

**Final Report
Davis #240 Watershed
Drainage Improvement Petition
per Ohio Revised Code Sec. 6131
June 3, 2026**

This report has been prepared for the Final Hearing on a drainage improvement petition filed by Bret Davis and others on February 18, 2020. The original petition was signed by 9 individuals representing 16 of the 103 parcels in the watershed.

The general location and course of the requested improvements are quoted from the petition as follows:

"In Delaware County, Troy Township, within the Davis #240 watershed and generally following, but not limited to, the course and termini of existing improvements."

The following is the nature of the work petitioned:

"To generally improve the drainage, both surface and subsurface, to a good and sufficient outlet, by replacing, repairing or altering the existing improvements as required and/or creating new surface and subsurface drainage mains or laterals as requested, by this petition."

The Davis #240 watershed is approximately 809 acres. The watershed is 66% agricultural, 22% rural residential, 8% woods, and 4% road right-of-way and commercial.

Petition Process

This petition has been submitted according to Ohio Revised Code Section 6131 which authorizes the Board of County Commissioners to act on behalf of benefited property owners to make drainage improvements. If the Commissioners decide to proceed with a project, the costs related to the improvements are collected via special assessment to the landowners in the watershed according to the benefit received. The construction assessments would be placed on the property tax bills of the benefited landowners and can be spread over a maximum of 15 years with 30 semi-annual installments depending on the method of payment chosen by the Commissioners. Additionally, the improvements will be placed on the county drainage maintenance program per Ohio Revised Code Section 6137 with maintenance funds being collected semiannually similar to the original construction costs. These annual maintenance assessments are generally 2 to 5 percent of the construction assessment.

It should be noted that property owners are only assessed for those improvements that are located downstream from their properties. No property is assessed for improvements located “upstream” of a given parcel. In addition, units of government that hold rights-of-way for public roads are assessed for both construction and maintenance costs in the same manner as private property owners.

The decision to approve a petition is a 3-step process involving a viewing, an initial, or first, hearing, and a second, or final, hearing. A viewing of the proposed improvements was conducted on August 17, 2020, by drone video to provide the Commissioners the opportunity familiarize themselves with the location and condition of the existing improvements. Next, the first hearing was held on September 3, 2020. At the first hearing, the Commissioners found in favor of the petition. They requested the Delaware County Engineer and the Delaware Soil and Water Conservation District to proceed in the development of engineering plans and specifications and the schedule of assessments. It is this information that is before the Board of Commissioners for consideration at this second and final hearing.

Project Scope

The proposed project has been divided into sections to better reflect the areas and costs as well as the request of the petition. These sections, described in detail below, are Main Section #1, Main Section #2, Lateral #1, and Lateral #2.

Main Section #1 begins on the William D. Walters parcel on the east side of Troy Road approximately 2,250 feet downstream of the road culvert and extends upstream to the west and north approximately 4,400 feet to the junction with Lateral #1. The primary items of work will include open channel restoration, the installation of erosion control measures, surface drain shaping and grading, the replacement of existing subsurface drain pipe, the installation of private drive culverts, and clearing and snagging. All disturbed areas will be returned to their preconstruction condition or seeded and mulched.

Main 2 will begin at the upstream terminus of Main Section #1 and extend upstream to the north approximately 8,950 feet to meet the request of the petition. The primary items of work will include surface drain shaping and grading, the replacement of existing subsurface drain pipe, the installation of new subsurface drain pipe, the installation of private drive culverts, and clearing and snagging. All disturbed areas will be returned to their preconstruction condition or seeded and mulched.

Lateral #1 will begin approximately 1,000 feet north of Buttermilk-Hill Road at the junction with the Main and extend upstream to the south to meet the request of the petition. The primary items of work will include surface drain shaping and grading, the replacement of existing subsurface drain pipe, the installation of new subsurface drain pipe, the installation of private drive culverts, and clearing and snagging. All disturbed areas will be returned to their preconstruction condition or seeded and mulched.

Lateral #2 will begin approximately 650 feet west of Troy Road at the junction with the Main and extend upstream to meet the request of the petition. The primary item of work is the installation of new subsurface drain pipe. All disturbed areas will be returned to their preconstruction condition or seeded and mulched.

Project Estimate

Main Section #1

Construction	\$ 322,717.40
Administration, Planning and Inspection	\$ 6,956.48
1 st Year Drainage Maintenance	\$ 16,483.69
Contingency	\$ 15,000.00
TOTAL ESTIMATED COST:	\$ 361,157.57

Main Section #2

Construction	\$ 552,530.64
Administration, Planning and Inspection	\$ 10,985.60
1 st Year Drainage Maintenance	\$ 28,175.81
Contingency	\$ 25,000.00
TOTAL ESTIMATED COST:	\$ 616,692.05

Lateral #1

Construction	\$ 78,995.14
Administration, Planning and Inspection	\$ 3,343.04
1 st Year Drainage Maintenance	\$ 4,116.91
Contingency	\$ 10,000.00
TOTAL ESTIMATED COST:	\$ 96,455.09

Lateral #2

Construction	\$ 21,893.66
Administration, Planning and Inspection	\$ 1,252.92
1 st Year Drainage Maintenance	\$ 1,157.33
Contingency	\$ 2,500.00
TOTAL ESTIMATED COST:	\$ 26,803.91

TOTAL PROJECT ESTIMATED COST: \$ 1,101,108.62

Calculation of Assessments

The Ohio Revised Code instructs the County Engineer to calculate the assessments to individual property owners based on the benefits received from the improvements for the various properties in the watershed. The ORC further defines benefited land as:

“Lands that have been removed from their natural state by deforestation, cultivation, artificial drainage, urban development, or other manmade causes shall be considered as benefited by an improvement required to dispose of the accelerated flow of water from the uplands.”

Assessments to individual parcels have been calculated using the following formula, a rationale that is widely used throughout the state of Ohio.

$$(\text{Acres Benefited}) \times (\text{Land Use Factor}) \times (\text{Percent of Improvement Used}) \times (\text{Remote Factor}) = (\text{Individual Parcel Assessment Factor})$$

Each parcel's assessment is then determined by:

$$(\text{Individual Parcel Assessment Factor}) / (\text{Total of all Individual Assessment Factors}) \times (\text{Total Construction Cost}) = (\text{Parcel Assessment})$$

Explanation of Factors:

- **Acres Benefited**
Total number of acres within a given parcel that contribute drainage to the improvement.
- **Land Use Factor**
The relative benefit to parcels of drainage based on the amount of increased storm water runoff resulting from the land use of the parcel.
- **Percent of Improvement used**
The point at which drainage from a given parcel enters the improvement. Parcels are only assessed for the portion of the improvement that lies downstream of the parcel.
- **Remote Factor**
The remote factor is based upon a parcel's distance from the improved section of the drainage course and is typically established in ½ mile increments. Parcels that are most “remote” from the actual improvement receive the greatest reduction on their assessment.

Benefits versus Cost

One of the primary factors set forth for consideration in the approval or dismissal of a petition request is the actual benefit of the proposed improvements to the watershed in question. The following analysis examines this factor from the standpoint of land productivity for the agricultural acres as well as the value of drainage to residential parcels.

A publication by The Ohio State University Extension titled “Returns to Farm Drainage” details several studies, conducted by Ohio State researchers, on the effects of drainage on crop yields. The studies show that fields with good drainage will produce higher yields than fields that have poor drainage. A recently completed 25-year study showed that subsurface drainage increased corn yields by 24%-39%, and increased soybean yields by 13%-46%. This produces average yield increases of 31% and 29% respectively. The benefits of drainage will thus equal this increased yield multiplied by the market price.

Overall, approximately 533 acres of the 809-acre watershed is agricultural land. The 2024 through 2020 average market price for corn and soybeans in Ohio, as reported by the USDA National Agricultural Statistics Service is \$5.16 per bushel for corn and \$12.73 per bushel for soybeans. The average estimated yield increases for the soil types present in the watershed, given appropriate drainage improvements are in place, equal 46 bushels per acre for corn and 14 bushels per acre for soybeans.

Crop production benefit examples:

For this example, we will assume that cropland acres are distributed equally between corn and soybeans.

- 533 acres of agricultural land
- Corn:
(46 Bushel per acre increase in yield) X (\$5.16 per bushel) X (533 acres) = \$126,512.88 increase annually.
- Soybeans:
(14 Bushel per acre increase in yield) X (\$12.73 per Bushel) X (533 acres) = \$94,991.26 increase annually.
- Average annual benefit = \$110,752.07
- Potential 20-year return = \$2,215,041.40

While this example does not take into consideration individual farm management practices, it does illustrate the fact that good agricultural drainage is a key factor in farm profitability and would reflect positively when considering a cost/benefit analysis for the watershed. It is also reasonable to view potential annual benefits as potential losses should any existing drainage improvements cease to function due to the degraded condition of the outlet.

The increased value or benefit for residential parcels is typically found in two ways: the increased marketability of the home and functionality of the home sewage treatment system and associated drainage needs. An inadequate subsurface drainage outlet can dramatically deteriorate the condition of household sewage treatment systems potentially limiting the value of the home for resale. Locally, the cost to construct an alternate sewage treatment system, should the existing system fail, ranges from \$15,000 to \$25,000 on average. Other benefits that are commonly perceived as a result of rural residential drainage improvements focus on quality of life and positive neighborhood perception. Watersheds that have planned and maintained drainage infrastructures generally have higher resale values than those communities that are known to have a history of drainage problems.

Approximately 176 acres of the land use in the watershed is residential in nature, and there are 69 residential properties. When evaluating the cost of providing adequate drainage outlets for residential properties, we find that for new construction, developers or homebuilders spend on average \$8,700 per lot to attain adequate drainage infrastructure within a development. Given this consideration, the residential benefits to the watershed can be considered as follows:

- 69 residential parcels X \$8,700 = \$600,300 average benefit

For roadway drainage, the lack of an adequate drainage outlet can lead to standing water on the roadway surface resulting in traffic safety hazards as well as degradation of the roadway base and increased maintenance of the roadway surface.

The benefits to this proposed project will be realized well beyond the construction repayment term. As previously stated, the construction assessments would be placed on the property tax bills of the benefited landowners and can be spread over a maximum of 15 years. Alternatively, assessments can be paid in full within 30 days after the close of the final hearing without paying interest. The long-term benefits will be realized by virtue of this project being placed on the County Drainage Maintenance Program in perpetuity per Ohio Revised Code Section 6137. Rev. Code 6137 requires maintenance funds to be collected semi-annually similar to the construction costs. These maintenance funds are applied to the annual inspection and maintenance of this specific project.

Decisions

A decision on Main Section #1 can be made independent of any other part of the project. Approval of Main Section #2 and Lateral #1 can be made independent of each other however both require approval of Main Section #1. Approval of Lateral #2 requires approval of Main Section #1 and Main Section #2. A denial of Main Section #1 will necessitate the denial of all remaining part of the project. A denial of Main Section #2 will necessitate the denial of Lateral #2.

Recommendations

Based on all of the information gathered and generated, I believe this project as proposed is technically feasible and would serve as an adequate outlet for the drainage needs of the watershed. Furthermore, the parcel assessments for this project are within the range of assessments that can be expected for a project of this scope. The testimony brought to the Board of Commissioners by the landowners as to whether the benefits of this project exceed the costs, should be given significant consideration in the decision to move forward with this project.

A resolution affirming the order to proceed for each section, confirming the schedule of assessments, and ordering the project to be advertised for competitive bid, per Section 6131 of the O.R.C., will be necessary. The resolution by the Board of Commissioners shall also determine how long a period of time, in semi-annual installments, as taxes are paid, shall be given the owners of land benefited to pay the construction assessments.

If the Board of Commissioners chooses to dismiss the Petition in whole or in part, I would recommend a resolution reflecting that decision, and that the costs for the proceedings, including the costs incurred by the Board of Commissioners, the County Engineer and the Delaware Soil and Water Conservation District in making surveys, plans, reports and schedules be distributed to the benefiting landowners in the same ratio as determined in the final estimated assessments presented at this hearing. This amount is estimated at \$11,000.

Prepared by,

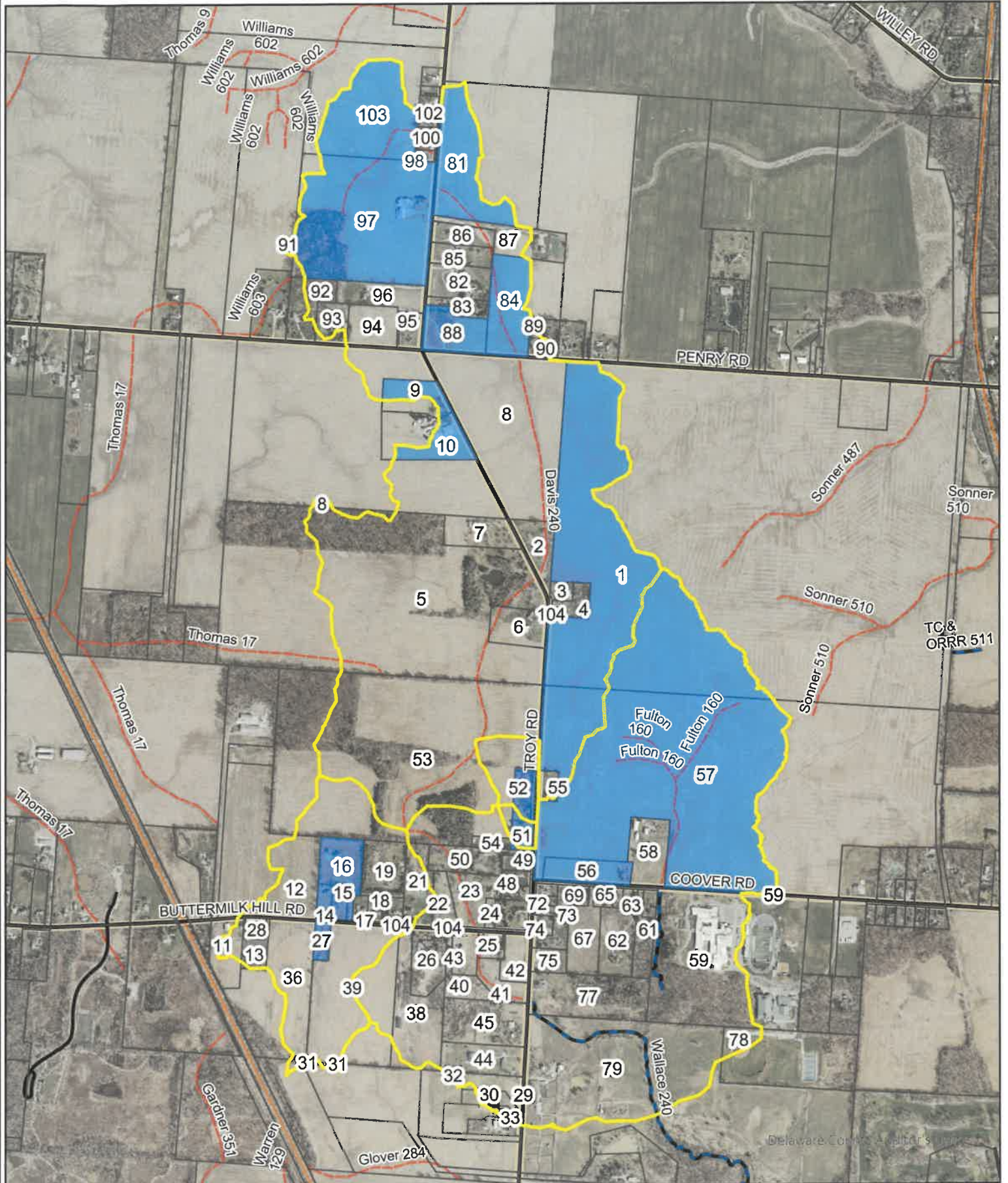


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Note: The Delaware SWCD makes no guarantee or warranty as to the accuracy of the information on this map.

