

- L. Sheehan, Chair
- H. LeGris, Vice-Chair
- D. Wu
- T. Fogle
- S. Lynch
- B. Monarrez
- D. Gray
- P. Worley
- F. Brown
- D. Sevigny



AGENDA

Environmental Quality & Public Works Committee

October 24, 2023

1:00 P.M.

- | | | |
|------|---|---------|
| I. | Approval of the September 12, 2023 Committee Summary | (1-2) |
| II. | Annual Snow Plan Update [Sheehan/Allen] | (3-22) |
| III. | Annual MS4 Program Update [Sheehan/Nicholas] | (23-43) |
| IV. | Waste Digester Feasibility Study [Sheehan and Sevigny/Albright] | (44-61) |
| V. | Items Referred to Committee | (62) |

"Environmental Quality and Public Works committee to which shall be referred matters relating to the department of Environmental Quality and Public Works and its divisions, including capital improvement projects and any related partner agencies."- Council Rules & Procedures, Section 2.102 (3). Effective January 1, 2023. Adopted by Urban County Council September 22, 2022.

2023 Meeting Schedule

February 7	September 12
April 18	October 24
May 23	December 5
July 11	



Environmental Quality & Public Works Committee

September 12, 2023

Summary and Motions

Chair Sheehan called the meeting to order at 1:01 p.m. Committee Members Wu, Fogle, Lynch, LeGris, Monarrez, Gray, F. Brown, and Sevigny were present. Committee Member Worley was absent.

I. Approval of July 11, 2023 Committee Summary

Motion by Gray to approve the July 11, 2023 Environmental Quality & Public Works Committee Summary. Seconded by Sevigny. Motion passed without dissent.

II. Annual Stormwater Program Update

Mark Sanders, Engineering Section Manager in Division of Water Quality, provided an overview of the storm water priority projects list. He reviewed the severity score process for the priority list and mentioned 2 factors are structure flooding and street/road flooding. He displayed a map to illustrate remaining priority projects and he explained how to view the priority list on the web site. Capital improvement projects include Southland Park/Tucson/Yuma, and he reviewed phase 1 and phase 2. He showed photos of the Southland area park phase 1 which are the basins. He provided an overview of the Joyland area stormwater project phase 1 & 6 and he showed photos of the that project. He reviewed minor stormwater construction projects completed, projects to be advertised, and current design projects. He reviewed the completed work orders from 2018-2022 and he explained the frustrating outcomes which include unintended consequences. Future preliminary engineering reports. challenges and tasks for 2023-24. complete projects under design to clear backlog, assist with updating web-based map, etc.

When asked about utility companies, Sanders did know of any problems. If there is an issue, the utility companies are responsive, and they are quick to come out. Speaking about the priority list and if 99 is the last one, Sanders confirmed and said we are on 85. He clarified that the Gainesway project is a 3-part project. When asked if numbers 1-84 are complete, Sanders pointed out that several of those are in construction/design phase, so they are not complete. When asked if any of this work is done in-house, Sanders and Lubeck agreed it is all contracted work. Addressing whether there is any parallel between storm and sanitary, Sanders said they try to work together. Speaking about completed work orders and if we are still in catch up phase, Sanders said it is the nature of design. You will have to catch up and have new projects, etc. It's like a roller coaster. Speaking about Shannon Dr. and Parkside, which pools up with water and causes mosquitos, Sanders said work is being done there right now and they anticipate completion in the next 4 weeks. When asked about Ohio and 3rd Street and how we inform the office, Sanders said this is done through LexCall (311). Speaking about the timeline for stormwater projects from start to finish, Lubeck said it depends on the project. He said it is a lengthy process. No action was taken on this item.

III. Process for Road Closures

Commissioner Albright provided an overview of the major road impact communication plan. She defined what a major road impact is which considers the rank of road as identified in snow plan and the extent of impact. A major road impact also considers the time of day (rush hour), duration of the road closure, proximity to intersections, and proximity to other work zones. The communication plan parameters

include whether the project meets the threshold for a major road impact, it includes only LFUCG projects, and true emergencies change all of this. Albright displayed a flow chart to explain this communication plan. She reviewed the first steps once construction is ready to begin: the contract is awarded, the contract includes a Maintenance of Traffic (MOT) plan, relationship of MOT to road impact review determines timeframe. When a contract is in place, it advances communication with council members and talk to Traffic Engineering, Public Information and Education (PIE), stakeholders, etc. Traffic Engineering approves a plan of a minimum of 8 business days before impact and communicates that plan with Waze app., posts to traffic Ticker and posts to Lex-wrecks on impacted days. 6 days out, the PIE team sends mass communication and shares impact details with councilmembers and constituents. The contractor puts variable message signs up 5 days in advance and executes traffic control plan during the project. Albright summarized by saying that the initial notification to councilmembers when the contract is finalized (MOT). There is a notice to Traffic Engineering 10 days before road impact occurs. And once the traffic plan is approved, the PIE team, councilmembers and the contractor all have communication responsibilities.

There was some discussion about using contractors for paving, and those contractors put signs up. There was a question about whether we update notification when roads aren't necessarily closed but just worked on. Speaking about sharing information and what the best way is to communicate this, Poe spoke about what the Public Information Office does to communicate (Nextdoor app, councilmembers, neighborhood contacts, etc.) It was stated that not all Neighborhood Associations are active so we need to play more of an active role and that we understand the goal so we can share the information. Poe said communication is difficult because the ways people get information is split. Speaking about the Council communications person using a system and how to communicate with schools, Albright suggested speaking with her office. When asked about markings not present until road is running out, Albright said sometimes putting markings too early can scare people off. There was some discussion about how to better communicate with franchise so they can communicate with constituents. When asked about a communications budget, Albright said for something big, they typically use Poe's group. She would like to explore funding for outreach. No action was taken on this item.

IV. Items Referred to Committee

Motion by Sevigny to remove *Process for Road Closures* from committee. Seconded by Wu. Motion passed without dissent.

The meeting adjourned at 2:15 p.m.

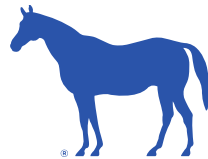
SNOW PLAN UPDATE

WINTER 2023-2024

Environmental Quality & Public Works Committee

Rob Allen, Director of Streets & Roads

October 24, 2023



LEXINGTON

Presentation Overview

- Snow Season Expense Comparison
- Status of Salt
- Route Rankings
- Service Levels
- Changes to the Snow Plan
- Coordination
- Sidewalk Snow Removal
- Staffing
- Projected Schedule for Plan Finalization

Snow Season Expense Comparison

Fiscal Year	Expense*	Salt used (Tons)	Salt price (per ton)	Mobilizations Full / Partial
2019	\$349,029	10,306	\$58.32	12 / 6
2020	\$198,608	4,215	\$86.44	4/13
2021	\$930,161**	1,745	\$90.87/92.884	2/6
2022	\$1,025,561	8,038 1,000 (rock)	\$68.90/70.90	7/2
2023	\$265,489	12,610	\$114.00	6/5
2024	?	?	\$90.25	?

* Does not include personnel

"Typical" winter averages 22 mobilizations per year

** 7,000 tons loaded into W Hickman Barn 2020

Full mobilization = All drivers and all supervisors and may include multiple shifts and days.

Partial mobilization = 1 supervisor and 1 driver or fewer per area.



Salt Supply

Currently on hand → 8,800 tons

Storage Capacity → 8,800 tons total

**(1,800 tons at Old Frankfort Pike & 7,000 tons at W
Hickman)**

**FY 2024 budget → \$500,000= 5,617 additional tons if
needed.**

FY24 salt cost → \$90.25/ ton (In FY23 \$114.00/ton)

Route Rankings

Rank 1 -- primary arteries in and out of the city.
(Nicholasville Rd, Man O' War Blvd, etc.) 296 lane
miles*

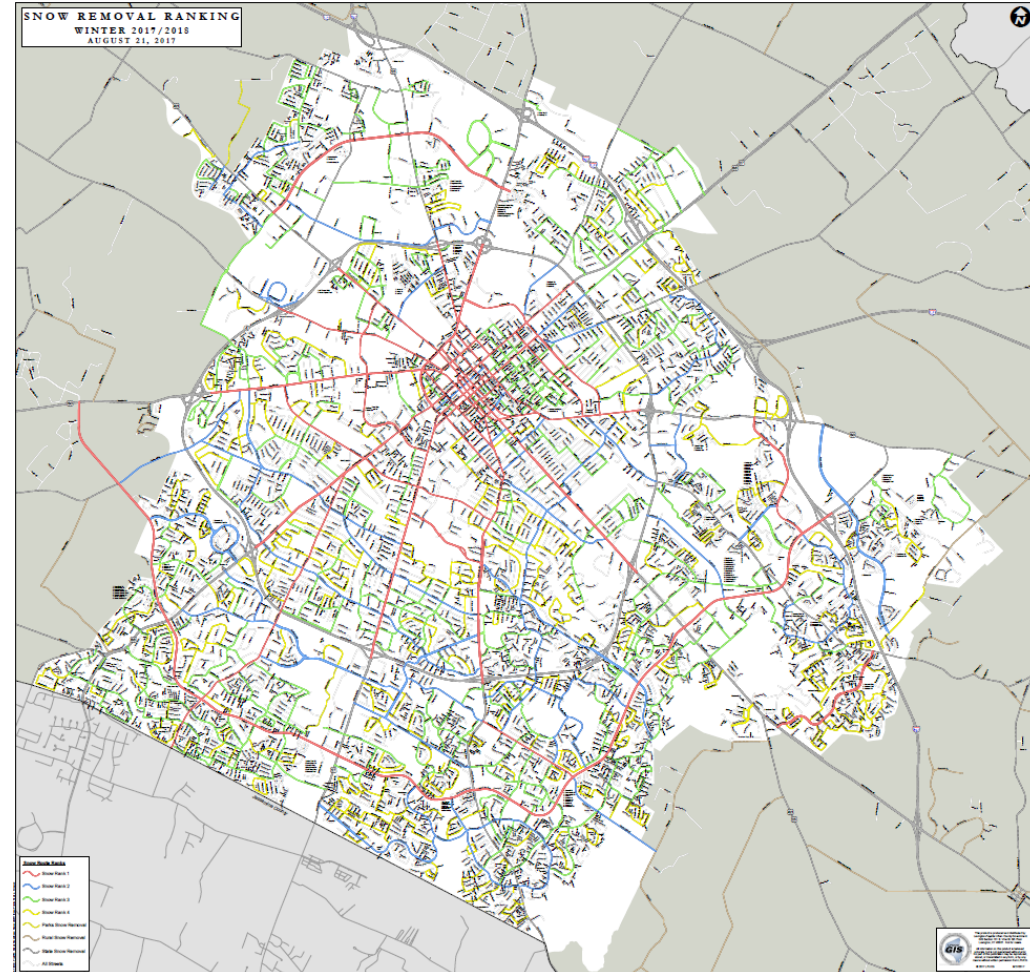
Rank 2 -- major connecting streets. (*Lane Allen Rd, Loudon Ave, etc.*) 192 lane miles*

Rank 3 -- collector routes. (*Sandersville Rd, Old Todds Rd, etc.*) 356 lane miles*

Rank 4 -- local residential streets, which allow residents access to the main roads (*Dunkirk Dr, Glendover Rd, etc.*) 330 lane miles*

*lane miles:

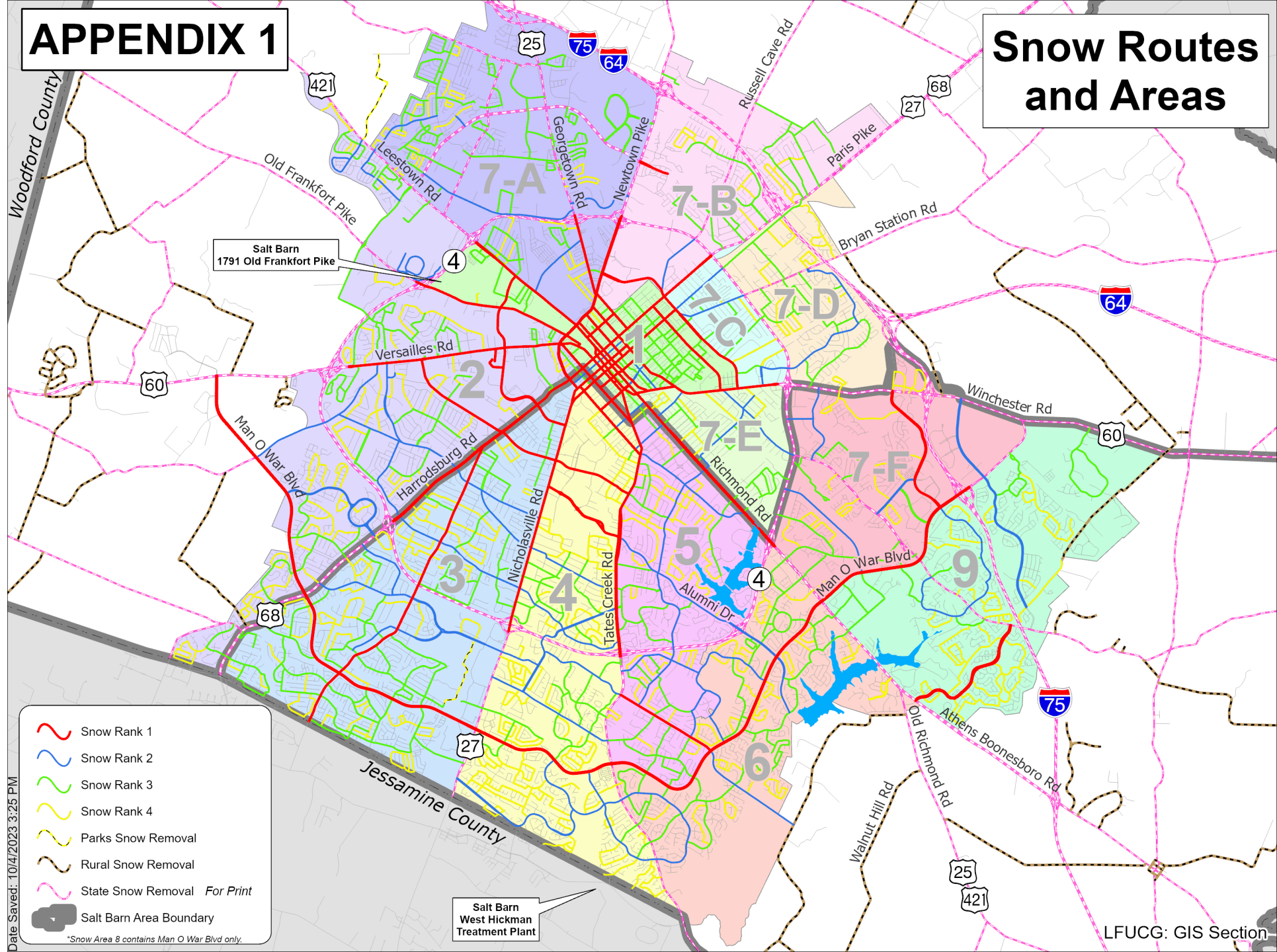
1 mile of a 2-lane road = 2 lane-miles



APPENDIX 1

Snow Routes and Areas

8



Service Levels

Level 1 → 1" to 4" of accumulation

- Operate under current plan (Rank 1-4 streets)

Level 2 → 5" to 8" of accumulation

- In addition to the Rank 1-4 routes, we will add unranked residential collector streets that connect to collector streets

Level 3 → 8" of accumulation and above

- In addition to the Rank 1-4 streets, we will attempt to plow as many streets as possible

Changes for 2023/24 Snow Season

- 1 rank 4 street added- Warrenwood Wynd. No other changes.

Coordination

- Informal assistance/support agreement with KYTC District #7.
- Updated emergency contact information across divisions and stakeholders for rapid internal communication.
- Consensus across divisions and agencies for mutual aid and support in the event of staffing shortages.
- Commissioner will serve as coordinator of rapid staff reallocation as needed.
- For 2023/2024, streets providing emergency access to certain critical facilities will have a Rank 1E ranking above Rank 1 should staffing become too limited to execute the traditional plan.



2023-24 Snow Plan

Goals

- Complete Roadway Snow Plan (Rank 1 – 4 routes) within 48 hours of **precipitation ending**.
- Complete Sidewalk Snow Plan (Rank 1 – 4 routes) within 96 hours of **precipitation ending**.

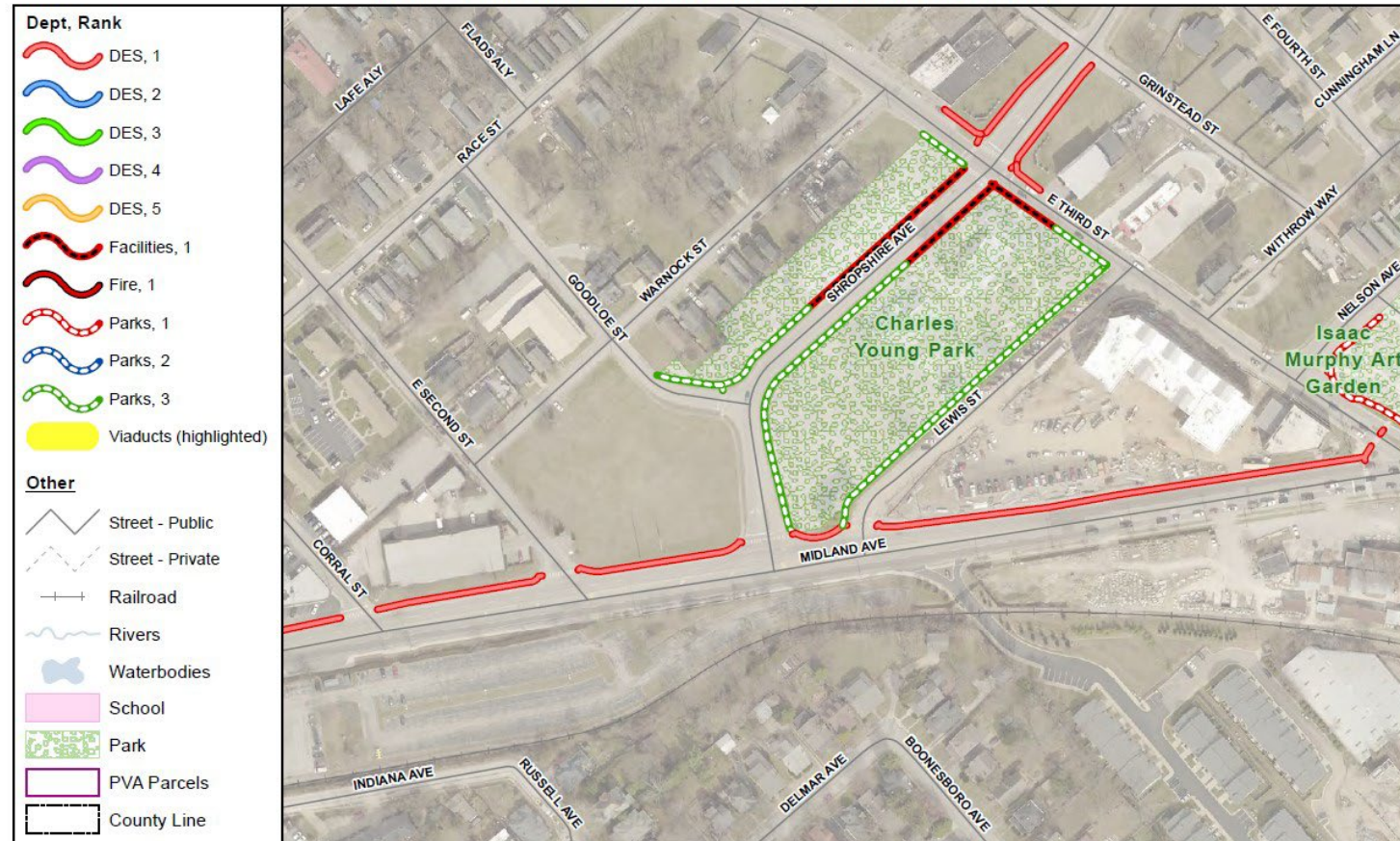
Sidewalk Snow Removal

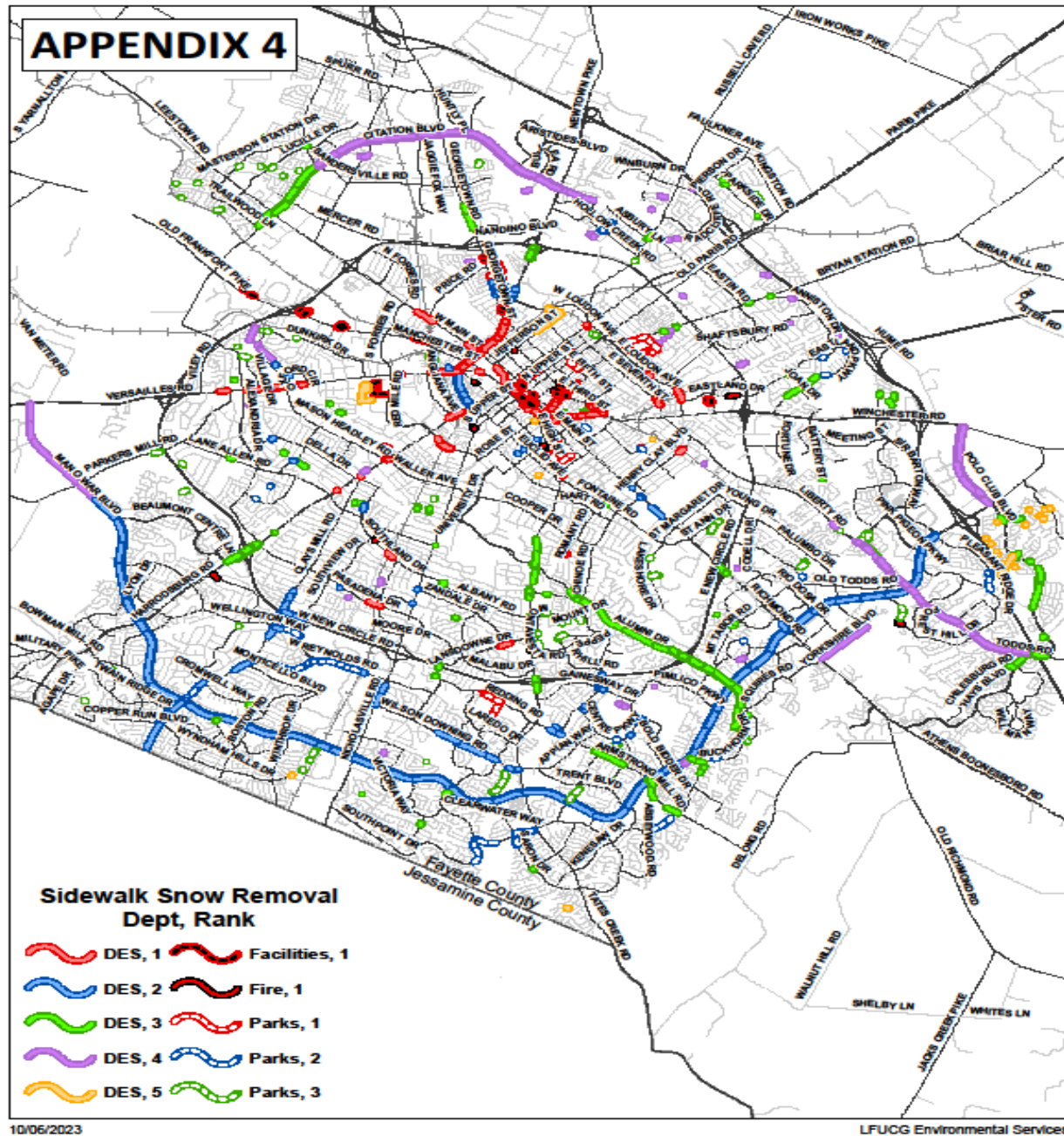
- Primary execution by combined forces of Environmental Services, Parks, Fire, and Facilities.
- Over 84 miles of sidewalks serviced with full execution of the plan.



Sidewalk Snow Removal

- Sidewalk clearing begins after snow stops.
- Must coordinate timing with road crews to minimize re-coverage after clearance.





Sidewalk Snow Removal

Rank examples	Length
Rank 1 • Overpasses and underpasses • City-owned facilities • High density city-maintained sidewalks/crosswalks • Service Open Parks Facilities	14.6 Sidewalk Miles
Rank 2 • Designated city-maintained sidewalks on arterials and collectors in high density areas (i.e., Man O' War, Wellington Way, Wilson Downing, etc.) • Service Closed Parks Facilities & near bus stops • School routes (school closed)	36.5 Sidewalk Miles
Rank 3 • Perimeter sidewalks of Parks - High density areas	16.6 Sidewalk Miles
Rank 4 • City-owned parcels in lower density residential areas (WQ lots, greenways); • Perimeter sidewalks of Parks - Low density areas	15.3 Sidewalk Miles
Rank 5 • Sidewalks at entrances to greenways • Trails within greenways or parks (not true sidewalks)	1.6 Sidewalk Miles

Staffing

Streets and Roads -- authorized strength: 67 CDL positions; 16 vacancies (4 new hires, 2 with CDL)
4 employees used as loaders (2 per shift, 1 loader per barn), 5 as mechanics and 42 drivers split over 2 shifts.

Water Quality – authorized strength: 29 CDL positions. Not all available to drive at the same time in case of sewer line breaks.

Environmental Services – authorized strength: 5 CDL positions and 8 general labor positions for clearing LFUCG sidewalks. One additional CDL driver assisting Streets & Roads.

Other – 5 Contractor drivers and plows from Red River.
Additional drivers from Water Quality, Parks, Waste Management, Code Enforcement, and Environmental Services (if needed).

Plan Finalization Schedule

**Stakeholder Meeting – September 20, 2023
(LexTran, FCPS, State DOT, etc.)** No participation by external partners. Not alarming as direct communication with Commissioner and Director have allowed for real time resolution of problems.

EQ&PW Committee Update – October 24, 2023

Post to Webpage – October 25, 2023

Communications

- Director of Streets & Roads emails internal and external partners informing of expected conditions and plans. This could be as simple as monitoring current conditions and road temperatures.
- Commissioner of EQPW informs Council and Administration of plans of action.
- EQPW PIO informs public and staff via socials.
- LexCall gathers service requests and directs them to Streets & Roads administration for resolution.
- Snow and Ice Control plan on the web at:
<https://www.lexingtonky.gov/snow-and-ice-control-plan>

Looking Ahead to 2024 and Beyond....

- Snow route optimization by the University of Kentucky (FY25).
- Replacing condemned salt barn at 1791 Old Frankfort Pike with new dome with 50% more salt storage than current barn. 4500 tons vs. 3000 tons (limited to 1800 tons currently due to structural defects and end of life span). (FY 25 +) This will bring our storage capacity to 12,500 tons of salt under roof. Average yearly salt usage has historically been 12,000 tons per annum. Funded, additional funds needed to fully authorize construction.

Shout out to our partners!

Cooperation from the following LFUCG partners is appreciated and essential for treating our roads and rights-of-way during winter weather:

- Code Enforcement
- Environmental Services
- Facilities Management
- Fleet Services
- Fire
- GTV3
- LexCall
- Parks & Recreation
- Police
- Public Information Office
- Water Quality
- Waste Management

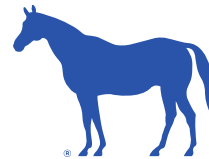
QUESTIONS ?



MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) UPDATE 2023 LEXINGTON'S STORMWATER QUALITY PROGRAM YEAR IN REVIEW

Environmental Quality and Public Works Committee

October 24, 2023

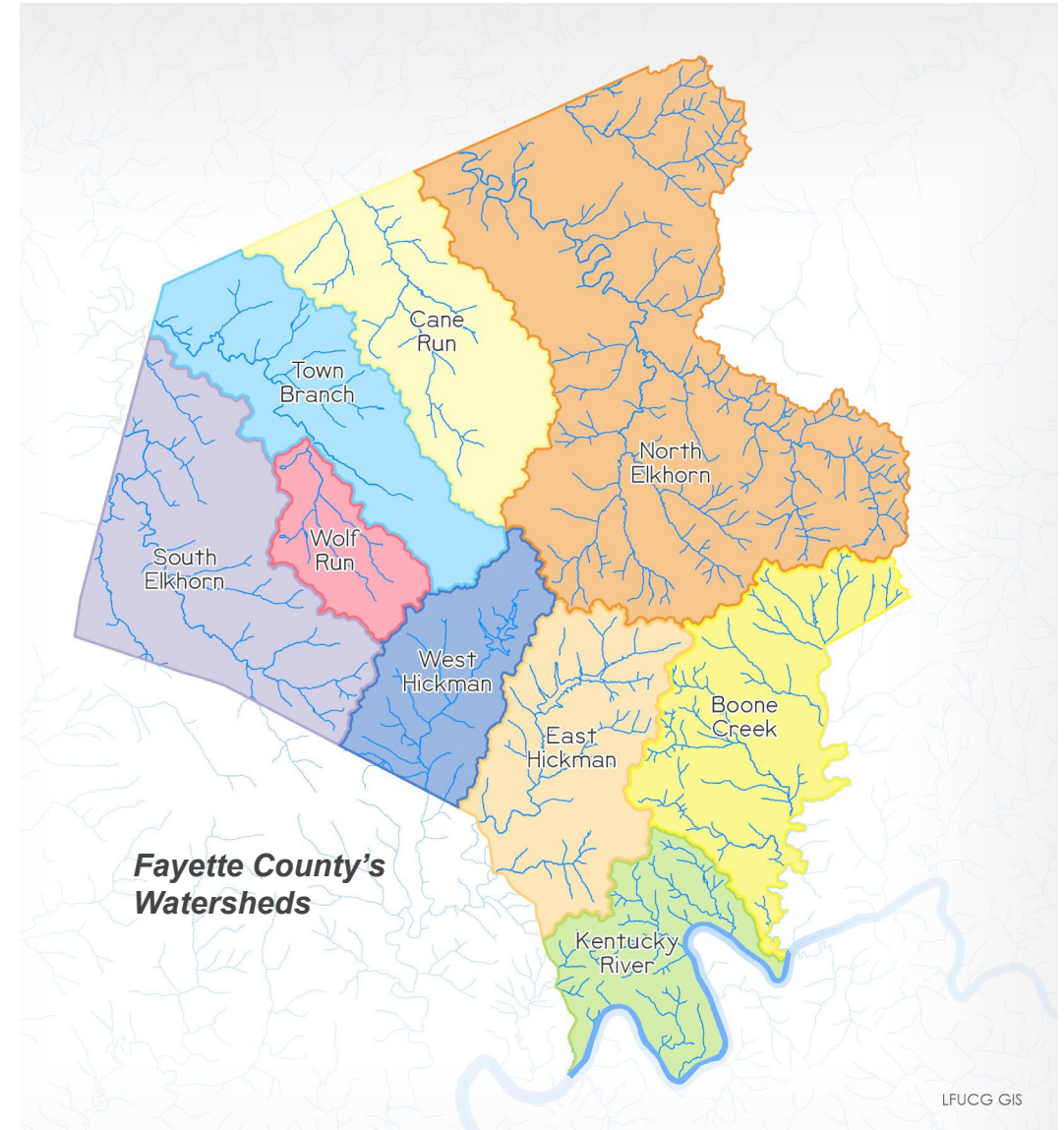


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Agenda

- What is a MS4 and Why does it Matter?
- Year in Review 2022
- Watershed Planning & Qcritical
- Moving Forward
- Questions





MS4 Defined

- Municipal Separate Storm Sewer System
- KRS 224 authorizes a community like Lexington to discharge stormwater runoff from its MS4 into “Waters of the Commonwealth”
- Lexington is issued a stormwater discharge permit by the Kentucky Department for Environmental Protection
- Permit requirements contained in federal law are applicable to “large MS4s” (Pop. 250,000 or greater) like Lexington



STEVEN L. BESHEAR
GOVERNOR

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
14 RELLY ROAD
FRANKFORT, KENTUCKY 40601-1190
www.kentucky.gov

LEONARD K. PETERS
SECRETARY

FACT SHEET

**KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT TO DISCHARGE FROM A LARGE MUNICIPAL SEPARATE STORM SEWER SYSTEM
INTO WATERS OF THE COMMONWEALTH**

KPDES No.: KYS000002 Permit Writer: Abigail Rains Date: May 1, 2015
AI No.: 74551

1. **SYNOPSIS OF APPLICATION**

a. Name and Address of Applicant
Lexington-Fayette Urban County Government
200 East Main Street
Lexington, Kentucky 40507

b. Description of Applicant's Operation
The applicant operates a large municipal separate storm sewer system through such controls as legal authority, source identification, discharge characterization, management program, assessment of controls, and fiscal analysis.

2. **PERMIT DURATION**
Five (5) years

3. **THE ADMINISTRATIVE RECORD**
The Administrative Record, including application, draft permit, fact sheet, public notice, comments received, and additional information is available for review at the Division of Water at 200 Fair Oaks Lane, Frankfort, Kentucky 40601.

4. **CONTACT**
Abigail Rains
KPDES Permit Writer
(502) 564-3410, extension 4891

Individual MS4 Permit – KYS000002

- Five years in duration, last permit expired May 31, 2020, renewal pending
- Current Permit Administratively Continued
- Compliance revolves around meeting the objectives of ten (10) specific Program Elements – Narrative Best Management Practices or BMPs
- Program Element objectives further defined in the Stormwater Quality Management Program (SWQMP) document

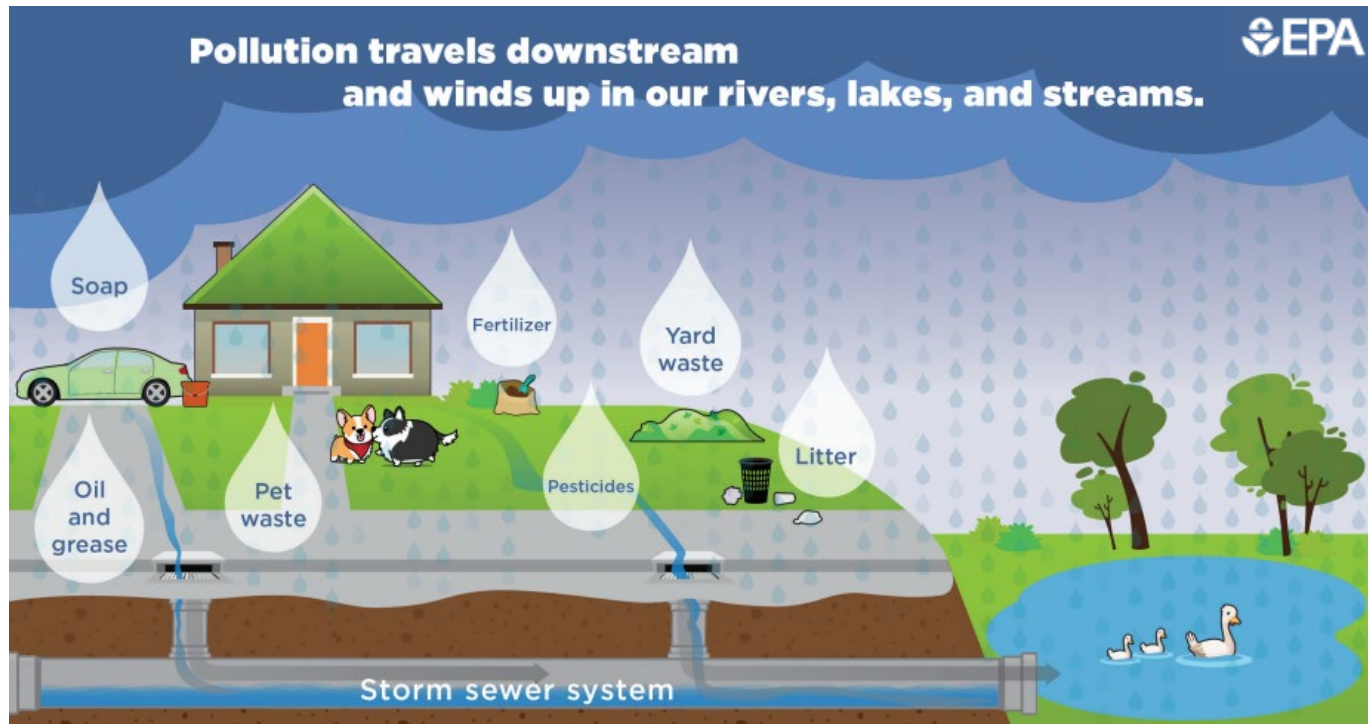
Required to implement a program that continually optimizes stormwater management in Lexington





Why it Matters

Program intended to maintain and improve the quality of the state's waterways *by reducing the quantity of pollutants that stormwater picks up and carries into the MS4 during storm events*





MS4 Permit – Program Elements

Public Engagement

- 1 Public Education and Outreach
- 2 Public Involvement and Participation

Pollution Prevention

- 3 Illicit Discharge Detection and Elimination
- 4 Construction Site Stormwater Runoff Control
- 5 Post-Construction SW Management
- 6 Pollution Prevention for Municipal Operations
- 7 Industrial Facility SW Pollution Prevention

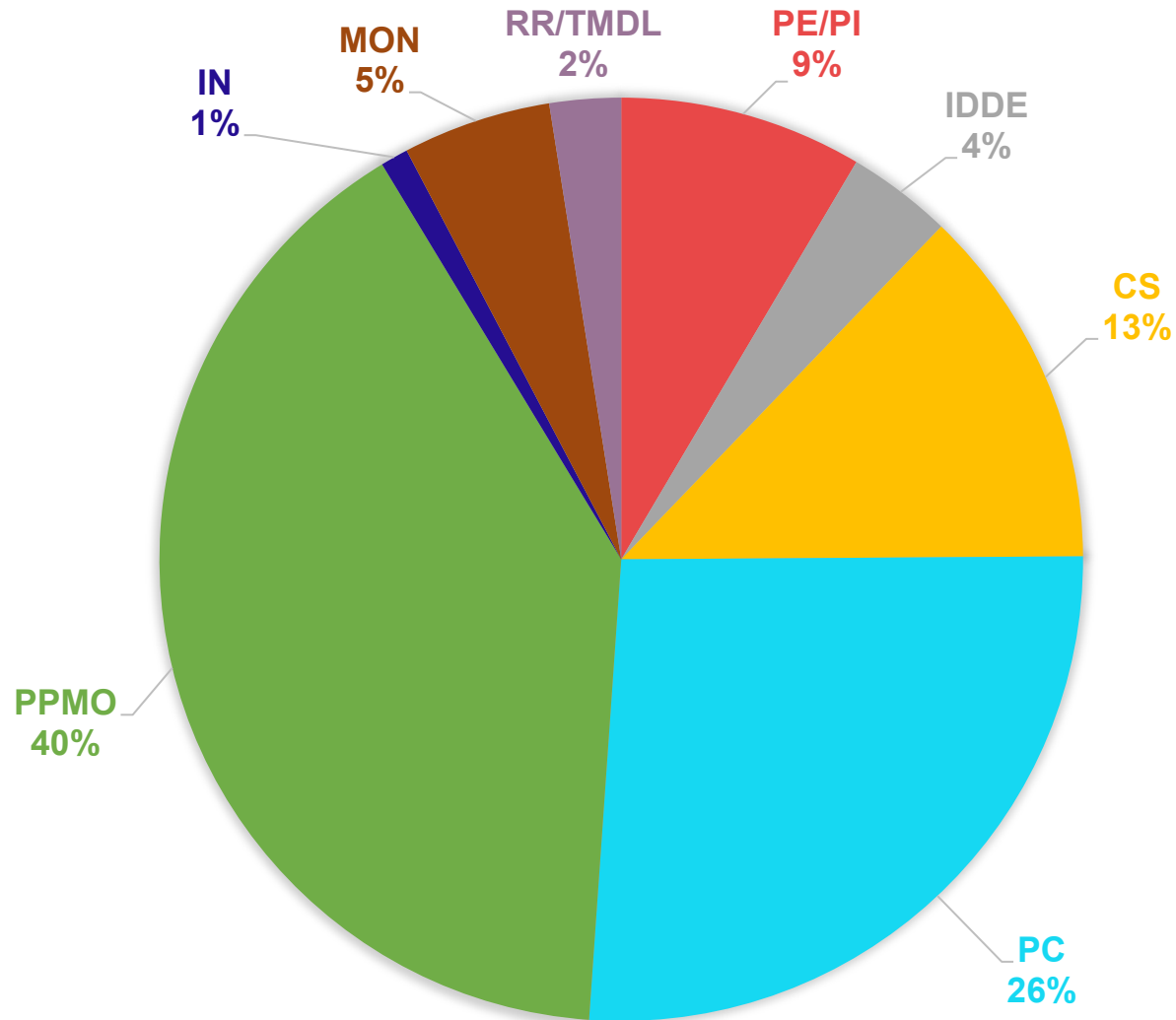
Monitoring and Reporting

- 8 Water Quality Monitoring
- 9 Reporting and Recordkeeping
- 10 Total Maximum Daily Loads/ Impaired Waters





Funding by MS4 Program Element



\$7.7 Million
Spent in 2022



Year in Review



Stormwater Stakeholder Advisory Committee (SSAC)

Stormwater Stakeholder Advisory Committee

1  LFUCG Division of Engineering	1  Hickman Creek Conservancy
1  LFUCG Division of Environmental Services	1  Bluegrass Greensource
1  LFUCG Division of Planning	1  University of Kentucky
1  LFUCG Division of Water Quality	1  Kentucky Water Resources Research Institute
1  LFUCG Planning Commission	1  Kentucky River Watershed Watch
1  LFUCG Urban County Council	1  Kentucky Transportation District 7
1  Fayette County Public Schools	1  Kentucky American Water Company
1  Fayette Alliance	1  Building Industry Association of Central Kentucky
1  Fayette County Neighborhood Council	1  Lexington-Bluegrass Association of Realtors
1  Friends of Wolf Run	1  Federal Facilities
1  Friends of Cane Run	6  Commerce Lexington
1  Friends of McConnell Springs	9  Watershed At-large Representatives
1  Neighbors United for South Elkhorn Creek	

- Interest Groups
- Business community
- Other Public Agencies
- Watershed At-Large Representatives

Meets Quarterly
(March, June, Sept, Dec)

Next Meeting, Friday December 1, 2023

SSAC September 8, 2023





2022 Inspections – Key to Compliance

Types of inspections conducted by LFUCG staff:	Total 2022 Inspections
Active Construction Sites	6,138
Targeted Construction Sites	402
Critical Drainage Culverts	705
Stormwater Retention Ponds	1,232
Water Quality Control Devices (Inserts, filters, infiltration areas)	1,129
Water Quality Control Devices – City Owned	384
Underground Detention Facilities	128
Detention Basins Round 1 & 2	2,470
Dry Weather Screening of Stormwater Discharge Outfalls	196
Industrial and High-Risk Commercial Facilities	35
Illicit Discharge/ Spill Investigations	212
Municipal Operation Stormwater Inspections	54
Total	13,085



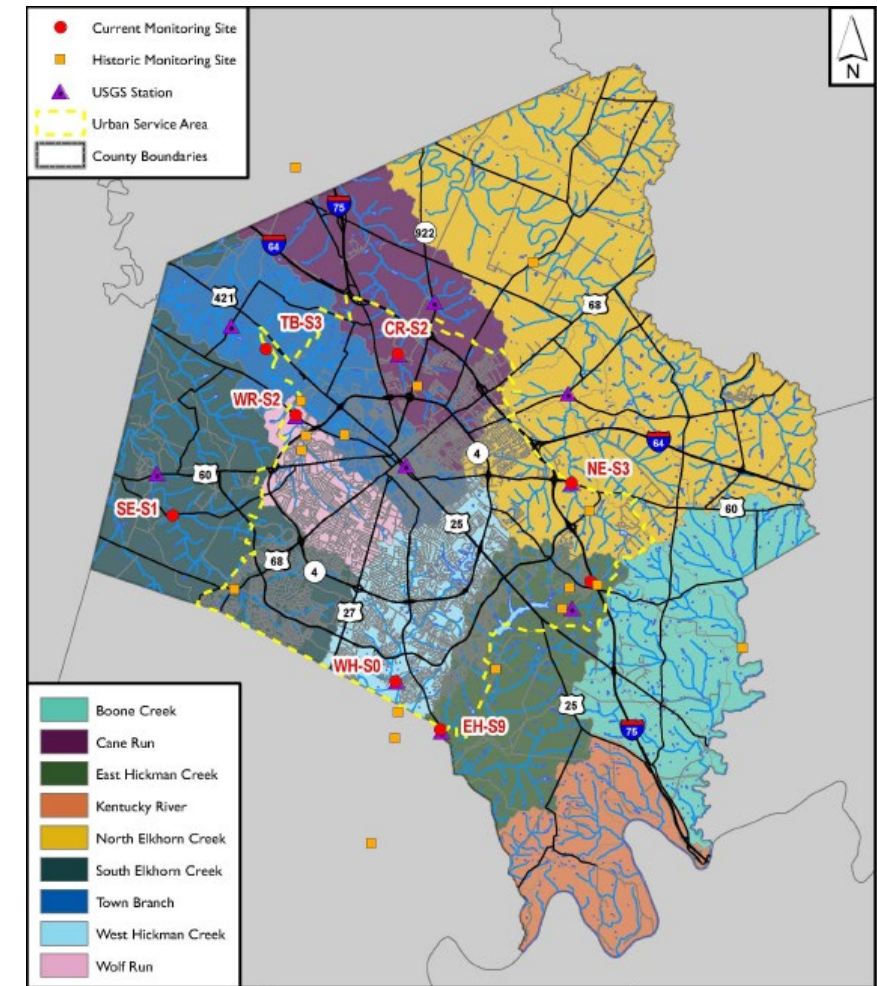
Summary of Water Quality Conditions

TABLE 15
PERCENTAGE OF 2022 WATER QUALITY RESULTS THAT MET BENCHMARK OR REFERENCE POINT

PARAMETER	UNIT	LIMIT	% MEETING BENCHMARK / REFERENCE POINT						
			CR-S2	EH-S9	NE-S3	SE-S1	TB-S3	WH-S0	WR-S2
Specific Conductance	uS/cm	500	11%	63%	22%	30%	20%	38%	20%
Dissolved Oxygen	mg/L	4	100%	100%	100%	100%	100%	100%	100%
Water Temp.	°C	31.7	100%	100%	100%	100%	100%	100%	100%
pH	SU	< 9, > 6	100%	100%	100%	100%	100%	100%	100%
Total Susp. Solids	mg/L	80	89%	100%	67%	90%	60%	63%	90%
<i>E. coli</i>	CFU/100mL	240	33%	25%	44%	30%	10%	25%	30%
Phosphorus, Dissolved	mg/L	0.5	100%	100%	100%	100%	10%	100%	100%
Phosphorus, Total	mg/L	0.5	78%	88%	67%	80%	10%	63%	90%
Ammonia-N	mg/L	1	100%	100%	100%	100%	100%	100%	100%
Total Kjeldahl Nitrogen-N	mg/L	2	89%	88%	100%	90%	40%	63%	90%
Nitrate-N + Nitrite-N	mg/L	2	78%	100%	100%	100%	10%	100%	100%

TABLE 17
SUMMARY OF 2022 MACROINVERTEBRATE SAMPLING RESULTS BY SITE

METRIC	CR-S2	EH-S9	NE-S3	SE-S1	TB-S3	WH-S0	WR-S2
MBI Score	16.3	61.9	25.0	50.0	41.8	47.2	38.7
MBI Rating ²	Very Poor	Good	Poor	Fair	Fair	Fair	Poor
WAH Use Support	Non	Full	Non	Partial	Partial	Partial	Non





Watershed-Focused Monitoring Program

- Town Branch report in 2022 MS4 Permit Annual Report
- North Elkhorn Monitoring Year in 2022
- Wolf Run Phase I Screening Year in 2022



TABLE 2 – PROJECT SCHEDULE BY WATERSHED

Watershed	Screening Year	Monitoring Year	Reporting Year
Cane Run	2016	2017	2018
South Elkhorn Creek	2017	2018	2019
West Hickman Creek	2018	2019	2020
East Hickman Creek	2019	2020	2021
Town Branch	2020	2021	2022
North Elkhorn Creek	2021	2022	2023
Wolf Run	2022	2023	2024



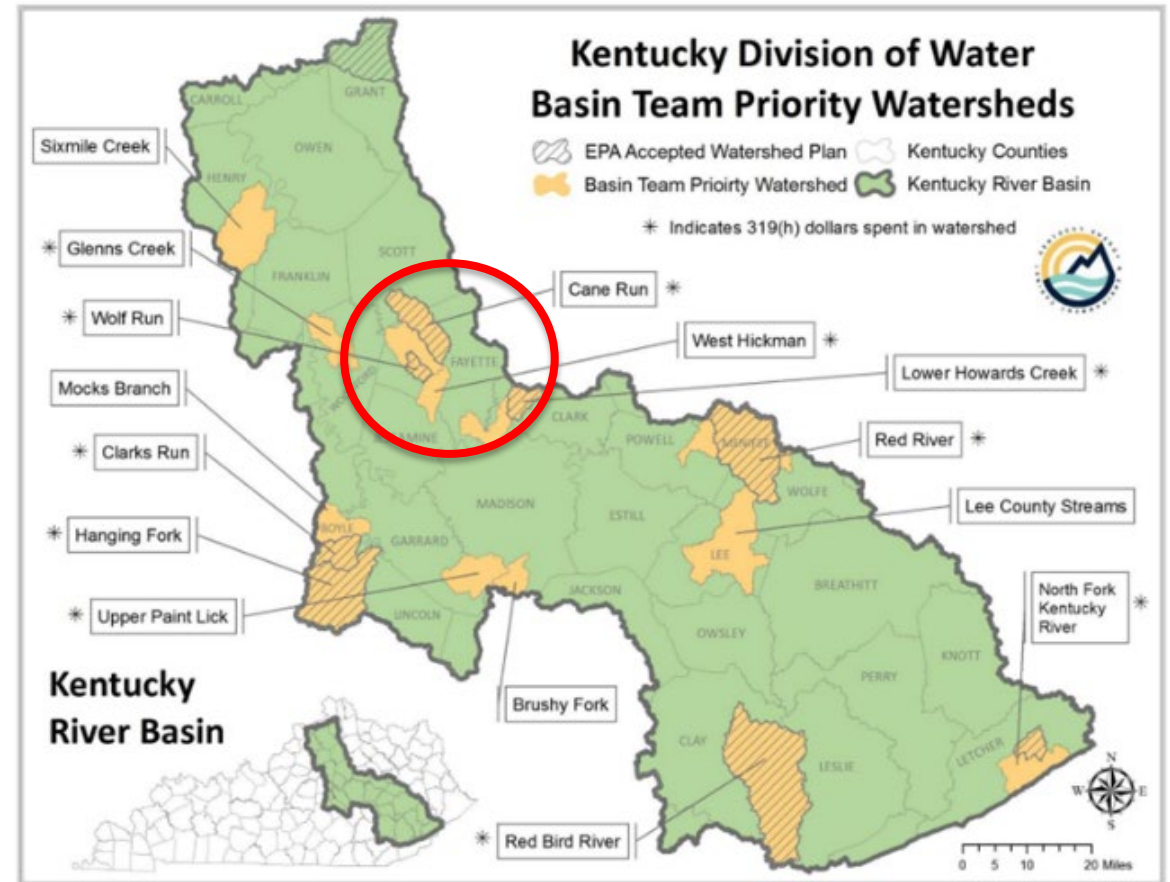
Watershed Planning and Implementation

Watersheds with approved Watershed Management Plans in Lexington:

- Cane Run 2019
- West Hickman 2023
- Wolf Run 2013 (Update 23/24)

What's next?

Taking a closer look at our urban streams - hydrologic restoration as an approach to watershed planning

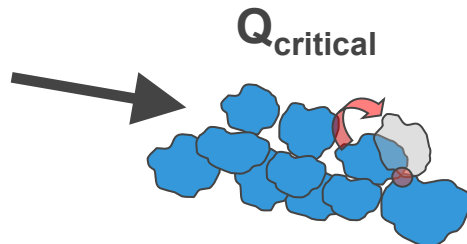


Source: KWRR

Qcritical and Typical Streambank Erosion in Lexington, KY

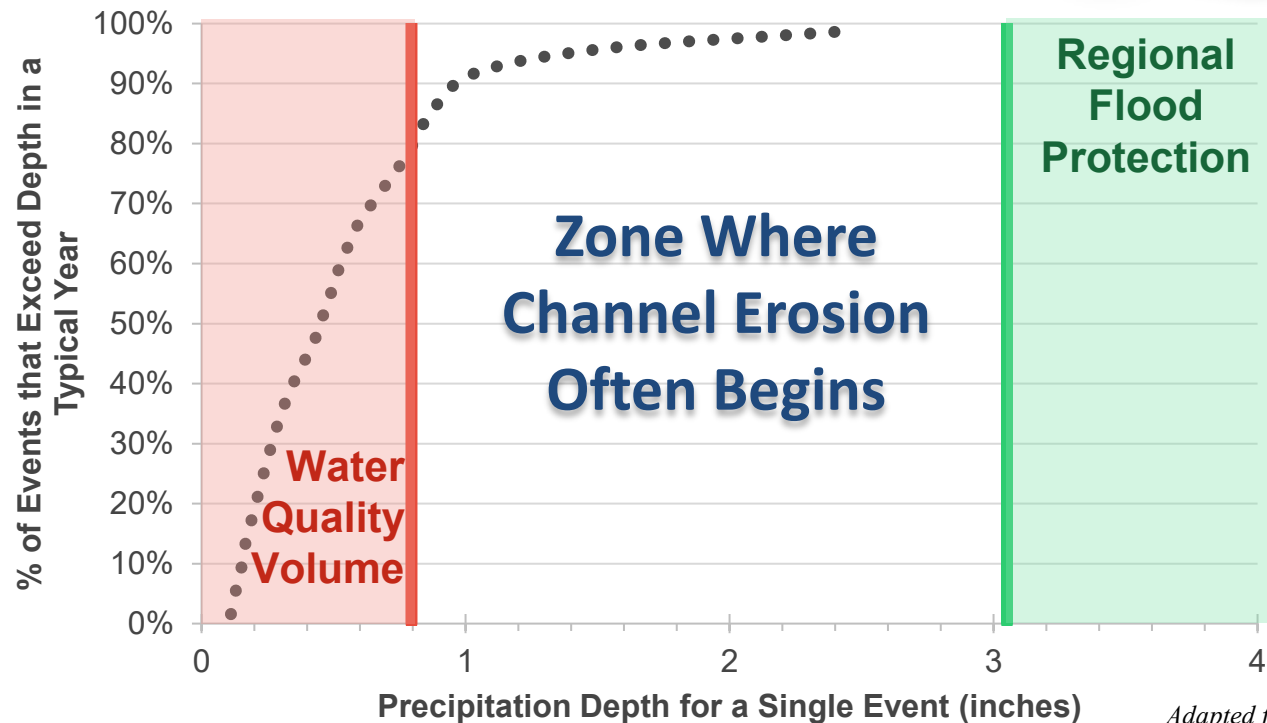
- Stream Deepening and Widening
- Water Quality Impacts
- Biological Disturbance
- Loss of Land/ Damaged Infrastructure

Critical Flow = flow that moves particles on the streambed

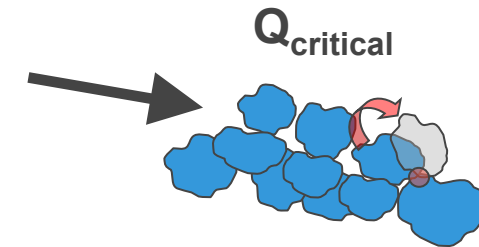


UT of South Elkhorn Creek in Shillito Park

Stormwater Management Optimization



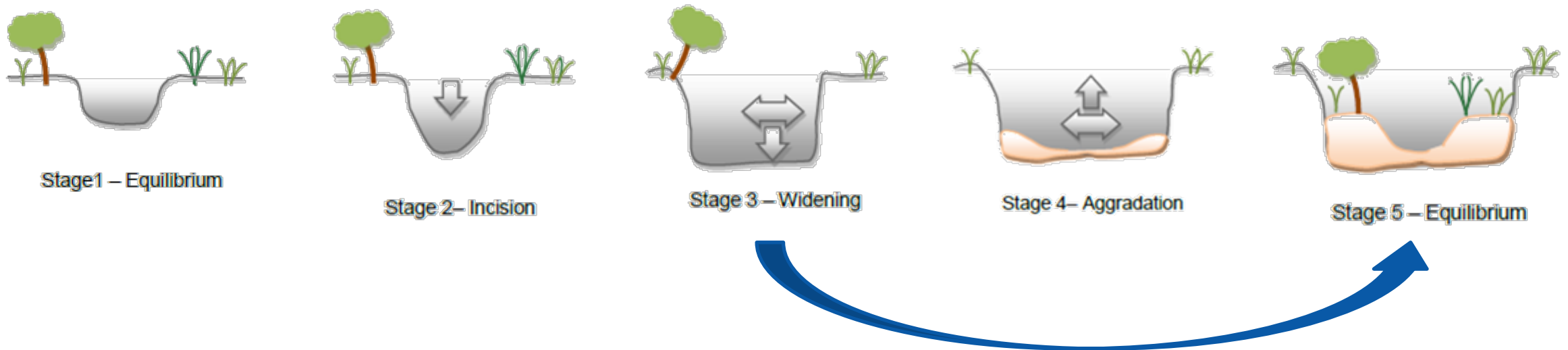
Adapted from Hawley (2012)



- Make sure new development isn't making the problem worse
- Consider working with large developments for "over control" opportunities



Habitat Recovery in Urban Streams





What are Basin Retrofits?

Retrofit existing stormwater basins to hold back water so the flow does not exceed the critical discharge

- Green Infrastructure is great but capacity still matters
- Control streambank erosion
- Accelerate habitat recovery and create healthy ecosystems and improved water quality

**Potential Pilot Project 2023/2024
in South Elkhorn Watershed/
Shillito Park (D9)**

Simple Retrofits



Stream/Wetland Complex



Stormwater Quality Projects Incentive Grant Program

Incentive Grants Awarded in 2022

Grant Class	Amount Awarded	Number of Projects
FY23 Class A Neighborhood Grants	\$411,118.59	7
FY23 Class B Education Grants	\$88,446.00	4
FY23 Class B Infrastructure Grants	\$1,934,050.80	8
	\$2,433,615.39	19



FY20 900 Block of North Limestone Stormwater Retrofit – Pervious Pavement, Rain Gardens, Bioswale, Water Walk Complete (ASLA Award of Excellence)

FY18 UK Alumni Drive (Across from Arboretum) UT to Hickman Creek Stream Restoration, Bio-infiltration Swale Project Complete



Moving Forward

- Continue compliance work in all Program Element categories per MS4 Permit with the State – Released from the stormwater side of the U.S. District Court Clean Water Act Consent Decree in 2021
- Continue to promote and administer the Stormwater Quality Projects Incentive Grant Program (10% Water Quality Management Fee)
- Focus on methods to further transition the Watershed-Focused Monitoring Program from data collection to an action plan
- Explore Critical Flow in Lexington to protect our streams from further degradation
- Maintain our partnerships with stormwater management stakeholders



Questions?



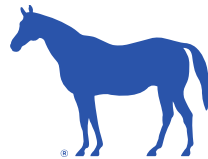
LEXINGTON

WASTE DIGESTER FEASIBILITY STUDY

EQPW Committee Meeting

October 24, 2023

Nancy B. Albright, PE, Commissioner



LEXINGTON



Agenda

- Introduction
- Background
- Feasibility Study
 - Purpose
 - Objectives
 - Details
- Findings
 - Overall summary
 - Yard waste
 - Challenges
- Costs
- Recommendation

Introduction – why we studied the feasibility of a digester

Economic, Environmental and Societal benefits to community wide composting including:

- Landfill costs continue to increase
- Transportation costs continue to increase
- Community composting reduces landfill burden
- 32% of our municipal solid waste (MSW) could be composted (waste characterization study)
- Beneficial reuses of waste
- A local solution

Background (Sevier Solid Waste)



- LFUCG delegation to Sevierville in 2015 and 2022.
- The facility uses five rotary drums to break down waste over three days
- Inert materials removed, leaving a compostable material that is screened and available to end markets.
- EQPW Committee Presentation May 2022 recommended a feasibility study of LFUCG waste.

Feasibility Study

Purpose

To evaluate the feasibility of an in-vessel waste composting solution (commonly referred to as a waste digester system) for municipal solid waste and biosolids generated by LFUCG residential and commercial customers with particular focus on scalability and yard waste.



Feasibility Study

Objectives

- Review of current waste management practices
- Examine other communities using this type of process
- Identify hurdles to implementation of a similar system
- Opportunities for waste diversion through partnerships
- Scalability of in-vessel systems
- Review landfill diversion options and costs
 - Rotary Drum system
 - Tunnel Reactor System
 - Source separated organic - aerated static piles

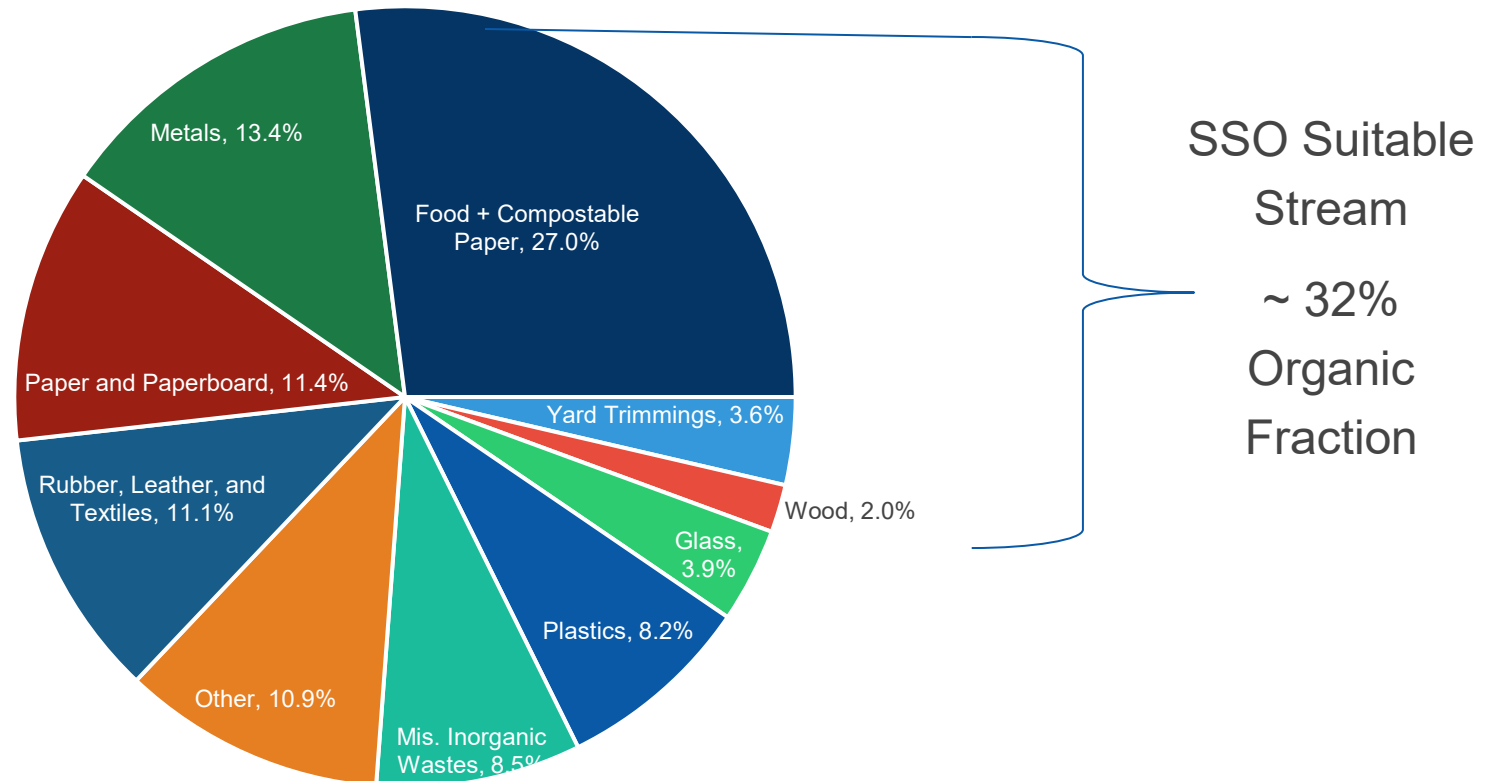
Feasibility Study

- RFP # 38-2022 closed 7/27/2022.
- GT Environmental selected
- Res. No. 604-2022; \$66,875
- GT Env. staff worked on MRF capital improvements
- Coker staff involved in 2018 organics study

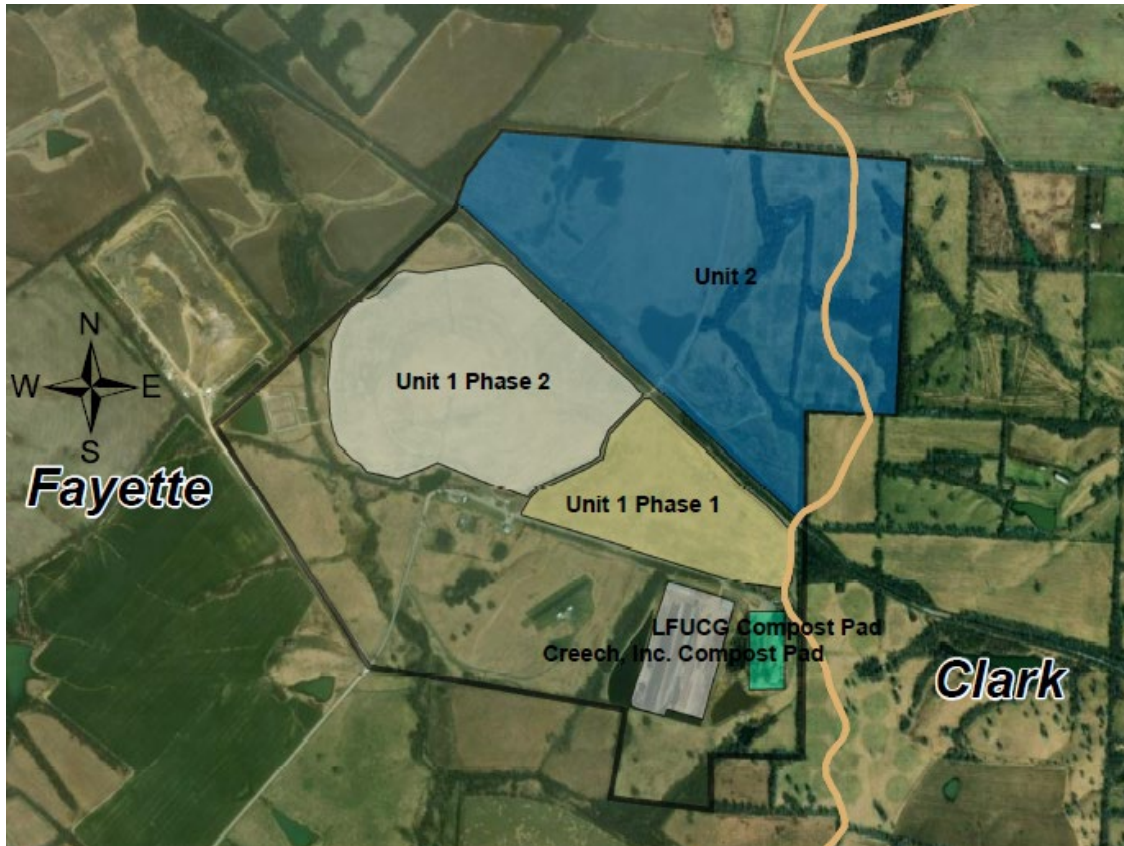




Materials in MSW Stream Suitable for Composting



Proposed Site - Haley Pike Landfill Complex



- Closed landfill location
- Composting operation
- Permitted landfill north Unit 2
 - 200 acres
 - Requires modified permit for any of these systems
- Permitted footprint is suitable
 - Provides cost saving on capital expenses
 - Can modify permit to add composting activity
 - WWTP sludge is special waste and requires a special waste permit and property zoning of industrial

Alternative 1 – Rotary Drum



- In vessel aerobic treatment
- Horizontal drum rotates to mix and aerate solid waste
- Breaks down biodegradable materials
- Non-degradable rejects removed before and after
- Sized for 550 tons/day
- Residence time = 3 days followed by 180 days finishing, curing and storage

Alternative 2 – Tunnel Reactor



- In vessel aerobic treatment
- Modular rectangular boxes or tunnels
- Individual controllable static system
- Breaks down biodegradable materials
- Sized for 550 tons/day
- Non-degradable rejects removed prior to and following composting
- Residence time = 18 days in reactor followed by 60 days curing

Alternative 3 – Source Separated Organics (SSO) Aerated Static Pile (ASP)



- Static pile aerobic composting for 30 days
- Air forced through pile for degradation
- Followed by turned pile curing for 30 days
- Similar to about 300 composting facilities in the U.S.
- Sized for 18,000 ton/year food scraps + 18,235 tons/year yard waste



Feasibility Study Summary of Findings

- Lexington in-vessel waste would average over 1,000 tons / day
 - 1,200 tons / day collected
 - Unsuitable material removed (such as bulky).
 - Biosolids and yard waste post process added.
- Sevierville averages 450 tons / day.
- 50% of waste diverted from a landfill based on the nature of our waste
- Would require roughly 3 of these sized systems to handle all LFUCG MSW waste in rotary drum or tunnel reactor
 - Phase 1 would address LFUCG-collected MSW
 - Would not process all Fayette County MSW until 3 sized systems operational
- Recommend collecting and processing yard waste separately.



Feasibility Study – Yard Waste Conclusion

- LFUCG collects approximately 42 tons of yard waste per day
- Unground yard waste will compromise a composting system.
- Recommendation for all 3 types: collect and compost yard waste separately and mix in at the end.

Feasibility Study Findings – Challenges

- Several items need to be removed before material enters the vessel (~25% of the waste stream)
 - Bulky
 - Yard Waste
 - Construction material
- End markets for the finished product not reliable – need to ensure a high quality product.
- Odor control an issue for all types.
- Maintenance and monitoring plan (MSW is corrosive)
- Need for education and drop off centers for those items to be removed from the process to minimize inappropriate items in the system



Cost Estimate (all 2023 dollars)

System	Rotary Drum	Tunnel Reactor	Source Separated Organics - Aerated Static Pile
Initial Construction (sized like Sevierville)	\$76,000,000	\$56,000,000	\$8,000,000
Ultimate Construction (large enough to handle all Fayette Co MSW)	\$228,000,000	\$168,000,000	\$35,000,000
Annual operating	\$25,000,000	\$25,000,000	\$1,500,000
Ultimate Tons/ Day diverted from landfill	500	500	100*

** If all appropriate material is separated by customers*

Feasibility Study Recommendation

“Based on the information gathered in this report, **Source Separated Organics Aerated Static Pile is the recommended management system to move forward.** Initial and long-term benefits are lower capital and operational expenditures, less long-term maintenance, and volume reduction disposed in the landfill. The SSO ASP program manages the financial, social, and environmental impacts, obligations, and opportunities. The system is sustainable.”

Questions?



LEXINGTON

ITEMS REFERRED TO COMMITTEE

Environmental Quality & Public Works

Referral Item	Current Sponsor	Date Referred	Last Presentation	Status	Legistar File ID
1 Process for Road Closures	D. Seigny	August 16, 2022		September 12, 2023	0920-23
2 Waste Digester Feasibility Study	L. Sheehan/D. Seigny	March 29, 2022	May 3, 2022	October 24, 2023	0445-22
3 Explore Lexington's Sustainability Options	L. Sheehan	February 20, 2018	May 23, 2023		0499-21
4 Environmental Best Practices In Our Paving Process	P. Worley	April 18, 2023		December 5, 2023	
5 Streets and Roads Fleet Depreciation and Replacement	H. LeGris	May 30, 2023			
6 Short-Term Rentals (STR) Enforcement	H. LeGris	May 30, 2023			
7 Environmental Commission - Ordinance Updates	L. Sheehan	June 13, 2023		December 5, 2023	0743-23
8 Update to Chapter 8 in Code of Ordinances related to blasting	D. Gray	July 11, 2023			
9 Review of revenue and expenditure of Refuse, Street Lights, and Street Sweeping (before the FY25 budget is finalized)	D. Seigny	August 22, 2023			
Annual / Periodic Updates					
10 Recycling General Practices * Note several recycling items were combined into this one item on March 9, 2021	P. Worley	March 9, 2021	January 19, 2021	January, 2024	0292-19
11 Backyard Composting - Home Compost Pilot Program	H. LeGris	February 2, 2021	May 23, 2023		0500-21
12 Urban Forestry / Street Trees Update	H. LeGris	September 17, 2019	July 11, 2023		0501-21
13 Capacity Assurance Program (CAP) Audit Update	L. Sheehan	August 30, 2018	April 18, 2023	Spring 2028	0964-20
14 Annual Energy Improvement Fund Update	L. Sheehan	January 10, 2017	July 11, 2023		0572-22
15 Annual Snow/Ice Removal Plan	L. Sheehan	February 15, 2014	October 11, 2022	October 24, 2023	1034-22
16 Annual Pavement Management Plan / Curbs Assessment	L. Sheehan	May 26, 2020	April 18, 2023		0440-22
17 Annual Stormwater Priority List Update	L. Sheehan	February 20, 2018	September 13, 2022	September 12, 2023	0922-22
18 Annual Municipal Separate Storm Sewer System (MS4) Program Update	L. Sheehan	February 20, 2018	November 1, 2022	October 24, 2023	1122-22
19 Annual Consent Decree and Remedial Measures Plan Update	L. Sheehan	January 22, 2019	March 1, 2022	December 5, 2023	0222-22
20 Annual Division and Program Review (Pilot Program)	L. Sheehan	November 30, 2021	November 1, 2022		0127-22

Updated 08.22.23, KJT