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REPORT OF THE ENGINEER

July 15, 2025

SWAN CREEK WATERSHED PETITION #1054

Background

On March 20, 2021, the Joint Board of County Commissioners, Fulton, Henry, and Lucas Counties were given notice of the filing of a petition by the Village of Whitehouse (Resolution 04-2021) to place all drainage improvements within Swan Creek Watershed under permanent maintenance using a combination of methods provided in the Ohio Revised Code Section 6131.01 (C) 1 through 5 necessary for the disposal of surplus water through the infrastructure hereinafter set forth (Note: Each creek or ditch is followed by the county(ies) it flows through. An asterisk (*) after a county name indicates that the segment of ditch in that county is not included in petition 1054).

As of December 2, 2021, the Engineer and the Clerk of the Board have been given notice request amending the petition to include additional ditches in the watershed to be placed under petition maintenance. The addition of these ditches does not increase the watershed area provided in the original petition and are submitted for consideration by the Joint Board at the First Hearing. The following the ditches have been added to the list presented in the original petition at the request of benefiting landowners (as provided in the Ohio Revised Code Section 6131.05) including the townships, municipalities, or property owners located within the watershed as ditches that could benefit from the future maintenance activities of this petition:

- a. Swan Creek: Lucas County, Fulton County
- b. Ai Creek: Lucas County, Fulton County
- c. Aumend Ditch: Lucas County, Henry County*
- d. Baum Ditch: Lucas County, Fulton County*
- e. Baumberger Ditch: Lucas County; Entire Length
- f. Blair Ditch: Lucas County; Entire Length
- g. Blue Creek : Lucas County, Fulton County*
- h. Blystone Ditch: Lucas County; Entire Length

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- i. Butler Ditch: Lucas County; Entire Length
- j. Cairl Ditch: Lucas County; Entire Length
- k. Drennan Ditch: Lucas County; Entire Length
- l. Dry Creek: Lucas County; Entire Length
- m. E. Jeffers Ditch: Lucas County; Entire Length
- n. Fewless Creek: Lucas County; Entire Length
- o. Gale Run Ditch: Lucas County; Entire Length
- p. Good Ditch: Lucas County; Entire Length
- q. Hall Ditch: Lucas County; Entire Length
- r. Harris Ditch: Lucas County, Henry County*
- s. Heilman Ditch: Lucas County; Entire Length
- t. Keener Ditch: Lucas County; Entire Length
- u. Kujawski Ditch: Lucas County; Entire Length
- v. Marshall Ditch: Lucas County; Entire Length
- w. Muntwiller Ditch: Lucas County; Entire Length
- x. Murbach Ditch: Lucas County; Entire Length
- y. N. Disher Ditch: Lucas County; Entire Length
- z. Neis Ditch: Fulton County, Lucas County*
- aa. Prairie Ditch: Lucas County; Entire Length
- bb. Rakestraw Ditch: Lucas County; Entire Length
- cc. Scherer Ditch: Lucas County; Entire Length
- dd. S. Disher Ditch: Lucas County; Entire Length
- ee. Stone Ditch: Lucas County; Entire Length
- ff. Wiregrass Ditch: Lucas County; Entire Length
- gg. Wolf Creek: Lucas County; Entire Length

Subsequent to the filing of the Petition, the following petitions for amendments have been filed and have been requested to be added to the list of ditches (and as shown on the attached map) presented in Petition #1054 by benefiting owners (as provided in the Ohio Revised Code Section 6131.05) including Townships, Municipalities, or benefitting property owners located within the watershed as ditches that could benefit from the future maintenance activities of Petition #1054:

- a. Buchman Ditch: Lucas County; Entire Length
- b. Ryan Ditch: Lucas County; Entire Length
- c. Morse Ditch: Lucas County; Entire Length
- d. Post Office Ditch: Lucas County; Entire Length
- e. Mollenkopf Ditch: Lucas County; Entire Length
- f. Strayer Road Ditch: Lucas County; Entire Length
- g. Fox Hollow South: Lucas County; Entire Length
- h. Brandywine Ditch: Lucas County; Entire Length
- i. Stonegate Ditch: Lucas County; Entire Length
- j. Holloway Ditch: Lucas County; Entire Length
- k. Stillwater Ditch: Lucas County; Entire Length

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- l. Jos Hains Ditch: Lucas County; Entire Length
- m. Weot Ditch: Lucas County; Entire Length
- n. Matzinger S. Ditch: Lucas County; Entire Length
- o. Harron Ditch: Lucas County; Entire Length
- p. Quarry Ditch: Lucas County; Entire Length
- q. Wood Ditch: Lucas County; Entire Length
- r. Kallagher Ditch: Lucas County; Entire Length
- s. Gruenke Ditch: Lucas County; Entire Length
- t. Corey Ditch: Lucas County; Entire Length
- u. Everett Ditch: Lucas County; Entire Length
- v. Matzinger Ditch: Lucas County; Entire Length
- w. Bucher Ditch: Lucas County; Entire Length
- x. Buchman Ditch: Lucas County; Entire Length
- y. Zaleski Ditch: Lucas County; Entire Length
- z. Buck North Ditch: Lucas County; Entire Length
- aa. Farnsworth Ditch: Lucas County; Entire Length
- bb. Moser Ditch: Lucas County; Entire Length
- cc. Iron Ore Ditch: Lucas County; Entire Length
- dd. Greetham Ditch: Lucas County; Entire Length
- ee. Harding Ditch: Lucas County; Entire Length
- ff. Baldwin Ditch: Lucas County; Entire Length
- gg. Emerick Ditch: Lucas County; Entire Length
- hh. Whitmill Ditch: Lucas County; Entire Length
- ii. Gray Ditch: Lucas County; Entire Length
- jj. Ripka Ditch: Lucas County; Entire Length
- kk. Ruhm Ditch: Lucas County; Entire Length
- ll. Doren Ditch: Lucas County; Entire Length
- mm. Laver Ditch: Lucas County; Entire Length
- nn. Cole Ditch: Lucas County; Entire Length
- oo. Kurtz Ditch: Lucas County; Entire Length
- pp. Jeffers W. Ditch: Lucas County; Entire Length
- qq. Studer Ditch: Lucas County; Entire Length
- rr. Kosch Ditch: Lucas County; Entire Length
- ss. Palmer Ditch: Lucas County; Entire Length

The extent of the Watershed is Illustrated in **Figure 1** below.

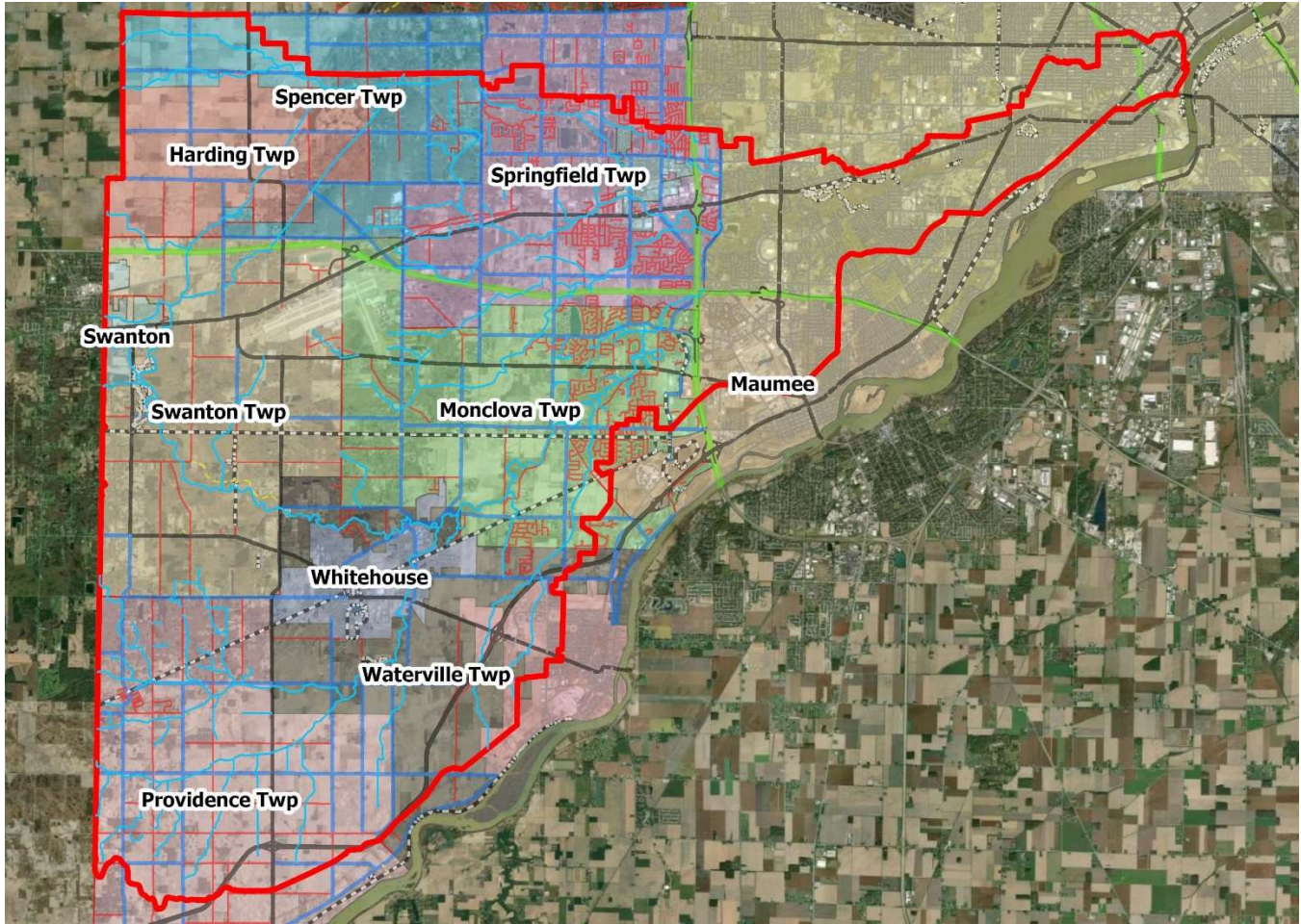


Figure 1 - Swan Creek Watershed

On the dates and locations outlined below, the Joint Board of Fulton, Henry, and Lucas County Commissioners held the View. At the View, the Joint Board, the County Engineers, and/or their Authorized Representatives were present in the watershed to hear proof from benefitting landowners on the existing conditions of the watercourses in the watershed.

View Dates and Locations

Date	Location
June 10, 2021	Oak Openings Metropark, Swanton, OH
July 15, 2021	Whitehouse Village Hall, Whitehouse, OH
August 19, 2021	Monclova Township Park, Monclova, OH
September 15, 2021	Swan Creek Metropark, Toledo, OH

At the First Hearing on December 2, 2021, the Joint Board heard evidence on for or against the granting of the petition and found the petition necessary and granted the petition, as amended.

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At the Final Hearing on August 6, 2024, the Joint Board of Fulton and Lucas County Commissioners, passed Resolution 2024-2FHLC, which removed the extent of Swan Creek, Ai Creek, Fewless Creek, and Neis Ditch within Fulton County from the petition. Furthermore, the Joint Board determined that the landowners in Fulton County derived no appreciable benefit from maintenance of the length of ditches in Lucas County and ordered the assessed benefit for the maintenance base for parcels and rights-of-way in Fulton County to be \$0. The Board ordered the Lucas County Engineer to revise the plan of work and benefit schedules to reflect changes to the extent of the ditches to be placed under petition. The Petition was then converted to a single county ditch petition under the jurisdiction of the Board of Lucas County Commissioners under Section 6131 of the Ohio Revised Code. The Board continued the Final Hearing to July 15, 2025.

A figure showing the original and additional ditches and watercourses included in the single county ditch petition is provided in **Appendix A** of this report.

Background

A watershed is an area of land that drains the rainfall from an area to a common outlet. It is composed of different elements of drainage infrastructure to carry runoff from properties to this outlet. This infrastructure can be manmade, such as underground drainage piping or tile, catch basins, swales, and trapezoidal ditches. It also can be natural in terms of our streams, rivers, groundwater aquifers, and wetlands. All elements of the drainage infrastructure are critical to ensure the waterflow and water quality is maintained. The functionality of the watershed and water quality are impacted by actions, human induced or not, which happen in the watershed.

The Swan Creek watershed has experienced tremendous transformation since the turn of the 20th century which has placed greater strain on this important system of drainage infrastructure. Current common law provides for the landowners to have responsibility for maintenance of these essential elements of drainage infrastructure which are utilized by all upstream landowners and impact all downstream landowners on their own properties. Many landowners either do not have the means and/or the knowledge to maintain elements of a complex infrastructure system. Lack of maintenance or failure of an element in one part of the system results in inoperability or failure in other parts of the system resulting in adverse impacts to the landowners in the community at large, typically through increased flooding, property and infrastructure damage, and reduced water quality.

The Ohio Revised Code Section 6131 provides a method where a benefitting landowner can request the County or Counties of a watershed to consider maintaining the drainage infrastructure in an organized, systematic fashion, realizing that it is difficult for a drainage system to operate properly if only pieces of the system are maintained. For a system to operate effectively, all responsible for its maintenance must do their part. The petition ditch process outlined in the ORC was established over 100 years ago due to the realization that a lack of maintenance by some can negatively impact all. The ditch petition process provides a remedy to ensure our drainage infrastructure can be kept in good working order to the benefit of all

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benefitting landowners. Ohio Revised Code Section 6137 provides for a right of access to petition ditches measuring 25' from the top of bank on one or both sides of the ditch. Section 6137 also provides for a landowner to get credit against assessment if landowners perform their own maintenance activities approved by the Engineer. In addition, Section 6137 provides for a 10' vegetated buffer strip from the top of bank which serves to filter runoff before it enters the ditch and reduces erosion.

Existing Conditions

The Lucas County Engineer’s Office as well as other various offices including Soil and Water Districts, the City of Toledo, and others inspected each of the ditches in 2022 through 2024 to identify potential maintenance issues and determine the function of the drainage system. More specific information is included in the Six-Year Work Plan. Based on the inspections, it is estimated that total of approximately 1 million cubic yards of accumulated sediment is present with an average sediment depth of 1.9 feet for approximately 154 miles of ditch. A summary of the ditch is given below:

Ditch Inspection Grade	# of Ditch Segments	Average Segment Sediment Depth (feet) per Segment	Total Ditch Segment Length (feet) per Inspection Grade	Total Ditch Segment Length (miles) per Inspection Grade	% of Total
A	1	1.00	260	<0.01	0.03%
B	112	1.93	193,405	37	23.86%
C	290	2.02	481,571	91	59.41%
D	61	1.98	135,395	26	16.70%
F	0	0	0	0	0%
Total	464		810,632	154	

Table 1 – Summary of the Swan Creek Ditch Inspection Sediment Data

In addition, the ditch inspection identified a total of 1,438 log jams of various severity with the average of three log jams per segment for the 154 miles of ditches. The table below summarizes the ditch inspection log jam data as well as the grade of inspected ditch segment.

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Ditch Inspection Grade	# of Ditch Segments	Average # of Log Jams per Segment	Percent Blockage (%)	Total Ditch Segment Length (feet) per Inspection Grade	Total Ditch Segment Length (miles) per Inspection Grade	% of Total Length
A	1	1.0	25 to 75%	260	<0.01	0.03%
B	112	1.6	<25 to 75%	193,405	37	23.9%
C	290	3.3	25 to >75%	481,571	91	59.4%
D	61	4.9	25 to >75%	135,395	26	16.7%
F	0	0		0	0	0%
Total	464			810,632	154	

Table 2 – Summary of the Swan Creek Ditch Inspection Log Jam Data

The majority of the log jams appear to be due to the widespread death of Ash Trees from the Emerald Ash Borer. These trees are beginning to rot to the point that branches or the entire tree are beginning to fall into watercourses.

Log jams are a hazard to canoeists and kayakers who use the watercourses for recreation. In addition, significant log jams result in backup flooding upstream impacting adjacent properties as well properties on upstream streams and stormwater infrastructure. Large log jams also significantly erode the streambanks as well as change the direction of the stream resulting in damage to the streambed and adjacent properties.



Significant Log Jam on Swan Creek in Waterville Township near Lial Catholic School (2023)

In smaller tributaries, efficient drainage has been impaired as a result of sedimentation which has reduced the capacity of the drainage infrastructure. Observations have indicated a reduction in the original drainage capacity of as much as 25 to 75% as a result of sedimentation in the watercourses. Reduced capacity in drainage watercourses has caused widespread flooding in areas of the watershed, especially during periods of heavy rainfall.

Alternatives Analysis

Alternative 1: Regular Maintenance of Watercourses

Over the past several decades, property owners and government officials within the watershed have contacted the Engineers regarding the accumulation of debris and poor drainage within streams in the watershed due to a lack of maintenance. Without a ditch petition in place, the Counties have no authority to address and resolve adverse impacts from neglected conditions within the watercourses in the watershed unless there is an imminent danger to life and/or property. Once the issue becomes severe enough to endanger life and property, activities to remove these dangerous conditions are costly, disruptive to adjacent property owners, risk further damage to downstream structures or properties from the removal activities, and place workers in hazardous conditions.

Furthermore, the need for such activities is significantly reduced if proper maintenance was conducted. Over time, proper maintenance is less costly than emergency removal operations. It is the opinion of the Engineer that regular evaluation of ditches within the watershed and implementation of regular maintenance activities in perpetuity would improve the long-term functionality of watercourses within the watershed. Regular maintenance will improve water quality and reduce risk of disruption and property damage.

Furthermore, it is the opinion of the Engineer that portions of the channels and ditches within the Swan Creek Watershed require removal of log jams, minor brushing and sediment removal to allow adequate flow of surplus water. In any case, the channels and ditches will have difficulty maintaining adequate flow in the future without continued maintenance. With perpetual maintenance, it is the opinion of the Engineer benefits will include the following:

- Removal of Log Jams and Dead/Leaning Trees
 - Reduce erosion and sedimentation in watercourses
 - Reduce potential for back-up of water upstream of the log jam and flash flooding downstream of log jam
 - Reduce the potential for land and structural damage from floating logs and debris
 - Improved drainage and functionality of the watercourse and watershed
 - Improved recreational use in larger streams
- Removal of Excess Sedimentation
 - Restores the natural capacity of the channel
 - Reduces damage and disruption due to flooding
 - Improved drainage and functionality of the watercourse and watershed
 - Reduced risk of invasive species establishment
- Implementation of Vegetated Buffer Strip
 - Reduces sedimentation in channel due to erosion
 - Improves water quality

With future maintenance, it is the opinion of the Engineer that drawbacks will include the following:

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- Removal of Log Jams and Dead/Leaning Trees
 - Potential Disruption for Adjacent Property Owners
 - Potential Tree Removal in Areas of Larger Log Jams to Obtain Access
 - Disruption of Habitat
- Removal of Excess Sedimentation
 - Potential Disruption for Adjacent Property Owners
 - Potential Brush Removal/Tree Removal to Obtain Access for Equipment
 - Need to Find Location for Spoil Depending on Quantity and Nature of Property
 - Temporary Disruption of Habitat
- Implementation of Vegetated Buffer Strip
 - Loss of Agricultural Property

The Engineer acknowledges that woody debris and stream bottoms provides valuable habitat for fish, wildlife, and other aquatic organisms and activities are weighed against the benefits provided and the impacts resulting from the activities. Activities for log jam removal and removal of sedimentation must comply with all local, state, and federal laws, rules, and regulations.

Alternative 2: No Maintenance – Leave Existing Conditions

This alternative would result in no maintenance being performed by the Counties. If this alternative is selected, it is the opinion of the Engineer that the conditions currently present in the watershed will continue to worsen, especially as the capacities of the watercourses continue to lose capacity due to sedimentation. Lack of capacity will continue to harm property owners as drainage infrastructure further upstream will lack an available outlet for drainage. Furthermore, failure to remove log jams in the watershed will result in risk to life and property due to small, unaddressed log jams becoming large log jams over time.

Without future maintenance, it is the opinion of the Engineer that benefits will include the following:

- Removal of Log Jams and Dead/Leaning Trees
 - Existing Conditions Maintained – Resulting in No Disruption from Maintenance Activities
- Removal of Excess Sedimentation
 - Existing Conditions Maintained – Resulting in No Disruption from Maintenance Activities
- No Vegetated Buffer Strip
 - Existing Conditions Maintained – Resulting in No Disruption from Maintenance Activities

Without future maintenance, it is the opinion of the Engineer the drawbacks will include the following:

- Removal of Log Jams and Dead/Leaning Trees
 - Increased erosion and sedimentation in watercourses

- Increased potential for back-up of water upstream of the log jam and flash flooding downstream of log jam
- Increased potential for land and structural damage from floating logs and debris
- Reduced drainage and functionality of the watercourse and watershed
- Reduced recreational use in larger streams
- Increased risk of litigation for property owners who do not maintain watercourses on their property
- Removal of Excess Sedimentation
 - Impedes the natural capacity of the channel
 - Increased damage and disruption due to flooding
 - Reduced drainage and functionality of the watercourse and watershed
 - Increased risk of invasive species establishment
 - Increased risk of litigation for property owners who do not maintain watercourses on their property
- No Vegetated Buffer Strip
 - Increased sedimentation of streams
 - Reduced Water Quality

Maintenance Base

The value of the maintenance base is supposed to approximate the value of adequate drainage to the benefitting properties and should approximate the cost of constructing the improvements. The cost of the improvements is based on a cost per lineal foot of conveyance of \$230 resulting in a total maintenance base of \$267,379,885.

The total maintenance base is then partitioned between the benefitting landowners by a series of calculations to approximate several factors to be considered under the Ohio Revised Code, including approximating runoff from each parcel based on soil type, use (residential, agriculture, industrial, etc.), and acreage. A usage factor is applied based on the length of ditch being utilized by the property, as well as an elevation and remoteness factor, as those who live at lower elevations and closer to the ditch benefit from a lower risk of flooding those at higher elevations and farther away from the ditch.

Benefit to the Watershed

Benefits will include increased crop production in terms of cultivated area within the 100-year floodplain. In addition, having a maintained stream will enable tiled drainage to work property and will prevent flooding and overwatering of root structures, mitigating the risk of crop loss due to excess water.

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Cultivated Land within 100-year floodplain in watershed – 2,413 Acres
Estimated Increased Crop Production and Land Value per Acre - \$171/Acre
Total Probable Annual Benefit from Increased Agricultural Production = \$412,623/year
Total Benefit over 30 years – \$12,378,690

In addition, there is a benefit from the reduced risk of damage to structures and property due to a reduced flooding risk from restoration of stream capacity, removal of log jams, and continued maintenance. The U.S. Army Corps of Engineers estimates that projects to reduce flood risk result in \$12.26 in potential damages saved for every \$1 spent toward projects such as this one. According to the FEMA Benefit Cost Calculator, benefits from a reduction in flood elevation by one foot due to removal of sediment from ditches results in an approximate benefit of approximately \$50,000 per property in the 100-year flood plain over a 30-year period.

Number of Properties in 100-year Floodplain in watershed – 4,815
Approximate Benefit Per Property - \$50,000 over 30-year period
Total Benefit for Watershed due to Reduced Risk of Flooding over 30 years - \$240,750,000

Total Benefit to Watershed over a 30-year period - \$253,128,690

Total Cost of Project – Six Year Work Plan - $\$2,678,190 \times 6 = \$16,691,148$
Total Cost of Maintenance for Years Six through Twelve - $\$400,000 \times 6 = \$2,500,000$
Total Cost of Maintenance Years 13 through 30 - \$2,600,000

Total Project Cost for 30 Year Plan = \$21,169,148

30-Year Benefit to Cost Ratio = 11.3

Recommendation

It is the opinion of the Engineer that the watercourses within the Swan Creek Watershed should be placed on permanent maintenance. Maintenance activities will include regular removal of log jams and dead/leaning trees and have sediment and/or debris removed as necessary. A six-year work plan has been prepared outlining maintenance work to be performed under separate cover and shall be revised yearly based on information gained during the annual field inspections. As required by Section 6137 of the Ohio Revised Code, the Engineer will inspect the watercourses placed under petition maintenance on a yearly basis. Based on the six-year work plan, it is proposed to perform at this time, it is the opinion of the Engineer that the estimated cost of maintenance activities to be approximately \$2,678,190 during the first two years, with a similar amount of work to be performed annually. Based on our initial inspection, it is believed that initial maintenance activities to rectify the issues associated with deferred maintenance could take as much as 12 to 15 years to complete until a regular maintenance schedule is established.

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It is the opinion of the Engineer that the proposed project is feasible, that it is conducive to the public welfare, that there is a sufficient outlet, and that the benefits exceed the cost.

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Lucas County Engineer

Appendix A

Swan Creek Petition Ditches

