

**LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
DIVISION OF ENGINEERING**

EXECUTIVE SUMMARY

**STORMWATER MANAGEMENT PLAN
FOR**

*Name and Address of **Redevelopment** Project*

EXECUTIVE SUMMARY STORMWATER MANAGEMENT PLAN FOR

Name of Redevelopment Project

Table of Contents

Page 1 – Cover Page

Page 2 – Table of Contents and Certification Statement

Page 3 – General Information

Page 4 – Detention Requirements

Page 5 – Detention Basin Data Form

Page 6 – Summary of Peak Outflows

Page 7 – Water Quality Requirements

Page 8 – Water Quality Data Form

Page 9 – Submittal Checklist

Page 10 – List of Supplemental Information Provided in the Appendix

Certification:

I certify that this executive summary was prepared by me or others under my supervision, and that a copy is being provided to the New Development Section in the Division of Engineering and the MS4 / Water Quality Manager in the Division of Water Quality.

Date

Engineer's Signature and Kentucky License No.

Printed Name

Name of Engineering Firm

GENERAL INFORMATION

Project Name:												
Site Address:												
Owner/Developer (Name, email address, phone number):												
Engineer (Name, email address, phone number):												
Watershed: <table style="width: 100%; border: none;"><tr><td><input type="checkbox"/> Boone Creek</td><td><input type="checkbox"/> Cane Run</td><td><input type="checkbox"/> East Hickman</td><td><input type="checkbox"/> KY River</td></tr><tr><td><input type="checkbox"/> North Elkhorn</td><td><input type="checkbox"/> South Elkhorn</td><td><input type="checkbox"/> Town Branch</td><td><input type="checkbox"/> West Hickman</td></tr><tr><td><input type="checkbox"/> Wolf Run</td><td colspan="3"></td></tr></table> <input type="checkbox"/> Royal Spring Wellhead Protection Area	<input type="checkbox"/> Boone Creek	<input type="checkbox"/> Cane Run	<input type="checkbox"/> East Hickman	<input type="checkbox"/> KY River	<input type="checkbox"/> North Elkhorn	<input type="checkbox"/> South Elkhorn	<input type="checkbox"/> Town Branch	<input type="checkbox"/> West Hickman	<input type="checkbox"/> Wolf Run			
<input type="checkbox"/> Boone Creek	<input type="checkbox"/> Cane Run	<input type="checkbox"/> East Hickman	<input type="checkbox"/> KY River									
<input type="checkbox"/> North Elkhorn	<input type="checkbox"/> South Elkhorn	<input type="checkbox"/> Town Branch	<input type="checkbox"/> West Hickman									
<input type="checkbox"/> Wolf Run												
U. S. Army Corps of Engineers Jurisdictional Streams and Wetlands Stream Length (feet): _____ Wetland Area (square feet): _____												
Type of Redevelopment: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial Limits of Disturbance (LOD) in acres: _____ (Land disturbance includes demolition, removal of pavements, and other activities that temporarily expose soil. It does not include repaving or remodeling.) Baseline (before demolition) impervious area within the LOD (acres): _____ Proposed impervious area within the LOD after redevelopment (acres): _____ No. of Outfalls (pipe or open channel at the property line): _____												

DETENTION REQUIREMENTS

Complete the applicable box below

Box 1

- The net impervious area will be increased above baseline conditions, and detention facilities (new facilities or modifications to existing facilities) are proposed to reduce the peak flows to baseline conditions for the design storms in Chapter 5 of the Stormwater Manual (Section 1.8.2 of the Stormwater Manual). In areas where downstream flooding is known to be a problem, LFUCG may require that peak flows be less than baseline conditions (1.8.2).

Complete the Detention Basin Data Form for each basin.

Complete the Summary of Peak Flows for each outfall (pipe or open channel at the property line).

Article 16-2(g) of the Zoning Ordinance (check one box below):

- Stormwater management facilities are provided for off-street parking areas containing five (5) or more parking spaces and/or more than 1,800 square feet.
- Off-street parking area is 1,800 square feet or less, or less than 5 parking spaces.

Box 2

- On-site detention is not required (at least one box below must be checked for the project to be exempt, Section 1.8.2 of the Stormwater Manual). In areas where downstream flooding is known to be a problem, LFUCG may require that peak flows be less than baseline conditions (1.8.2).

The impervious area will not be increased.

- The Engineer has conducted a Downstream Study and all of the following apply within the study area:
- there will be no effect (practically interpreted to be less than 0.10 feet for modeling purposes) on the water surface elevations within the DSA for the design storms for flood control structures in Chapter 5, and the 25yr-24hr storm
 - the downstream drainage system within the DSA has sufficient capacity as defined in Table 1-5

Note: The Downstream Study Area (DSA) means the area beginning at the property line and extending downstream to a point where the proposed development area comprises 10 percent of the total watershed area draining to that point.

The Engineer has conducted a Downstream Study and determined that on-site detention will increase flood elevations in the DSA.

- Detention is provided in existing facilities as part of a regional stormwater quantity master plan
- | | | |
|---|--|--|
| <input type="checkbox"/> Expansion Area 2 | <input type="checkbox"/> Beaumont Centre | <input type="checkbox"/> Coldstream |
| <input type="checkbox"/> Hamburg | <input type="checkbox"/> Reynolds Road | <input type="checkbox"/> Masterson Station |
| <input type="checkbox"/> Other _____ | | |

Detention is provided offsite in existing facilities (explain in the Appendix):

- Supporting documentation attached, including map of offsite detention basin

DETENTION BASIN DATA FORM

Detention Basin No. _____ (Complete for each Basin)

Type of Detention Facility:

- Detention Basin
 Underground Detention
 Retention Pond
 Extended Detention
 Green Infrastructure w/detention volume:
 Infiltration Trench
 Bioretention
 Bioinfiltration Swale
 Permeable Pavement

Proposed Total Detention Volume: _____ cubic feet (top of embankment to bottom of basin)

Peak Flow Attenuation Design			
Design Storm	Peak Flows		
	Baseline	Basin Inflow	Basin Outflow
10yr-6hr			
100yr-6hr			
2006 actual storm			
1995 actual storm			

100yr-24hr storm:

Peak Stage _____ (assuming no flow through the principal spillway)

Emergency Spillway Elevation _____

Elevation of Normal Pool of Wet (Retention) Ponds _____

- Wet Ponds are designed with anti-seep collars

SUMMARY OF PEAK FLOWS

Outfall No.		Peak Flow (cfs)			
		10yr-6hr	100yr-6hr	2006	1995
1	Baseline				
	After Redevelopment				
2	Baseline				
	After Redevelopment				
3	Baseline				
	After Redevelopment				
4	Baseline				
	After Redevelopment				
5	Baseline				
	After Redevelopment				
6	Baseline				
	After Redevelopment				
7	Baseline				
	After Redevelopment				
8	Baseline				
	After Redevelopment				
9	Baseline				
	After Redevelopment				
10	Baseline				
	After Redevelopment				

WATER QUALITY REQUIREMENTS

Complete the applicable box below

Box 1

Water Quality is addressed as follows (Section 1.8 of the Stormwater Manual):

Option A: The baseline impervious area within the LOD will be reduced by at least 20%.

Baseline Impervious Area (before demolition) = _____ square feet

Impervious Area After Redevelopment = _____ square feet

Percent Reduction = _____

OR

Option B: Stormwater Controls (SWCs), Green Infrastructure, or Manufactured Treatment Devices are proposed to manage at least 20% of the baseline impervious area plus 100% of the net increase in impervious area. Runoff Reduction is required only for the net increase in impervious area. Modifications to existing SWCs/Devices may be sufficient.

The Required Water Quality Volume (WQV) is determined as follows:

If $B > A$: $WQV = A \times 0.2 \times 1.2''/12 + (B-A) \times 1.2''/12 =$ _____ cubic feet

If $B = A$: $WQV = A \times 0.2 \times 1.2''/12 =$ _____ cubic feet

where,

A = Baseline impervious area = _____ square feet

B = Impervious area after redevelopment = _____ square feet

If $B < A$: Go to Option C

The Required Runoff Reduction Volume (RRV) is determined as follows (only when $B > A$):

$RRV = (B-A) \times 0.8''/12 =$ _____ cubic feet (enter 0.0 if RRV is not feasible)

Check this box if Runoff Reduction is not feasible because all of the following conditions are present

- the soil infiltration rate is less than 0.5 inches per hour
 - infiltration rate of the on-site soils = _____ inches/hour
- subdrains are not feasible for applicable Green Infrastructure practices
- no other Green Infrastructure practices are feasible

Complete the Water Quality Data Form for each outfall (pipe or open channel at the property line).

Describe Existing Stormwater Quality Controls prior to demolition of the site, if any:

OR

Option C: A combination of the above (described in the attachment)

Box 2

Site is Exempt - The amount of land to be disturbed is less than one acre (Section 1.7.2 of the Stormwater Manual).

WATER QUALITY DATA FORM
Outfall No. (Complete for each Outfall)

Required WQV (from previous page) = _____

Required RRV (from previous page) = _____

RRV Provided by Green Infrastructure	
Description	RRV (cf)
Impervious Area Disconnection to Developed Green Space	
Impervious Area Disconnection to Protected Natural Areas (including floodplains)	
Bioretention and Rain Gardens	
Permeable Pavement	
Bioinfiltration Swales	
Infiltration Basins and Trenches	
Tree Trenches and Planter Boxes	
Rainwater Harvesting	
Vegetated Roofs	
Riparian Buffer Restoration	
Constructed Wetlands	
Total	

WQV Provided by Other Stormwater Controls	
Description	WQV (cf)
Extended Detention Basins	
Wet Ponds	
Underground Detention	
Total	

Manufactured Treatment Devices		
Description	Impervious Drainage Area (sf)	WQV Provided (cf) (Imp. Area x 1.2"/12)
Total		

Summary Table of Stormwater Controls	
RRV provided by Green Infrastructure (cf)	
WQV Provided by Extended Detention, Wet Ponds, or Underground Detention	
WQV Provided by MTDs (cf)	
Total (cf)	

SUBMITTAL CHECKLIST

Engineer's Drainage Report/Plans (Stormwater Manual Chapter 4 design documentation)

- Watershed map with sub-watersheds delineated and labeled (4.3.1)
- Location map of the stormwater controls and outfalls (4.3.1)
- Baseline and After Redevelopment drainage map (4.3.1)
- Streams, wetlands, and other environmentally sensitive areas are shown on the plan (4.3.1)
- Detention basin design calculations and schematics (4.3.2)
- Proposed Stormwater Controls are in an easement/stormwater management area (1.5.6)
- Baseline and After Redevelopment runoff hydrographs with supporting data and analysis (4.3.2)
- Hydraulic analysis of the proposed storm sewers, inlets, culverts, and channels (4.3.2, 1.6.5)
- Water quality volume and BMP design calculations and schematics (4.3.2)
- Detailed design of control structures and embankments (4.3.2)
- Erosion prevention measures are provided at pipe outfalls (Section 1.7.6)
- Channel protection measures are provided to prevent bank erosion (8.2.2)
- Manufacturer's design and maintenance standards for stormwater manufactured treatment devices (4.3.2)
- If detention is not proposed, a hydraulic analysis is provided of the downstream drainage system that demonstrates sufficient capacity (1.6.2)

Projects In or Along a Stream/Floodplain

- LFUCG's FEMA Floodplain Administrator has reviewed the plans
- FEMA Effective Special Flood Hazard Area is shown on the plan (1.5.12)
- The 100-year floodplain has been determined for streams that have not been mapped by FEMA, and is shown on the plans (1.4.5)
- Flood Protection Elevations are shown for structures (1.6.6)
- Structures are at least 25 feet from the floodplain (1.6.7)
- Plans conform to Tables 1-9 and 1-10 regarding allowable uses in the floodplain (1.10)
- Placing fill in the 100-year floodplain will have no adverse impact on contiguous property (1.5.4)
- Vegetative buffers are shown on the plan (1.10)
- Greenways are shown on the plan (4.3.1)

Federal, State, and Local Permits related to proposed construction in a stream or floodplain

- LFUCG Division of Engineering Stormwater Permitting Checklist
- USACE 404 Permit
- KYDOW 401 Water Quality Certification
- KY Stream Construction/Floodplain Permit
- FEMA LOMR or CLOMR
- Special Permit from LFUCG for construction in the floodplain

General

- Adequate vehicle access provided to maintain BMPs (driving surface within 10 feet of the BMP)
- Maintenance agreement for commercial projects

Appendix

- Related drainage studies that affect the stormwater management plan of this project
- Narrative of known downstream flooding problems from LFUCG studies or Engineer's downstream study
- Copies of Waivers or Variances from LFUCG

Note: If a box is not checked, provide explanation in the Appendix

List of Supplemental Information Provided in the Appendix