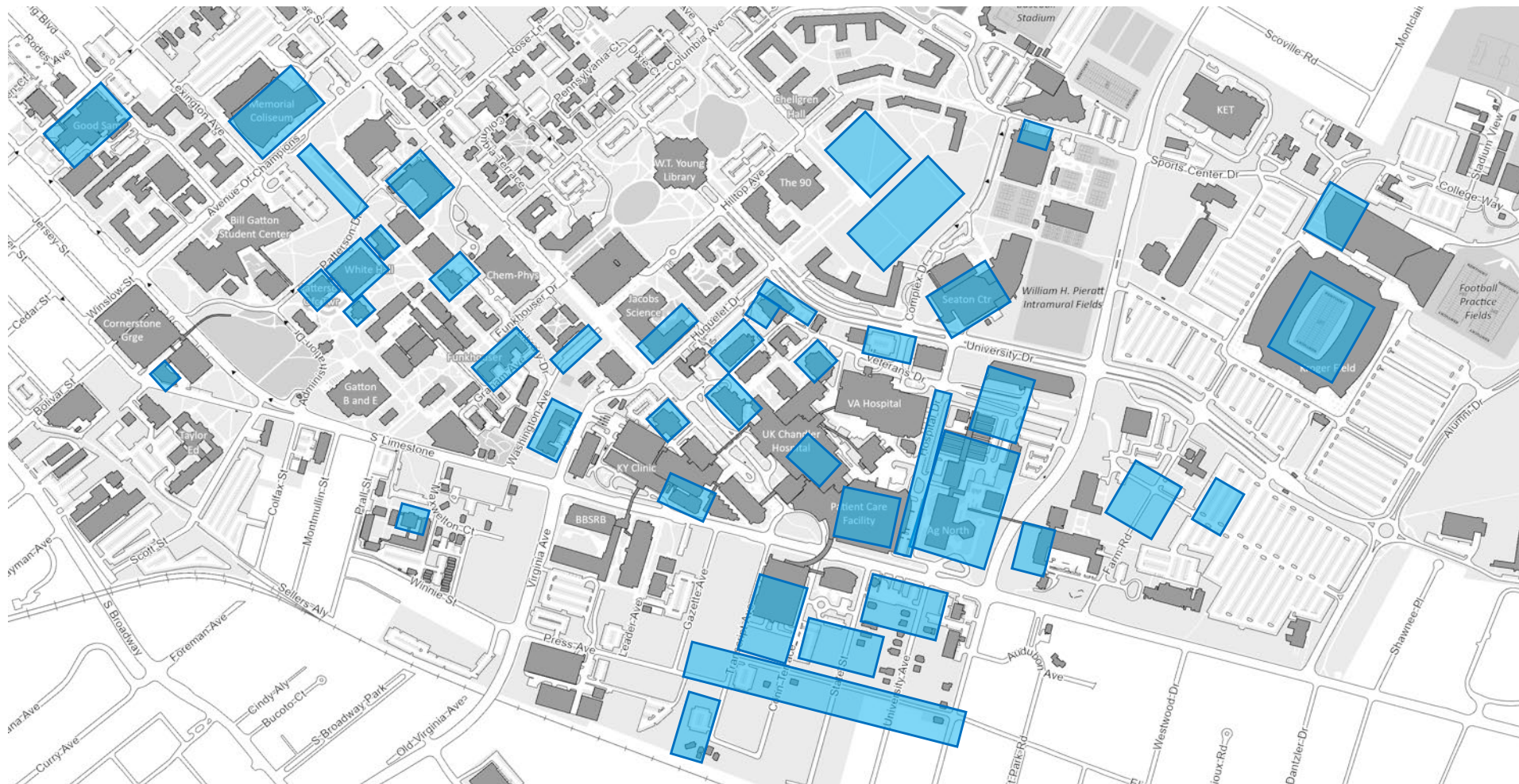


ACTIVE PROJECTS

74

TOTAL PROJECT COST

\$6,159,387,190



APPENDIX D-2

KEPSC Training

May 15, 2024

Dear Mr. Nathan Weber,

Congratulations! You have successfully completed the Kentucky Erosion Prevention and Sediment Control Inspector Qualification Course held on 8/28/2024. Enclosed you will find your certificate and a wallet card to carry with you.

You have been assigned qualification number 240800179. *Individuals must be qualified through training and testing and certified by the Kentucky Transportation Cabinet every three years.* The Kentucky Transportation Center will keep records of the trainings.

You will receive notification approximately one year before your qualification expires, along with information for renewal and continuing education. Please contact our office if you have a change of address.

For more information, including future training and other updates, please visit us at www.kyt2.com. If you need additional assistance, please feel free to contact me by email at chantal.barlow@uky.edu, or at 800-432-0719 or (859) 257-7466.

Sincerely,



Chantal Barlow
Conference Coordinator

University of Kentucky

*College of Engineering
Kentucky Transportation Center
Lexington, Kentucky*

This is to certify that

Nathan Weber

has earned 6 professional development hours at the

KEPSC Inspector Qualification

Qualification #: 240800179

8/28/2024

Date

PG Buckhult

Dean, College of Engineering



John K. Ricketts

Instructor

Day Klein

Interim Director, Kentucky Transportation Center



Nathan Weber

Has successfully completed a course of study and is qualified as a

**KENTUCKY EROSION PREVENTION
& SEDIMENT CONTROL PROGRAM**

Date: 8/28/2024

No. 240800179

This individual attended six hours of instruction and demonstrated his/her knowledge by successfully passing a written/oral exam. Topics covered and materials are available from the Kentucky Transportation Center; contact information can be found at www.kyt2.com. He/She is qualified to act as a Kentucky Erosion Prevention and Sediment Control Technician on public highways in Kentucky for a period of three years from date of study. Qualification will expire in three years from the date on the front of this card.



APPENDIX D-3

Construction Industry Workshop Agenda



Annual Workshop with the Engineering, Development, and Construction Industry

Friday, December 13, 2024

8:30-9:00	Registration
9:00-9:30	Welcome and Community Survey Bailee Young, DWQ MS4 Section Manager
9:30-10:00	Updated KY Erosion Prevention and Sediment Control Guides Paulette Akers, KDOW
10:00-10:20	Stormwater Section Update Mark Sanders, DWQ Stormwater Section Manager
10:20-10:30	Break
10:30-11:00	Erosion & Sediment Control Refresher Abby Terry, Tetra Tech
11:00-11:45	New Development Roundtable Moderator – Richard Walker, Tetra Tech Doug Burton – DOE Director Greg Lubeck – DWQ Deputy Director Bailee Young – DWQ MS4 Section Manager Gabe Hensley – DWQ Compliance and Monitoring Manager Demetria Mehlhorn – DES Enforcement Program Manager Traci Wade – Planning Manager
11:45-12:00	Wrap Up and Adjourn

APPENDIX E-1

Stormwater Quality Device Maintenance

UK Water Quality Units

Date	Location	Comments
3/12/2024	Jewell Hall	
3/12/2024	Roselle Hall	
3/12/2024	Student Center	
3/12/2024	The 90'S	
3/12/2024	Lewis Hall	
3/12/2024	University Flats	Downstream Defender
3/13/2024	Hilltop Ave	
3/13/2024	Johnson Hall	
3/13/2024	New Baseball Stadium	Hydrodynamics Separator #3
3/14/2024	College Way Parking	Pretreatment #1
3/14/2024	College Way Parking	Pretreatment #2
3/14/2024	College Way Parking	Pretreatment #3
3/14/2024	College Way Parking	Pretreatment #4
6/19/2024	Parking lot By Baseball Field	
6/19/2024	Parking lot By Baseball Field	
6/19/2024	Parking lot By Baseball Field	
6/19/2024	New Baseball Stadium	One on Wildcat Court
6/19/2024	New Baseball Stadium	One on College Way
6/19/2024	University Flats	Downstream defender #2
6/19/2024	University Flats	Downstream Defender #1
6/19/2024	University Flats	Flats Snout A
6/19/2024	University Flats	Stormtech unit Row B
6/19/2024	University Flats	Preatreatment Device #2
6/19/2024	University Flats	Flats snout C
7/11/2024	Track & Field	Contech CDS Hydrodynamic Separator
7/11/2024	Woodland Glen	FloGard Dual Vortex Separator #3
7/11/2024	Woodland Glen	FloGard Dual Vortex Separator #1
7/11/2024	Woodland Glen	FloGard Dual Vortex Separator #2
7/11/2024	Alpha Gamma Rho Fraternity	AGR Water Quality Unit
7/11/2024	Academic Science Building	VortSentry #2
7/11/2024	Academic Science Building	Contech CDS Hydrodynamic Separator
7/11/2024	Law Building	Water Quality Unit
7/24/2024	New Baseball Stadium	Hydrodynamics Separator #1
7/24/2024	Shriners Hospital	Pretreatment device
7/24/2024	Administrative Dr	Pretreatment Device
8/8/2024	Student Center	Contech CDS Hydrodynamic Separator D

Parking structure 8 Snouts (2)

Unable to access due to construction

APPENDIX E-2

EcoGro Natural Areas Stewardship Report



University of Kentucky Main Campus 2024 Natural Areas Stewardship Report

The natural areas managed on UK's main campus are home to many beautiful views and a surprising amount of beneficial wildlife. EcoGro is proud to be a part in managing these spaces. It has been several years now since initial planting/installation, and the landscape continues to develop in a way that beautifies the area, benefits the environment, and reduces pollution entering our city's waterways. It is very rewarding to see these sites grow healthy, dynamic ecosystems.

Many of these projects are in areas very visible not only to campus staff, students, and guests but also to sports fans and other commuters who get a brief glance of some pretty flowers on their drive. The wide variety of native plants serves to attract native wildlife that isn't commonly seen inside city limits. We have observed many species of pollinating insects, ducks, green herons, and thick-billed longspurs (A.K.A. Cooper's hawks) using the site.

The goal of this report is to provide a summary overview of the progress of these projects through 2024. Through regular communication with UK managers and crews we are able to quickly address any issues that arise, and ensure they are handled in a timely manner. We attribute this success to a combination of regular monitoring of the sites, keeping up with best management practices (BMP's), and proactive measures to prevent further unnecessary work for ourselves or others in the future.

The University of Kentucky has demonstrated great leadership in demonstrating best management practices in stormwater mitigation, ecological restoration, and green infrastructure. The use of natural areas in education has been of great value to both the University and the community, whether that be through the use of outdoor classrooms or on-campus research sites. With so many eyes on these sites, it is a valued and appreciated demonstration of the University's commitment to education and sustainability. Proper operation and educational use of the sites listed in this report may support multiple programs and policies. Two such policies directly upheld are:

- **UK's Sustainability Strategic Plan:** by using key methods of grounds maintenance and operations, and urban forest management; maximizing stormwater infiltration and evapotranspiration; minimizing negative impacts to water quality; optimizing the use of water on campus grounds; conducting water-focused outreach and engagement on campus.
- **UK's Stormwater Quality Management Plan:** These projects facilitate minimum control measures of UK's MS4 program and compliance with KDOW permits.

We often receive positive feedback from the general public nearby about how the sites are appreciated, providing an aesthetically pleasing break from the comfortable monotony of turf grass and concrete. The natural spaces on campus serve as a effective, professional demonstration of stormwater management principles and are recognized as the new benchmarks of successful stormwater management in central Kentucky. The significance of these projects demonstrates active movement by UK towards ecological awareness and responsibility. EcoGro thanks UK for their continued contributions to stewardship of the environment and leadership in best management practices for the future, serving as an example of how to balance human needs with natural beauty. Let's now take a look at the individual projects that are managed on campus.



University of Kentucky Main Campus 2024 Natural Areas Stewardship Report

FEMA / Alumni Dr. Stream Section

- Plants are well established and providing effective treatment of stormwater and wildlife habitat. We have observed tadpoles in early spring, numerous pollinators through the flowering season, and various birds throughout the year.
- The phenomena of forest succession and abundant of volunteer trees aim to cover the natural area with a shady forest canopy after several years. Although this is a natural progression for our Kentucky landscape, it will eventually modify the composition of species - particularly herbaceous species that are less tolerant of shade. Efforts to selectively remove trees and shrub species of lesser value will help keep sunlight on showy perennial wildflowers.
- Over the past eight years, there have been areas where muskrats had burrowed into banks - especially locations where large boulders provide gaps at the waterline and a higher elevation of earth at the floodplain interface. It is unknown if any of these burrows are actively used. We recommend that workers be aware of potential wildlife and the general conditions associated with working in natural areas.



As summer approaches its end, greenspace vegetation is lush and abundant. Our trimmers make short work of what plants grow into the walking paths, maintaining visible and accessible paths across the creek (September).



University of Kentucky Main Campus 2024 Natural Areas Stewardship Report



Pictured above are all that remains of the cattail population along this section of stream. We expect less than 10% of cattail that were present at the start of the year will resprout in the spring (November).



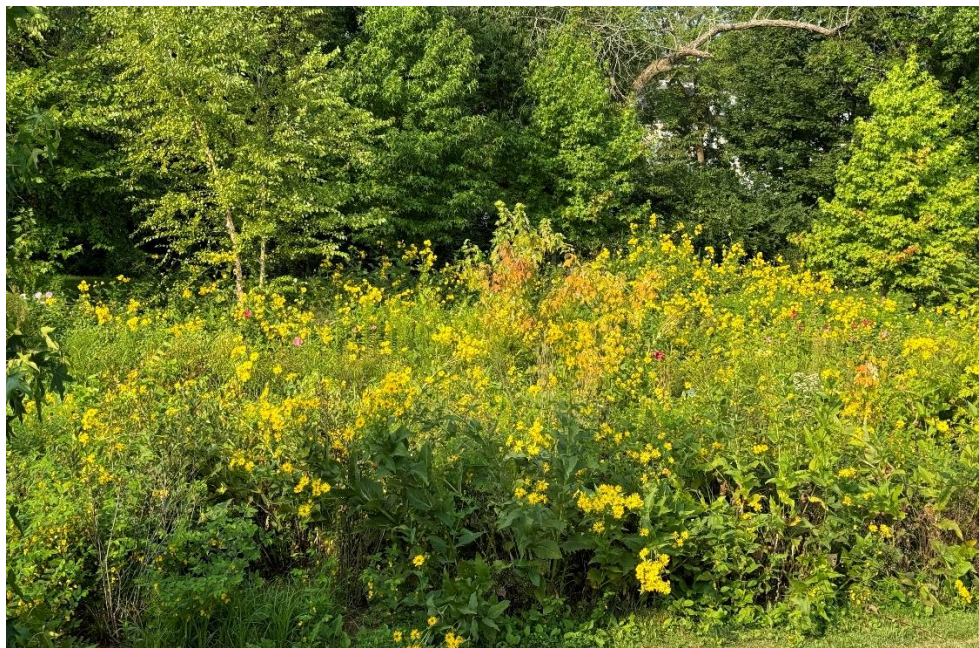
University of Kentucky Main Campus 2024 Natural Areas Stewardship Report



In July (top), we see our native hibiscus in bloom, being visited by an assortment of pollinators. By November (bottom), most plants have died off or entered dormancy. A staggering array of native pollinators use plant stems, leaf cover, or undisturbed soil to overwinter.



University of Kentucky Main Campus 2024 Natural Areas Stewardship Report



Management of the canopy in regards to light allows beautiful wildflowers to exist next to more shade-loving native plants (July, Aug).

www.EcoGro.net

(859) 231-0500

P.O. Box 22273, Lexington, KY 40522

Page 5 of 14.



University of Kentucky Main Campus 2024 Natural Areas Stewardship Report

FEMA / Alumni Drive Basins

- A major consideration for management of the basins is the potential for cut plant material to accumulate and clog stormwater outlets and inlets. We have made it a priority at each site visit to ensure outlets are free of obstructions and to remove material if they are not. We also reduce the possibility of causing a clog ourselves by either finely cutting up vegetation into smaller pieces when cutting is needed or removing material from the basins. Coordination with UK Grounds staff has made for a smooth process managing the space and materials. We appreciate their understanding of and consideration for how to properly manage these types of greenspaces.



The summer is a remarkable time to visit the basins. Above we see our native hibiscus, swamp rose mallow, in abundant bloom in mid-July.



University of Kentucky Main Campus 2024 Natural Areas Stewardship Report



A year in three photos, the cycles of nature enacting before us. (April, June, & November).

www.EcoGro.net

(859) 231-0500

P.O. Box 22273, Lexington, KY 40522

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University of Kentucky Main Campus 2024 Natural Areas Stewardship Report



August and September present a stunning mosaic of fall colors as the days grow short.



University of Kentucky Main Campus 2024 Natural Areas Stewardship Report

Alumni Drive East Stream and Bioswale

- Now past its' fifth full growing season, we are seeing many of the planted and desirable volunteer trees grow above the herbaceous annuals and perennials, demonstrating early succession from meadow to a mixed, open-canopy forest. The site is an example of desirable characteristics promoted by Cooperative Extension Service publications.
- Amongst the thick herbaceous cover of perennial wildflowers and native grasses, the trees and shrubs have continued their growth. Pioneer species indicative of early succession (such as black cherry, wild plum, sycamore and elms) have taken full advantage of ample sunlight and are putting on impressive amounts of growth. Slower growing species (such as oak, pawpaw, pecan and persimmon) are continuing their progress towards the light and above the quick-growing plants around them.
- Volunteer trees are increasing in abundance and size. Sycamore, box elder, elm and similar pioneer trees that were not planted are approaching the same size as those that were planted. In some cases the volunteers have grown even larger. We monitor and manage the number of these volunteer trees in order to provide preference for planted species and to prevent crowding or increasing the difficulty of future management.
- Pink flagging tape has proven a useful management practice, marking any trees during the winter season that will be obscured by a sea of tall herbaceous plants in the coming year. Once a tree or shrub has grown above the height of most of their neighbors, they "graduate" beyond the need of the pink flagging tape and have it removed. Another aspect of the increased visibility is the reduction of a chance of harm by periodic stewardship practices, such as the use of trimmers or herbicide.



Several non-human visitors performing their own water quality checks. The stream is frequently visited by a wide variety of birds. (February)



University of Kentucky Main Campus 2024 Natural Areas Stewardship Report



After cutting back last year's herbaceous cover in February (top 4 photos), the growing season progresses with new vegetative growth in April through June, showy flowers from July through October (bottom 4), then into dormancy for the winter.

www.EcoGro.net

(859) 231-0500

P.O. Box 22273, Lexington, KY 40522

Page 10 of 14.



University of Kentucky Main Campus 2024 Natural Areas Stewardship Report



Walkways and seating areas were kept clear and accessible through the growing season (top and left).



Stormwater inlets and outlets were checked during each site visit and cleared if needed (below).





University of Kentucky Main Campus 2024 Natural Areas Stewardship Report

Stadium View Drive Stormwater Treatment

- During winter months, herbaceous cover is left in place to provide shelter for wildlife. It was cut back in February, before migratory birds returned to build nests.
- With the project's third full season of growth, native plants are well-established with less pressure from invasives. A mix of perennials and annuals keep the site interesting year round.
- The rock channel and sand filter remain stable and are performing as expected.
- Stormwater inlets and outlets are checked with each visit and cleared if/when needed.



*Top: The rock channel provides contrast to the green growth of spring. (April).
Bottom: Spring flowers give way to summer flowers (early July).*



University of Kentucky Main Campus 2024 Natural Areas Stewardship Report



Stadium View provides more than just a view of sports fields for visitors to the area (June & July).



University of Kentucky Main Campus 2024 Natural Areas Stewardship Report



Above: Before and after a trim of the outdoor classroom (November).

APPENDIX F-1

LFUCG Water Quality Incentive Grant Applications

ATHLETICS COMPLEX STORMWATER INFRASTRUCTURE REPAIRS LFUCG INFRASTRUCTURE GRANT APPLICATION



*UNIVERSITY OF KENTUCKY
LEXINGTON, KENTUCKY*

JULY 2024

PREPARED BY:

*BELL ENGINEERING
2480 FORTUNE DRIVE, SUITE 350
LEXINGTON, KENTUCKY 40509*

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The Stormwater Quality Projects Incentive Grant Program
APPLICATION FORM FOR CLASS B INFRASTRUCTURE PROJECTS
Division of Water Quality – Document #INC.2025I.2

GRANT FISCAL YEAR: 2025 (July 1, 2024 – June 30, 2025)
APPLICATION DEADLINE: **FRIDAY, JULY 26, 2024**

Refer to Document #INC.2025I.1 “The Stormwater Quality Projects Incentive Grant Program, Application Packet for Class B Infrastructure Projects” prior to filling out this application.

Please provide responses to all questions below. Mail **nine (9)** copies of the completed and signed form, all typed responses, and any supporting documentation to the address given on Page 5.21-7104.3

In addition to the hard copies, a digital copy of the application form with attachments is also required. It can be provided via a flash drive or emailed to fmabson@lexingtonky.gov and/or sbullock@lexingtonky.gov.

----- ALL APPLICATIONS MUST BE SIGNED OR THEY WILL NOT BE CONSIDERED -----

Official Name of Applicant as Registered with the State of Kentucky: [The University of Kentucky Research Foundation](#)

Organization Number as Registered with the State of Kentucky: [0052708](#)

Official Mailing Address: [500 South Limestone, Kinkaid Hall, Lexington, KY 40526-0001](#)

Federal Employer Identification Number (optional): [616033693](#)

LEXserv Account Number: [21-7104.300](#)

Name of Primary Project Contact: [Kim C. Carter](#)

Cell or Daytime Phone Number: [859-257-9420](#)

Email: ospa@uky.edu

Name of Secondary Project Contact: [Britney Ragland](#)

Cell or Daytime Phone Number: [859-257-4171](#)

Email: britney.ragland@uky.edu

Name of Design Consulting Firm: [Bell Engineering](#)

Name of Design Firm Contact: [Bo Smith, PE](#)

Cell or Daytime Phone Number: [859-278-5412](#)

Email: bsmith@hkbell.com

Grant Being Applied For (check all that apply):

- ☐ Feasibility
☐ Projects \$75,000 or Less
☒ Design and/or Construction

Grant Amount Being Requested:

(a) [\\$322,000](#)

Proposed Cost Share to be Provided:

(b) [\\$80,500](#)

Estimated Total Project Cost [(a) + (b)]:

(c) [\\$402,500](#)

Proposed Cost Share % of Total Project Cost [(b) ÷ (c)]:

(d) [20%](#) (20% min.)

If the entire grant amount requested is unavailable, does the Applicant wish to be considered for partial funding? ☐ YES ☒ NO (If YES, refer to question B5 for more information)

Is any additional information, such as supporting documentation, letters from partners / stakeholders, etc., attached to this form? ☒ YES ☐ NO If YES – See Question 8.

1) Address of Project Site: [770 Alumni Drive, Lexington, KY 40503](#)

2) Is the Applicant also the Property Owner of the project site? ☐ YES ☒ NO

If NO, provide the following:

Property Owner Name: [Eric Monday – University of Kentucky](#)

Property Owner Address: [410 Administration Drive, Lexington, KY 40506](#)

Phone Number: [859-257-1841](#)

Email: emonday@uky.edu

3) Is the Project Site currently undeveloped (e.g., vacant, woods, etc.)? ☐ YES ☒ NO

4) Does the project propose to target a documented building or road flooding problem? ☐ YES ☒ NO
If YES, refer to question A3 and attach documentation of flooding (e.g., photos, insurance claims, etc.)

5) Is the project site an LFUCG designated industrial or high-risk commercial facility? ☐ YES ☒ NO
If YES, describe how the proposed plan addresses pollutants of concern related to commercial/industrial activities with potential exposure to stormwater: _____

6) Does the project propose to remove and/or retrofit an existing impervious surface? ☐ YES ☒ NO
If YES, refer to question A7 and describe the existing control(s): _____

7) Provide typed responses to the following questions and attach to this form or insert text below each question in this document. Include as much detail as possible, including any information the Applicant feels is pertinent but not asked below.

A. PROJECT ELEMENTS:

A1. Describe the overall project purpose and general project elements (e.g., parking lot retrofit, building expansion, BMPs only, etc.).

[Previous developments to the project location removed a grass swale and directed flow to an underground conveyance system. However, later improvements to the Athletic complex reintroduced flow to the area which was previously a grass swale. This portion of flow is currently missing the stormwater conveyance system and causing damage to a downstream infiltration basin. Additionally, the excess moisture in the project location has led to the loss of recently installed tree canopy. This project would reintroduce a vegetated swale to this location and direct this portion of flow back to the underground conveyance system, allowing for the continued operation of the infiltration basin and the reintroduction of tree canopy along the mixed-use trail.](#)

A2. List all proposed Best Management Practices (BMPs) and indicate whether each BMP is for water quality control, water quantity control, or both.

[Install vegetated swale system – Quantity and Quality Control](#)

[Repairs to Existing Infiltration Basin – Quantity and Quality Control](#)

[Connect to Underground Conveyance System – Quantity Control](#)

A3. Describe any existing building or road flooding problems and how the proposed project would impact, reduce, or eliminate those problems.

[This project is intended to prevent a road flooding problem by addressing an at-risk area before flooding has progressed to the point of impact to existing infrastructure. Presently, a large amount of flow is ponding along the mixed-use trail and causing damage to the embankment of the downstream infiltration basin. There is a risk that with continued](#)

ponding and damage to the downstream infrastructure, flow could begin to pond over the mixed-use trail and eventually Alumni Drive.

- A4. Provide a site sketch that includes the location(s) the BMPs AND/OR tree canopy proposed and delineates the areas draining to them. See Attached.
- A5. Provide the amount of square feet of impervious area (e.g., parking lots, rooftops, etc.) to be removed or retrofitted to a pervious surface AND/OR the proposed tree canopy area (in square feet) to be added (tree canopy is calculated using Article 26-5(6)(e)2 of the LFUCG Zoning Ordinance with categories of trees found in Section VII of the LFUCG Planting Manual).

No impervious area is anticipated to be removed in this project.

- A6. Provide the amount of square feet of drainage area that would drain to each of the proposed BMPs AND/OR tree canopy.

The improvements would capture flow from approximately 21 acres of developed land on the University's campus. See Attached.

- A7. List any proposed BMPs that are retrofits to an existing stormwater control structure or impervious surface (including proposed tree canopy establishment / expansion).

Grading repairs are intended for the existing infiltration basin.

- A8. For water quality BMPs:

Describe how the water quality BMPs would function and the types of pollutants they address. Reference the proposed design criteria to be used.

Vegetative Swale will provide additional infiltration as outlined in the LFUCG Standards.

- a. Does this project address *E. coli* pollution? ☐ YES ☒ NO If YES, please describe how the project addresses it:

- A9. For water quantity BMPs – describe how they would function, if they provide peak control and/or volume control, the storm events being considered, etc. Reference the proposed design criteria to be used.

Vegetative Swale and installed storm sewers will provide capacity to convey flows from a 10-year and 100-year intensity storms as outlined in the LFUCG stormwater manual.

- A10. List any proposed BMPs that are not currently listed in Chapter 10 of LFUCG's Stormwater Manual.

All proposed BMPs are listed in Chapter 10 of the stormwater manual.

- A11. If the proposed project is an upgrade or enhancement to a structure required by local, state, or federal regulations, clearly explain how the proposed grant-funded portion of the project would exceed the minimum requirements.

This project does not address any required regulatory actions, and rather is intended to correct a problem before regulatory action is required. This project is focused on proactive improvement in a sensitive area.

- A12. Does this project fulfill one or more of the proposed BMPs of an approved Watershed Management Plan?

☐ YES ☒ NO If YES, please explain:

B. PROJECT IMPLEMENTATION:

- B1. Describe the project team (include at a minimum):
- Applicant's Grant Manager: [Britney Ragland, UKY](#)
 - Project Design Consulting Firm: [Bell Engineering](#)
 - Design Consulting Firm's project members, including professional(s) of record for the project (i.e., the person who will seal the design plans and record drawings): [Jim Buckles, PE](#); [Bo Smith, PE](#)
 - Material Suppliers (if known, not required): [TBD](#)
 - Contractor (if known, not required): [TBD](#)
 - Other Stakeholders: [TBD](#)
- B2. Describe the proposed approach to permitting and designing the project elements.
- [As a highly visible area of campus, it is imperative to reduce the effects of stormwater runoff with minimal disturbance to the surrounding area. Additional, sensitive improvements are located downstream of the project area. As a result, work to improve this area will be carefully planned to avoid disrupting the function of downstream improvements. As this work affects the headwaters of a regulated stream, the design of project elements would follow guidelines set by a USACE nationwide permit.](#)
- B3. Describe the proposed approach for securing a contractor and completing construction. Will the construction work go through a bidding process? If so, how? If not, why not?
- [Public Bid through Lynn Imaging's UK Procurement portal.](#)
- B4. Provide a proposed schedule for project implementation, including the start and finish of each project phase (e.g., Design, Construction).
- [Final Design Phase – June 2025 to November 2025](#)
- [Bidding - November 2025](#)
- [Construction – December 2025 to May 2026](#)
- B5. Attach a proposed project budget with line items for (a) Equipment and Supplies, (b) Consulting Fees, (c) Construction Costs, (d) Personnel, and (e) Other Project Specific Costs as appropriate. Include as much detail as possible in the proposed budget, breaking out costs for various project phases and types of expenses. [See Attached.](#)

NOTE:

- If the project is proposing new or additional parking, provide justification for the value of the proposed improvements using the following formula:*
$$\text{Unit Price of a Standard Pervious Lot (in sqft)} - \text{Unit Price of a Standard Asphalt Parking Lot (in sqft)} = \text{Net Value of Proposed Stormwater Facilities (upgrade cost amount)}$$
 - If you have elected to be considered for partial funding, include the following in addition to the proposed project budget as detailed above:*
 - Separate all budget items into stand-alone projects that could be constructed independently of one another.*
 - Rank the proposed stand-alone projects by order of funding preference.*
- B6. Describe the approach for meeting the grant cost share, such as funding sources available, donated hours or supplies, etc. Describe the portions of the project elements to be covered by the Applicant's cost share.
- [The University is committed to providing a 20% match as required for this grant proposal. This match will cover engineering consultant fees, a portion of construction costs, and contingencies.](#)

C. EDUCATION:

- C1. Describe any future educational opportunities that completion of this project will offer, whether to employees / personnel or the public in general.

This project is within a highly visible area with access from a mixed-use trail, making it a prime location for educational signage and guided programs beginning in the arboretum or on campus. Additionally, access from the mixed-use trail make this a prime location access for university courses.

- C2. Describe any specific water quality / stormwater educational program and/or curriculum this infrastructure project is tied to.

University of Kentucky students studying engineering or a related field will be invited to participate in the design development for this project.

D. PROJECT SUSTAINABILITY:

- D1. Describe the project site's current and future uses, include an aerial map or site plan, if possible. Describe how the proposed BMPs are appropriate for future site uses.

This site is located between the Athletics Complex and Mixed-Use trail on Alumni Drive. See attached site plan for guidance. The proposed installation conforms to the existing and future land uses relating to the University of Kentucky Master Plan. The proposed improvements ensure the area can continue to support its current land use for years to come.

- D2. Describe the plan for future inspection and maintenance of the improvements. Will an Inspection, Operation, & Maintenance (IOM) Plan be developed for this project or will industry standard guidelines be used? Include who will be performing future maintenance (e.g., internal staff, contractors, etc.).

During the installation of the specified improvements, the general contractor will be responsible for the implementation and maintenance of the installed BMPs. After the completion of this project, UK's Facilities Management Grounds Team and Utilities Department will maintain the BMP. BMPs will be monitored in accordance with the University's MS4 permit and SWQMP.

- D3. Describe the availability and sustainability of funding sources to cover future maintenance costs.

The University intends to utilize annual funding for the maintenance of campus grounds and utilities to maintain the project site.

- D4. Describe how the site plan will allow for access to all BMPs for appropriate maintenance.

This installation has sufficient access for maintenance from the mixed-use trail and Alumni Drive. Thus, all provided installations will be readily accessible for maintenance.

- 8) **SUPPORTING DOCUMENTATION:** Include with the application any additional information, letters of support from partners / stakeholders, etc. INCLUDE A COVER SHEET THAT LISTS ALL OF THE ATTACHMENTS.

- 9) **PROJECT EXECUTIVE SUMMARY:** Provide a project narrative describing the existing situation or need for the project, project name, proposed project elements, anticipated costs, proposed benefits, project sustainability, and any unique aspects of the project. The maximum length shall be half (1/2) a page (8.5"x11") using Times New Roman Font, Size 12.

AUTHORIZED SIGNATURES

This form shall be signed by hand. Electronic signatures are not acceptable. Please indicate which submittal application is the original.

APPLICANT

I certify that my organization is in full compliance with all applicable provisions of the LFUCG Code of Ordinances listed in the Application Packet, is a Class B Water Quality Management Fee ratepayer, and is current on all LEXserv-billed services. I further certify that the information provided in this grant application is complete and true to the best of my knowledge, and that I am duly authorized to submit this application on behalf of my organization.

In addition, I certify that if my organization's application is selected for funding that my organization agrees to execute a Grant Award Agreement with LFUCG that will include all project elements, eligible expenses (i.e., budget items), terms, and conditions, to be forwarded for approval by the Urban County Council.

Kim C. Carter
Signature of Applicant

7/24/2024
Date

Kim C. Carter
Printed Name of Applicant

Associate Director, University of KY Research Foundation
Title of Applicant

IF THE SITE OF THE PROPOSED PERMANENT INFRASTRUCTURE OR EQUIPMENT IS NOT OWNED BY THE APPLICANT, THE PROPERTY OWNER SHALL SIGN BELOW.

PROPERTY OWNERS

I hereby authorize the above-signed Applicant to apply for a Water Quality Management Fee-funded Class B Infrastructure Stormwater Quality Projects Incentive Grant. If this project is selected for a grant, I authorize construction of the described project elements on my property located at (provide complete address): University of Kentucky, 410 Administration Drive, Lexington, KY 40506. I also agree to execute the *Agreement to Maintain Stormwater Control Facilities Funded by an LFUCG Class B Infrastructure Stormwater Quality Projects Incentive Grant* at the completion of construction.

Eric N. Monday
Signature of Property Owner

072324
Date

Eric N. Monday, EVPFA
Printed Name of Property Owner

Digitally signed by
Shannan Stamper
Reason: Reviewed for
form and legality
Date: 2024.07.23
15:01:13 -04'00'

MAIL OR DELIVER NINE (9) COPIES OF THIS FORM WITH ATTACHMENTS TO:

**Frank Mabson
LFUCG Division of Water Quality
125 Lisle Industrial Avenue, Suite 180
Lexington, KY 40511**

(Must be delivered or postmarked by **FRIDAY, JULY 26, 2024, to be considered)**



University of Kentucky
Facilities Management
Office of the Vice President

July 23, 2024

Frank Mabson
LFUCG Division of Water Quality
125 Lisle Industrial Avenue, Suite 180
Lexington KY 40511

Dear Mr. Mabson,

University of Kentucky Facilities Management is in support of the UK proposal, *Athletics Complex Stormwater Infrastructure Repairs*, to the LFUCG Stormwater Incentive Grant Program. The various benefits to the area including efficient water conveyance within the watershed and opportunities to improve upon the tree canopy in the future. The proposal is aligned with our Campus Master Plan and Landscape Guidelines, and it supports several of the core principles in UK's Strategic Plan.

Furthermore, Facilities Management is committed to providing \$80,500 in matching funds to support the project in addition to future maintenance activities as required.

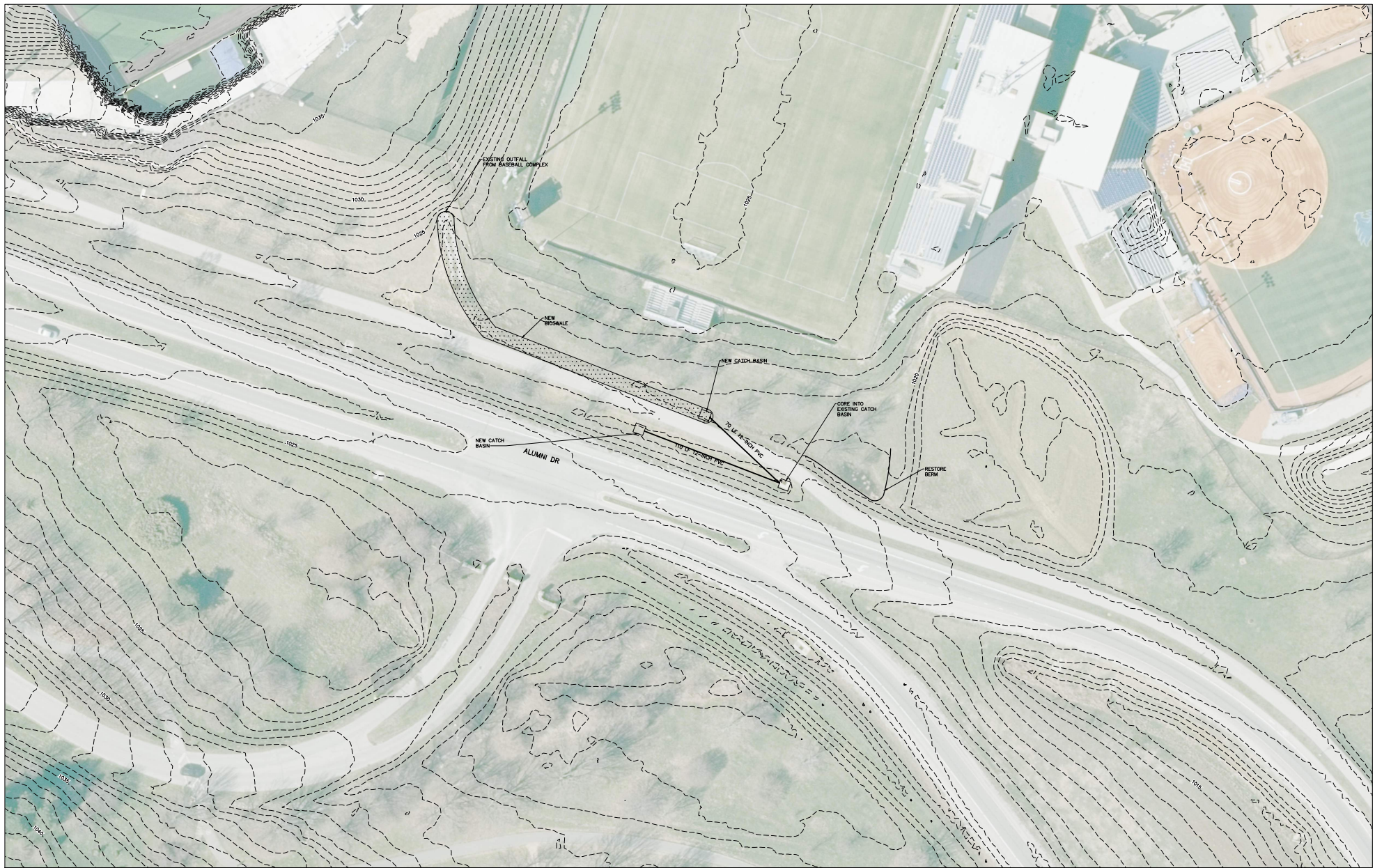
Sincerely,

A handwritten signature in black ink that reads "Mary S. Vosevich".

Mary S. Vosevich
Vice President and Chief Facilities Officer
Facilities Management
University of Kentucky
Lexington, Kentucky

FY 2025 Class B Infrastructure Grant
Athletics Complex Repairs Budget

	Type of Expense	Participants	Item	Unit Price	Quantity	Funded by Organization	Funded by Grant	Total Expense
	Design							
	Design - Civil	Consultant	Project Design & Development		1.0	\$4,000	\$16,000	\$20,000
	Design - Civil	Consultant	Project Planning and Administration		1.0	\$6,300	\$25,200	\$31,500
	Design - Civil	Consultant	Preparation of Bid Package and Recommendation to Award		1.0	\$600	\$2,400	\$3,000
	Construction							
	Construction	Contractor	Project Construction		1.0	\$46,000	\$184,000	\$230,000
	Construction	Contractor	Overrun for Market Conditions			\$4,000	\$16,000	\$20,000
	Construction	Consultant	Construction Administration		1.0	\$1,200	\$4,800	\$6,000
	Construction	University Sponsored Projects	University Project Manager		1.0	\$4,600	\$18,400	\$23,000
	Construction	Consultant	Construction Inspection Services		1.0	\$4,600	\$18,400	\$23,000
	Construction	Consultant	Contingencies		1.0	\$9,200	\$36,800	\$46,000
	TOTAL PROJECT BUDGET:					\$80,500	\$322,000	\$402,500
						ORGANIZATION	GRANT	
						SHARE	SHARE	
						20%	80%	



DESIGNER	BHS	DATE		BY		REVISION	
DRAWN	CRB						
CHECKED	ZKH						
APPROVED	JB						

GRAPHIC SCALE
SCALE: 1" = 30'

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IN WHOLE OR IN PART OR USED FOR CONSTRUCTION
OF OTHER THAN THIS SPECIFIC PROJECT WITHOUT
THE WRITTEN PERMISSION OF BELL ENGINEERING.



Lexington, KY (859) 278-5412
Hopkinsville, KY (270) 896-5466
Somerset, KY (606) 485-4011

UNIVERSITY OF KENTUCKY
LEXINGTON, KENTUCKY

FIVE-YEAR STORM WATER BEST MANAGEMENT
PRACTICES PLAN, BASEBALL/SOFTBALL COMPLEX

DIVISION	-
CONTRACT NO.	600-143
DATE	MARCH 2024
SHEET NO.	3 OF 10



Date: July 2024
 Drawn: BHS
 Approved: BHS

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**DRAINAGE AREA
 ATHLETICS COMPLEX STORMWATER REPAIRS
 UNIVERSITY OF KENTUCKY**

Scale:
 1 in = 200 ft

Reference Images of Site



The above images show site conditions on the morning of July 22, 2024 following an approximately 0.17-inch rainfall event. Water is not captured by the existing stormwater infrastructure in the area and has caused damage to a downstream basin.



The above image shows the condition of the berm at the existing sedimentation basin. Flow from the project area has eroded the berm as seen in the lower right corner of the image. Further damage to the berm may impact the basin's functionality and cause greater flooding concerns in the project area.



The above image better illustrates erosion damage to the berm of the basin along alumni drive. Flow from the athletics complex has eroded a portion of the berm, leading to the potential of greater stormwater concerns in the project area.



A portion of stormwater in the project area bypasses the existing controls, leading to ponding near Alumni Drive's mixed-use trail. This has resulted in the loss of tree canopy in the area, as the waterlogged soils have become unsuitable for many of the trees planted here. The image above provides an example of a recently removed tree as a result of these conditions.

EXECUTIVE SUMMARY

This project aims to address issues with a failing Stormwater Best Management Practice (BMP) that is no longer effective in managing stormwater on the southern edge of the UK Barnhart Family Athletics Complex. The natural landscape in the area has been altered by recent projects such as the Alumni Drive realignment, the UK Baseball Stadium, and the Soccer/Softball Complex, leading to water retention and the growth of cattails and swamp-related vegetation. This has made grounds maintenance difficult and necessitates repair to ensure the future restoration of the tree canopy. Additionally, the area may pose a flooding risk during high-flow conditions due to its proximity to Alumni Drive and a pedestrian trail. The proposed project involves the design and construction of two catch basins and approximately 250 feet of stormwater piping to realign with the existing stormwater infrastructure. The anticipated budget for this project is \$402,500. It is expected that 80% of the funds for this project will be committed through grant funding, with a 20% match by the University.

HOPE LODGE STORMWATER IMPROVEMENTS FEASIBILITY STUDY LFUCG INFRASTRUCTURE GRANT APPLICATION



*UNIVERSITY OF KENTUCKY
LEXINGTON, KENTUCKY*

JULY 2024

PREPARED BY:

*BELL ENGINEERING
2480 FORTUNE DRIVE, SUITE 350
LEXINGTON, KENTUCKY 40509*

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LEXINGTON

Lexington-Fayette Urban County Government
Department of Environmental Quality & Public Works

The Stormwater Quality Projects Incentive Grant Program
APPLICATION FORM FOR CLASS B INFRASTRUCTURE PROJECTS
Division of Water Quality – Document #INC.2025I.2

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APPLICATION DEADLINE: **FRIDAY, JULY 26, 2024**

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Please provide responses to all questions below. Mail **nine (9)** copies of the completed and signed form, all typed responses, and any supporting documentation to the address given on Page 5.21-7104.3

In addition to the hard copies, a digital copy of the application form with attachments is also required. It can be provided via a flash drive or emailed to fmabson@lexingtonky.gov and/or sbullock@lexingtonky.gov.

----- ALL APPLICATIONS MUST BE SIGNED OR THEY WILL NOT BE CONSIDERED -----

Official Name of Applicant as Registered with the State of Kentucky: [The University of Kentucky Research Foundation](#)

Organization Number as Registered with the State of Kentucky: [0052708](#)

Official Mailing Address: [500 South Limestone, Kinkaid Hall, Lexington, KY 40526-0001](#)

Federal Employer Identification Number (optional): [616033693](#)

LEXserv Account Number: [21-7104.300](#)

Name of Primary Project Contact: [Kim C. Carter](#)

Cell or Daytime Phone Number: [859-257-9420](#)

Email: ospa@uky.edu

Name of Secondary Project Contact: [Britney Ragland](#)

Cell or Daytime Phone Number: [859-257-4171](#)

Email: britney.ragland@uky.edu

Name of Design Consulting Firm: [Bell Engineering](#)

Name of Design Firm Contact: [Bo Smith, PE](#)

Cell or Daytime Phone Number: [859-278-5412](#)

Email: bsmith@hkbell.com

Grant Being Applied For (check all that apply):

- ☒ Feasibility
☐ Projects \$75,000 or Less
☐ Design and/or Construction

Grant Amount Being Requested:

(a) [\\$41,034](#)

Proposed Cost Share to be Provided:

(b) [\\$10,260](#)

Estimated Total Project Cost [(a) + (b)]:

(c) [\\$51,294](#)

Proposed Cost Share % of Total Project Cost [(b) ÷ (c)]:

(d) [20%](#) (20% min.)

If the entire grant amount requested is unavailable, does the Applicant wish to be considered for partial funding? ☒ YES ☐ NO (If YES, refer to question B5 for more information)

A representative budget is attached as reference to this application. If partial funding is award, the University of Kentucky will be responsible for budget overages shall they choose to continue with the project.

Is any additional information, such as supporting documentation, letters from partners / stakeholders, etc., attached to this form? ☒ YES ☐ NO If YES – See Question 8.

1) Address of Project Site: [1500 College Way, Lexington, KY 40502](#)

2) Is the Applicant also the Property Owner of the project site? ☐ YES ☒ NO

If NO, provide the following:

Property Owner Name: [Eric Monday – University of Kentucky](#)

Property Owner Address: [410 Administration Drive, Lexington, KY 40506](#)

Phone Number: [859-257-1841](#)

Email: emonday@uky.edu

3) Is the Project Site currently undeveloped (e.g., vacant, woods, etc.)? ☐ YES ☒ NO

4) Does the project propose to target a documented building or road flooding problem? ☒ YES ☐ NO

If YES, refer to question A3 and attach documentation of flooding (e.g., photos, insurance claims, etc.)

5) Is the project site an LFUCG designated industrial or high-risk commercial facility? ☐ YES ☒ NO

If YES, describe how the proposed plan addresses pollutants of concern related to commercial/industrial activities with potential exposure to stormwater: _____

6) Does the project propose to remove and/or retrofit an existing impervious surface? ☐ YES ☒ NO

If YES, refer to question A7 and describe the existing control(s):

[The eventual project may replace impervious parking with pervious pavers, but the feasibility study will determine this later.](#)

7) Provide typed responses to the following questions and attach to this form or insert text below each question in this document. Include as much detail as possible, including any information the Applicant feels is pertinent but not asked below.

A. PROJECT ELEMENTS:

A1. Describe the overall project purpose and general project elements (e.g., parking lot retrofit, building expansion, BMPs only, etc.).

[This study is proposed in response to the previous Five-Year Stormwater Improvements Feasibility Study completed in May 2024. This study identified the area surrounding the Hope Lodge as an area with numerous stormwater concerns. Preliminary investigations found the concerns to be primarily due to runoff from the nearby Montclair neighborhood.](#)

This project would further narrow down proposed design elements, scope of work, and costs required to reduce localized flooding and improve stormwater conveyance.

- A2. List all proposed Best Management Practices (BMPs) and indicate whether each BMP is for water quality control, water quantity control, or both.

Install vegetated swale system – Quantity and Quality Control

Repairs to Existing Dry Detention Basin – Quantity and Quality Control

Pervious Paver Parking Area – Quantity and Quality Control

Connect Spring to Underground Conveyance System – Quantity Control

- A3. Describe any existing building or road flooding problems and how the proposed project would impact, reduce, or eliminate those problems.

This project will address a noted flooding concern in the Hope Lodge parking area. Previous efforts mitigated flooding concerns with the installation of a concrete curb. This effort removed the threat of flooding in the building, but flow has been redirected to the parking area. This project will investigate methods of mitigation for this localized flooding.



- A4. Provide a site sketch that includes the location(s) the BMPs AND/OR tree canopy proposed and delineates the areas draining to them. [See Attached.](#)
- A5. Provide the amount of square feet of impervious area (e.g., parking lots, rooftops, etc.) to be removed or retrofitted to a pervious surface AND/OR the proposed tree canopy area (in square feet) to be added (tree canopy is calculated using Article 26-5(6)(e)2 of the LFUCG Zoning Ordinance with categories of trees found in Section VII of the LFUCG Planting Manual).

This feasibility study will consider the possibility of removing approximate 780 square yards of impervious area currently used for parking at the Hope Lodge facility. This area would be replaced with pervious pavers. Additionally, the study intends to investigate options for installing native vegetation and raingardens which would increase tree cover, although the extent of this increase has yet to be determined.

- A6. Provide the amount of square feet of drainage area that would drain to each of the proposed BMPs AND/OR tree canopy.

The area of study collects flow from a drainage area of approximately 20 acres.

- A7. List any proposed BMPs that are retrofits to an existing stormwater control structure or impervious surface (including proposed tree canopy establishment / expansion).

Grading repairs are intended for the existing dry detention basin.

- A8. For water quality BMPs:

Describe how the water quality BMPs would function and the types of pollutants they address. Reference the proposed design criteria to be used.

Vegetative Swale will provide additional infiltration as outlined in the LFUCG Standards.

Pervious Pavers will provide additional infiltration as outlined in the LFUCG Standards.

- a. Does this project address *E. coli* pollution? ☐ YES ☒ NO If YES, please describe how the project addresses it:

- A9. For water quantity BMPs – describe how they would function, if they provide peak control and/or volume control, the storm events being considered, etc. Reference the proposed design criteria to be used.

Vegetative Swale and installed storm sewers will provide capacity to convey flows from a 10-year and 100-year intensity storms as outlined in the LFUCG stormwater manual.

- A10. List any proposed BMPs that are not currently listed in Chapter 10 of LFUCG's Stormwater Manual.

All proposed BMPs are listed in Chapter 10 of the stormwater manual.

- A11. If the proposed project is an upgrade or enhancement to a structure required by local, state, or federal regulations, clearly explain how the proposed grant-funded portion of the project would exceed the minimum requirements.

This project does not address any required regulatory actions, and rather is intended to correct a problem before regulatory action is required. This project is focused on proactive improvement in a sensitive area.

- A12. Does this project fulfill one or more of the proposed BMPs of an approved Watershed Management Plan?

☐ YES ☒ NO If YES, please explain:

B. PROJECT IMPLEMENTATION:

- B1. Describe the project team (include at a minimum):
- Applicant's Grant Manager: [Britney Ragland, UKY](#)
 - Project Design Consulting Firm: [Bell Engineering](#)
 - Design Consulting Firm's project members, including professional(s) of record for the project (i.e., the person who will seal the design plans and record drawings): [Jim Buckles, PE](#); [Bo Smith, PE](#)
 - Material Suppliers (if known, not required): [TBD](#)
 - Contractor (if known, not required): [TBD](#)
 - Other Stakeholders: [KET, Hope Lodge, Ronald McDonald House](#)
- B2. Describe the proposed approach to permitting and designing the project elements.
- [The consultant will work with University personnel to provide recommendations for the implementation of improvements to the Hope Lodge Drainage area and build off of the plans made in the 2024 Five-Year Stormwater Improvements Feasibility Study. This effort will focus on narrowing down design scope, cost, permitting requirements, and other project elements necessary for the implementation of a future LFUCG Class B Infrastructure Grant.](#)
- B3. Describe the proposed approach for securing a contractor and completing construction. Will the construction work go through a bidding process? If so, how? If not, why not? [The University will select a design consultant at will through existing Per Diem contracts. Consideration will be given to design experience with similar projects and familiarity with the University campus.](#)
- B4. Provide a proposed schedule for project implementation, including the start and finish of each project phase (e.g., Design, Construction).
- [Feasibility Report Drafting – June 2025 to January 2026](#)
- [Prepare Final Draft of Feasibility Report – February 2026](#)
- B5. Attach a proposed project budget with line items for (a) Equipment and Supplies, (b) Consulting Fees, (c) Construction Costs, (d) Personnel, and (e) Other Project Specific Costs as appropriate. Include as much detail as possible in the proposed budget, breaking out costs for various project phases and types of expenses. [See Attached.](#)

NOTE:

- If the project is proposing new or additional parking, provide justification for the value of the proposed improvements using the following formula:*
$$\text{Unit Price of a Standard Pervious Lot (in sqft)} - \text{Unit Price of a Standard Asphalt Parking Lot (in sqft)} = \text{Net Value of Proposed Stormwater Facilities (upgrade cost amount)}$$
 - If you have elected to be considered for partial funding, include the following in addition to the proposed project budget as detailed above:*
 - Separate all budget items into stand-alone projects that could be constructed independently of one another.*
 - Rank the proposed stand-alone projects by order of funding preference.*
- B6. Describe the approach for meeting the grant cost share, such as funding sources available, donated hours or supplies, etc. Describe the portions of the project elements to be covered by the Applicant's cost share.
- [The University is committed to providing a 20% match as required for this grant proposal. This match will provide for in-kind salary for the PI, funding for engineering consultant fees, and any overages beyond 20%.](#)

C. EDUCATION:

- C1. Describe any future educational opportunities that completion of this project will offer, whether to employees / personnel or the public in general.

The University is aptly positioned to incorporate improvements into a number of educational opportunities, including but not limited to: Integration into course curriculum, incorporation in research projects for graduate and undergraduate researchers, UK Facilities Management Training, and extension and outreach opportunities.

- C2. Describe any specific water quality / stormwater educational program and/or curriculum this infrastructure project is tied to.

No specific curriculums were considered, though the project is applicable for review by University courses in hydrology and stormwater design. A portion of the feasibility study effort will focus on the determination of specific educational opportunities this site may offer.

D. PROJECT SUSTAINABILITY:

- D1. Describe the project site's current and future uses, include an aerial map or site plan, if possible. Describe how the proposed BMPs are appropriate for future site uses.

This site is located between the Hope Lodge, Kentucky Educational Television, and the Ronald McDonald House off of College Way. The neighborhoods surrounding this area have experienced significant growth and have contributed to the localized flooding this area of campus sees. However, it is not anticipated that future land use on campus will impact the project location. The feasibility study will focus on identifying BMPs that are compatible with the UK Master Plan for this region of campus.

- D2. Describe the plan for future inspection and maintenance of the improvements. Will an Inspection, Operation, & Maintenance (IOM) Plan be developed for this project or will industry standard guidelines be used? Include who will be performing future maintenance (e.g., internal staff, contractors, etc.).

During the installation of the specified improvements, the general contractor will be responsible for the implementation and maintenance of the installed BMPs. After the completion of this project, UK's Facilities Management Grounds Team and Utilities Department will maintain the BMP. BMPs will be monitored in accordance with the University's MS4 permit and SWQMP.

- D3. Describe the availability and sustainability of funding sources to cover future maintenance costs.

The University intends to utilize annual funding for the maintenance of campus grounds and utilities to maintain the project site.

- D4. Describe how the site plan will allow for access to all BMPs for appropriate maintenance.

This installation has sufficient access for maintenance from the Hope Lodge Parking Area. Thus, all provided installations will be readily accessible for maintenance.

- 8) **SUPPORTING DOCUMENTATION:** Include with the application any additional information, letters of support from partners / stakeholders, etc. INCLUDE A COVER SHEET THAT LISTS ALL OF THE ATTACHMENTS.
- 9) **PROJECT EXECUTIVE SUMMARY:** Provide a project narrative describing the existing situation or need for the project, project name, proposed project elements, anticipated costs, proposed benefits, project sustainability, and any unique aspects of the project. The maximum length shall be half (1/2) a page (8.5"x11") using Times New Roman Font, Size 12.

AUTHORIZED SIGNATURES

This form shall be signed by hand. Electronic signatures are not acceptable. Please indicate which submittal application is the original.

APPLICANT

I certify that my organization is in full compliance with all applicable provisions of the LFUCG Code of Ordinances listed in the Application Packet, is a Class B Water Quality Management Fee ratepayer, and is current on all LEXserv-billed services. I further certify that the information provided in this grant application is complete and true to the best of my knowledge, and that I am duly authorized to submit this application on behalf of my organization.

In addition, I certify that if my organization's application is selected for funding that my organization agrees to execute a Grant Award Agreement with LFUCG that will include all project elements, eligible expenses (i.e., budget items), terms, and conditions, to be forwarded for approval by the Urban County Council.

Kim C. Carter
Signature of Applicant

7/24/2024
Date

Kim C. Carter
Printed Name of Applicant

Associate Director, University of KY Research Foundation
Title of Applicant

IF THE SITE OF THE PROPOSED PERMANENT INFRASTRUCTURE OR EQUIPMENT IS NOT OWNED BY THE APPLICANT, THE PROPERTY OWNER SHALL SIGN BELOW.

PROPERTY OWNERS

I hereby authorize the above-signed Applicant to apply for a Water Quality Management Fee-funded Class B Infrastructure Stormwater Quality Projects Incentive Grant. If this project is selected for a grant, I authorize construction of the described project elements on my property located at (provide complete address): University of Kentucky, 410 Administration Drive, Lexington, KY 40506. I also agree to execute the *Agreement to Maintain Stormwater Control Facilities Funded by an LFUCG Class B Infrastructure Stormwater Quality Projects Incentive Grant* at the completion of construction.

Eric N. Monday
Signature of Property Owner

072324
Date

Eric N. Monday, EVPFA
Printed Name of Property Owner

Digitally signed by
Shannan Stamper
Reason: Reviewed
for form and legality
Date: 2024.07.23
14:58:39 -04'00'

MAIL OR DELIVER NINE (9) COPIES OF THIS FORM WITH ATTACHMENTS TO:

**Frank Mabson
LFUCG Division of Water Quality
125 Lisle Industrial Avenue, Suite 180
Lexington, KY 40511**

(Must be delivered or postmarked by FRIDAY, JULY 26, 2024, to be considered)



University of Kentucky
Facilities Management
Office of the Vice President

July 23, 2024

Frank Mabson
LFUCG Division of Water Quality
125 Lisle Industrial Avenue, Suite 180
Lexington KY 40511

Dear Mr. Mabson,

University of Kentucky Facilities Management is in support of the UK proposal, *Hope Lodge Stormwater Improvements Feasibility Study*, to the LFUCG Stormwater Incentive Grant Program. There is potential for significant improvements to the stormwater system along this property which will benefit both the Hope Lodge facility and the overall stormwater quality and quantity in the watershed. The proposal is aligned with our Campus Master Plan and Landscape Guidelines, and it supports several of the core principles in UK's Strategic Plan.

Furthermore, Facilities Management is committed to providing \$10,260 in matching funds to support the study and design of this project.

Sincerely,

A handwritten signature in black ink that reads 'Mary S. Vosevich'.

Mary S. Vosevich
Vice President and Chief Facilities Officer
Facilities Management
University of Kentucky
Lexington, Kentucky

Subject: Stormwater survey Grant
Date: Friday, July 19, 2024 at 2:26:35 PM Eastern Daylight Time
From: Jodi Burrell
To: Ragland, Britney M.
CC: Jason Young

CAUTION: External Sender

Hello Brittany,

The American Cancer Society is in support of the stormwater survey grant project. Please let me know if you need anything else from us.

We appreciate your work on this project.

Jodi Burrell | Director, Real Estate and Facilities Management
American Cancer Society, Inc.
270 Peachtree Street NW Suite 1300
Atlanta, GA 30303
Phone: +1 (678) 5282103
cancer.org | 1.800.227.2345

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FY 2025 Class B Infrastructure
Hope Lodge Feasibility Budget

FY 2025 Class B Infrastructure Budget									
	Type of Expense	Participants	Item	Unit Price		Quantity	Funded by Organization	Funded by Grant	Total Expense
Design									
	Design - Civil / Master Planning	Consultant	Stormwater Study & Project Development			1.0	\$8,305.00	\$34,195.00	\$42,500.00
Indirect Costs									
	University Indirect Costs	University Sponsored Projects	Max of 20% allowable Indirect costs					\$6,839.00	\$6,839.00
Other Costs									
	PI Cost Share	Principal Investigator	Salary & Benefit Match - Britney Ragland*	\$81.45	HR	24.0	\$1,955.00		\$1,955.00
				TOTAL PROJECT BUDGET:			\$10,260.00	\$41,034.00	\$51,294.00
							ORGANIZATION	GRANT	
			*COST SHARE % =	20.00%	OK		SHARE	SHARE	
							20.0%	80.0%	
* NOTE: ALL ESTIMATES OF HOURS AND SALARY/WAGE TOTALS ARE FOR ILLUSTRATIVE PURPOSES ONLY. The University of Kentucky as a not-for-profit institute for higher education is neither required, nor is its accounting system capable of, reporting personnel expenses by the number of hours or hourly rate per the university's federal rate agreement, Uniform Guidelines, applicable OMB Circulars and other federal procurement regulations.									



DESIGNER	BHS	DATE	BY	REVISION
DRAWN	CRB			
CHECKED	ZKH			
APPROVED	JB			

GRAPHIC SCALE

SCALE: 1" = 30'

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bell engineering

Lexington, KY (859) 278-5412
Hopkinsville, KY (270) 886-5466
Somerset, KY (606) 485-4011

UNIVERSITY OF KENTUCKY
LEXINGTON, KENTUCKY

FIVE-YEAR STORM WATER BEST MANAGEMENT PRACTICES PLAN, NEW LINE HOPE LODGE DRAINAGE AREA IMPROVEMENTS

DIVISION	-
CONTRACT NO.	600-143
DATE	MARCH 2024
SHEET NO.	1 OF 10



Reference Images of Site



The above images show site conditions prior to the installation of a concrete curb to redirect flow away from the Hope Lodge building. This project was successful in removing flooding concerns from the building basement. However, flooding concerns still exist in the parking area.



The above images show conditions at the LFUCG outfall from the Montclair neighborhood, located at the head of the grass swale on the Hope Lodge property. Images shown were taken the morning of July 22, 2024.



The above image shows the grass swale at the project site. This image was taken on the morning of July 22, 2024 following an estimated rainfall event of approximately 0.17 inches.



The above image shows the grass swale and basin at the project site. This image was taken on the morning of July 22, 2024 following an estimated rainfall event of approximately 0.17 inches.



The above images show the location of the spring which has opened by the Oswald Building on Sports Center Drive. The area surrounding the tree pictured has become saturated and poses a potential pedestrian hazard, leading University Grounds staff to construct a temporary barrier around the area.

EXECUTIVE SUMMARY

Stormwater from the Montclair neighborhood currently flows down a grassy swale around the Hope Lodge facility and into the KET Dry Detention Pond, causing localized flooding in the basement and parking lot. In the short term, a curb has been installed to mitigate these issues. This proposed project aims to examine the design elements, scope of work, and costs needed to improve or retrofit the existing swale in order to better manage stormwater and reduce flooding impacts. Potential design elements may include constructing an engineered bioswale, making repairs to the KET Dry Detention Pond (such as removing accumulated sediment and replanting native vegetation, and installing an emergency spillway), and considering the installation of pervious pavers in the parking lot to address additional flow from Sports Center Drive. Additionally, this project would explore the possibility of allowing the natural spring along Sports Center Drive to drain by coring into the drainage box at Oswald Building.

Through addressing known flooding concerns, enhancing stormwater quality, and creating opportunities for public outreach and education, this project aims to bring about significant improvements. Given the project's complexity and potential costs, UK proposes funding a Feasibility Study to thoroughly understand the site challenges, constraints, and opportunities, and to develop drawings for future infrastructure enhancements. The total budgeted cost for this study is expected to be \$51,294, with approximately 80% of the cost supplied by grant funds and the remaining 20% matched by University funds.

APPENDIX F-2

Stormwater Stakeholder Meeting Presentation, Sign-in Sheet, & Minutes

MS4 Stormwater Stakeholders Advisory Committee Meeting Agenda

Date: December 20th, 2024
1000 – 1130

Location: Peterson 226 Conference Room

Purpose: To provide updates on the stormwater program and our SWQMP efforts in order to track compliance with the MS4 permit.

Attendees: Richard McClure, Steven Vogel, Kevin Lewis, Nathan Weber, Steve Evans, Shane Tedder, Jerry hart, Harold Sandford, Mike Duffy, Donnie Mefford, Wayne Thomas, Brian Butler, Briney Ragland, David Hibbard, Orion Saunier, Graham Gray, Carter Whitton

I. WELCOME

1000-1005

- Opening Slide: Fire Service Replacement Project in front of Lancaster Aquatic (Seaton Fire Suppression)
 - Project failed to install/keep proper stormwater BMPs in place until disturbed area was stabilized.
 - Result was disturbed earth subjected to multiple heavy rainfall events causing sediment to wash across the sidewalk and enter the adjacent roadway.
 - Even though small projects aren't required to apply for stormwater permit coverage, they must still install erosion prevention and sediment control BMPs to protect stormwater.
 - BMPs have been put in place (straw and wattles) until sod can be installed
- Last full stakeholder meeting was held on September 15, 2023. An additional Preventative Maintenance Meeting was held with select stakeholders in December.
- Why have there been no meetings in 2024 until now?
 - It has been an excessively busy year for most of the stakeholders.
 - As an example, here is a list of some of the changes that have taken place since our last meeting:
 - Grounds Manager Position Vacated
 - Water Quality Compliance Specialist Position Vacated & Refilled – Nathan Weber
 - EQM Director Position Vacated & Filled – Brian Butler
 - UEM Executive Director Position Filled – Graham Gray
 - UEM Distribution Manager Position Vacated and Refilled – Carter Whitton
 - Stormwater Quality Extension Associate Position Vacated (Ben Currans)
 - Facilities Services Associate Director Duty Assignment – Shane Tedder
 - New Sustainability Program Coordinator Hired – Carlie Martindale
 - Facilities Preventative Maintenance Managers – Campus (Extended Absence), Med Center (Retirement)
 - Facilities Maintenance Area 5 Created (Personnel/Responsibility Reassignment)
 - MS4 Web (Compliance Software/Database) – Unexpected Product Cancellation & Search for Replacement Software
 - Compliance Go (New Compliance Software) Onboarding

- Construction Project Review Procedures Updated – Adoption of Bluebeam
- Environmental Quality Management Center – Pending Demolition and Design of New Facility
- Construction - Project Reviews, Project Reviews, Project Reviews

II. PROGRAM UPDATES

• PERMIT UPDATES

1005-1010

- MS4 Permit
 - Expired April 30th, 2023
 - Administratively continued until new permit is issued
 - Permit still under KDOW internal review, will likely be issued next year
 - Once issued, a new SWQMP will need to be developed
- KYR10 (Stormwater Discharges Associated with Construction Activities)
 - Expired November 30th, 2024
 - Permit available for public comment Oct. 23rd – Nov. 22nd
 - Draft reviewed as part of KSA workgroup
 - No major changes
 - Minor comments made regarding clarification
 - KDOW is currently holding coverage letters until the new permit is issued.
 - **Existing coverages are extended and remain in effect until two years after the permit effective date – a new NOI requesting coverage will be required for projects that will not achieve final stabilization by this date.**

• ANNUAL REPORT

1010-1015

- Completion of 2023 Report
 - Submitted to KDOW and provided to stakeholders on April 12th
 - Executive Summary provides SWQMP progress highlights
 - SWQMP Progress/Tracking Spreadsheet Summary - Strand
- Time for 2024 Report
 - Updates Needed - Stakeholders should be completing assigned SWQMP tasks and updating the tracking spreadsheet throughout the year
 - Prepare “Evidence of Completion” – we will begin compiling information in January and need stakeholder documentation

• PROJECT REVIEWS – STORMWATER APPROVALS

1015-1020

- The MS4 Permit requires a review/approval process for construction projects.
- Changes in review process for 2024
 - Review went from joint CPMD/EQM review to EQM responsibility with the retirement of Bob Brashear.
 - MS4 Assistance Contract had to be utilized for plan review (unexpected) – EQM has outsourced the responsibility to Strand to assist with technical aspects of project reviews.
 - \$35,000 spent in project review consulting fees in 2024
 - Has impacted the ability to complete other tasks.
- Over 100 individual reviews were completed by EQM in 2024.
- Project Review Components:
 - Water Quality Compliance Assessment – Wastewater, Stormwater, Groundwater, SPCC
 - Stormwater Requirement Assessment
 - KYR10 Coverage/NOI Submittal Applicability
 - i. > 1 acre/< 1 acre & part of larger common plan

- ii. Linear Utility Line Projects
 - Stormwater Quantity Requirement Applicability
 - Stormwater Quality Requirement Applicability
 - Erosion Prevention and Sediment Control Plan Applicability
 - EPSC Plan Review and Approval
 - Post-Construction BMP Review and Approval
 - Stormwater Narrative and Executive Summary
 - Stormwater Pollution Prevention Plan (SWPPP) Review & Approval
 - includes erosion control plan but also covers other elements that can impact stormwater.
 - Stormwater Manual Compliance Assessment – includes specific documentation requirements
 - Notice of Termination Inspection (Post Construction) – confirmation that post-construction stormwater control elements are in place as designed.
- Permit Requirements:
 - Development and implementation of a permitting process with plan review to affirm compliance with local ordinances, inspection, and enforcement capability for all projects subject to the program.
 - Development and implementation of project review, approval, and enforcement procedures, including site plan review and approval as well as re-approval process when changes to stormwater management measures are required.
 - Development, adoption, and implementation of regulatory mechanism that addresses post-construction stormwater runoff from new and redevelopment
 - Program must include requirements that construction site operators implement EPSC BMPs that are as protective as the KYR10 requirements
 - Develop a post-construction process to demonstrate and document that post-construction stormwater measures have been installed per design specifications.
- Efforts to Improve Compliance and Streamline Review Process
 - Program Manager Training Development
 - SWPPP Review Checklist Development
 - Stormwater Narrative and Executive Summary Checklist Development
 - Construction Stormwater Process Manual Development
- Small Construction Sites
 - Small projects that are not subject to KYR10 coverage are still required to install EPSC BMPs.
 - Formal EPSC plan submittal is typically not required but is considered on a case-by-case basis
 - SWPPP submittal is not required.
 - See Lancaster Aquatic Photo (title slide)
- Athletics Projects need to follow same review procedures as other projects
 - This includes field resurfacing – anywhere land disturbance takes place
 - Several projects took place this summer that by-passed the review/approval process and were caught during construction

- **COMPLIANCE GO ONBOARDING**

1020-1025

- System Purpose: compliance database – allows for site tracking and inspection documentation
- MS4web was used since 2012 and discontinued in 2024
- New compliance software was selected. Additional capabilities of the software allow for notifications to be sent. As implementation of new software continues, this will be refined. Action items are intended to be

used to notify stakeholders of issues found during inspections and for documentation of remediation to be documented.

- Stakeholder Impact:
 - Inspection Notification, Action Item, and Inspection Report Emails – Not SPAM!
 - Will continue to send a formal report of findings in addition to website notifications.

- **WATER QUALITY INTERNSHIP**

1025-1030

- Project Goals:
 - Assess main campus stormwater drains
 - Assessment includes determining marker status, clogging, damage, and presence of illicit discharge
 - Total Storm Drains on Campus: 1900 (1,716 UK Owned, 184 Non-UK)
 - Create and manage a drain marking event
 - Mark outlier drains
 - Update Drain Marker Design
- Accomplishments:
 - Total Number of Drain Assessments Completed: 1,159 drains
 - ~50 reported issues – clogging/damaged/potential illicit discharge
 - i. Automated emails sent to Grounds/UEM/EQM
 - Total Number of Drains Marked: 84
- Will be working with the sustainability internship program to further this effort in the upcoming academic year.

- **SPCC**

1030-1035

- Plan Recertification
 - Terracon was hired to complete site assessments and update plans.
 - Intended to complete in October 2023 but were unable to do so.
 - Current Status:
 - 4 out of 5 Plans have been certified by PE
 - 5th plan in process of certification
 - Next Steps:
 - Certify final plan
 - Provide hard copy of plans to directors
 - Directors need to obtain Mary's signature and provide the signature pages to EQM
 - Plans will be finalized – hard copies will be distributed and digital copies will be available on the stormwater website.
 - Plans will need to be updated and recertified in 2025 due to major changes at facilities on campus.
- 2024 Annual Inspections
 - Nathan is in process of completing site visits prior to end of year.
 - Summary reports will be distributed in January 2025.

- **GPP**

1035-1040

- 2023 Annual Inspections were not conducted.
- 2024 Annual Inspections were conducted in June.
 - Inspection reports are in draft form awaiting finalization and distribution, which will take place in January.
- Plan Revision & Recertification
 - Required every three years and when changes occur.
 - Plan was last updated in 2019 – Recertification Overdue.
 - Current Status
 - Plan updated to draft form in 2023
 - Compost System & Mulch Storage needs to be incorporated

- Activity Information Sheets need final review and incorporation
- Plan needs to be formatted to meet program standard

• **POST-CONSTRUCTION BMPs**

1040-1050

- Inspections
 - 2023 Follow-Up Inspections Not Conducted
 - 2024 Inspections – Completed in May/June
 - Inspection summary reports in draft form – awaiting final review and distribution
 - Findings Summary:
 - i. 27 Above Ground BMP's Inspected
 - 1. 15 (56%) Compliant, 9 (33%) Marginal, 3 (11%) Not Acceptable
 - ii. 21 Underground Detention Systems and 11 associated above ground BMPs
 - 1. Underground Detention: 11 (52%) Compliant, 9 (43%) Marginal, 1 (5%) Not Acceptable
 - 2. Pretreatment Devices: 9 (82%) Compliant, 1 (9%) Marginal, 1 (9%) Not Acceptable
- O&M/PMP Plan Implementation
 - Meeting held with select stakeholders on December 15th, 2023
 - Program turned over to stakeholders for implementation.
 - Current Status:
 - Implementation has not taken place due to PM Manager taking extended leave shortly after implementation meeting.
 - Will be switching from SAP to Asset Works – the implementation may be hindered by this change.
 - An additional meeting concerning implementation may need to be held.

• **STORMWATER GRANT UPDATES**

1055-1100

- Tree Cells
 - Going to bid in 2025 and will install up to 12 trees with additional soil volume and pervious pavers.
 - This is a trial of the soil cell BMP to determine if further use on campus is wanted/possible.
 - Already seeing issues in the design process.
- Shawneetown (University Court)
 - Currently on hold – the lower portion of the project is grant funded, the upper portion is not. In order to proceed, funding needs to be secured for the upper portion. LFUCG is aware and has no issues with the postponement.
- Feasibility Study
 - Study has been completed.
 - Looked at sites around campus to identify recommended places for improvement that can leverage future LFUCG stormwater grant funds.
 - Assessed ten different sites for inclusion. Five projects were prioritized for future implementation.
 - Two of the recommended projects were used to apply for stormwater grants in 2024:
 - i. Hope Lodge Drainage Improvements
 - ii. Alumni Drive/Baseball Complex Repairs
 - Both of the submitted projects were selected to receive grant funding in 2025.
- Cooling Plant 2 Stormwater Harvesting Study (Biosystems and Ag Seniors)

- Working with Biosystems and Ag Senior Design project on a stormwater harvesting system at Cooling 2 that aligns with the feasibility study.
- Future Grant Awards/Submittals
 - Ongoing goal is to have projects submitted for LFUCG grant funding annually.
 - Some concern was expressed regarding scheduling and workload, however, UEM intends to leverage these projects to get a return on investment in stormwater fees.

III. STAKEHOLDER UPDATES

1100-1140

- EQM (Kevin/Nathan/Strand)
 - Strand KSA Presentation – provided at the KSA Conference in July – discussed the lessons learned regarding BMP inspections, tracking, and maintenance plan development at UK.
- UEM (Graham/Mike/Britney/Carter)
 - Civil engineering is modeling campus watershed – presented an KWRI Conference
 - Britney presented at a recent LFUCG stakeholder meeting on the CUP Water Harvesting Project.
 - The majority of campus above ground water quality units were cleaned out through Buchanan – a list of cleaned units was provided for reference.
 - Gluck Pond Illicit Discharge – Investigation found condensate leak in Orange Lot that was corrected. This was the ultimate cause of the hot water release captured in the thermal aerials.
 - Sanitary Repairs:
 - Funkhouser to Memorial line was repaired.
 - Funkhouser Renovation – Graham Avenue line determined to be in bad shape. Funkhouser discharge will be rerouted to the recently replaced line.
 - Washington Avenue Line Replacement – construction nearing completion.
 - Shawneetown Sanitary Status
 - Line with known issues, but repairs haven't been completed.
 - Big Elm Fork is impaired for E.coli. Project should be considered to address known issues with exfiltration.
 - Have considered repairing only worst areas and not entire system. The issue is that the area is likely to be redeveloped soon, so spending a lot of money to repair/replace lines that are ripped back out in a couple of years is not ideal.
 - MC-1 Copper Exceedance Update – ongoing exceedance started in 2023 and again in spring of 2024. Sampling couldn't identify location of source beyond potential adherence to sediment in the line. Have not been able to identify any major issues with the pipe system either. Need to evaluate the sanitary mapping to confirm all potential sources have been identified.
 - MCHC Haybale Replacement Status – Plant no longer intended to burn coal. Haybales surrounding adjacent storm inlet have been removed.
 - If coal is housed/transported to the plant, new BMPs need to be installed at the inlet.
 - Plant is at the end of its lifespan and may be removed within the next ten years.
- Grounds (Jerry)
 - Compost is being stored at the Cooling Plant 2 Coal Pile Storage area.
 - Have received complaint from UEM due to maintenance issues.
 - BMPs need to be installed around pile to prevent debris from washing into storm inlet and clogging filter.

- Facility Operations/Custodial (Harold)
 - Jim Blackwell has retired. Todd Thacker to move from Area 5 to Area 2. Custodial Services has also reorganized to match the maintenance areas.
 - This will impact SPCC plan contacts.
 - SPCC Inspection Concerns
 - Both annual training and area specific training is required. Need to make sure that everyone that needs the training is having it assigned.
- Athletics (Donnie)
 - Staying on top of training and inventoried materials
 - Need to stay on top of sports turf maintenance deposition of top-dressing materials in parking areas.
 - Updating operational procedures to have top dressing materials (clay/sand) delivered as close to the time of usage as possible to eliminate it sitting in parking lot for extended time/need for tarping.
- Sustainability (Shane)
 - New Sustainability Program Coordinator (Carlie Martindale) will be focusing on student programs.
 - Has been tasked with growing the Sustainability Internship Program.
 - EQM will be hosting two interns for the upcoming academic year.
 - Earthflow Composting System is nearly complete. Plan is to be operational by early January 2025.
 - Sustainability Strategic Plan 2.0 – still in process of finalizing the plan. Several components align with and exceed our current stormwater goals.
- CPMD (Richard/Wayne)
 - Stormwater inspections are ongoing. Reports are being entered into Compliance Go with additional features to be implemented in the future.
 - Completed Projects: Gray Design Building, Rose Street Beautification, Soccer and Softball Field Renovations, Indoor Track, Cooper House, Still and Maturation
 - Contractors need to continue inspections until the NOT is filed. Having issues where once construction is complete, contractor stops inspections, fails to schedule NOT inspection, and fails to file NOT.
 - New and Ongoing Projects: Sanders-Brown Renovation, Memorial Coliseum Renovation, PS8 (nearing completion), Kirwan-Blanding Redevelopment, Barnhart Expansion, HEB, Ag Research 1
 - Memorial – Final Stormwater Submittals Never Received
 - Whitehall – Stormwater Submittal Never Received
- KWRRI (Steve E.)
 - Statewide Stormwater Training
 - Post-Construction BMP Quantitative Analysis
 - Statewide Stormwater Outreach Strategy to address major stormwater issues. An example is salt usage during weather events and the impact on conductivity.
 - Developing workshops to assist in training.
 - Developing interactive controls for use in outreach.
 - Developing Post-Construction BMP guides.

IV. QUESTIONS/COMMENTS/ADDITIONAL DISCUSSION

1140

- Moving back to Quarterly Meetings
 - Invites will be sent out in January for 2025

Stormwater Stakeholder Meeting

12.20.24





Agenda:

MS4 Stormwater Stakeholders Advisory Committee Meeting Agenda

Date: December 20th, 2024
1000 – 1130

Location: Peterson 226 Conference Room

Purpose: To provide updates on the stormwater program and our SWQMP efforts in order to track compliance with the MS4 permit.

- | | |
|---|--------------------|
| I. WELCOME | 1000-1005 |
| <ul style="list-style-type: none">• Refresher• Changes that have taken place since our last meeting | |
| II. PROGRAM UPDATES | 1005 - 1050 |
| <ul style="list-style-type: none">• Permit Updates<ul style="list-style-type: none">◦ MS4 Permit◦ KYR10• Annual Report<ul style="list-style-type: none">◦ 2023 Report◦ 2024 Report• Project Reviews – Stormwater Approvals• Compliance Go Onboarding• Water Quality Internship• SPCC<ul style="list-style-type: none">◦ Plan Recertification◦ 2024 Annual Inspections• GPP• Post-Construction BMPs<ul style="list-style-type: none">◦ Inspections◦ O&M/PMP Plan Implementation• Stormwater Grants | |
| III. STAKEHOLDER UPDATES | 1050-1125 |
| <ul style="list-style-type: none">• EQM (Kevin/Nathan/Strand)• UEM (Graham/Mike/Britney/Carter)• Grounds (Jerry)• Facility Operations/Custodial (Harold)• Facilities Engineering/Asset Management (Tim Armstrong)• Athletics (Donnie)• Sustainability (Shane/Carlie)• Extension (Amanda/Lee)• CPMD (Richard/Wayne)• KWRRI (Steve E.) | |
| IV. QUESTIONS/COMMENTS/ADDITIONAL DISCUSSION | 1125-1130 |

Refresher:

Last Full Stakeholder Meeting: September 15th, 2023

Refresher:

Last Full Stakeholder Meeting: September 15th, 2023

Why have there been no meetings in 2024 until now?

Some changes that have taken place since our last meeting:

- Grounds Manager Position Vacated
- Water Quality Compliance Specialist Position Vacated & Filled
- EQM Director Position Vacated and Filled
- UEM Executive Director Named
- UEM Distribution Manager Position Vacated and Filled
- Stormwater Quality Extension Associate Position Vacated
- Facilities Services Associate Director Duty Assignment
- New Sustainability Program Coordinator Hired
- Facilities Preventative Maintenance Managers
 - Campus – Extended Absence
 - Med Center – Retirement & Duties Reassigned
- Facilities Maintenance Area 5 Created (Personnel & Responsibility Reassignment)
- MS4 Web (Compliance Software/Database) – Unexpected Product Cancellation & Search for Replacement Software
- Compliance Go (New Compliance Software) Onboarding
- Construction Project Review Procedure Update – Adoption of Bluebeam
- Environmental Quality Management Center - Pending Demolition and New Facility Design
- Construction: Project Reviews
- Project Reviews
- **More Project Reviews!**

Program Updates:

- **Permit Updates**
 - MS4 Permit
 - Expired April 30th, 2023
 - Administratively continued until new permit is issued
 - Permit still under KDOW internal review
 - New SWQMP will need to be developed once issued
 - KYR10 Permit (Stormwater Discharges Associated with Construction Activities)
 - Expired November 30th, 2024
 - Permit available for public comment October 23rd – November 22nd
 - Draft reviewed as part of Kentucky Stormwater Association Workgroup
 - No major changes
 - Minor comments made regarding clarification
 - KDOW currently holding construction site coverage letters until new permit is issued
 - **Existing coverages are extended and remain in effect until two years after the permit effective date – a new NOI requesting coverage will be required for projects that will not achieve final stabilization by this date**

Program Updates:

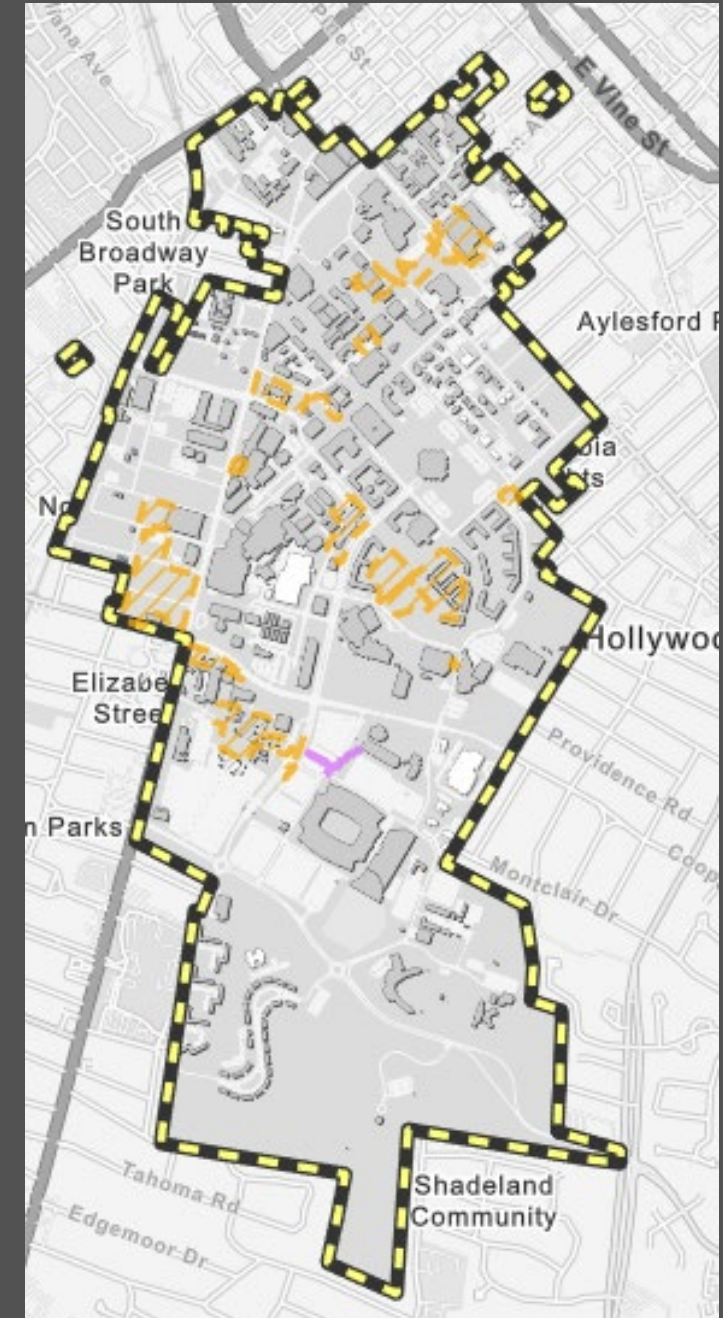
- **Annual Report**
 - 2023 Report
 - Submitted to KDOW and provided to stakeholders on April 12th
 - Executive Summary provides SWQMP progress highlights
 - SWQMP Progress/Tracking Spreadsheet Summary: Strand
 - 2024 Report
 - Updates Needed – Stakeholders should be completing assigned SWQMP tasks and updating the tracking spreadsheet throughout the year
 - Prepare “Evidence of Completion” – we will begin compiling information in January and need stakeholder documentation of tasks completed

Program Updates:

- **Project Reviews – Stormwater Approvals**

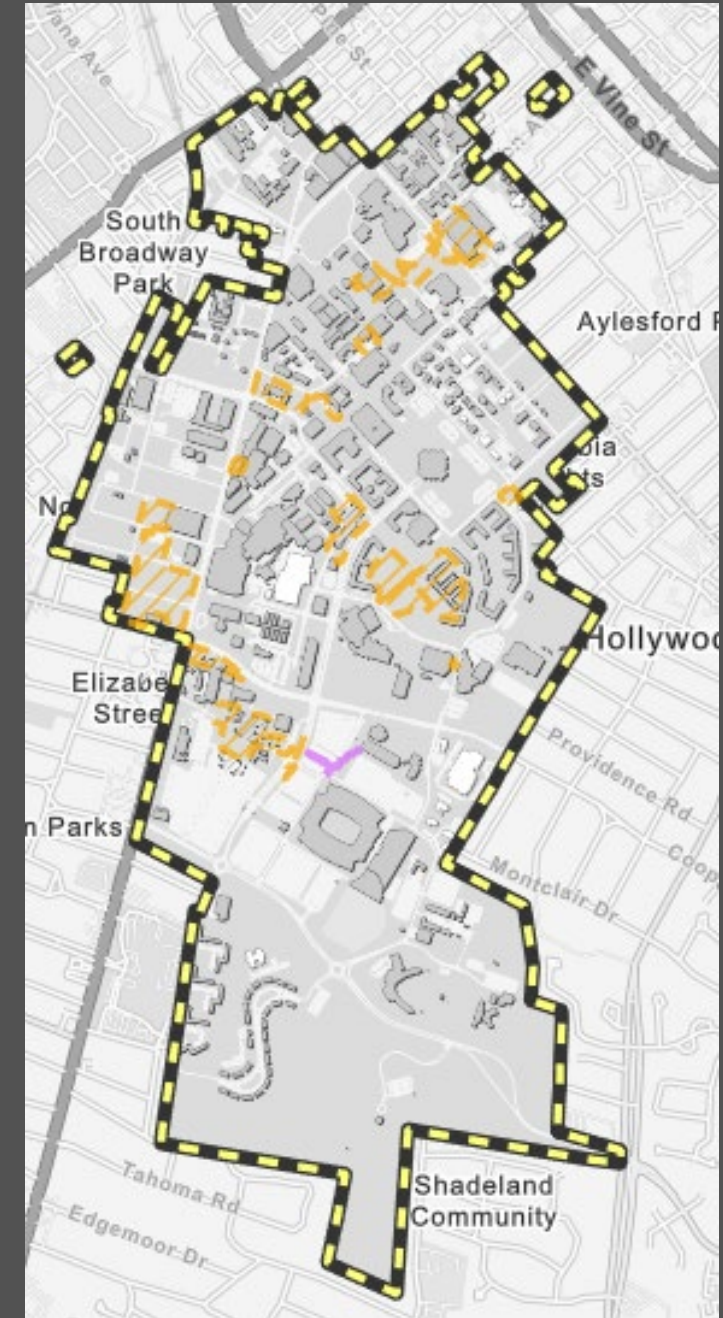
- Performed over 100 project reviews in 2024
- Major Projects Include:

- | | | |
|---|------------------------------------|--|
| • Ag Research 1 | • Kirwan-Blanding Site Work | • Silva Cell Installation (Memorial Parking Lot) |
| • Ag Research Teaching Greenhouse | • Kirwan-Blanding New Dorm | • Soccer Field Renovation |
| • Ag Research 2 | • Orange Lot Expansion | • Softball Field Renovation |
| • Arboretum Visitors Center Expansion | • Panama Canal | • USDA FAPL (Campus) |
| • Barnhart Expansion | • Pence Hall Renovation | • USDA LRC (Woodford) |
| • Cancer Center | • PS7/Johnson Center Expansion | • Washington/Huguelet Sanitary Replacement |
| • Cancer Center Parking Garage | • Princeton Grain Center | • Whitehall Renovation |
| • College Way West Lot Expansion | • Princeton Farm Shop | • Wildcat Wheels |
| • Earthflow Composting System | • Princeton Graduate Dorm | |
| • Elizabeth Street Reconstruction | • Princeton Field Building | |
| • Environmental Quality Management Center | • Princeton Greenhouse | |
| • Funkhouser Renovation | • Rose Street Beautification (NOT) | |
| • Gluck Lot Expansion | • Sanders Brown | |
| • Health Education Building | • Scovell Renovation | |
| • Indoor Track (NOT) | • Shawneetown Stormwater | |
| | • Shively Parking Lot Expansion | |



Program Updates:

- **Project Reviews – Stormwater Approvals**
 - Changes in Review Process
 - Review went from joint CPMD/EQM review to EQM Responsibility
 - MS4 Assistance Contract had to be utilized for plan review
 - \$35,000 spent in project review consulting fees (2024)

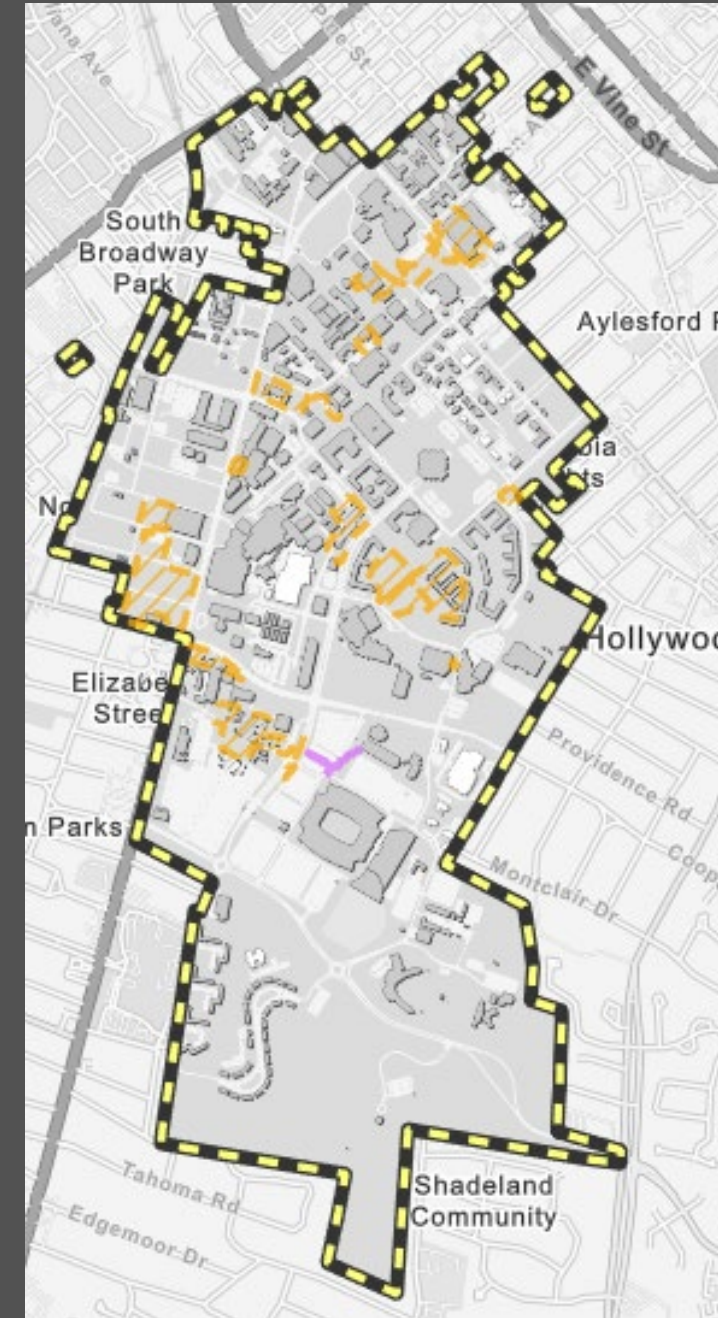


Program Updates:

- **Project Reviews – Stormwater Approvals**

- Project Review Components:

1. Water Quality Compliance Assessment – Wastewater, Stormwater, Groundwater, SPCC
2. Stormwater Requirement Assessment
 - a. KYR10 Coverage/NOI Submittal Applicability
 - i. > 1 acre/< 1 acre & part of a larger common plan
 - ii. Linear Utility Line Projects
 - b. Stormwater Quantity Requirement Applicability
 - c. Stormwater Quality Requirement Applicability
 - d. Erosion Prevention and Sediment Control Plan Applicability
3. EPSC Plan Review and Approval
4. Post-Construction BMP Review and Approval
 - a. Stormwater Narrative and Executive Summary
5. Stormwater Pollution Prevention Plan (SWPPP) Review and Approval
6. Stormwater Manual Compliance Assessment
7. Notice of Termination Inspection (Post Construction)

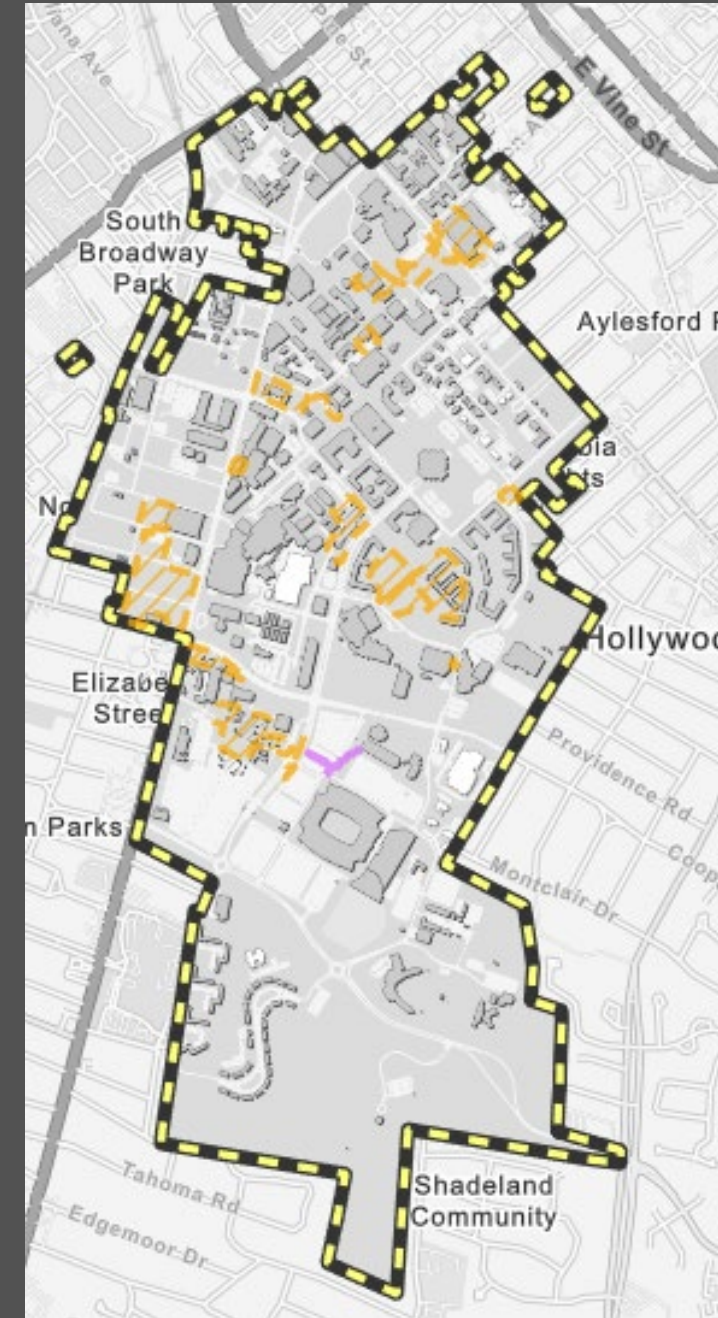


Program Updates:

- **Project Reviews – Stormwater Approvals**
 - Permit Requirements :
 - **Development and implementation of a permitting process with plan review** to affirm compliance with local ordinances, inspection, and enforcement capability for all projects subject to the program.
 - Development and implementation of project review, approval, and enforcement procedures, including **site plan review and approval as well as re-approval** process **when changes** to stormwater management measures **are required**.
 - Development, adoption, and implementation of regulatory mechanism that **addresses post-construction stormwater runoff from new and redevelopment**.
 - Program must include requirements that **construction site operators implement EPSC BMPs** that are **as protective as the KYR10 requirements**.
 - Develop a post-construction process to **demonstrate and document that post-construction stormwater measures have been installed per design specifications**.

Program Updates:

- **Project Reviews – Stormwater Approvals**
 - Efforts to Improve Compliance and Streamline Review Process:
 - Program Manager Training Development
 - SWPPP Review Checklist Development
 - Stormwater Narrative and Executive Summary Checklist Development
 - Construction Stormwater Process Manual Development
 - Small Construction Sites
 - Small projects that are not subject to KYR10 coverage are still required to install EPSC BMPs.
 - Formal EPSC plan submittal is typically not required but is considered on a case-by-case basis.
 - SWPPP submittal is not required.
 - Athletics Projects need to follow the same review procedures/process as other projects
 - This includes field resurfacing (anywhere land disturbance takes place)
 - Several projects took place this summer that by-passed the review/approval process and were caught mid-construction.



Program Updates:

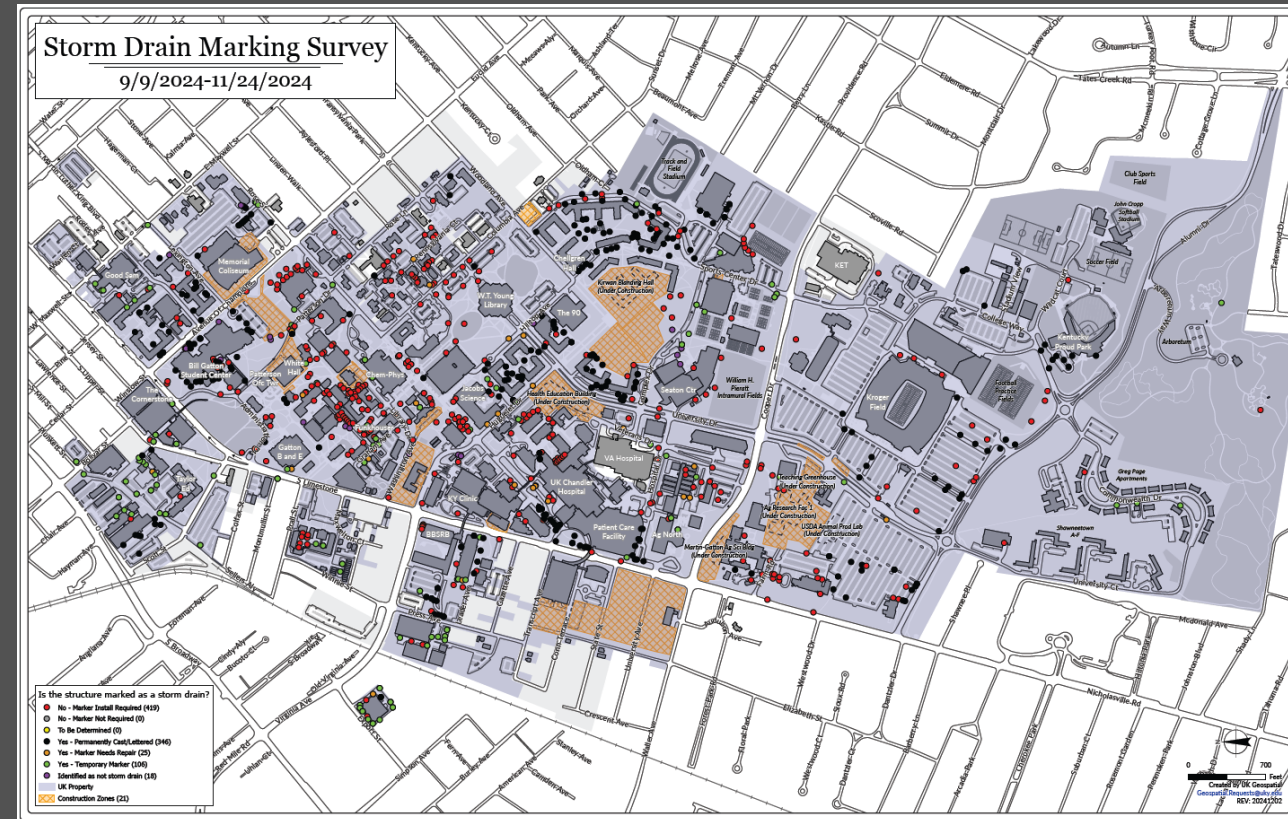
- **Compliance Go Onboarding**

- System Purpose: Compliance Database – allows for site tracking and inspection documentation
- Stakeholder Impact:
 - Emails – Inspection Notification, Action Item, and Inspection Reports – NOT SPAM!!!
 - Inspection summaries will still be provided to management



Program Updates:

- **Water Quality Internship**
 - Project Goals:
 - **Assess main campus stormwater drains**
 - Includes determining marker status, clogging, damage, and presence of illicit discharge
 - **Total Drains on Campus = 1900**
(1,716 UK Owned, 184 Non-UK)
 - Create and manage drain marking event
 - Mark outlier drains
 - Update drain marker design
- Accomplishments:
 - **1,159 drains assessed**
 - ~50 issues reported – automated emails sent to Grounds/UEM/EQM
 - **84 drains marked**



Program Updates:

- **Spill Prevention Control and Countermeasures (SPCC)**
 - Plan Recertification
 - Original Completion Goal – October 2023
 - Current Status:
 - 4 out of 5 plans have been certified by PE
 - 5th plan in process of final review prior to recertification
 - Next Steps:
 - Complete review and certify final plan
 - Provide hard copy to directors
 - Directors need to obtain Mary's signature and provide the signature pages to EQM
 - 2024 Annual Inspections
 - Nathan in process of completing site visits prior to end of year
 - Reports will be distributed in January 2025

SPILL PREVENTION, CONTROL, AND
COUNTERMEASURE PLAN

CAMPUS FACILITIES MANAGEMENT

UNIVERSITY OF KENTUCKY
LEXINGTON, FAYETTE COUNTY, KENTUCKY

Prepared for:



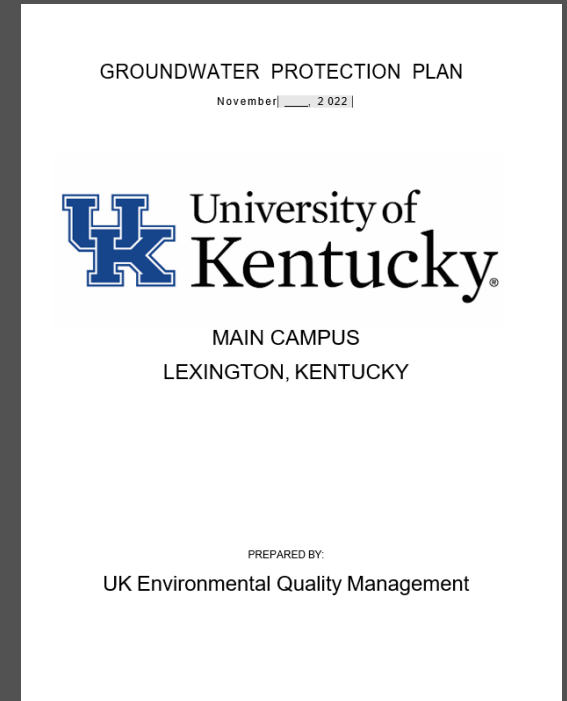
Revised by:

Terracon Consultants, Inc.,
800 Morrison Road
Columbus, OH 43230

Origination Date: May 2003
Revision Date: November 2023

Program Updates:

- **Groundwater Protection Plan(GPP)**
 - 2023 Annual Inspections Not Conducted
 - 2024 Annual Inspections Conducted in June
 - Inspection reports in draft form awaiting finalization and distribution
 - Plan Revision and Recertification
 - Required every three years and when changes occur
 - Recertification overdue – plan last updated in 2019
 - Current Status:
 - Plan updated to draft form in 2023
 - Earthflow Compost System and Mulch Storage need to be incorporated
 - Activity Information Sheets need final review and incorporation
 - Plan needs to be reformatted to meet program standard



Program Updates:

- **Post-Construction BMPs**

- Inspections:

- 2023 Follow-up Inspections not Conducted
 - **2024 Inspections Completed in May/June**
 - Inspection summary reports in draft form – awaiting final review and distribution

- Findings Summary:

- i. 27 Above Ground BMPs Inspected

- 1. **15 (56%) Compliant, 9 (33%) Marginal, 3 (11%) Not Acceptable**

- ii. 21 Underground Detention Systems and 11 associated above ground BMPs

- 1. **Underground Detention: 11 (52%) Compliant, 9 (43%) Marginal, 1 (5%) Not Acceptable**

- 2. **Pretreatment Devices: 9 (82%) Compliant, 1 (9%) Marginal, 1 (9%) Not Acceptable**

- O&M/PMP Plan Implementation

- Meeting held with select stakeholders on December 15th, 2023
 - Program turned over to stakeholders for implementation
 - **Current Status?**

**POST-CONSTRUCTION STRUCTURAL
BEST MANAGEMENT PRACTICE
OPERATION AND MAINTENANCE PLAN**

**ENVIRONMENTAL QUALITY MANAGEMENT
UNIVERSITY OF KENTUCKY
LEXINGTON, FAYETTE COUNTY, KENTUCKY**



Prepared for:

Prepared by:

Strand Associates Inc.®
651 Perimeter Drive
Suite 220
Lexington, KY 40515

Origination Date: February 2012
Revised: June 2022

Program Updates:

- **Stormwater Grants**
 - Tree Cells
 - Shawneetown
 - Feasibility Study
 - Cooling Plant 2 Stormwater Harvesting Study (Biosystems and Ag Seniors)
 - Future Grant Awards/Submittals?

Stakeholder Updates:

- EQM – Kevin/Nathan/Strand
- UEM – Graham/Mike/Britney/Carter
- Grounds – Jerry
- Facility Operations/Custodial – Harold
- Facilities Engineering – Tim
- Athletics – Donnie
- Sustainability – Shane/Carlie
- Extension – Amanda/Lee
- CPMD – Richard/Wayne
- KWRRI – Steve Evans

Questions/Comments/Additional Discussion?

- Moving back to quarterly meetings
 - Invites will be sent out in January for 2025

APPENDIX F-3

Storm Drain Marking Assessment Report and Mapping

EQM Storm Drain Marking

Structure ID

Web browsers may not respond well when there are more than 500 answers in the word cloud. [Show it anyway](#)

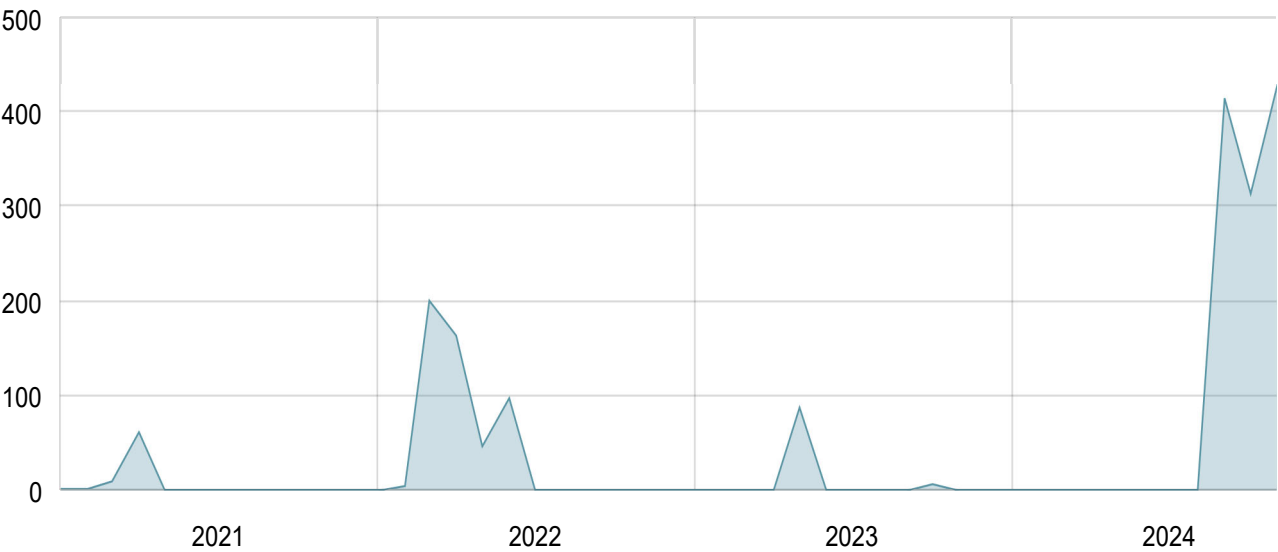
Global ID

Loading... 

Inspector Name *

Web browsers may not respond well when there are more than 500 answers in the word cloud. [Show it anyway](#)

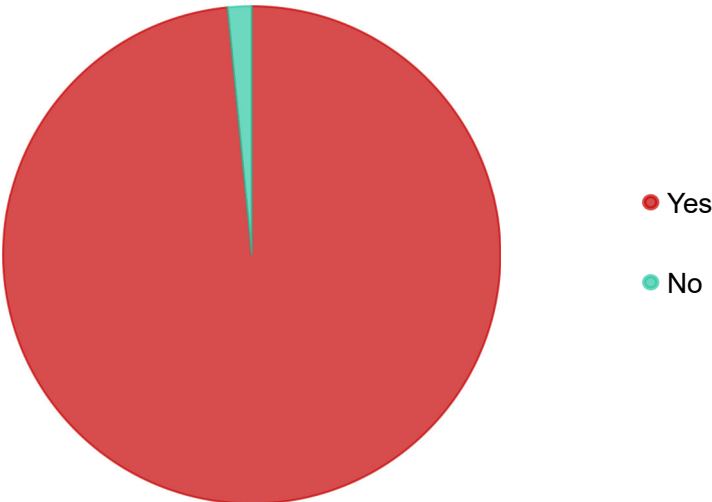
Inspection Date & Time



Date and time	Count
Jan 1, 2021, 12:00:00 AM - Feb 1, 2021, 12:00:00 AM	2
Feb 1, 2021, 12:00:00 AM - Mar 1, 2021, 12:00:00 AM	2
Mar 1, 2021, 12:00:00 AM - Apr 1, 2021, 12:00:00 AM	10
Apr 1, 2021, 12:00:00 AM - May 1, 2021, 12:00:00 AM	62
Feb 1, 2022, 12:00:00 AM - Mar 1, 2022, 12:00:00 AM	5
Mar 1, 2022, 12:00:00 AM - Apr 1, 2022, 12:00:00 AM	201
Apr 1, 2022, 12:00:00 AM - May 1, 2022, 12:00:00 AM	164
May 1, 2022, 12:00:00 AM - Jun 1, 2022, 12:00:00 AM	47
Jun 1, 2022, 12:00:00 AM - Jul 1, 2022, 12:00:00 AM	98
May 1, 2023, 12:00:00 AM - Jun 1, 2023, 12:00:00 AM	88
Oct 1, 2023, 12:00:00 AM - Nov 1, 2023, 12:00:00 AM	7
Sep 1, 2024, 12:00:00 AM - Oct 1, 2024, 12:00:00 AM	415
Oct 1, 2024, 12:00:00 AM - Nov 1, 2024, 12:00:00 AM	314
Nov 1, 2024, 12:00:00 AM - Nov 30, 2024, 11:59:59 PM	430

Answered: 1,845 Skipped: 0

Is the structure a storm drain? *

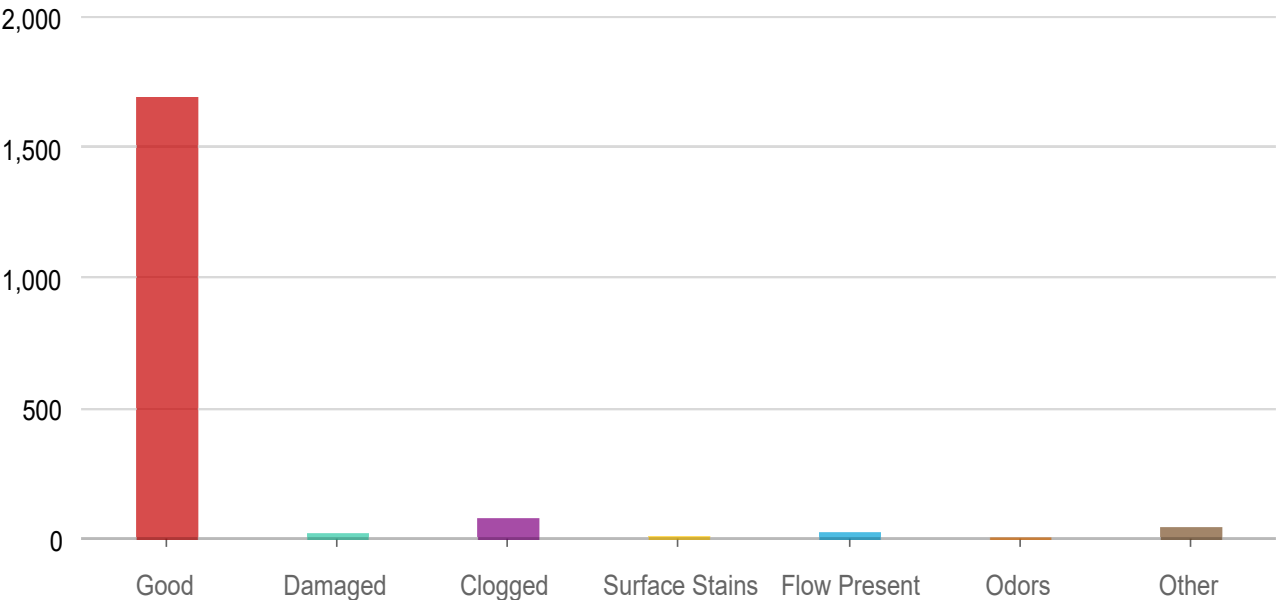


Answers	Count	Percentage
---------	-------	------------

Yes	1,141	61.84%
No	18	0.98%

Answered: 1,769 Skipped: 76

Condition *



Answers

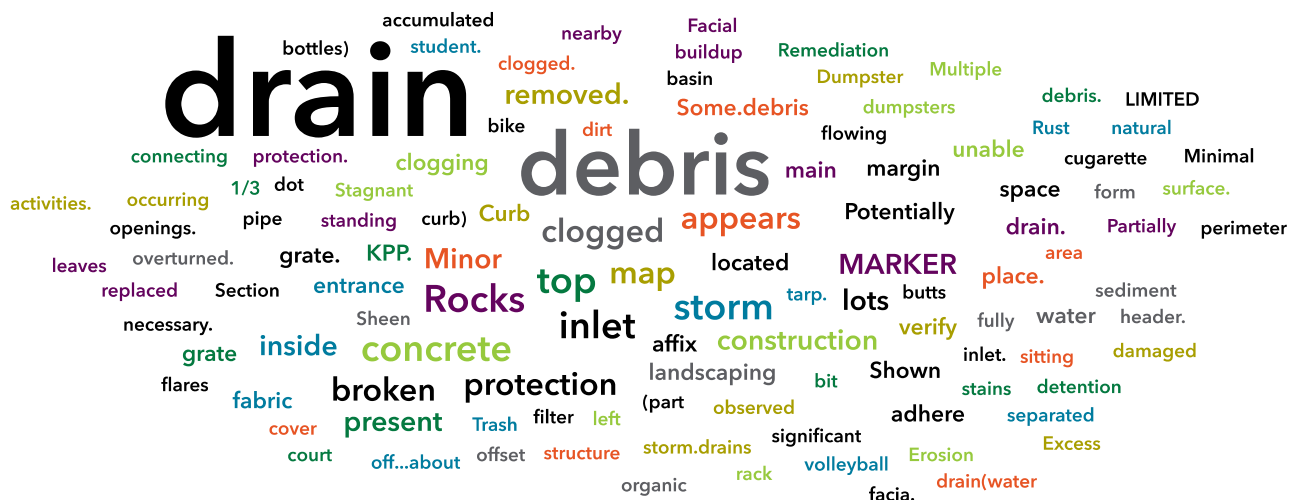
Count

Percentage

Good	1,695	91.87%
Damaged	24	1.3%
Clogged	81	4.39%
Surface Stains	12	0.65%
Flow Present	29	1.57%
Odors	7	0.38%
Other	48	2.6%

Answered: 1,816 Skipped: 29

Specify other.



Count

Int

Potentially located under the rocks in landscaping at the main entrance of KPP. Shown on map as a storm drain, but was unable to verify with rocks in place.	2
No margin on drain to adhere marker	2

Some debris inside	2
Sheen is present on standing water in drain	1
Rust stains present flowing from dumpsters	1
Dumpster is sitting on top of storm drain.	1
Debris and cigarette butts in drain	1
Fabric has been placed in the drain as a form of inlet protection.	1
Trash and debris throughout the detention basin	1
Stagnant water observed in the drain.	1
May be clogged. Lots of debris in drain	1
It appears inlet protection placed in the storm drain during construction has not been removed.	1
It appears inlet protection placed in the storm drain during construction has not been removed.	1
Section of the grate has been broken or removed.	1
Old flares in drain	1
This drain appears to be clogged by sediment buildup on top of the inlet protection tarp.	1
Does not appear to be clogged but significant debris in drain	1
Some debris around	1
Multiple storm drains in the area but only one dot on map	1
This drain has filter fabric placed over the grate.	1
Minor clogging under curb header.	1
Partially clogged	1
Drain has become separated from connecting pipe below the surface.	1
Curb concrete has been damaged and top cover (part of curb) was overturned. Has been replaced by student. Remediation may be necessary.	1
Minor debris	1

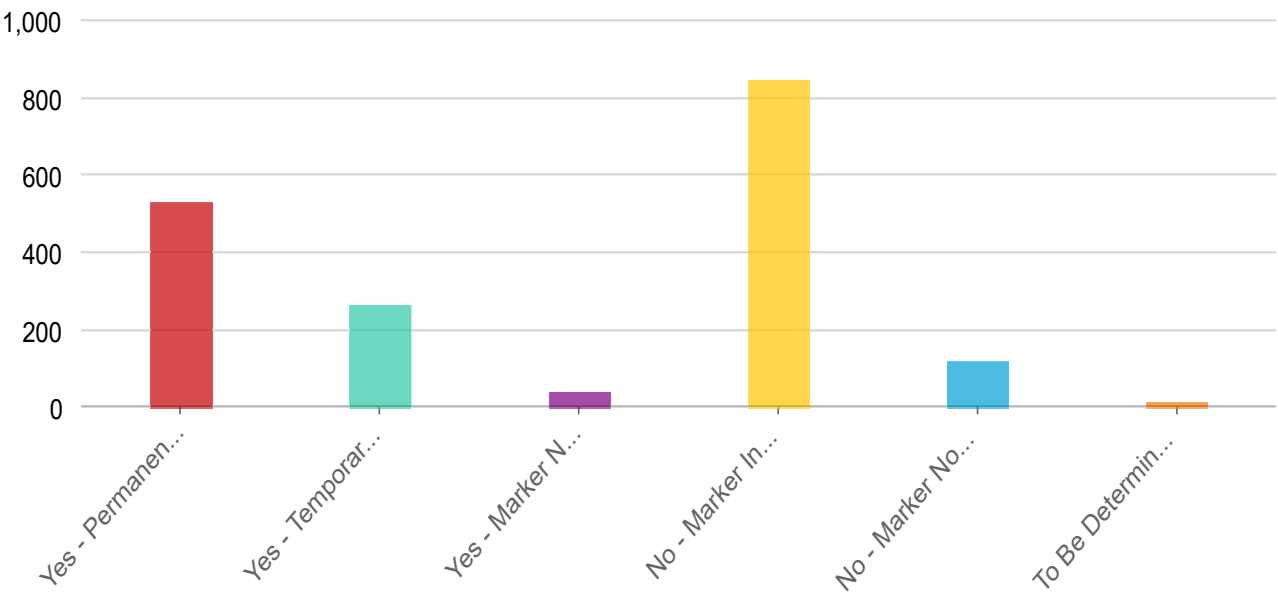
Erosion occurring before the concrete structure of the drain inlet.	1
debris	1
Rocks on top of drain	1
Some concrete has broken off	1
Not clogged but debris present	1
Debris clogging a few of the grate openings.	1
Some.debris on drain	1
Minor debris and drain is offset	1
There is another drain nearby between the volleyball court and bike rack that is not on the map	1
Excess dirt has accumulated on top of the drain grate.	1
No space around perimeter to fully affix	1
Concrete has broken off, lots of debris inside	1
Some.debris around drain	1
Contains lots of leaves and natural debris.	1
LIMITED space to affix MARKER	1
This drain appears to have left over inlet protection from construction activities.	1
Some debris in drain(water bottles)	1
Minimal organic debris	1
Facial concrete has broken off...about 1/3 of the drain facia.	1

Answered: 47 Skipped: 1798

Location Description *

Web browsers may not respond well when there are more than 500 answers in the word cloud. [Show it anyway](#)

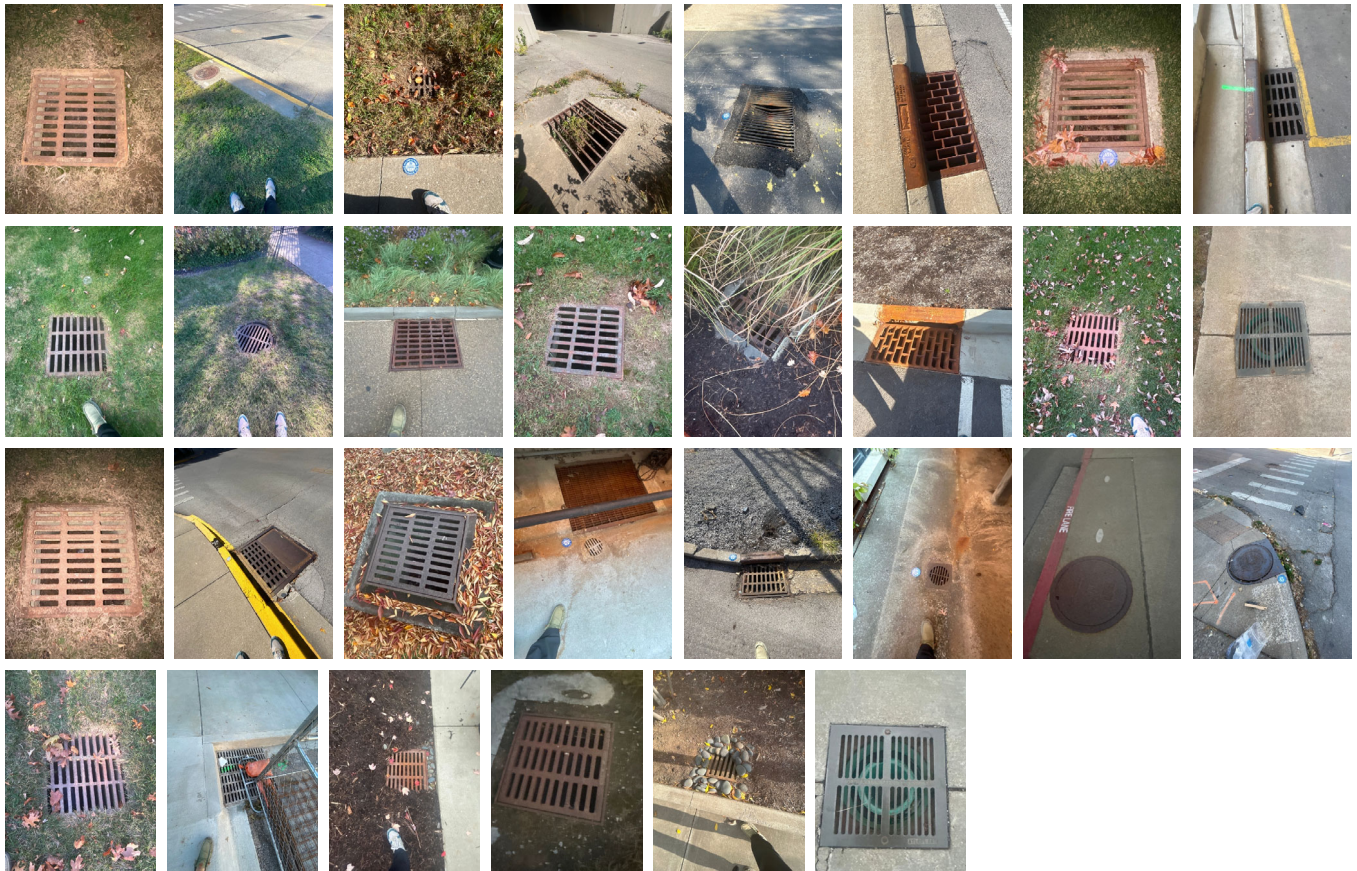
Is the structure marked as a storm drain? *



Answers	Count	Percentage
Yes - Permanently Cast/Lettered	532	28.83%
Yes - Temporary Marker	264	14.31%
Yes - Marker Needs Repair	39	2.11%
No - Marker Install Required	847	45.91%
No - Marker Not Required	119	6.45%
To Be Determined	15	0.81%

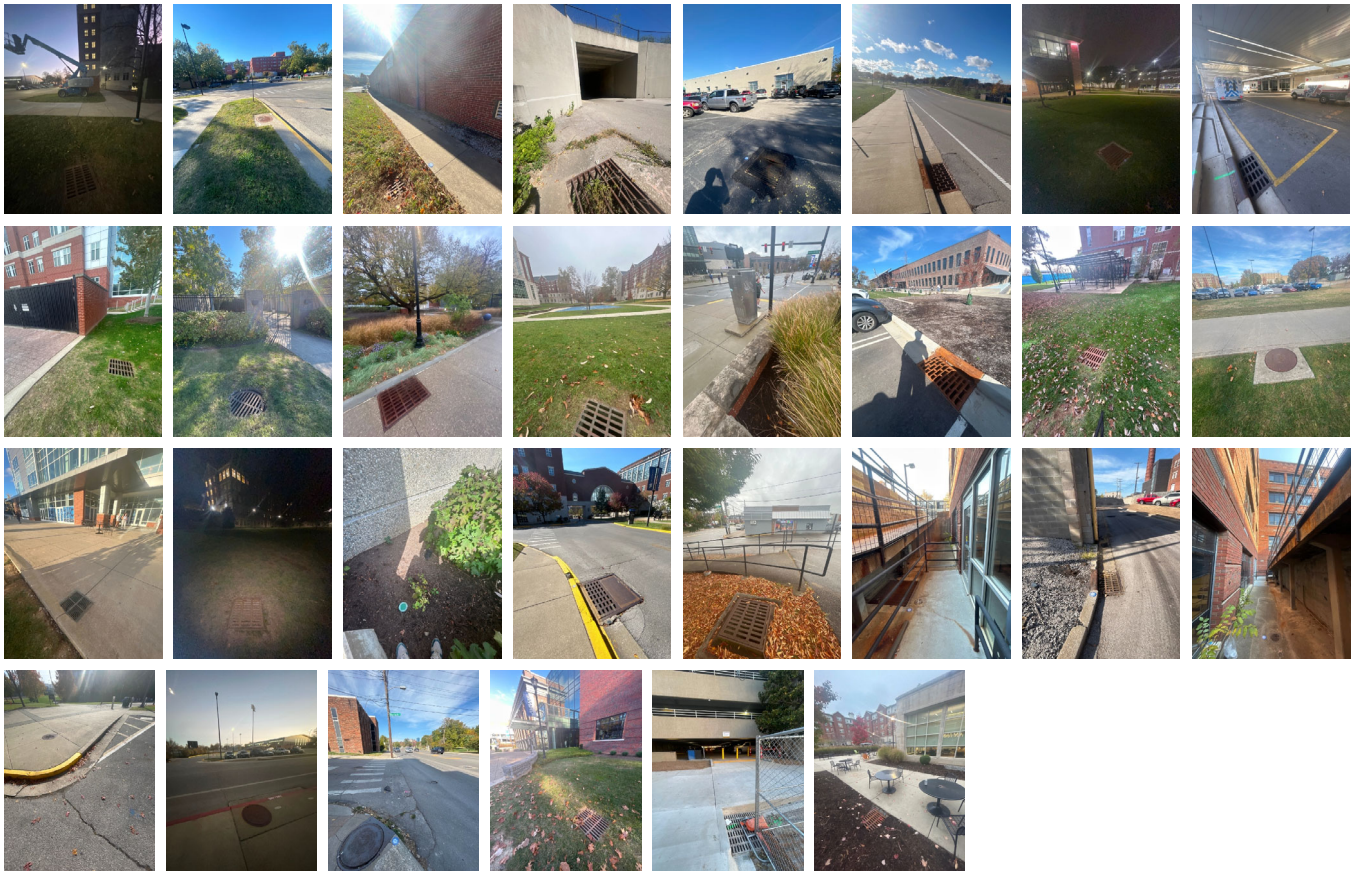
Answered: 1,816 Skipped: 29

Drain Photo *



Images: 596

Area Photo *



Images: 614

Notification Sent

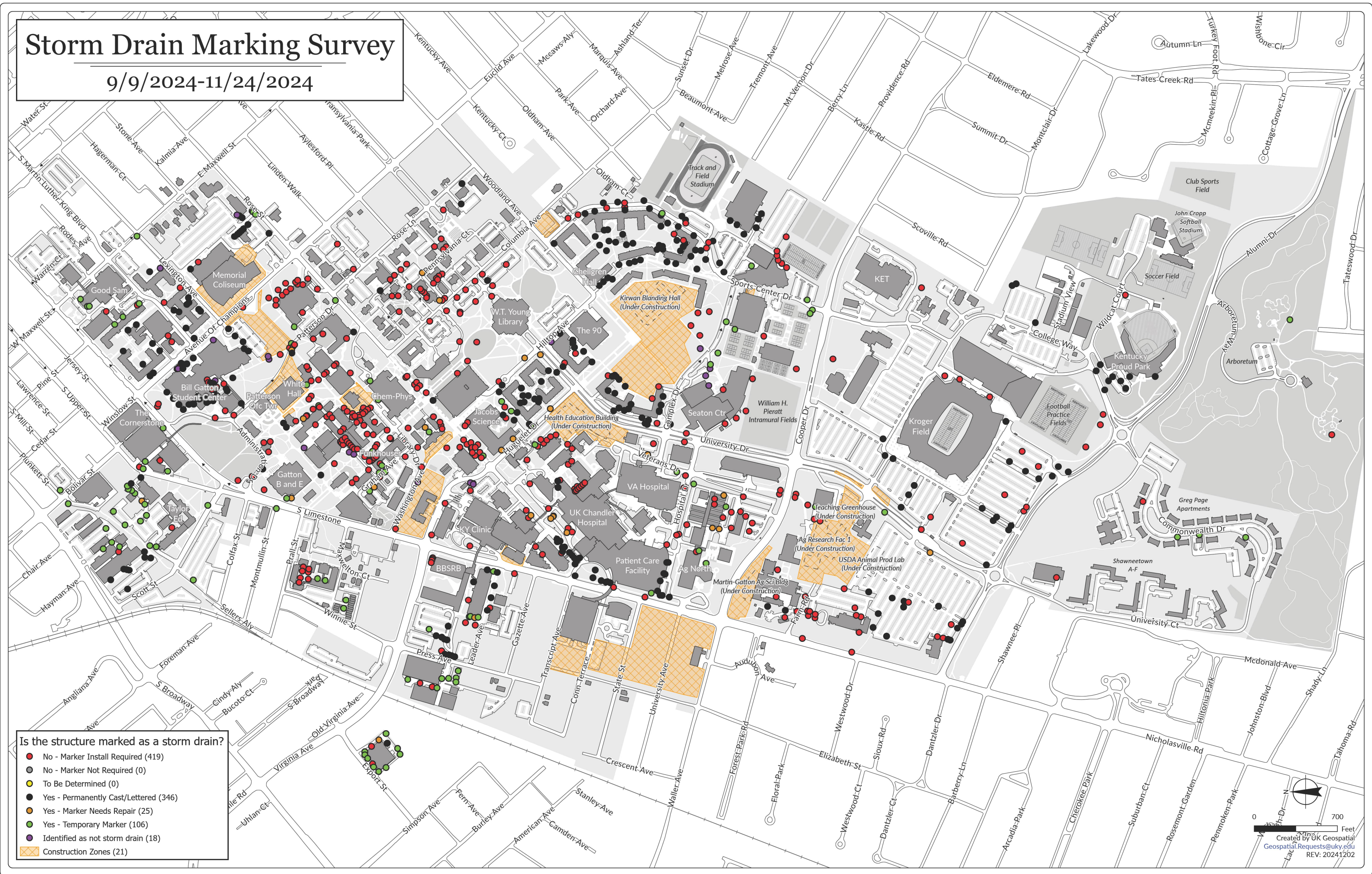
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Location Verify

Web browsers may not respond well when there are more than 500 answers in the word cloud. [Show it anyway](#)

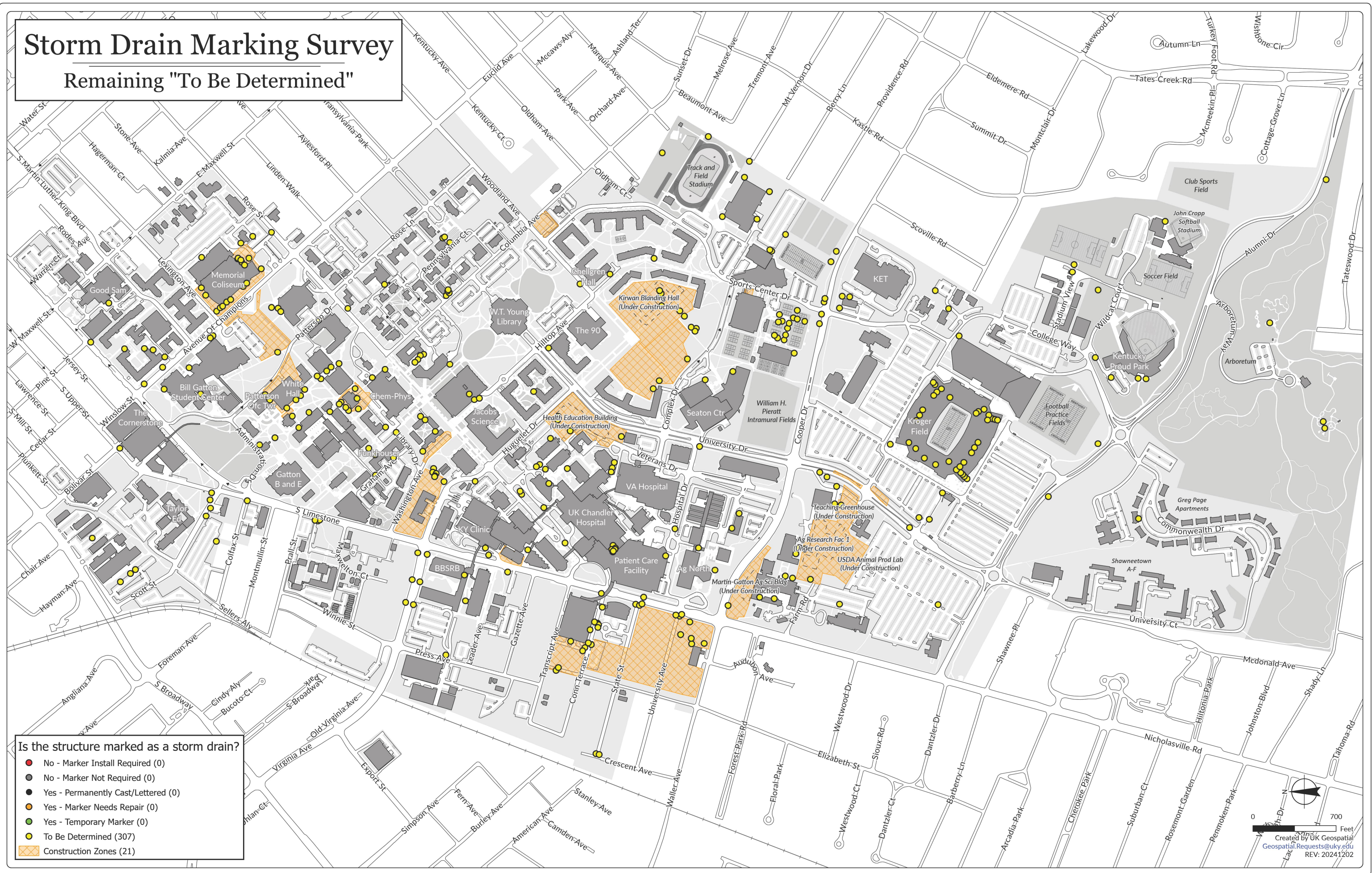
Storm Drain Marking Survey

9/9/2024-11/24/2024



Storm Drain Marking Survey

Remaining "To Be Determined"



Created by UK Geospatial
Geospatial.Requests@uky.edu
REV: 20241202

Storm Drain Marking Survey

ALL DRAINS

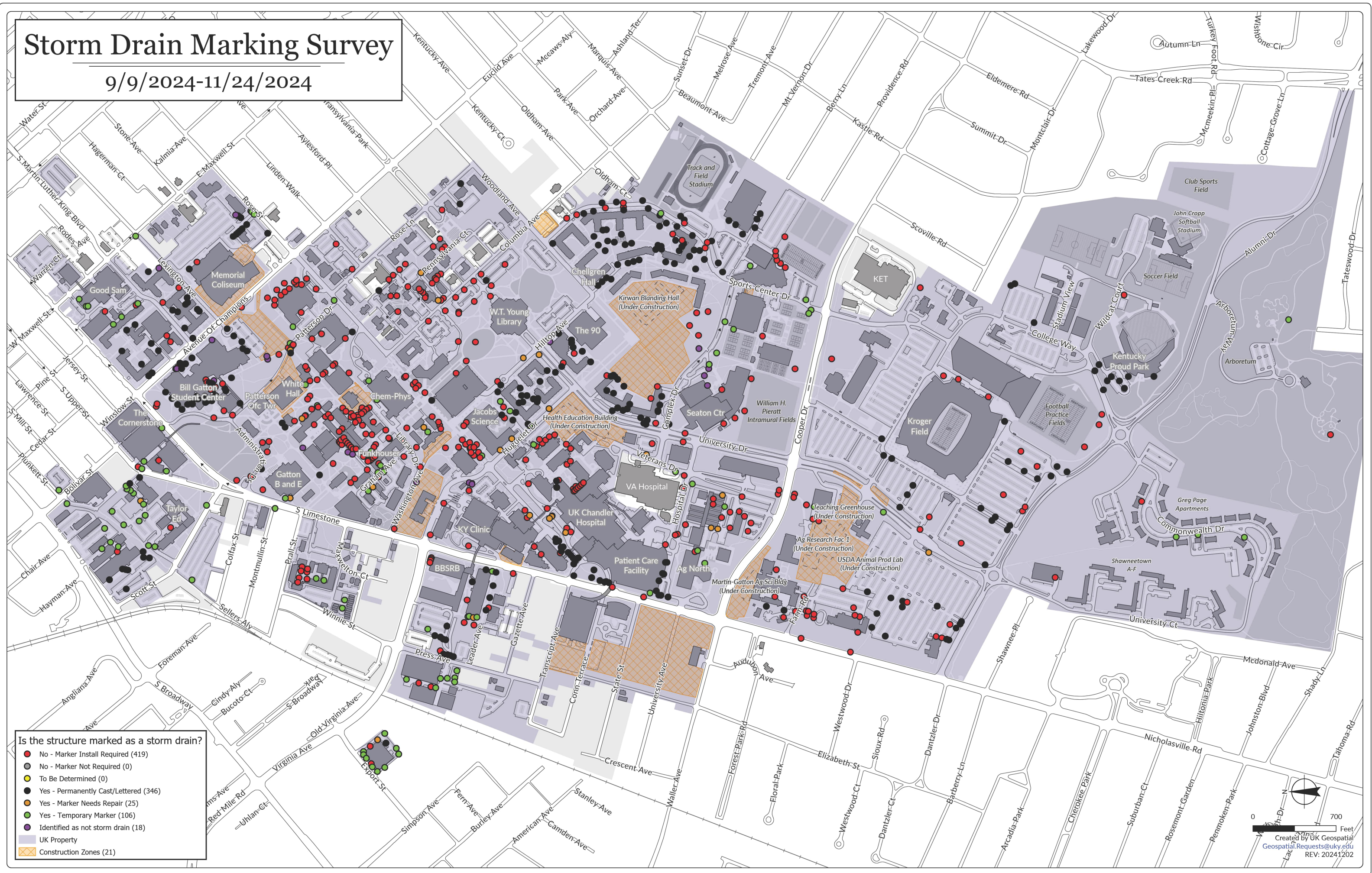
Is the structure marked as a storm drain?

- No - Marker Install Required (885)
- No - Marker Not Required (91)
- Yes - Permanently Cast/Lettered (357)
- Yes - Marker Needs Repair (40)
- Yes - Temporary Marker (203)
- To Be Determined (307)
- Construction Zones (21)

Storm Drain Marking Survey

9/9/2024-11/24/2024

9/9/2024-11/24/2024

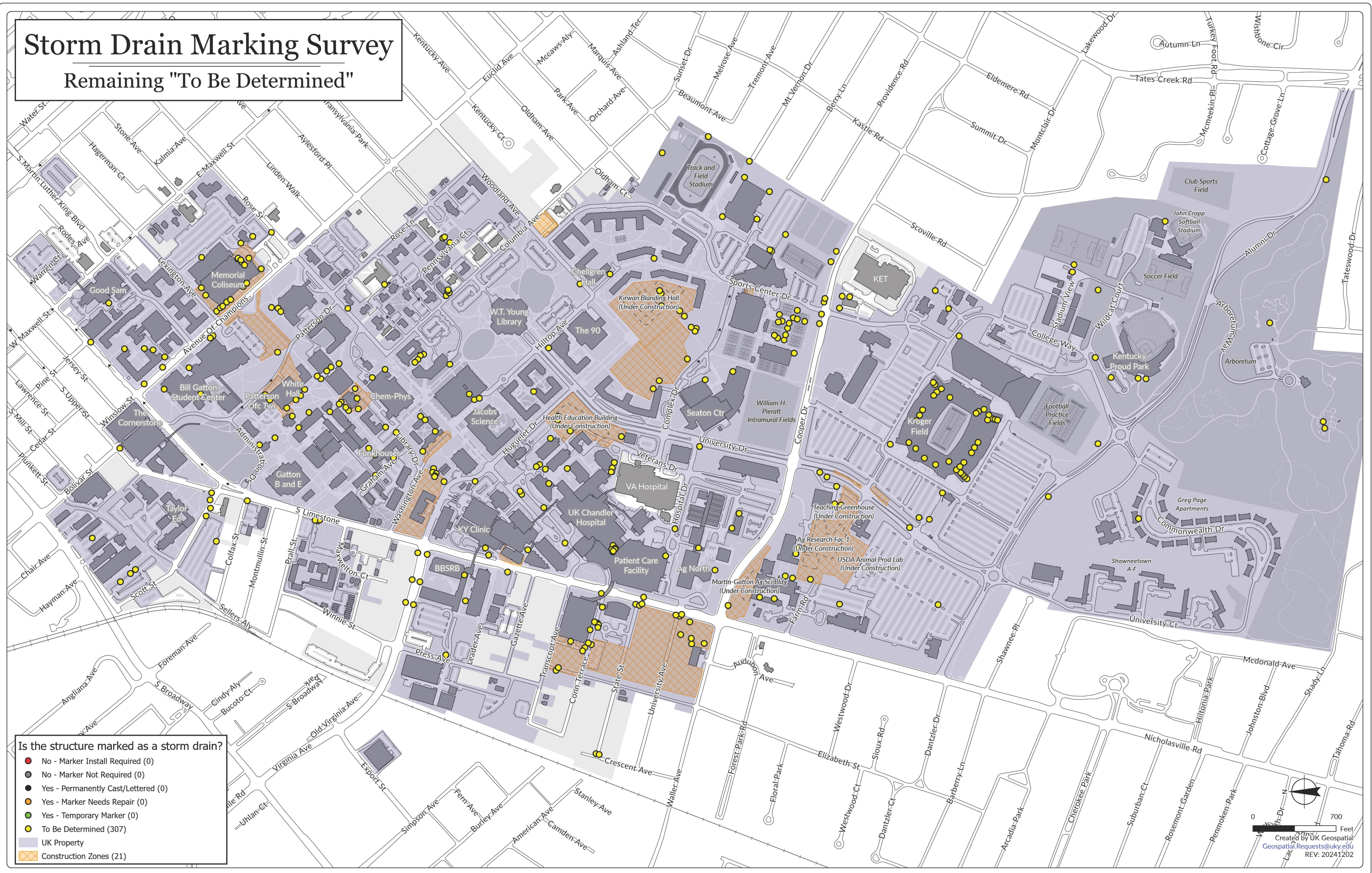


Is the structure marked as a storm drain?

-  No - Marker Install Required (419)
-  No - Marker Not Required (0)
-  To Be Determined (0)
-  Yes - Permanently Cast/Lettered (346)
-  Yes - Marker Needs Repair (25)
-  Yes - Temporary Marker (106)
-  Identified as not storm drain (18)
-  UK Property
-  Construction Zones (21)

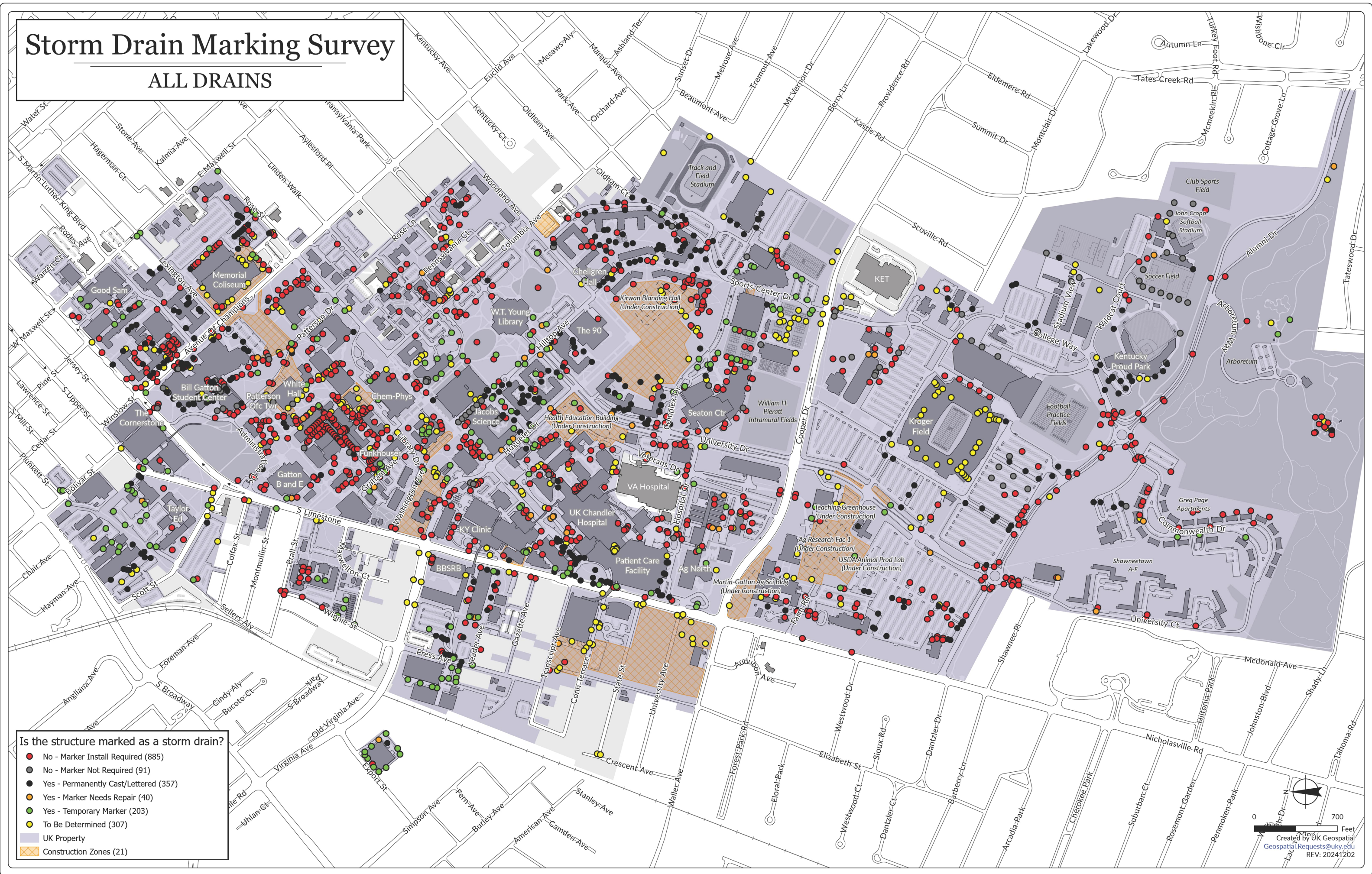
Storm Drain Marking Survey

Remaining "To Be Determined"



Storm Drain Marking Survey

ALL DRAINS



Is the structure marked as a storm drain?

- No - Marker Install Required (885)
- No - Marker Not Required (91)
- Yes - Permanently Cast/Lettered (357)
- Yes - Marker Needs Repair (40)
- Yes - Temporary Marker (203)
- To Be Determined (307)
- UK Property
- Construction Zones (21)

APPENDIX F-4

General Stormwater Training Documentation

Item ID	Last Name	First Name	Organization	Completion Status	Completion Date
EHS-STORMWATER	Tyree	William	Utilities & Energy Management	Passed	4/9/2024 03:16 PM US/Eastern
EHS-STORMWATER	Altizer	Shawn	Utilities & Energy Management	Passed	9/13/2024 02:23 AM US/Eastern
EHS-STORMWATER	Owens	Joe	Phys Plt-Trucking Services	Passed	12/6/2024 02:57 PM US/Eastern
EHS-STORMWATER	Del Rey Del Rio	Barbara	Utilities & Energy Management	Passed	5/30/2024 06:50 PM US/Eastern
EHS-STORMWATER	Minton	Jonathan	Utilities & Energy Management	Passed	2/2/2024 08:41 AM US/Eastern
EHS-STORMWATER	Roe	Jacob	Medical Center Physical Plant	Passed	2/21/2024 05:05 AM US/Eastern
EHS-STORMWATER	Morrow	Kristen	Campus Maintenance Central	Passed	8/15/2024 09:03 AM US/Eastern
EHS-STORMWATER	Johnson	VanNess	Utilities & Energy Management	Passed	3/6/2024 03:52 PM US/Eastern
EHS-STORMWATER	Ragland	Britney	Utilities & Energy Management	Passed	9/10/2024 03:54 PM US/Eastern
EHS-STORMWATER	Cole	Kenneth	Phys Plt-Trucking Services	Passed	12/3/2024 08:34 AM US/Eastern
EHS-STORMWATER	Strange	Garth	Medical Center Physical Plant	Passed	3/12/2024 08:26 AM US/Eastern
EHS-STORMWATER	Assel	April	Utilities & Energy Management	Passed	3/25/2024 02:51 PM US/Eastern
EHS-STORMWATER	Costello	Corinne	Phys Plt-Recycling Operations	Passed	11/26/2024 09:02 AM US/Eastern
EHS-STORMWATER	Canter	Eric	Phys Plt-Grounds Services	Passed	12/13/2024 09:41 AM US/Eastern
EHS-STORMWATER	Morris	Earl	Medical Center Physical Plant	Passed	4/11/2024 03:16 PM US/Eastern
EHS-STORMWATER	Ortynska	Lyudmyla	Phys Plt-Custodial Services	Passed	3/14/2024 11:13 AM US/Eastern
EHS-STORMWATER	Boyd	Jacob	Medical Center Physical Plant	Passed	9/10/2024 04:28 PM US/Eastern
EHS-STORMWATER	Hurst	Michael	Phys Plt-Grounds Services	Passed	8/5/2024 03:59 PM US/Eastern
EHS-STORMWATER	Blankenship	Philip	Athletics - Facilities	Passed	3/10/2024 12:33 PM US/Eastern
EHS-STORMWATER	Templeton	Chad	Utilities & Energy Management	Passed	9/11/2024 10:23 PM US/Eastern
EHS-STORMWATER	Smallwood	George	Phys Plt-Custodial Services	Passed	2/15/2024 01:06 PM US/Eastern
EHS-STORMWATER	Herbert	Tandellier	Facilities Project Management	Passed	3/25/2024 11:11 AM US/Eastern
EHS-STORMWATER	Webb	Jacob	Medical Center Physical Plant	Passed	4/22/2024 11:24 AM US/Eastern
EHS-STORMWATER	Bain	Matthew	STEPS Temporary Employment	Passed	4/15/2024 12:49 PM US/Eastern
EHS-STORMWATER	Bain	Matthew	STEPS Temporary Employment	Passed	4/17/2024 09:37 AM US/Eastern
EHS-STORMWATER	Elswick	Marcus	Athletics - Operations	Passed	8/29/2024 07:41 AM US/Eastern
EHS-STORMWATER	Navales	Jomari	Medical Center Physical Plant	Passed	12/24/2024 10:21 AM US/Eastern
EHS-STORMWATER	Smith	Pierre	Phys Plt-Grounds Services	Passed	2/28/2024 03:14 PM US/Eastern
EHS-STORMWATER	Crace	Kimberly	Facilities Project Management	Passed	10/11/2024 09:48 AM US/Eastern
EHS-STORMWATER	Chwatko	Waldemar	Campus Maintenance Central	Passed	4/24/2024 10:03 AM US/Eastern
EHS-STORMWATER	Meyers	Timothy	Campus Physical Plant	Passed	12/17/2024 01:04 PM US/Eastern
EHS-STORMWATER	Mays	Devin	Medical Center Physical Plant	Passed	3/9/2024 03:16 PM US/Eastern
EHS-STORMWATER	Lark	Ryan	Phys Plt-Recycling Operations	Passed	11/25/2024 03:18 PM US/Eastern
EHS-STORMWATER	Weber	Nathan	Environmental Quality Management	Passed	6/10/2024 09:19 AM US/Eastern
EHS-STORMWATER	Hall	Anthony	Utilities & Energy Management	Passed	9/24/2024 09:53 AM US/Eastern
EHS-STORMWATER	Murphy	Jason	Facilities Project Management	Passed	1/10/2024 04:06 PM US/Eastern
EHS-STORMWATER	Smith	Tony	Phys Plt-Grounds Services	Passed	3/6/2024 05:44 PM US/Eastern
EHS-STORMWATER	Smith	Tony	Phys Plt-Grounds Services	Passed	12/5/2024 02:12 PM US/Eastern
EHS-STORMWATER	Smith	Tony	Phys Plt-Grounds Services	Passed	8/5/2024 03:59 PM US/Eastern
EHS-STORMWATER	Rodriguez Duboy	Mayelin	Phys Plt-Custodial Services	Passed	3/28/2024 05:47 AM US/Eastern
EHS-STORMWATER	Tucker	Gretchen	Campus Physical Plant	Passed	7/9/2024 08:15 AM US/Eastern
EHS-STORMWATER	Duffy	Michael	Utilities & Energy Management	Passed	9/16/2024 10:44 AM US/Eastern
EHS-STORMWATER	White	Larry	Campus Maintenance Central	Passed	3/19/2024 10:28 AM US/Eastern
EHS-STORMWATER	Hodges	Dustin	Phys Plt-Grounds Services	Passed	12/5/2024 01:24 PM US/Eastern
EHS-STORMWATER	Burroughs	Jon	Campus Maintenance Central	Passed	3/6/2024 03:26 PM US/Eastern
EHS-STORMWATER	Walton	Breanna	Phys Plt-Recycling Operations	Passed	12/13/2024 10:04 AM US/Eastern
EHS-STORMWATER	Smith	Kurtis	Medical Center Physical Plant	Passed	10/9/2024 11:07 AM US/Eastern
EHS-STORMWATER	Graham	Michael	Campus Maintenance Central	Passed	3/11/2024 08:17 AM US/Eastern
EHS-STORMWATER	Graham	Michael	Campus Maintenance Central	Passed	3/26/2024 09:22 PM US/Eastern
EHS-STORMWATER	Brand	Paul	Medical Center Physical Plant	Passed	4/22/2024 12:19 PM US/Eastern
EHS-STORMWATER	Oliver	Marilyn	Phys Plt-Custodial Services	Passed	10/3/2024 07:24 PM US/Eastern
EHS-STORMWATER	Henry	Bradley	Phys Plt-Grounds Services	Passed	12/20/2024 09:03 AM US/Eastern
EHS-STORMWATER	Foster	Don	Campus Maintenance Central	Passed	6/2/2024 09:54 PM US/Eastern
EHS-STORMWATER	Barnett	Jonathan	Medical Center Physical Plant	Passed	6/4/2024 11:33 AM US/Eastern
EHS-STORMWATER	Haffermann	Jack	Phys Plt-Grounds Services	Passed	11/6/2024 08:51 AM US/Eastern
EHS-STORMWATER	Hampton	Brandon	Medical Center Physical Plant	Passed	3/1/2024 03:26 PM US/Eastern
EHS-STORMWATER	Skeese	Shawn	Medical Center Physical Plant	Passed	3/20/2024 04:40 PM US/Eastern
EHS-STORMWATER	Short	Travis	Medical Center Physical Plant	Passed	2/9/2024 09:06 AM US/Eastern
EHS-STORMWATER	Cronk	Kelly	Utilities & Energy Management	Passed	8/30/2024 11:22 AM US/Eastern
EHS-STORMWATER	Jump	Matthew	Capital Project Management	Passed	1/16/2024 11:21 AM US/Eastern
EHS-STORMWATER	Negrete Leon	Jesus	Medical Center Physical Plant	Passed	4/30/2024 12:04 PM US/Eastern
EHS-STORMWATER	Montgomery	Kasey	VP - Facilities	Passed	9/12/2024 11:56 AM US/Eastern
EHS-STORMWATER	Fuentes	Rosario	Phys Plt-Custodial Services	Passed	1/17/2024 08:47 AM US/Eastern
EHS-STORMWATER	Mefford	Mason	Environmental Quality Management	Passed	9/5/2024 02:28 PM US/Eastern
EHS-STORMWATER	Walker	Sondajo	Medical Center Physical Plant	Passed	9/26/2024 03:14 PM US/Eastern
EHS-STORMWATER	Martindale	Carlie	Facilities Shared Services	Passed	12/12/2024 09:16 AM US/Eastern
EHS-STORMWATER	Gray	Scott	Phys Plt-Grounds Services	Passed	12/28/2024 06:26 PM US/Eastern
EHS-STORMWATER	Campos	Marcelo	Utilities & Energy Management	Passed	8/13/2024 09:40 AM US/Eastern
EHS-STORMWATER	Chenault	Cory	Utilities & Energy Management	Passed	9/3/2024 08:21 AM US/Eastern
EHS-STORMWATER	Phillips	Jerry	Utilities & Energy Management	Passed	5/8/2024 01:41 PM US/Eastern
EHS-STORMWATER	Curry	Adam	Phys Plt-Grounds Services	Passed	8/15/2024 01:37 PM US/Eastern
EHS-STORMWATER	Woodrum	Kenneth	Utilities & Energy Management	Passed	12/18/2024 12:41 AM US/Eastern
EHS-STORMWATER	Goode	Ryan	Phys Plt-Custodial Services	Passed	3/26/2024 09:40 AM US/Eastern

EHS-STORMWATER	Huber	Dan	Medical Center Physical Plant	Passed	4/10/2024 11:32 AM US/Eastern
EHS-STORMWATER	Cleveland	Ben	Medical Center Physical Plant	Passed	3/27/2024 03:32 PM US/Eastern
EHS-STORMWATER	Stacy	Ryan	Campus Maintenance Central	Passed	8/1/2024 10:17 AM US/Eastern
EHS-STORMWATER	Robbins	Matthew	Utilities & Energy Management	Passed	12/1/2024 07:21 AM US/Eastern
EHS-STORMWATER	Timoshchuk	Lyudmila	Campus Physical Plant	Passed	9/10/2024 12:45 PM US/Eastern
EHS-STORMWATER	Timoshchuk	Lyudmila	Campus Physical Plant	Passed	8/29/2024 02:22 PM US/Eastern
EHS-STORMWATER	Ruano	Fox	Phys Plt-Grounds Services	Passed	8/5/2024 03:59 PM US/Eastern
EHS-STORMWATER	Joseph	Jack	Utilities & Energy Management	Passed	2/14/2024 10:19 PM US/Eastern
EHS-STORMWATER	Kouns	Kyle	Utilities & Energy Management	Passed	2/29/2024 05:31 PM US/Eastern
EHS-STORMWATER	Perry	Orin	Utilities & Energy Management	Passed	9/13/2024 09:19 PM US/Eastern
EHS-STORMWATER	Caudill	James	Medical Center Physical Plant	Passed	5/29/2024 10:48 PM US/Eastern
EHS-STORMWATER	Baker	Sarah	Capital Project Management	Passed	6/12/2024 10:38 AM US/Eastern
EHS-STORMWATER	Coward	Thomas	Medical Center Physical Plant	Passed	4/10/2024 12:56 PM US/Eastern
EHS-STORMWATER	Wigglesworth	Sandra	Athletics - Facilities	Passed	2/22/2024 08:54 AM US/Eastern
EHS-STORMWATER	Poe	Bryan	Utilities & Energy Management	Passed	4/23/2024 03:45 PM US/Eastern
EHS-STORMWATER	Harris	Joseph	Utilities & Energy Management	Passed	9/3/2024 08:12 AM US/Eastern
EHS-STORMWATER	Harris	Joseph	Utilities & Energy Management	Passed	6/25/2024 01:59 PM US/Eastern
EHS-STORMWATER	Chenault	Jathniel	Medical Center Physical Plant	Passed	3/21/2024 01:55 PM US/Eastern
EHS-STORMWATER	Sanchez	Juan	Medical Center Physical Plant	Passed	3/8/2024 12:23 PM US/Eastern
EHS-STORMWATER	Williams	Zachary	Medical Center Physical Plant	Passed	4/2/2024 01:09 PM US/Eastern
EHS-STORMWATER	Hoard	Jacob	Utilities & Energy Management	Passed	9/3/2024 09:33 AM US/Eastern
EHS-STORMWATER	Pippen	Brian	Utilities & Energy Management	Passed	9/12/2024 01:26 PM US/Eastern
EHS-STORMWATER	Hardin	Matthew	Phys Plt-Grounds Services	Passed	12/5/2024 02:12 PM US/Eastern
EHS-STORMWATER	Hardin	Matthew	Phys Plt-Grounds Services	Passed	8/5/2024 03:59 PM US/Eastern
EHS-STORMWATER	Griggs	Alexandria	Medical Center Physical Plant	Passed	5/29/2024 10:55 AM US/Eastern
EHS-STORMWATER	Jones	Phil	Phys Plt-Grounds Services	Passed	12/5/2024 02:12 PM US/Eastern
EHS-STORMWATER	Jones	Phil	Phys Plt-Grounds Services	Passed	8/5/2024 03:59 PM US/Eastern
EHS-STORMWATER	Kane	Joseph	Capital Project Management	Passed	8/15/2024 04:03 PM US/Eastern
EHS-STORMWATER	Reynolds	James	Utilities & Energy Management	Passed	9/18/2024 04:12 AM US/Eastern
EHS-STORMWATER	Sidwell	Eric	Phys Plt-Grounds Services	Passed	12/13/2024 09:19 AM US/Eastern
EHS-STORMWATER	Huffines	Henry	Utilities & Energy Management	Passed	3/25/2024 01:12 PM US/Eastern
EHS-STORMWATER	Drury	Michael	Campus Maintenance Central	Passed	9/10/2024 12:22 PM US/Eastern
EHS-STORMWATER	Trumble	Sarah	Environmental Quality Management	Passed	4/23/2024 08:30 AM US/Eastern
EHS-STORMWATER	Thomas	Charles	Phys Plt-Custodial Services	Passed	7/21/2024 04:08 PM US/Eastern
EHS-STORMWATER	Brady	Bryan	Phys Plt-Grounds Services	Passed	8/5/2024 03:59 PM US/Eastern
EHS-STORMWATER	Mack	Antoine	Utilities & Energy Management	Passed	8/13/2024 11:49 AM US/Eastern
EHS-STORMWATER	Dennis	Ryan	Campus Maintenance Central	Passed	10/10/2024 02:23 PM US/Eastern
EHS-STORMWATER	Keely	Daniel	Utilities & Energy Management	Passed	10/15/2024 05:43 AM US/Eastern
EHS-STORMWATER	Kemp	Dustin	Utilities & Energy Management	Passed	5/15/2024 09:24 AM US/Eastern
EHS-STORMWATER	Caudill	Emery	Phys Plt-Grounds Services	Passed	8/5/2024 03:59 PM US/Eastern
EHS-STORMWATER	Caudill	Emery	Phys Plt-Grounds Services	Passed	7/16/2024 02:43 PM US/Eastern
EHS-STORMWATER	Young	William	Campus Maintenance Central	Passed	1/18/2024 08:06 AM US/Eastern
EHS-STORMWATER	Arthur	Kindra	Utilities & Energy Management	Passed	8/6/2024 08:52 AM US/Eastern
EHS-STORMWATER	McCarty	Sumi	Arboretum	Passed	1/9/2024 12:52 PM US/Eastern
EHS-STORMWATER	Pelat	Christian	Utilities & Energy Management	Passed	6/6/2024 12:59 PM US/Eastern
EHS-STORMWATER	Gay	Fred	Medical Center Physical Plant	Passed	2/13/2024 02:58 PM US/Eastern
EHS-STORMWATER	Thomas	Corey	Capital Project Management	Passed	12/26/2024 08:23 AM US/Eastern
EHS-STORMWATER	Mueller	Matthew	Medical Center Physical Plant	Passed	2/26/2024 03:51 PM US/Eastern
EHS-STORMWATER	Locke	Jacob	Medical Center Physical Plant	Passed	6/18/2024 10:12 AM US/Eastern
EHS-STORMWATER	Monroe	Steven	Campus Maintenance Central	Passed	2/27/2024 12:30 PM US/Eastern
EHS-STORMWATER	Hannabach	Robert	Utilities & Energy Management	Passed	5/1/2024 04:08 PM US/Eastern
EHS-STORMWATER	Barnett	Russell	Medical Center Physical Plant	Passed	9/10/2024 01:56 PM US/Eastern
EHS-STORMWATER	Gut	Sophia	Utilities & Energy Management	Passed	1/31/2024 03:38 PM US/Eastern
EHS-STORMWATER	Roc	Jean Francis	Phys Plt-Custodial Services	Passed	1/4/2024 01:14 PM US/Eastern
EHS-STORMWATER	Warner	Karl	Campus Maintenance Central	Passed	12/3/2024 08:52 AM US/Eastern
EHS-STORMWATER	Ward	Nathaniel	Utilities & Energy Management	Passed	8/13/2024 08:06 AM US/Eastern
EHS-STORMWATER	Shearer	Ronald	Phys Plt-Grounds Services	Passed	12/5/2024 02:12 PM US/Eastern
EHS-STORMWATER	Shearer	Ronald	Phys Plt-Grounds Services	Passed	8/5/2024 03:59 PM US/Eastern
EHS-STORMWATER	Zierer	Paul	Utilities & Energy Management	Passed	9/13/2024 12:08 PM US/Eastern
EHS-STORMWATER	Nordine	Sarah	Capital Project Management	Passed	8/15/2024 07:59 AM US/Eastern
EHS-STORMWATER	Flannery	Forrest	Campus Maintenance Central	Passed	2/21/2024 11:04 AM US/Eastern
EHS-STORMWATER	Daly	Michael	Campus Maintenance Central	Passed	11/20/2024 10:43 AM US/Eastern
EHS-STORMWATER	Spears	Russell	Campus Maintenance Central	Passed	3/9/2024 02:22 PM US/Eastern
EHS-STORMWATER	Stewart	Nathan	Medical Center Physical Plant	Passed	3/8/2024 06:30 AM US/Eastern
EHS-STORMWATER	Peck	Jonah	Campus Maintenance Central	Passed	12/9/2024 09:01 AM US/Eastern
EHS-STORMWATER	Buford	Christopher	Medical Center Physical Plant	Passed	4/5/2024 04:36 PM US/Eastern
EHS-STORMWATER	Parker	Spencer	Utilities & Energy Management	Passed	8/16/2024 08:09 AM US/Eastern
EHS-STORMWATER	Gardner	Logan	Medical Center Physical Plant	Passed	9/17/2024 10:32 AM US/Eastern
EHS-STORMWATER	Christopher	Jared	Utilities & Energy Management	Passed	11/15/2024 09:04 PM US/Eastern
EHS-STORMWATER	Lawson	David	Phys Plt-Grounds Services	Passed	5/23/2024 09:51 AM US/Eastern
EHS-STORMWATER	Lawson	David	Phys Plt-Grounds Services	Passed	8/5/2024 03:59 PM US/Eastern
EHS-STORMWATER	Abernathy	Isaac	Phys Plt-Grounds Services	Passed	11/6/2024 09:53 AM US/Eastern
EHS-STORMWATER	Jacquecilus	Sperencia	Phys Plt-Custodial Services	Passed	10/31/2024 10:32 AM US/Eastern
EHS-STORMWATER	Hopkins	Eric	Campus Maintenance Central	Passed	12/23/2024 02:43 PM US/Eastern

EHS-STORMWATER	Hale	Andrew	Phys Plt-Grounds Services	Passed	8/5/2024 03:59 PM US/Eastern
EHS-STORMWATER	Hale	Andrew	Phys Plt-Grounds Services	Passed	12/5/2024 02:12 PM US/Eastern
EHS-STORMWATER	Booth	Steven	Utilities & Energy Management	Passed	10/1/2024 02:46 PM US/Eastern
EHS-STORMWATER	Williams	Jennifer	Campus Physical Plant	Passed	4/23/2024 01:45 PM US/Eastern
EHS-STORMWATER	Tincher	Bobbie	Utilities & Energy Management	Passed	9/11/2024 01:24 PM US/Eastern
EHS-STORMWATER	Dunn	Shayne	Campus Maintenance Central	Passed	10/30/2024 08:46 AM US/Eastern
EHS-STORMWATER	Gray	Graham	Utilities & Energy Management	Passed	9/10/2024 02:22 PM US/Eastern
EHS-STORMWATER	Dansby	Darla	Phys Plt-Custodial Services	Passed	9/19/2024 09:22 AM US/Eastern
EHS-STORMWATER	Hudgins	Jeff	Capital Project Management	Passed	4/24/2024 02:06 PM US/Eastern
EHS-STORMWATER	Disney	James	Campus Maintenance Central	Passed	11/8/2024 01:40 PM US/Eastern
EHS-STORMWATER	Petit-Frere	Anaira	Phys Plt-Custodial Services	Passed	7/2/2024 01:01 PM US/Eastern
EHS-STORMWATER	Powers	Chad	Campus Maintenance Central	Passed	2/27/2024 01:34 PM US/Eastern
EHS-STORMWATER	Severyn	Andriy	Medical Center Physical Plant	Passed	7/8/2024 03:55 PM US/Eastern
EHS-STORMWATER	Orozco Perez	Flumencio	Medical Center Physical Plant	Passed	3/12/2024 04:04 PM US/Eastern
EHS-STORMWATER	Hardy	Craig	Medical Center Physical Plant	Passed	2/27/2024 08:16 AM US/Eastern
EHS-STORMWATER	Radschweit	Jonathan	Medical Center Physical Plant	Passed	8/19/2024 05:46 PM US/Eastern
EHS-STORMWATER	Higgins	Lawrence	Medical Center Physical Plant	Passed	7/8/2024 08:03 AM US/Eastern
EHS-STORMWATER	Bond Jr.	LaMonte	Campus Maintenance Central	Passed	7/5/2024 11:44 AM US/Eastern
EHS-STORMWATER	Timsina Sharma	Khina	Phys Plt-Custodial Services	Passed	4/4/2024 11:16 AM US/Eastern
EHS-STORMWATER	Gess	Brian	Campus Maintenance Central	Passed	2/16/2024 10:21 AM US/Eastern
EHS-STORMWATER	Joseph	Selius	Phys Plt-Custodial Services	Passed	3/4/2024 11:17 AM US/Eastern
EHS-STORMWATER	Bell	Daniel	Phys Plt-Custodial Services	Passed	10/6/2024 09:24 PM US/Eastern
EHS-STORMWATER	Reed	Daniel	Medical Center Physical Plant	Passed	2/21/2024 09:37 AM US/Eastern
EHS-STORMWATER	Owens	Landon	Medical Center Physical Plant	Passed	10/11/2024 10:58 AM US/Eastern
EHS-STORMWATER	Hughes	Brayden	Utilities & Energy Management	Passed	2/20/2024 08:43 AM US/Eastern
EHS-STORMWATER	Morales-Tinoco	Gabriel	STEPS Temporary Employment	Passed	1/25/2024 09:58 AM US/Eastern
EHS-STORMWATER	Barnett	Meyrick	STEPS Temporary Employment	Passed	3/5/2024 02:53 PM US/Eastern
EHS-STORMWATER	Hamersley	Daniel	Campus Maintenance Central	Passed	3/15/2024 03:44 PM US/Eastern
EHS-STORMWATER	Watkins	Lori	Medical Center Physical Plant	Passed	5/15/2024 07:57 AM US/Eastern
EHS-STORMWATER	Long	Jacob	Campus Maintenance Central	Passed	3/8/2024 02:24 PM US/Eastern
EHS-STORMWATER	Cutler	Alexander	Phys Plt-Custodial Services	Passed	10/31/2024 08:26 AM US/Eastern
EHS-STORMWATER	Valle	Jose	STEPS Temporary Employment	Passed	8/14/2024 06:50 AM US/Eastern
EHS-STORMWATER	Estes	Mitchell	Campus maintenance Area 2	Passed	2/23/2024 11:31 AM US/Eastern
EHS-STORMWATER	Bledsoe	Nicholas	Campus Maintenance Central	Passed	3/13/2024 09:02 PM US/Eastern
EHS-STORMWATER	Henson	Tiara	Phys Plt-Custodial Services	Passed	4/3/2024 12:33 PM US/Eastern

APPENDIX F-5

Spill Prevention & Control Countermeasures Training Documentation

Item ID	Last Name	First Name	Organization	Completion Status	Completion Date
EHS-SPCC-GWP	Russell	Gregory	4-H Central Operations	Passed	1/10/2024 08:33 AM US/Eastern
EHS-SPCC-GWP	Hamilton	John	4-H Central Operations	Passed	1/31/2024 10:07 AM US/Eastern
EHS-SPCC-GWP	Kanzy	Fidel	Acute Care	Passed	4/2/2024 11:18 AM US/Eastern
EHS-SPCC-GWP	McCarty	Sumi	Arboretum	Passed	1/9/2024 01:51 PM US/Eastern
EHS-SPCC-GWP	Ebelhar	Jeremy	Athletics - Facilities	Passed	2/7/2024 10:37 AM US/Eastern
EHS-SPCC-GWP	Blankenship	Philip	Athletics - Facilities	Passed	3/10/2024 01:56 PM US/Eastern
EHS-SPCC-GWP	Logan	William	Athletics - Facilities	Passed	2/21/2024 10:26 AM US/Eastern
EHS-SPCC-GWP	Day	Robert	Athletics - Facilities	Passed	3/20/2024 04:25 PM US/Eastern
EHS-SPCC-GWP	Wigglesworth	Sandra	Athletics - Facilities	Passed	2/22/2024 09:44 AM US/Eastern
EHS-SPCC-GWP	Goode	Matthew	Athletics - Operations	Passed	12/11/2024 09:36 AM US/Eastern
EHS-SPCC-GWP	Pettus	John	Athletics - Operations	Passed	12/11/2024 09:32 AM US/Eastern
EHS-SPCC-GWP	Gobald	Ella	Athletics - Operations	Passed	7/12/2024 10:46 AM US/Eastern
EHS-SPCC-GWP	Elswick	Marcus	Athletics - Operations	Passed	11/22/2024 11:09 AM US/Eastern
EHS-SPCC-GWP	Reed	Nathaniel	Athletics - Operations	Passed	12/11/2024 09:34 AM US/Eastern
EHS-SPCC-GWP	Nelson	James	Athletics - Operations	Passed	12/16/2024 09:35 AM US/Eastern
EHS-SPCC-GWP	Hayosh	John	Athletics - Operations	Passed	12/13/2024 09:32 AM US/Eastern
EHS-SPCC-GWP	Davis	Tommy	Athletics - Operations	Passed	12/18/2024 10:31 AM US/Eastern
EHS-SPCC-GWP	Barnes	Joshua	Athletics - Operations	Passed	12/11/2024 10:56 AM US/Eastern
EHS-SPCC-GWP	Lydian	Tristin	Athletics - Operations	Passed	12/11/2024 09:47 AM US/Eastern
EHS-SPCC-GWP	Hernandez	Pablo	Athletics - Operations	Passed	12/11/2024 10:29 AM US/Eastern
EHS-SPCC-GWP	Carter	Timothy	Campus Maintenance Central	Passed	1/25/2024 03:01 PM US/Eastern
EHS-SPCC-GWP	Dennis	Ryan	Campus Maintenance Central	Passed	4/11/2024 01:22 PM US/Eastern
EHS-SPCC-GWP	Flannery	Forrest	Campus Maintenance Central	Passed	2/22/2024 10:04 AM US/Eastern
EHS-SPCC-GWP	Dunn	Shayne	Campus Maintenance Central	Passed	10/30/2024 09:51 AM US/Eastern
EHS-SPCC-GWP	Weber	Nathan	Environmental Quality Management	Passed	6/10/2024 12:20 PM US/Eastern
EHS-SPCC-GWP	Mefford	Mason	Environmental Quality Management	Passed	9/5/2024 06:01 PM US/Eastern
EHS-SPCC-GWP	Given	Jeffrey	Medical Center Physical Plant	Passed	3/28/2024 08:06 PM US/Eastern
EHS-SPCC-GWP	Strange	Garth	Medical Center Physical Plant	Passed	3/12/2024 10:52 AM US/Eastern
EHS-SPCC-GWP	Barnett	Russell	Medical Center Physical Plant	Passed	9/30/2024 01:43 PM US/Eastern
EHS-SPCC-GWP	Combs	Glenn	Medical Center Physical Plant	Passed	4/16/2024 06:09 AM US/Eastern
EHS-SPCC-GWP	Negrete Leon	Jesus	Medical Center Physical Plant	Passed	4/30/2024 02:13 PM US/Eastern
EHS-SPCC-GWP	Ellis	Edward	Medical Center Physical Plant	Passed	4/2/2024 08:15 AM US/Eastern
EHS-SPCC-GWP	Coward	Thomas	Medical Center Physical Plant	Passed	8/3/2024 03:45 PM US/Eastern
EHS-SPCC-GWP	Chenault	Jathniel	Medical Center Physical Plant	Passed	3/11/2024 12:44 PM US/Eastern
EHS-SPCC-GWP	Ellis	Roger	Medical Center Physical Plant	Passed	4/3/2024 02:08 PM US/Eastern
EHS-SPCC-GWP	Hurst	Michael	Phys Plt-Grounds Services	Passed	7/10/2024 08:12 AM US/Eastern
EHS-SPCC-GWP	Hart	Jerry	Phys Plt-Grounds Services	Passed	10/11/2024 05:02 PM US/Eastern
EHS-SPCC-GWP	Caudill	Emery	Phys Plt-Grounds Services	Passed	5/17/2024 02:46 PM US/Eastern
EHS-SPCC-GWP	Hodges	Dustin	Phys Plt-Grounds Services	Passed	12/5/2024 02:33 PM US/Eastern
EHS-SPCC-GWP	Morrison	Chuck	Phys Plt-Grounds Services	Passed	12/13/2024 10:22 AM US/Eastern
EHS-SPCC-GWP	Long	Brett	Phys Plt-Grounds Services	Passed	12/18/2024 01:47 PM US/Eastern
EHS-SPCC-GWP	Balko	Zevin	Phys Plt-Grounds Services	Passed	1/9/2024 10:11 AM US/Eastern
EHS-SPCC-GWP	Hudgins	Bronson	Research Farms	Passed	11/14/2024 09:25 AM US/Eastern
EHS-SPCC-GWP	Smith	John	Research Farms	Passed	11/14/2024 11:13 AM US/Eastern
EHS-SPCC-GWP	Green	Clifford	Research Farms	Passed	11/14/2024 02:22 PM US/Eastern
EHS-SPCC-GWP	Henderson	Johnnie	Research Farms	Passed	11/14/2024 09:50 AM US/Eastern
EHS-SPCC-GWP	Stucker	Tyler	Research Farms	Passed	11/14/2024 09:22 AM US/Eastern
EHS-SPCC-GWP	Sparrow	Kip	Research Farms	Passed	11/14/2024 09:19 AM US/Eastern
EHS-SPCC-GWP	Tyree	William	Utilities & Energy Management	Passed	9/9/2024 10:16 AM US/Eastern
EHS-SPCC-GWP	Saunier	Azariah	Utilities & Energy Management	Passed	9/27/2024 12:28 AM US/Eastern
EHS-SPCC-GWP	Altizer	Shawn	Utilities & Energy Management	Passed	9/17/2024 11:53 PM US/Eastern
EHS-SPCC-GWP	De Rossitt	Chad	Utilities & Energy Management	Passed	9/14/2024 04:30 PM US/Eastern
EHS-SPCC-GWP	Minton	Jonathan	Utilities & Energy Management	Passed	2/3/2024 09:20 AM US/Eastern
EHS-SPCC-GWP	Hoard	Jacob	Utilities & Energy Management	Passed	9/4/2024 08:26 AM US/Eastern
EHS-SPCC-GWP	Pippen	Brian	Utilities & Energy Management	Passed	9/13/2024 10:42 AM US/Eastern
EHS-SPCC-GWP	Reynolds	James	Utilities & Energy Management	Passed	9/18/2024 11:42 PM US/Eastern
EHS-SPCC-GWP	Templeton	Chad	Utilities & Energy Management	Passed	9/20/2024 12:49 PM US/Eastern
EHS-SPCC-GWP	Huffines	Henry	Utilities & Energy Management	Passed	9/27/2024 08:59 AM US/Eastern
EHS-SPCC-GWP	Keely	Daniel	Utilities & Energy Management	Passed	9/23/2024 01:42 PM US/Eastern
EHS-SPCC-GWP	Hannabach	Robert	Utilities & Energy Management	Passed	9/27/2024 10:05 AM US/Eastern

EHS-SPCC-GWP	Duffy	Michael	Utilities & Energy Management	Passed	9/16/2024 10:12 AM US/Eastern
EHS-SPCC-GWP	Conner	Eric	Utilities & Energy Management	Passed	9/26/2024 10:48 AM US/Eastern
EHS-SPCC-GWP	Zierer	Paul	Utilities & Energy Management	Passed	9/20/2024 02:30 PM US/Eastern
EHS-SPCC-GWP	TRUE	Matthew	Utilities & Energy Management	Passed	5/27/2024 10:16 AM US/Eastern
EHS-SPCC-GWP	Combs	Joshua	Utilities & Energy Management	Passed	9/20/2024 04:39 AM US/Eastern
EHS-SPCC-GWP	Cronk	Kelly	Utilities & Energy Management	Passed	8/30/2024 12:14 PM US/Eastern
EHS-SPCC-GWP	Christopher	Jared	Utilities & Energy Management	Passed	9/26/2024 11:26 AM US/Eastern
EHS-SPCC-GWP	Derenge	David	Utilities & Energy Management	Passed	9/27/2024 08:28 AM US/Eastern
EHS-SPCC-GWP	Cafego	Joseph	Utilities & Energy Management	Passed	9/27/2024 10:21 AM US/Eastern
EHS-SPCC-GWP	Chenault	Cory	Utilities & Energy Management	Passed	9/3/2024 09:18 AM US/Eastern
EHS-SPCC-GWP	Phillips	Jerry	Utilities & Energy Management	Passed	5/8/2024 03:07 PM US/Eastern
EHS-SPCC-GWP	Booth	Steven	Utilities & Energy Management	Passed	10/1/2024 03:50 PM US/Eastern
EHS-SPCC-GWP	Woodrum	Kenneth	Utilities & Energy Management	Passed	12/17/2024 11:56 PM US/Eastern
EHS-SPCC-GWP	Rogers	Luther	Utilities & Energy Management	Passed	9/26/2024 02:43 PM US/Eastern
EHS-SPCC-GWP	Howard	Jack	Utilities & Energy Management	Passed	9/26/2024 11:25 AM US/Eastern
EHS-SPCC-GWP	Howard	Jack	Utilities & Energy Management	Passed	4/10/2024 08:15 AM US/Eastern
EHS-SPCC-GWP	Gray	Graham	Utilities & Energy Management	Passed	9/13/2024 02:10 PM US/Eastern
EHS-SPCC-GWP	Poynter	Martin	Utilities & Energy Management	Passed	9/29/2024 08:07 PM US/Eastern
EHS-SPCC-GWP	Robbins	Matthew	Utilities & Energy Management	Passed	12/4/2024 02:59 PM US/Eastern
EHS-SPCC-GWP	Perry	Orin	Utilities & Energy Management	Passed	9/13/2024 11:10 PM US/Eastern
EHS-SPCC-GWP	Moberly	Charles	Utilities & Energy Management	Passed	9/18/2024 06:34 AM US/Eastern
EHS-SPCC-GWP	Harris	Joseph	Utilities & Energy Management	Passed	9/3/2024 09:05 AM US/Eastern
EHS-SPCC-GWP	Brown	Tracy	Utilities & Energy Management	Passed	3/30/2024 11:31 PM US/Eastern

APPENDIX G

Small MS4 Training Certificates



2024 Kentucky Stormwater Association Winter Quarterly
February 7, 2024 (10 AM - Noon ET)
Professional Development Hours
Virtual Webinar via Zoom

Presentation Title	Speaker	Duration (hours)	Session Attended (check box)
KSA Board Updates and Introduction to the Limelight Series	KSA Board and Adam Shelley (Research Communications Specialist), Kentucky Water Research Institute (KWRI)	0.2	☒
Minimal Elements for Compliance	Lucas Hanks (MS4 Coordinator), KY Division of Water (KDOW)	0.15	☒
Beneficial Elements for More Effective Ordinances	Steve Evans (Associate Director), KWRI	0.35	☒
Innovative Approaches to MCMs (MCMs 3, 4, and 5)	Matt Powell, City of Bowling Green; Brooke Shireman, SD1; Neal Crawford, QK4 and David Curry, City of Radcliff	0.6	☒
Stormwater Fees	Steve Evans, KWRI; Nikki Koller, Warren County Stormwater; Josh Morgan, City of Danville	0.5	☒
Co-Permittee Agreements	Steve Evans, KWRI; Allison Thomas, Bullitt County	0.2	☒
Total PDH Hours		Kevin Lewis - 2.0	



2024 Kentucky Stormwater Association Spring Quarterly
May 14, 2024 (10 AM - Noon ET)
Professional Development Hours
Virtual Webinar via Zoom

Presentation Title	Speaker	Duration (hours)	Session Attended (check box)
KSA Board Updates and Announcements	KSA Board	0.15	☒
Kentucky Communities Are Embracing Their Local Waterways and Basin Coordinators Have a Seat at the Table	Brian Storz, Licking River Basin Coordinator, KY Division of Water (KDOW)	0.50	☒
OSG Green Infrastructure Assistance Program Updates	Dale Booth, Environmental Scientist, KDOW	0.20	☒
Kentucky's Clean Water State Revolving Fund (CWSRF): Considerations for Stormwater Management	Becca Trueman, Quantified Ventures	0.65	☒
Creek Cleanup Efforts	Meredith Meyers, Louisville MSD	0.50	☒
Total PDH Hours		Kevin Lewis - 2.0	



**2024 Kentucky Stormwater Association Fall Quarterly
October 23, 2024 (10 AM - Noon ET)
Professional Development Hours
Virtual Webinar via Zoom**

Presentation Title	Speaker	Duration (hours)	Session Attended (check box)
Welcome and KSA Board Updates	KSA Board	0.25	✓
Limelight Series (Key Steps to Your Compliance and Enforcement Program)	Demetria Kimball, Program Manager Sr - LFUCG Division of Environmental Services	1.25	✓
Kevin Lewis - 1.5			



certifies that

Kevin Lewis

has earned **0.1 Continuing Education Unit (CEU) or 1.0 Professional Development Hour (PDH)**

by successfully completing

Capturing Stormwater: Tapping the Resource

Presented at AQUALIS' Sustainable Water Compliance Summit

A handwritten signature in black ink that reads "Robin Pugh".

Robin Pugh
Continuing Education Manager

April 24, 2024

The logo for AQUALIS, featuring the word "AQUALIS" in a bold, blue, sans-serif font. A stylized blue wave graphic is positioned below the letter "A".

The logo for Stormwater Solutions, featuring the words "STORMWATER SOLUTIONS" in a bold, blue, sans-serif font. A blue water drop icon is placed above the letter "O" in "STORMWATER".



certifies that

Kevin Lewis

has earned **0.1 Continuing Education Unit (CEU) or 1.0 Professional Development Hour (PDH)**

by successfully completing

**A Retrospective on Green Infrastructure: Lessons Learned
in Design and Implementation**

Presented at AQUALIS' Sustainable Water Compliance Summit

A handwritten signature in black ink that reads "Robin Pugh".

Robin Pugh
Continuing Education Manager

April 24, 2024

The logo for AQUALIS, featuring the word "AQUALIS" in a bold, blue, sans-serif font. A stylized blue wave graphic is positioned below the letter "Q".

The logo for Stormwater Solutions, featuring the words "STORMWATER SOLUTIONS" in a bold, blue, sans-serif font. A blue water drop icon is placed above the letter "O" in "STORMWATER".



certifies that

Kevin Lewis

has earned **0.1 Continuing Education Unit (CEU) or 1.0 Professional Development Hour (PDH)**

by successfully completing

**Green Infrastructure Planning, Implementation, and
Maintenance Program from a Needs-based Approach**

Presented at AQUALIS' Sustainable Water Compliance Summit

A handwritten signature in black ink that reads "Robin Pugh".

Robin Pugh
Continuing Education Manager

April 24, 2024



CERTIFICATE OF ATTENDANCE

THIS CERTIFICATE IS PRESENTED TO

Kevin Lewis

FOR ATTENDING 1.0 HOUR OF THE
DWQ CAPITAL PROJECTS EROSION AND SEDIMENT CONTROL TRAINING
ON OCTOBER 30, 2024

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



Baile M

NAME

MS4 Section Manager

TITLE

October 30, 2024

DATE

CERTIFICATE OF ATTENDANCE

THIS CERTIFICATE IS PRESENTED TO

Kevin Lewis

FOR ATTENDING 3.0 HOURS
OF THE
WORKSHOP WITH THE ENGINEERING, DEVELOPMENT, & CONSTRUCTION
INDUSTRY ON DECEMBER 13, 2024

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



Baile M

NAME

MS4 Section Manager

TITLE

December 13, 2024

DATE



CERTIFICATE OF COURSE COMPLETION

This certifies that Kevin Lewis has completed

Advanced Drainage Systems

"Stormwater Solutions"

Presented by: Eddie Mesta, PE

Training Provider: Advanced Drainage Systems

1.0 Professional Development Hour(s)

Date & Location: July 16, 2024: University of Kentucky Facilities Management

A handwritten signature in black ink, appearing to read "Eddie Mesta", is written over a horizontal line.

Presenter/or Training Provider Signature

Eddie Mesta, PE

APPENDIX H

Updated SWQMP Tables

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency						
					PY1	PY2	PY3	PY4	PY5	Continued	Complete
	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	✓	= Complete /Stopped	
MCM 1	Public Education and Outreach										
	1.A – Strengthen Education, Outreach and Participation Program	EMD, TFISE	▪ Develop partnership with TFISE in year one	▪ Provide agreement between EMD and TFISE (MOU)	X	X		X	X	X	
			▪ Develop MCM 1&2 budget in year one to determine operating constraints of program	▪ Provide copy of operational budget for MCM 1&2.							
			▪ Develop MCM 1&2 program improvements in year one	▪ Provide detailed outline of program for MCM 1&2.							
			▪ Hire interns to assist TFISE in education/outreach activities by year two	▪ Provide copies of intern final reports, presentations, data, etc.							
	1.B – Update and maintain stormwater website	EMD, TFISE	▪ Website redesigned	▪ Updated website launched, documentation of regular updates, page traffic information		X	X	X			✓
			▪ Website routinely updated								
			▪ Page visits are trackable/analytics package								
	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.)	▪ Provide link to published map			X				✓
			▪ Develop interactive Story Map								
	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		X	X				✓
				▪ Provide the number of complaints through website and copies of the submitted reports							
	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	▪ Provide link to resource page			X				✓
			▪ Create content to include on the resource page	▪ Provide access to created educator resources							
			▪ Develop notification of availability once completed								
	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	▪ Provide links to social media accounts		X		X	X	X	
			▪ Add account links to UK Stormwater page								
			▪ Regularly update sites to keep information relevant								
	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	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	X	X	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	X	X	X	
	1.C.2 – Provide mechanism for incorporating students in stakeholder/planning process	EMD,		▪ Provide meeting dates, sign in sheets, meeting minutes, agendas, etc.				X	X	X	
		Sustainability,						X	X	X	
		TFISE						X	X	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.	▪ Provide copy of materials created as well as numbers distributed.				X	X	X	
			▪ Specify how those on campus can help reduce these problems.								
	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	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	X	
	1.D.1 – Involve student organizations	TFISE	▪ 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	X	X	X	X	X	X	
			▪ Devise incentive program to boost participation	▪ Provide description of incentive and names of qualifying groups							
	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	X	

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency						
					PY1	PY2	PY3	PY4	PY5	Continued	Complete
	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	▪ Provide copy of training			X	X			✓
			▪ Integrate training into online training programs and routine staff meetings	▪ Provide sign in sheets and online training records annually							
	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				X			✓
				▪ Provide distribution list/number of viewings, etc.							
	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.	▪ Provide copy of/link to the developed training			X	X	X	X	
			▪ Expand training to areas such as grad students, outdoor labs, etc. that may impact stormwater								
	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	X	
	1.J – Develop a consortium of stormwater professionals targeting universities	TFISE	▪ Develop a network of individuals	▪ Provide meeting date(s), attendees, and the agenda/list of topics discussed				X	X	X	
			▪ Meet with stormwater professionals to discuss campus stormwater and share ideas at least once annually.								
	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	X	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	▪ Provide progress update of efforts/changes completed each year		X	X	X	X	X	
			▪ Coordinate the program and participation with the marked drain inventory and the interactive map completion.								
	2.A.1 – Update inventory of marked drains via intern program	EMD	▪ 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.		X	X	X	X	X	
			▪ 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								
	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	X	X			✓
	2.A.3 – Develop advertising/awareness campaign to improve program participation	TFISE	▪ Create various advertising materials	▪ Provide # stormdrains marked annually			X	X	X	X	
			▪ Market program to faculty, staff, students, and visitors through various means to increase awareness and participation annually once completed.	▪ Provide # of participants annually							
				▪ Provide copy of marketing materials							
	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	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)	▪ Provide copy of notification methods and procedures/include in the Stormwater Operations Manual		X	X	X	X	X	
			▪ Create procedures outlining when and how notifications are used	▪ Provide copies of any notifications							
	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				✓

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency							
					PY1	PY2	PY3	PY4	PY5	Continued	Complete	
	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	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	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	• Provide list of procedures		X	X					✓
			• Develop/amend current procedures and include documentation of notification in year two/three	• Provide list/map of added properties (include link)								
			• Add procedures to Stormwater Operations Manual									
	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	X	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	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	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	X	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	X	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	• Provide copy of/link to training			X	X				✓
			• Develop staff protocols for reporting and include information on the new reporting mechanism	• Provide copy of protocols								
			• Add protocols to IDDE Manual/Stormwater Operations Manual									
	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	X				✓
	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	X	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 • Work with TFISE to develop video	• Provide link to video • Provide distribution list and/or list of trainings/discussions where video is used					X			✓

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency						
					PY1	PY2	PY3	PY4	PY5	Continued	Complete
	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	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		X					✓
			• Determine protocols for how/when scans will be used.	• Provide copy of protocols/include in Stormwater Operations Manual							
			• 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	X	X	X	X	X	X	
			• Develop a prioritized repair list	• Provide prioritized repair list							
			• 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		X	X	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	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		X	X					✓
		• Educate CPMD Project Managers on updated project steps	• Provide copy of presentation and/or meeting sign in sheet for PM training								
		• 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		X	X					✓
		• Create procedures for how step will be utilized and enforced									
		• 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	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		X	X					✓
		• Update design standards to clarify requirements and expectations of contractors	• Provide copy of updated design standards								
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		X						✓
		• Review proposals and select contractor	• Provide list of construction sites contractor has been hired to repair along with list of deficiencies corrected								
		• 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	X		
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		
		• 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	X		
• Update MS4 web with review information											

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency							
					PY1	PY2	PY3	PY4	PY5	Continued	Complete	
	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 • Review projects based on LFUCG guidelines • Update MS4 Web as needed	• Provide copy of updated contract/design standards • Provide project review reports from MS4 web	X	X	X	X	X	X		
	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 • Develop addition checklist for SWPPP requirement review based on KYR10 and integrate into MS4 Web	• Provide copy of updated checklist(s)		X					✔	
	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	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	X	X	X		
	4.G.1 – Develop UK construction process/requirement training	CPMD, Facility Operations	• Develop training in year two • Conduct training annually (minimum)	• Provide training presentation/ information • Provide training schedule & sign in sheets			X	X	X	X		
	4.G.2 – Develop KYR10 Requirement training	CPMD, EMD	• Develop training in year two/three • Conduct training with each project/annually (minimum)	• Provide training presentation/ information • Provide training schedule & sign in sheets			X	X	X	X		
	4.G.3 – Develop SWPPP development/requirement training	CPMD, EMD	• Develop training in year three • Conduct annually/as needed	• Provide training presentation/ information • Provide training schedule & sign in sheets			X	X	X	X		
	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 • Hold training annually (if possible)	• Provide summary of discussion • Provide training schedule (if applicable)		X					✔	
	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 • Provide list of projects and sign in/training acknowledgement sheet			X	X	X	X		
	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.) • Put policy in place for small construction projects (as appropriate)	• Provide copy of developed policies/procedures		X	X	X	X	X		
	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 • Review projects based on latest LFUCG standards • Update design and construction standards with any changes to post construction stormwater quality requirements as necessary • Update MS4 web with project information and approvals	• Maintain submitted information for each project • Provide copy of updated design and construction standards if applicable • Provide list of approved projects/ MS4 web report	X	X	X	X	X	X		
	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 • Complete and sign the MOU if applicable	• Provide summary of the determination and/or copy of the completed/signed MOU			X	X	X	X		
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 • Begin development of masterplan or schedule development of masterplan as needed • Create UK standards for stormwater post construction BMP selection (consider local water quality impairments) • Evaluate adopting the UK Landscape Guidelines as policy and enforcement of the policy • Incorporate into work flow and utilize the SITES review process (or equivalent) on all construction projects	• Provide meeting minutes/summary, sign in sheet, and copy of masterplan or schedule (if applicable) • Provide copy of post construction BMP selection standards • Provide update on Landscape Guidelines as policy determination along with procedures for enforcement of policy if applicable • Provide procedures for SITES review process (or equivalent) • Provide documentation of review processes use on new construction sites (score cards, etc)		X	X	X	X	X			
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	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	X			

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency							
					PY1	PY2	PY3	PY4	PY5	Continued	Complete	
	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	• Provide copy of updated checklist		X						✓
	• Update MS4 Web with new checklist		• Provide MS4 web report and/or copies of completed project review checklists									
	• Begin using new checklist for project review											
	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	• Provide list of completed inspections	X	X	X	X	X	X		
	• Document inspection in MS4 web											
	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	• Provide report/list of all inspected bmp’s along with findings	X	X	X	X	X	X		
			• Inspect 100% of underground BMP’s annually	• Provide preventative maintenance program procedures/ guidelines								
			• Develop preventative maintenance program for all UK owned post construction BMP’s in year two	• Provide copy of pm cost assessment								
			• 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								
			• Assist EDR with development of PM program for EDR owned bmp’s in year two	• Provide copy of EDR PM plan								
• Document all inspections and maintenance in MS4 web or effective equivalent												
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	X	X	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 copy of report/presentation		X	X	X	X	X			
		• Provide information to administrative staff via report and/or presentation										
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	• Provide completed Stormwater Operations Manual						X	X	
			• 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									
	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	• Provide copy of O&M manual including the activity calendar and responsibility assignments to be integrated into comprehensive Stormwater Procedure Manual.				X	X	X		✓
			• 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)												
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	• Provide inspection reports and maintenance invoices		X	X	X	X	X			
		• Draft and issue RFP										
		• Hire contractor										
		• Schedule and perform inspections and maintenance as needed										
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	• Provide example reports of SAP data/work orders				X	X	X			
		• Utilize information to create reoccurring work orders in PM system										
6.A.2. – Evaluate incorporation of SPCC program into Stormwater Program	EMD	• Determine if/how the two programs can be combined	• Provide determination and integration plan (if available)			X					✓	
		• Create plan to integrate two programs (as necessary)										

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency						
					PY1	PY2	PY3	PY4	PY5	Continued	Complete
	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	
	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	X	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	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	X			✓
	6.B – Update Employee Training Program	EMD, Utilities, Facility Operations, Athletics	• Evaluate employee training participation/documentation and improve as needed	• Provide list of updated training	X	X	X	X	X		✓
	• Update/consolidate training as necessary		• Provide sign in sheets for any training conducted								
	• Train employees on new procedures developed during permit term		• Provide evidence of procedures that have been amended to alter employee behavior to protect stormwater								
	• Integrate training prescribed actions into departmental procedures & employee behaviors/actions										
	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	X	X	X	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	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	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	X	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			✓	
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	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							

Activity	2018 SWQMP Tasks	Responsibility	Measurable Goal	Evidence of Completion	Deadline/Frequency							
					PY1	PY2	PY3	PY4	PY5	Continued	Complete	
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	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			
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	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		
			• 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	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	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 15 th	X	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	X		