



December 2018

City of Danville Storm Water Quality  
Management Plan  
*Danville Storm Water Utility*

# Table of Contents

- I. Introduction**
  - a. Stormwater Quality Management Plan Overview
  
- II. Minimum Control Measures**
  - a. Public Education and Outreach Requirements
  - b. Public Involvement and Participation Requirements
  - c. Illicit Discharge Detection and Elimination
  - d. Construction Site Stormwater Runoff Control Requirements
  - e. Post-Construction in New Development and Redevelopment
  - f. Pollution Prevention/Good Housekeeping
  
- III. Monitoring Plan**
  
- IV. Appendices**
  - a. Acronyms
  - b. B.1 Danville Urban Area Sub-basin map
    - B.2 Spears Creek
    - B.3 Clarks Run

## **I. Introduction**

The City of Danville Storm Water Quality Management Plan (SWQMP) is a guide to comply with storm water permit programs that stem from the Clean Water Act. The City's Municipal Separate Storm Sewer System (MS4) "Storm water" Permit requires developing and maintaining awareness and participation across the city at large including the various operations of the City. The SWQMP is designed to disseminate permit responsibilities and tracking requirements throughout the organization and support the organization in meeting the requirements of the storm water permit. While the City deploys a designated stormwater manager the SWQMP Measurable Goals Table allows for improved distribution of BMP Activity tasks among field personnel while also improving tracking and monitoring. The SWQMP does not establish new regulatory requirements, but is to be utilized as a guide for compliance with Danville's KPDES Permit.

This City of Danville's Municipal Separate Storm Sewer System (MS4) Stormwater Quality Management Plan (SWQMP) was developed to address the Kentucky Pollutant Discharge Elimination System (KPDES) MS4 Phase II program requirements as specified in the KPDES Permit (KPDES No. KYG200000 A.I. No. 35050). The Kentucky Division of Water (KDOW) regulates the MS4 Program.

### **Stormwater Quality Management Plan Overview**

The overall goal of the Stormwater Quality Management Program is to reduce the discharge of pollutants from the MS4s to the maximum Extent Practicable (MEP). Danville attains this goal through the implementation of 6 Minimum Control Measures (MCMs): Public Education and Outreach, Public Involvement and Participation, Illicit Discharge Detection and Elimination, Construction Site Stormwater Runoff Control, Post-Construction Stormwater Management in Development, Good Housekeeping/Pollution Prevention for Municipal operations. These MCMs consist of a combination of activities, commonly known as Best Management Practices (BMPs), which are focused on controlling and reducing the discharge of pollutants from the small MS4s.

The most critical element to enabling the management of runoff water quality is public acceptance and support of the program. Providing for education, participation, and involvement to citizens and employees are tenants of the program. Our goal of reaching all ages will occur by utilizing classroom settings to reach younger citizens, by aiding and coordinating clean-up days/work-days post-college age groups can be reached, and by public speaking and engagements at work sessions and civic group meetings the remaining age

groups can be targeted. The program will survey residents to measure success of outreach efforts as well as monitoring volunteer and meeting participation rates.

Danville is responsible for the maintenance of hundreds of short sections of pipes, culverts, and ditches that allow drainage to flow off properties within its jurisdictional area into primary waterways. Danville is to meet the requirements of the MS4 permit through a combination of standards, contracts, orders and inspections. In addition, Danville is to comply with KPDES General Permits for stormwater discharges associated with construction activities and stormwater point sources from other municipal utility operations.

Danville is required to develop a stormwater quality management program that is designed to reduce the discharge of pollutants to the maximum extent practicable (MEP). Rather than numeric limits, the MEP standard involves applying BMPs that are effective in reducing the discharge of pollutants in stormwater runoff through the use of known, available, and reasonable methods. MEP is an iterative standard, which evolves over time as urban runoff management knowledge increases. As such, Danville will continually assess the MS4 program to incorporate improved programs, control measures, BMPs, etc.

Danville is required to develop and implement a SWQMP with the objective of reducing the discharge of pollutants to the MEP. The SWQMP is a planning tool to define how the MS4 stormwater permit program will be administered.

#### Danville Urban Stormwater Area

Provided in Appendix B.1 is a street map with the boundaries Danville's identified sub-basins. The urban stormwater area is broken into two watersheds; Spears Creek on the north side of the city and Clarks Run Creek on the south side of the city. For the most part Main Street is the delineation boundary for the two watersheds with some minor variance. Appendix B.2 – Spears Creek with primary tributaries and B.3 – Clarks Run with primary tributaries will be discussed also.

Beginning with the implementation of the City's Storm Water Utility the City has evaluated sub-basins for structural flooding, nuisance flooding, conveyance system reliability, illicit discharges, post-construction BMP effectiveness, and water quality enhancements. The evaluations and subsequent improvement projects, while being coordinated by City staff, was completed using engineering consultants, landscape architects, contractors, public hearings, and local residents as volunteers.

Work thus far is outlined in the following table:

<b>Stormwater Municipal Utility System work since 2007-2008</b>			
<b>Sub-basins</b>	<b>Engineering Evaluation</b>	<b>Construction Project</b>	<b>Comments</b>
<i>Spears Creek</i>			
SB E	x	x	
SB C	x	x	
SB Q	x	x	
SB B	x		Const: 2019
SB A	x		Const: 2019
SB F(partial)	x		
<i>Clarks Run</i>			
SB N(partial)	x	x	
SB J	x		Const: 2019
SB R	x	x	

This evaluation process will continue but will now be guided in concert with the tasks identified in the SWQMP. When the City organized the Storm Water Utility it was decided that the evaluation of and improvements to the system will occur over a 25-year cycle. Utilizing water quality BMP's to complete system should be completed 5 years ahead of schedule.

In addition to evaluations identified above, stormwater sampling has already occurred. The City has sampled both Clarks Run and Spears Creek at the general locations identified in Appendix B.2 and Appendix B.3. I.e. Spears Creek locations shown in B.2 are SC1, SC2 and SC3 along with the discharge of each shown tributary.

## **II. Minimum Control Measures**

A: MCM - Public Education and Outreach – Implementing a successful program to distribute educational materials or conduct equivalent outreach activities about the impacts of stormwater discharges on water bodies will improve knowledge within the community in regards to water resources. Most critical for Danville is the understanding of the “local Danville” water cycle; runoff water entering either Spears Creek or Clarks Run discharges into Lake Herrington, the Danville’s source for drinking water. In addition the Danville Waste Water System discharges into Clarks Run. The education process will provide the steps the public can take to reduce pollutants in stormwater runoff and will accomplish two main goals: greater support and

compliance with the program and improved water quality as the public gains greater awareness regarding how their personal actions impact runoff.

Permittees will implement requirements of the KYG20 General Permit as outlined in the KYG20 Guidance document. Based upon these the City shall implement the BMP's outlined in the following table:

Task MCM ID	Element Task/Activity/BMP	Measurable Goal	Deadline/Frequency (permit year)					Responsible Division
			1	2	3	4	5	
<b>1. Public Education and Outreach</b>								
PE 1	Provide Classroom Education	Facilitate or provide training related to the SWQMP to students in grades K-12, at the college as requested school administrators or scheduled by City.	x	x	x	x	x	SWM
PE 2	Provide Community Training	Organize, promote, and participate in community training activities regarding water resource stewardship and the reduction of stormwater pollution as requested and scheduled.	x	x	x	x	x	SWM
PE 3	Provide Employee Training	Conduct annual employee training to public service employees related to the City's SWQMP, water resource stewardship, the City's ERSC requirements, structural BMP maintenance and good housekeeping practices.	x	x	x	x	x	SWM
PE 4	Provide Information About Stormwater and Water Quality at Public Meetings	Give presentations at four public meetings per year, which include topics related to City's MS4 permit and the SWQMP. Public meetings include the City Commission meetings and meetings of civic groups and planning and zoning.	x	x	x	x	x	SWM
PE 5	Provide targeted outreach to Construction Industry	Develop and maintain stormwater and water quality education material relevant to the construction industry to be shared through targeted outreach.	x	x	x	x	x	SWM
PE 6	Provide targeted outreach online/newsletter	Develop and maintain stormwater and water quality education material to be shared on the City's webpage stormwater link and to be provided two times per year in the City's quarterly newsletter (mailed to 10,000 municipal utility customers both homeowners and businesses)	x	x	x	x	x	SWM

**Measurable goal: Measurable Goal Evidence of Completion:** The following list shows the acceptable documentation to substantiate the completion of each measurable goal from the preceding SWQMP Table. These items will be included in the MS4 Annual Report for the applicable permit year.

PE 1: provide documentation of each training event

PE 2: provide education resources and documentation for each training event

PE 3: provide sign-in sheets and education resource outlines

PE 4: provide documentation for each public meeting(i.e. agenda or minutes)

PE 5: provide sign-in sheets for events

PE 6: provide copy of newsletter or published information

- b. **MCM - Public Involvement and Participation** – The public can provide valuable input and act increase the city’s workforce in implementing the program. As such the public should be given an active role in the development and implementation of the program. An active and involved public will generate broader public support and have ownership of the program results. Activities may include representation on local storm water management work groups, public hearings, education volunteers, assisting with program coordination and monitoring efforts, per applicable state and federal requirements.

Permittees will implement requirements of the KYG20 General Permit as outlined in the KYG20 Guidance document. Based upon these the City shall implement the BMP’s outlined in the following table:

Task MCM ID	Element Task/Activity/BMP	Measurable Goal	Deadline/Frequency (permit year)					Responsible Division
			1	2	3	4	5	
<b>2. Public Involvement/Participation</b>								
PI 1	Provide opportunity for residents to notify City of SW management problems/concerns	Review and update online webpage providing residents contact information for City and state officials for reporting: illicit discharges, illegal dumping, spills, etc complaints, and drainage complaints	x	x	x	x	x	SWM
PI 2	Provide public planning meetings for sub-basin project planning	Conduct public hearings related to SW system evaluations identifying capital project ideas in indicated watersheds/subbasins.	x	x	x	x	x	SWM
PI 3	Provide water resource related volunteer opportunities	Organize, promote, and participate in community water resource activities regarding water resource stewardship and the reduction of stormwater pollution as requested and scheduled. E.g. clean-up, construction, repairing restoration events.	x	x	x	x	x	SWM
PI 4	Support non-profit groups involved in watershed protection/management	Participate in or support civic groups that focus on water quality, water resource protection, watershed management, or stormwater pollution prevention	x	x	x	x	x	SWM

**Measurable goal: Measurable Goal Evidence of Completion:** The following list shows the acceptable documentation to substantiate the completion of each measurable goal from the preceding SWQMP Table. These items will be included in the MS4 Annual Report for the applicable permit year.

PI 1: provide website contact link, provide received comments

PI 2: provide planning meeting sign in sheets and handout materials

PI 3: provide summaries of volunteer events

PI 4: provide agreements and/or participation list

- c. MCM - Illicit Discharge Detection and Elimination Program – Danville will develop, implement and enforce a program to detect and eliminate illicit discharges into the waterways within the jurisdictional areas. For illicit discharges to the storm sewer system Danville will work to eliminate such and document the notifications, enforcement action, and results. It is recognized that with improved public awareness this MCM will be more successful.

Permittees will implement requirements of the KYG20 General Permit as outlined in the KYG20 Guidance document. Based upon these the City shall implement the BMP's outlined in the following table:

Task MCM ID	Element Task/Activity/BMP	Measurable Goal	Deadline/Frequency (per year)					Responsible Division
			1	2	3	4	5	
<b>3. Illicit Discharge Detection and Elimination (IDDE)</b>								
IDDE 1	Maintain IDDE Plan addressing notification, detection, response, mitigation, and tracking	Maintain and implement IDDE plan to guide City in conducting IDDE program. Plan shall identify illicit discharge locations, guide dry-weather screening, outline investigation procedures, and clean-up. Review and update tri-annually.	x			x		SWM
IDDE 2	Update and Maintain SW outfall inventory and mapping.	Update and maintain an inventory and mapping(i.e. GIS) of all known outfalls of CITY and their names, locations, and surface water receiving discharges.	x	x	x	x	x	SWM
IDDE 3	Conduct dry weather screening and investigations	Annually conduct dry-weather screening of 20% of major outfalls. Immediately investigate discoveries or complaints related to illicit discharges or spills determined to be urgent or severe. Conduct follow-up investigations to determine if mitigation actions were conclusive.	x	x	x	x	x	SWM
IDDE 4	Conduct Field Staff Training	Conduct annual training (i.e. investigation, response, mitigation) for field staff (i.e. public services/utilities).	x	x	x	x	x	SWM

**Measurable Goal Evidence of Completion:** The following list shows the acceptable documentation to substantiate the completion of each measurable goal from the preceding SWQMP Table. These items will be included in the MS4 Annual Report for the applicable permit year.

IDDE 1: provide copy of the current plan version

IDDE 2: provide mapping of outfall inventory

IDDE 3: provide dry-weather screening reports

IDDE 4: provide education material provided to staff along with sign-in sheets

- d. MCM Construction Site Runoff Control – Sedimentation is one of the most widespread pollutants affecting rivers and streams according to the 200 National Water Quality Inventory, second only to pathogens. Sources of sedimentation include agriculture, urban runoff, construction, and forestry. Sediment runoff rates from construction sites, however, are typically 10 to 20 times greater than those of agricultural lands and more than a 1,000 times greater than forests. During a very short time construction sites can discharge more sediment than occurs naturally over many years. The resultant negative impact on the environment can be vast including both physical and chemical changes to surface water.

For the reason stated above CS Runoff control is an important component to improving the water quality regulation. Permittees are required to develop, implement and enforce a program to reduce pollutants in any stormwater runoff from construction activities. While specific permitting and planning is required for sites greater than an acre ESC BMPs should be deployed in an instances to prevent pollution of the waterways. In order to achieve objectives permittees will implement requirements of the KYG20 General Permit as outlined in the KYG20 Guidance document. Based upon these,the City shall implement the BMP's outlined in the following table:

Task MCM ID	Element Task/Activity/BMP	Measurable Goal	Deadline/Frequency (permit year)					Responsible Division
			1	2	3	4	5	
<b>4. Construction Site Stormwater Runoff Control</b>								
CS 1	Review update local ordinances, SW Manual, and administrative policies	Review and update City ordinances related to SW Construction Site runoff control within the City. The Ordinances and materials shall require and organize the plan review process, guide developers for water quality BMP implementation, and organize inspections.	x			x		SWM
CS 2	Maintain permitting process with construction-site runoff design guidance.	Implement permitting process associated with plan reviews to affirm compliance with regulations. Update design guide (storm water manual) for developers, engineers, and construction-site operators.	x	x	x	x	x	SWM
CS 3	Conduct construction-site inspection program and enforcement action program for non-compliance	Conduct construction-site inspections as required to observe compliance. Implement escalating enforcement actions for non-compliance with construction-site runoff requirements.	x	x	x	x	x	SWM
CS 4	Conduct field staff training	Conduct annual training for field staff (i.e. public services/utilities).	x	x	x	x	x	SWM
			x	x	x	x	x	SWM

**Measurable Goal Evidence of Completion:** The following list shows the acceptable documentation to substantiate the completion of each measurable goal from the preceding SWQMP Table. These items will be included in the MS4 Annual Report for the applicable permit year.

- CS 1: provide copy revisions as they occur and are implemented
- CS 2: provide a list of annual permits issued
- CS 3: provide copy of inspection reports
- CS 4: provide education material provided to staff along with sign-in sheets

- e. **MCM Post-construction Site Runoff Control** – With the completion of construction the natural waterways and environment has changed. Complicating the matter and in most cases parking lots or hardscapes (non-pervious) surfaces are created. These surfaces contribute to higher rates of erosion downstream if not managed as well as the consolidation of pollutants illicitly discharged from motor vehicles, for example. The KYG20 Permit requires local permittees to deploy tactics with development to manage this environmental change in a way to prevent the degradation of water quality. Permittees are required to develop, implement and enforce a program that addresses stormwater runoff from new development and redevelopment projects by using BMPs as well as a robust maintenance program to ensure long-term operation and functionality of the BMPs.

Permittees will implement requirements of the KYG20 General Permit as outlined in the KYG20 Guidance document. Based upon these the City shall implement the BMP's outlined in the following table:

Task MCM ID	Element Task/Activity/BMP	Measurable Goal	Deadline/Frequency (permit year)					Responsible Division
			1	2	3	4	5	
<b>5. Post-Construction Stormwater management in new development and redevelopment</b>								
PC 1	Review update local ordinances, SW Manual, and administrative policies	Review and update City ordinances related to post-construction runoff control within the City. The Ordinances and materials shall require and organize the plan review process, guide developers for water quality BMP implementation, and organize inspections.	x			x		SWM
PC 2	Maintain and update post-construction feature design guidance including water quality standards	Update the City ordinances and stormwater design manual that stipulates a stormwater runoff quality standard. The design guidance shall be developed developers, engineers, and construction-site operators for use in the planning and construction processes that address post-construction runoff.	x			x		SWM
PC 3	Implement post-construction stormwater inspection and maintenance program	Conduct annual inspections for all approved post-construction BMP's for proper installation and operation. Conduct maintenance and develop capital program to ensure proper longterm function of BMP's.	x	x	x	x	x	SWM

**Measurable Goal Evidence of Completion:** The following list shows the acceptable documentation to substantiate the completion of each measurable goal from the preceding SWQMP Table. These items will be included in the MS4 Annual Report for the applicable permit year.

PC 1: provide copy revisions as they occur and are implemented

PC 2: provide revisions summarized when amended

PC 3: provide annual inspection reports along with maintenance summaries

- f. **MCM Pollution Prevention/Good Housekeeping** – Prevention and good housekeeping is a key element of a small MS4 SW management program. The measure requires the MS4 to monitor its own activities to ensure a reduction in pollution entering and collecting on streets, parking lots, open spaces, and its maintenance facilities that results from insensitive land development and flood management or poor maintenance of the storm water system. The MCM is meant to improve or protect water quality by altering municipal operations however it can also result in reduced costs from the municipality. The permittee shall develop and implement an operations and maintenance program that includes a training component and has a goal of preventing or reducing polluted runoff from their daily operations, including while performing maintenance of municipal infrastructure.

Permittees will implement requirements of the KYG20 General Permit as outlined in the KYG20 Guidance document. Based upon these the City shall implement the BMP's outlined in the following table:

Task MCM ID	Element Task/Activity/BMP	Measurable Goal	Deadline/Frequncy (permit year)					Responsible Division
			1	2	3	4	5	
<b>6. Pollution Prevention/ Good Housekeeping for Municipal Operations</b>								
PP 1	Maintain Operation and maintenance manual	Review and update City's operation and maintenance manual with the goal of preventing or reducing ploutant runoff form muncipal operations.	x			x		SWM
PP 2	Maintain inventory of muncipal facilities	Review and update inventory list of muncipal facilities owend and operated by the City.	x	x	x	x	x	SWM
PP 3	Develop and implement an operation and maintenance inspection program	Develop and maintain annual inspection checklist for muncipal BMP facilities.	x	x	x	x	x	SWM
PP 4	Conduct field staff training	Conduct annual training for field staff (i.e. public services/utilites) related to good-house keeping and pollution prevention practices.	x	x	x	x	x	SWM

**Measurable Goal Evidence of Completion:** The following list shows the acceptable documentation to substantiate the completion of each measurable goal from the preceding SWQMP Table. These items will be included in the MS4 Annual Report for the applicable permit year.

PP 1: provide department operation and maintenance guide

PP 2: provide mapping of BMP inventory

PP 3: provide O and M inspection reports by supervisors

PP 4: provide education material provided to staff along with sign-in sheets

### **III. Stormwater Quality Management Monitoring Plan**

The goal of the Stormwater Quality Management Program is to reduce the discharge of pollutants from the MS4 urban area to the maximum extent practicable. Necessarily the plan will be a dynamic monitoring plan that will be updated bi-annually based upon information gathered. The City must collect water samples for surface runoff and these samples should result in action by the City. The information gathered during sampling should guide the City's activities moving forward as it relates to strategic or improved inspections, the identification of illicit discharges, runoff control and thus direction for enforcement actions or field activities. The information gained during monitoring should be used to provide public education by enhanced involvement of all citizens towards a greater understanding of water quality impacts. The result of these core actions will be the enhancement of water quality to the maximum extent practical.

The City began in 2018 monitoring of both Clarks Run and Spears Creek at the general locations identified in Appendix B.2 and Appendix B.3. I.e. Spears Creek locations shown in B.2 are SC1, SC2 and SC3 along with the discharge of each shown tributary. These sample locations will remain the same for an additional 2 year cycle. As information is gathered additional sample locations within tributaries may be added to regular monitoring. Also additional hot-spot monitoring will occur with dry-weather screening and inspections. The activities will include:

- A. **Sample Collection** – The activity should consist of the collection of samples through diverse sources at strategic locations. The result of sampling, if done correctly, will aid in determining the effectiveness of the City's construction site runoff controls, post-construction controls, along with good house keeping measures taken. The City will utilize the wastewater treatment plant laboratory to

analyze and summarize sample data. However, the Long-term sites will be used to increase public awareness and increase public education. Collection of these samples will be aided by partners such as Bluegrass Greensource, UK Boyle County Extension Service, the CREEC group, and local schools. The City will coordinate “sampling days” with published times in order to ensure public participation.

- B. Long-term sites – these sites are selected on the geographic proximities to major watersheds and its tributaries. These sites would then yield information to determine baseline knowledge of water quality within a sub-basin or major watershed. For example, along the Clark’s Run Creek corridor we have located sample sites prior to water entering Danville, at the discharge of four major tributaries, and water just upstream of the waste water treatment plant or as water leaves Danville. From this data a determination can be made as to the impact Danville has on the water quality within the Clarks Run Watershed.
- C. Sampling - will conducted on a quarterly basis. The idea of the sampling frequency is to collect samples during wet weather flow and dry weather flow periods. Short term or “hot spot” sampling will be conducted on an as needed basis. This selective sampling will occur at the direction of the City Inspectors, Storm water Personnel and the Waste Water Rehabilitation Department. Citizen complaints or provided concern may also require sampling.
- D. Outcome of Sampling – The primary outcome as previously stated is to guide strategic follow-up inspections or inspections for illicit discharges, dry-weather flows, areas of lower water quality and areas of enforcement activities. Annually the City will summarize the result of sampling and conduct a public meeting where information is presented to those attending. Additionally the data gathered will provide the City opportunities for increased public aware/ness and education. The gathering of data will occur with public participation thereby achieving program goals.

The development of a water quality database will aid in the evaluation of the SWQMP as well as construction control activities. By having historical information, as a background staff will be able to ascertain the effectiveness of inspections, contractors, and the BMP’s utilized. Further, the database will be used to determine the effectiveness of good housekeeping measures undertaken by the City’s storm water staff. This data will aid the City in strategic staff education and training.

#### **IV. APENDICIES**

##### **a. ACRONYMS**

**"BMPs" is an acronym for Best Management Practices.**

**"CFR" is an acronym for Code of Federal Regulations.**

**"CS" is an acronym for Construction Site Runoff Control program element.**

**"CWA" is an acronym for Clean Water Act.**

**"EPA" is an acronym for Environmental Protection Agency.**

**"GIS" is an acronym for Geographic Information System.**

**"IDDE" is an acronym for Illicit Discharge Detection and Elimination program element.**

**"KAR" is an acronym for Kentucky Administrative Regulations.**

**"KDOW" is an acronym for Kentucky Division of Water.**

**"KPDES" is an acronym for Kentucky Pollutant Discharge Elimination System.**

**"KRS" is an acronym for Kentucky Revised Statutes.**

**"MEP" is an acronym for Maximum Extent Practicable.**

**"MG" is an acronym for Measurable Goal.**

**"MS4" is an acronym for Municipal Separate Storm Sewer System.**

**"NPDES" is an acronym for National Pollutant Discharge Elimination System.**

**"PC" is an acronym for Post-Construction Stormwater Management in New Development and Redevelopment program element.**

**"PE" is an acronym for Public Education and Outreach program element.**

**"PI" is an acronym for Public Involvement and Participation program element.**

**"PP" is an acronym for Pollution Prevention for Municipal Operations program element.**

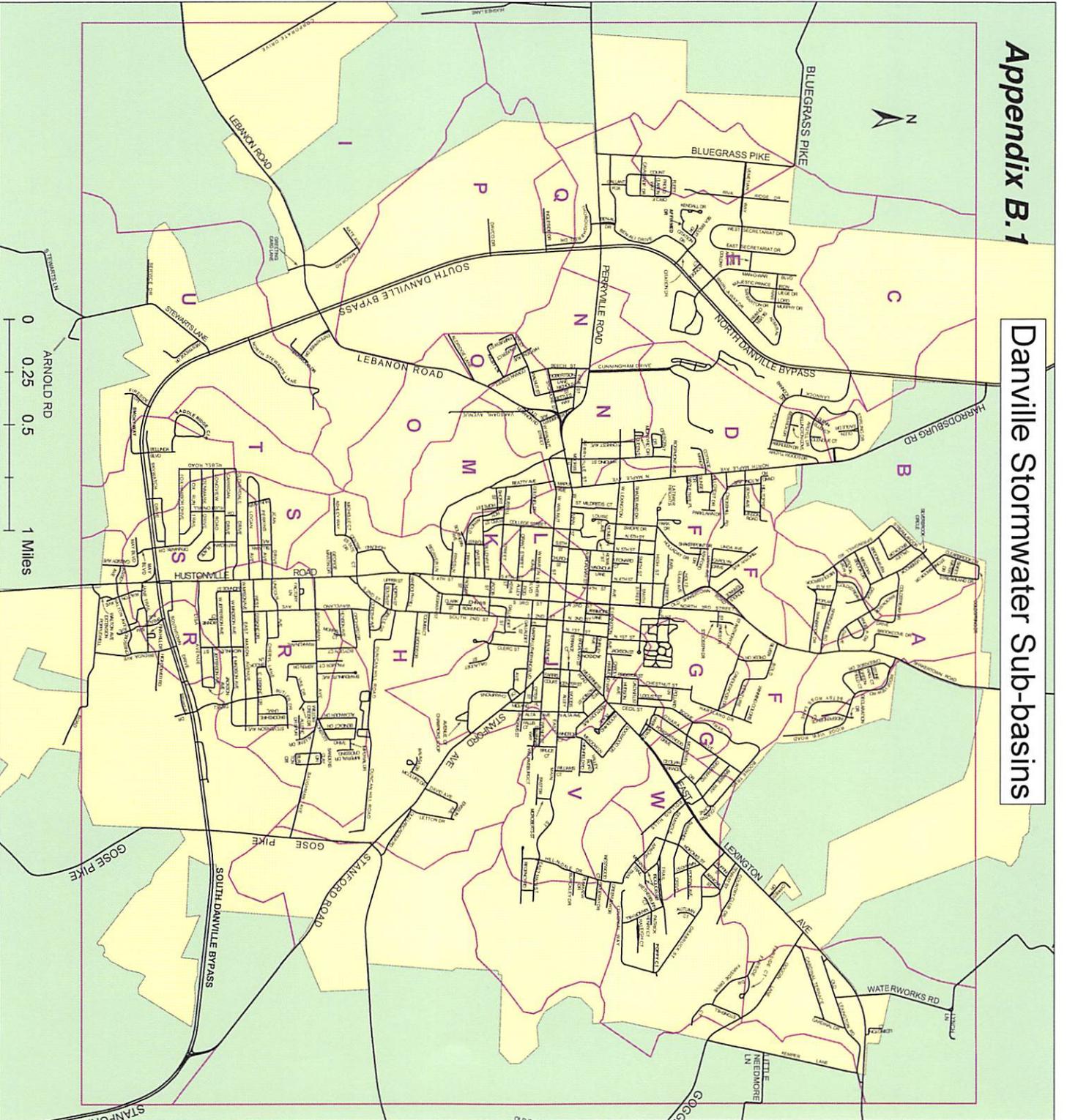
**"SWQMP" is an acronym for Stormwater Quality Management Program.**

**SWPPP" is an acronym for Stormwater Pollution Prevention Plan.**

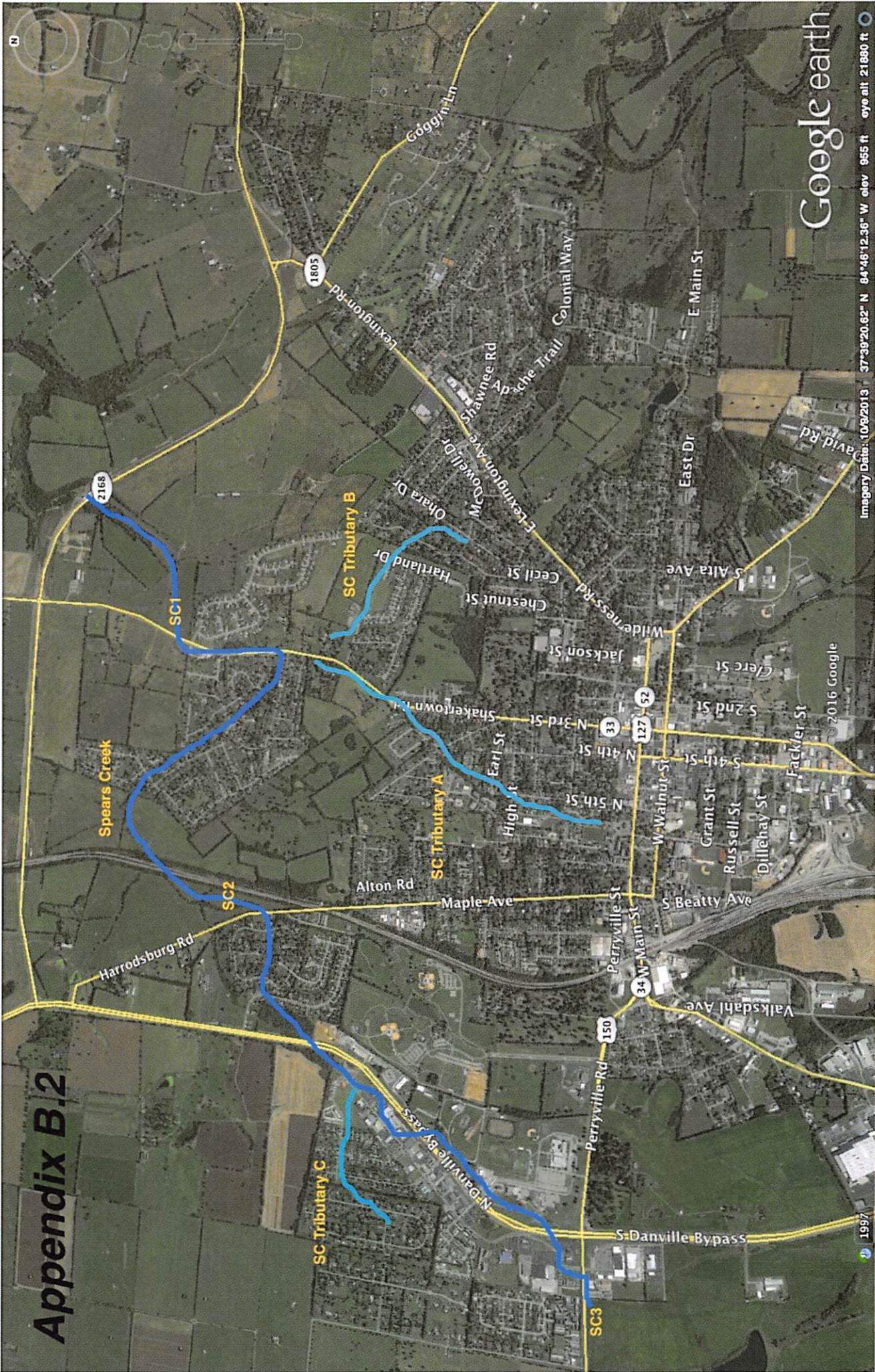
**This page intentionally left blank**

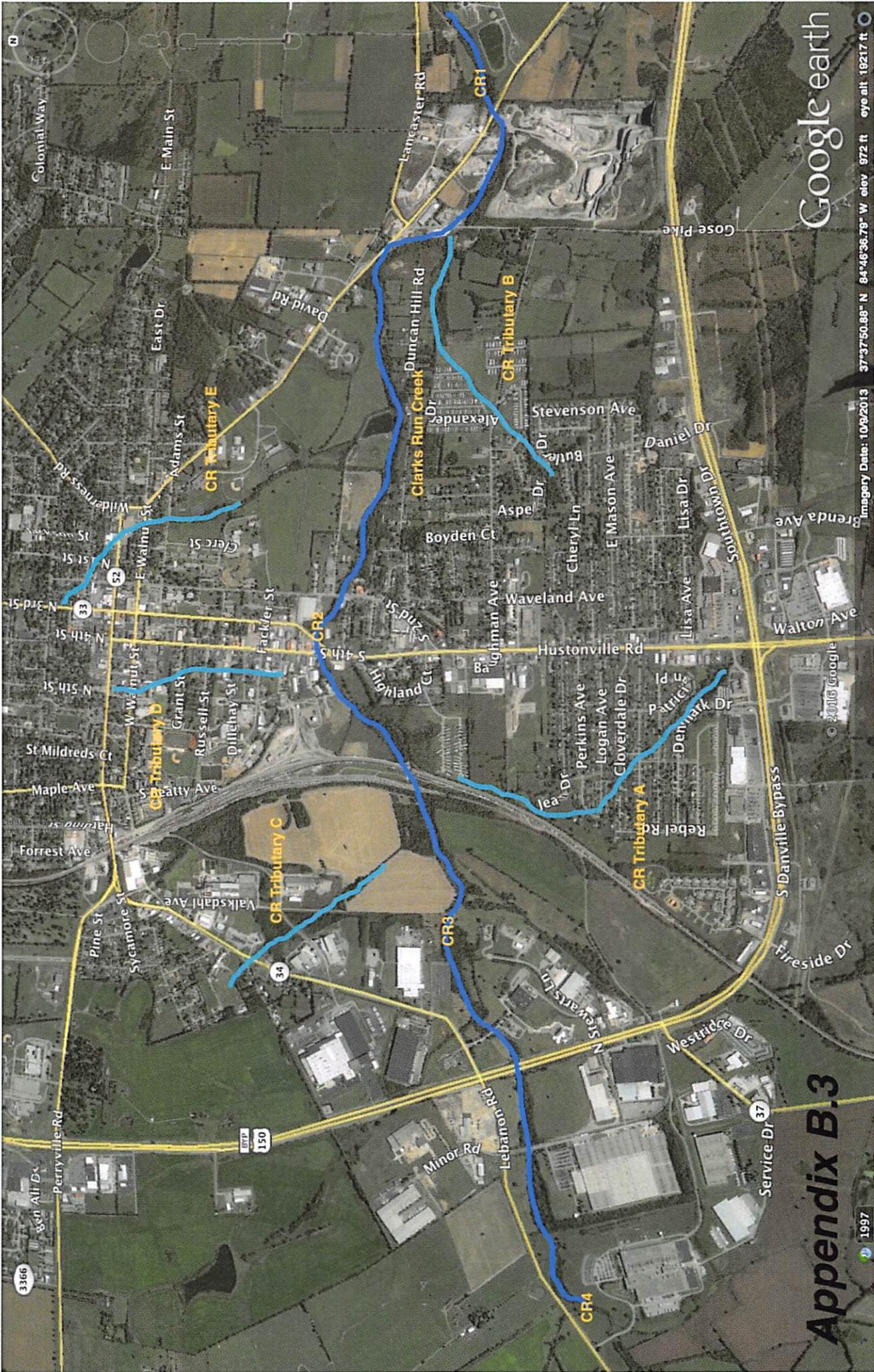
# Appendix B.1

## Danville Stormwater Sub-basins



# Appendix B.2





Google earth

Imagery Date: 10/9/2013 37°37'50.88" N 84°46'38.79" W elev 972 ft eye alt 18217 ft

# Appendix B.3

© 1997