

**Final Report
Norris Run Watershed
Drainage Improvement Petition
per Ohio Revised Code Sec. 6131
October 19, 2022**

This report has been prepared for the final hearing on a drainage improvement petition filed by Mark A. James and LaDonna D. James and others on December 8, 2016. The original petition has been signed by 8 individuals representing 44 of the 126 parcels in the watershed.

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

"In Delaware County, Radnor and Troy Township, within the Norris Run Full Watershed and generally following, but not limited to the course and termini of the existing improvements. Additional laterals by the name of Prugh Main 517, Hadley Main (534) 109, Price Main 179, Shaw Main 13, Lewis Main 130, Miller 538, Klee 13, and Wilson Main 87.

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 Norris Run watershed is approximately 2,571 acres. The watershed is 90% agricultural, 5% rural residential, 3% woods, and 2% road right-of-way.

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 March 6, 2017 by the Commissioners to familiarize themselves with the location and condition of the existing improvements. Next, the first hearing was held on May 18, 2017. 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 as follows: Norris Run Main, Prugh #517 Main an, Hadley #109, Price #179, Lewis #130, and Wilson #87 Main and Lateral.

The Norris Run Main will begin at the intersection of the Norris Run open channel and Troutman Road and extending upstream to the intersection of the Prugh #517, Hadley #109, and Price #179. The primary items of work will consist of logjam and debris removal, open channel restoration, new open channel construction, surface drain shaping and grading, subsurface drain installation, and the construction of grade stabilization structures. All disturbed areas will be returned to their preconstruction condition or seeded and mulched.

The Prugh #517 will begin at the junction with the Norris Run Main and extend upstream crossing N. Sectionline Road to meet the request of the petition. This lateral has been further subdivided into a downstream part and an upstream part, Section 1 and Section 2 respectively, to better represent distinct areas of work. Section 1 will begin at the junction with the Main and extend upstream to the James/Myrmidon Farms property line. Section 2 will begin at the terminus of Section 1 and extend to the Thomas property on the west side of N. Sectionline Road. The primary items of work will consist of brush and vegetation removal, surface drain shaping and grading, and subsurface drain installation. All disturbed areas will be returned to their preconstruction condition or seeded and mulched.

The Hadley #109 will begin at the junction with the Norris Run Main and extend upstream to meet the request of the petition. The primary items of work will consist of surface drain shaping and grading and subsurface drain installation. All disturbed areas will be returned to their preconstruction condition or seeded and mulched.

The Price #179 will begin at the junction with the Norris Run Main and extend upstream to meet the request of the petition. The primary items of work will consist of surface drain shaping and grading and subsurface drain installation. All disturbed areas will be returned to their preconstruction condition or seeded and mulched.

The Lewis #130 will begin at the junction with the Thomas #2004 Drainage Maintenance Project and extend upstream to meet the request of the petition. The primary items of work will consist of surface drain shaping and grading and subsurface drain installation. All disturbed areas will be returned to their preconstruction condition or seeded and mulched.

The Wilson #87 will begin at the junction with the Norris Run Main open channel approximately 315 feet east of Miller Road and extend upstream crossing Radnor Road to meet the request of the petition. The primary items of work will consist of surface drain shaping and grading, subsurface drain installation, and the construction of a grade stabilization structure. All disturbed areas will be returned to their preconstruction condition or seeded and mulched.

Project Estimate

The individual project cost estimates contain amounts for damages to be paid for agricultural ground area to be used for the proposed construction corridor. Damages have been estimated at \$500 per acre for the area on each parcel to be used for construction.

Norris Run Main

Construction	\$ 240,884.65
Administration, Planning and Inspection	\$ 15,665.41
Estimated Damages	\$ 7,274.50
Drainage Maintenance Pay-in	\$ 12,827.50
Contingency	\$ 38,482.51
TOTAL ESTIMATED COST:	\$ 315,134.57

Prugh #517 Section 1

Construction	\$ 300,055.60
Construction Layout & Supervision	\$ 2,000.00
Estimated Damages	\$ 5,172.00
Drainage Maintenance Pay-in	\$ 15,102.78
Contingency	\$ 45,308.34
TOTAL ESTIMATED COST:	\$ 367,638.72

Prugh #517 Section 2

Construction	\$ 61,202.70
Construction Layout & Supervision	\$ 1,000.00
Estimated Damages	\$ 1,857.50
Drainage Maintenance Pay-in	\$ 3,110.14
Contingency	\$ 9,330.40
TOTAL ESTIMATED COST:	\$ 76,500.74

NOTES:

- The estimated total cost includes \$10,380 to be direct assessed to Marlboro Township and \$10,380 to be direct assessed to Radnor Township for work directly benefitting the N. Sectionline Road right-of-way. The total remaining amount to be assessed to the watershed is \$55,740.74.

Hadley #109

Construction	\$ 152,496.07
Construction Layout & Supervision	\$ 2,000.00
Estimated Damages	\$ 6,849.00
Drainage Maintenance Pay-in	\$ 7,724.80
Contingency	\$ 23,174.41
TOTAL ESTIMATED COST:	\$ 192,244.28

Price #179

Construction	\$ 87,174.60
Construction Layout & Supervision	\$ 2,000.00
Estimated Damages	\$ 4,087.00
Drainage Maintenance Pay-in	\$ 4,458.73
Contingency	\$ 13,376.19
TOTAL ESTIMATED COST:	\$ 111,096.52

Lewis #130

Construction	\$ 89,918.06
Construction Layout & Supervision	\$ 2,000.00
Estimated Damages	\$ 3,355.00
Drainage Maintenance Pay-in	\$ 4,595.90
Contingency	\$ 13,787.71
TOTAL ESTIMATED COST:	\$ 113,656.67

Wilson #87 Main

Construction	\$ 268,425.50
Construction Layout & Supervision	\$ 3,000.00
Estimated Damages	\$ 7,700.50
Drainage Maintenance Pay-in	\$ 13,571.28
Contingency	\$ 40,713.82
TOTAL ESTIMATED COST:	\$ 333,411.10

NOTES:

- The estimated total cost includes \$7,200 to be direct assessed to Delaware County for work directly benefitting the Radnor Road right-of-way. The total remaining amount to be assessed to the watershed is \$326,211.10.

Wilson #87 Lateral

Construction	\$ 42,906.74
Construction Layout & Supervision	\$ 1,500.00
Estimated Damages	\$ 1,508.50
Drainage Maintenance Pay-in	\$ 2,220.34
Contingency	\$ 6,661.01
TOTAL ESTIMATED COST:	\$ 54,796.59

TOTAL PROJECT ESTIMATED COST: \$1,564,479.19

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.

(Acres Benefited) X (Land Use Factor) X (Percent of Improvement Used) X (Remote Factor) =
(Individual Parcel Assessment Factor)

Each parcel's assessment is then determined by:

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

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. No remote factor has been applied for this project.

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 2,321 acres of the 2,571-acre watershed is agricultural land. The 2021 through 2017 average market price for corn and soybeans in Ohio, as reported by the USDA National Agricultural Statistics Service is \$4.28 per bushel for corn and \$10.35 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.

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

Crop production benefit examples:

Norris Run Main

- 2,321 acres of agricultural land
- Corn:
(46 Bushel per acre increase in yield) X (\$4.28 per bushel) X (2,321 acres) = \$456,958.48 increase annually.
- Soybeans:
(14 Bushel per acre increase in yield) X (\$10.35 per Bushel) X (2,321 acres) = \$336,312.90 increase annually.
- Average annual benefit = \$396,635.69
- Potential 20-year return = \$7,932,713.80

Prugh #517 Section 1

- 296 acres of agricultural land
- Corn:
(46 Bushel per acre increase in yield) X (\$4.28 per bushel) X (296 acres) = \$58,276.48 increase annually.
- Soybeans:
(14 Bushel per acre increase in yield) X (\$10.35 per Bushel) X (296 acres) = \$42,890.40 increase annually.
- Average annual benefit = \$50,583.44
- Potential 20-year return = \$1,011,668.80

Prugh #517 Section 2

- 143 acres of agricultural land
- Corn:
(46 Bushel per acre increase in yield) X (\$4.28 per bushel) X (143 acres) = \$28,153.84 increase annually.
- Soybeans:
(14 Bushel per acre increase in yield) X (\$10.35 per Bushel) X (143 acres) = \$20,720.70 increase annually.
- Average annual benefit = \$24,437.27
- Potential 20-year return = \$488,745.40

Hadley #109

- 166 acres of agricultural land
- Corn:
(46 Bushel per acre increase in yield) X (\$4.28 per bushel) X (166 acres) = \$32,682.08
increase annually.
- Soybeans:
(14 Bushel per acre increase in yield) X (\$10.35 per Bushel) X (166 acres) = \$24,053.40
increase annually.
- Average annual benefit = \$28,367.74
- Potential 20-year return = \$567,354.80

Price #179

- 171 acres of agricultural land
- Corn:
(46 Bushel per acre increase in yield) X (\$4.28 per bushel) X (171 acres) = \$33,666.48
increase annually.
- Soybeans:
(14 Bushel per acre increase in yield) X (\$10.35 per Bushel) X (171 acres) = \$24,777.90
increase annually.
- Average annual benefit = \$29,222.19
- Potential 20-year return = \$584,443.80

Lewis #130

- 89 acres of agricultural land
- Corn:
(46 Bushel per acre increase in yield) X (\$4.28 per bushel) X (89 acres) = \$17,522.32
increase annually.
- Soybeans:
(14 Bushel per acre increase in yield) X (\$10.35 per Bushel) X (89 acres) = \$12,896.10
increase annually.
- Average annual benefit = \$15,209.21
- Potential 20-year return = \$304,184.20

Wilson #87 Main

- 517 acres of agricultural land
- Corn:
(46 Bushel per acre increase in yield) X (\$4.28 per bushel) X (517 acres) = \$101,786.96
increase annually.
- Soybeans:
(14 Bushel per acre increase in yield) X (\$10.35 per Bushel) X (517 acres) = \$74,913.30
increase annually.
- Average annual benefit = \$88,350.13
- Potential 20-year return = \$1,767,002.60

Wilson #87 Lateral

- 204 acres of agricultural land
- Corn:
(46 Bushel per acre increase in yield) X (\$4.28 per bushel) X (204 acres) = \$40,163.52 increase annually.
- Soybeans:
(14 Bushel per acre increase in yield) X (\$10.35 per Bushel) X (204 acres) = \$29,559.60 increase annually.
- Average annual benefit = \$34,861.56
- Potential 20-year return = \$697,231.20

While these examples do not take into consideration individual farm management practices, they do 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 individual sections of this project as well as the project as a whole.

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 suburban 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 135 acres of the land use in the watershed is residential in nature. 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. With 42 residential parcels in the watershed, the potential average benefit is \$365,400 at minimum. While this analysis does not consider many potential variables, it could aid in the decision-making process

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. O.R.C. 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 the Wilson #87 Main and Lateral and a decision on the Norris Run Main and other associated sections can be made independently of each other.

Approval of the Wilson #87 Lateral is contingent upon approval of the Wilson #87 Main. A denial of the Wilson #87 Main will necessitate denial of the Lateral.

A decision on the Lewis #130 can be made independently of any other portion of the project.

Approvals of the Prugh #517 Section 1 and Section 2, Hadley #109, and Price #179 are all contingent upon approval of the Norris Run Main. Denial of the Norris Run Main will necessitate denial of the Prugh #517 Section 1 and Section 2, Hadley #109, and Price #179.

Decisions on the Prugh #517 Section 1 and Section 2, Hadley #109, and Price #179 can be made independent of each other. A denial of one of these sections does not necessitate denial of either of the remaining sections.

Approval of the Prugh #517 Section 2 is contingent upon approval of the Prugh #517 Section 1. A denial of the Prugh #517 Section 1 will necessitate denial of Section 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 \$15,000.

Prepared by,

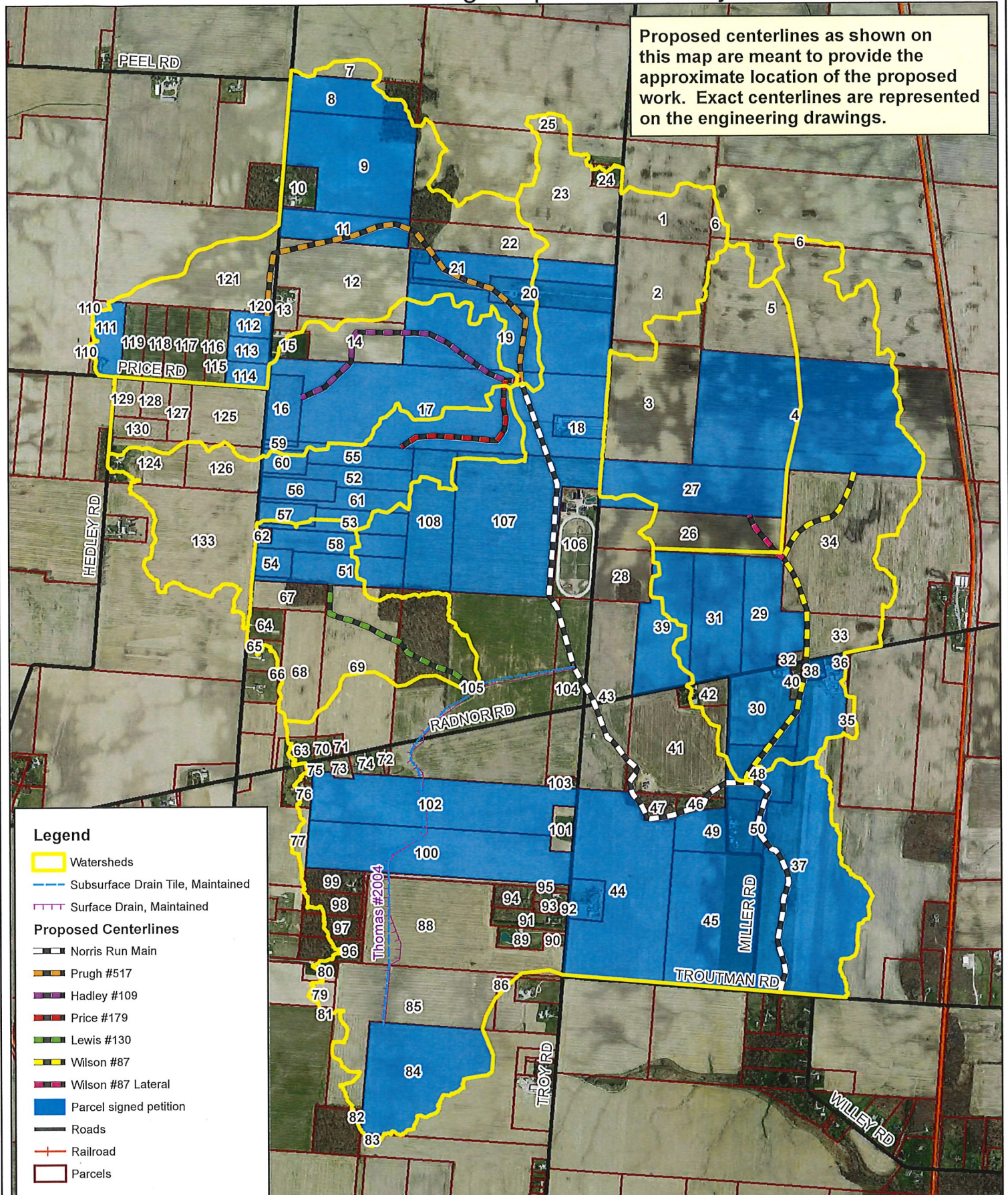
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Bret Bacon
Deputy Administrator
Resource Conservation Program Coordinator
Delaware Soil and Water Conservation District

Approved by,

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Chris Bauserman P.E., P.S.
Delaware County Engineer



Delaware Soil & Water Conservation District
557 Sunbury Rd. Suite A
Delaware, OH 43015
(740) 368-1921 dswcd@delawareswcd.org
soilandwater.co.delaware.oh.us



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Note:
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