

**Final Report
English #346 Watershed
Drainage Improvement Petition
per Ohio Revised Code Sec. 6131
September 21, 2021**

This report has been prepared for the final hearing on a drainage improvement petition filed by Christopher A. and Nicki L. Acker and others on May 16, 2018. The petition has been signed by 9 individuals representing 12 of the 43 parcels in the watershed. Additionally, an amendment was filed by Ross Carlson requesting a good and sufficient outlet for 4 additional parcels. This amendment was accepted by the Commissioners on August 23, 2018. The general location and course of the requested improvements is quoted from the petition as follows:

“In Delaware County, Brown & Berlin Twps within English 346 watershed and generally following, but not limited to the course and termini of the existing improvement.”

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 English #346 watershed is 438.921 acres. The watershed is 46% agricultural land, 3% rural residential, 1% woods, and 50% commercial, industrial, and road right-of-way.

Petition Process

This petition has been submitted according to Ohio Revised Code Sec. 6131 which authorizes the Board of County Commissioners to act on behalf of benefited property owners to make drainage improvements. If the Board of Commissioners decides 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 semiannual installments depending on the method of payment chosen by the Board. Additionally, the improvements will be placed on the Delaware County Drainage Maintenance Program in perpetuity, per Ohio Revised Code Sec. 6137, with maintenance funds being collected semiannually similar to the original construction costs. These annual maintenance assessments are generally 2% to 5% 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 via drone video by the Board of Commissioners on August 13, 2018 to familiarize themselves with the location and condition of the existing improvements. Next, the first hearing was held on November 1, 2018. At this first hearing, the Board 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 for consideration at this second and final hearing.

Project Scope

The proposed project has been divided into four distinct parts: Main, Lateral A West, Lateral A East, and Lateral B. The Main is proposed to commence on the north side at the outlet of the road culvert and extend downstream to the junction with the O’Brien #440 (#1103) drainage maintenance project. Lateral A West is proposed to commence at the junction with the Main approximately 300 feet north of Sunbury Road and extend upstream to the junction with the New Beginnings UMC drainage maintenance project #1515. Lateral A East is proposed to commence at the upstream side of the New Beginnings UMC drainage maintenance project and extend upstream through the CSX railroad to the Doug Dawson property. Lateral B is proposed to commence at a catch basin on the Davidson property on the south side of Sunbury Road and east of Davidson Lane and extend upstream to a connection point with the existing English #346 main tile.

The primary items of work for each part are as follows:

Main

- Open channel reconstruction
- Rock lined channel
- Clearing of brush and vegetation

Lateral A West

- Subsurface drain tile installation
- Grade stabilization structure
- Fence gate installations

Lateral A East

- Surface drain shaping and grading
- Tile breather installations
- Subsurface drain installation

Lateral B

- Subsurface drain installation
- Tile breather installations
- Clearing of brush and vegetation

All disturbed areas will be returned to their pre-construction condition or seeded and mulched.

Project Estimate – Main

Construction	\$ 15,950.00
Administration, Planning and Inspection	\$ 6,779.54
Drainage Maintenance Startup (5%)	\$ 1,086.48
<u>Contingency (15%)</u>	<u>\$ 3,259.43</u>
TOTAL ESTIMATED COST:	\$ 27,075.45

Project Estimate – Lateral A West

Construction	\$ 30,332.40
Administration, Planning and Inspection	\$ 2,500.00
Drainage Maintenance Startup (5%)	\$ 1,641.62
<u>Contingency (15%)</u>	<u>\$ 4,924.86</u>
TOTAL ESTIMATED COST:	\$ 39,398.88

Project Estimate – Lateral A East

Construction	\$ 14,573.00
Administration, Planning and Inspection	\$ 500.00
Drainage Maintenance Startup (5%)	\$ 1,398.25
<u>Contingency (15%)</u>	<u>\$ 2,260.95</u>
TOTAL ESTIMATED COST:	\$ 18,732.20

NOTE: Approximately 1,100 feet of existing 10” subsurface drain on Lateral A East is proposed to be accepted in its existing condition with no construction necessary. The current value of this subsurface drain is estimated at \$12,892.00. The total estimated value of Lateral A East including this amount is \$31,624.20. The 5% Drainage Maintenance Startup above is calculated using this amount.

Project Estimate – Lateral B

Construction	\$ 31,906.60
Administration, Planning and Inspection	\$ 1,500.00
Drainage Maintenance Startup (5%)	\$ 1,670.33
Contingency (15%)	\$ 5,010.99
TOTAL ESTIMATED COST:	\$ 40,087.92
TOTAL PROJECT ESTIMATED CONSTRUCTION COST:	\$ 125,294.45
TOTAL ESTIMATED DRAINAGE MAINTENANCE BASE VALUE:	\$ 138,186.45

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 Ohio Revised Code 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:

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

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.
- **Remote Factor**
The remote factors are 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.

Approximately 200 acres of the 439-acre watershed is agricultural land. The 2020 through 2016 average market price for corn and soybeans in Ohio, as reported by the USDA National Agricultural Statistics Service is \$3.73 per bushel for corn and \$9.30 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:

- Corn
(46 Bushel per acre increase in yield) X (\$3.73 per bushel) X (200 acres) = \$34,316 increase annually.
- Soybeans
(14 Bushel per acre increase in yield) X (\$9.30 per Bushel) X (200 acres) = \$26,040 increase annually.

For this example, we will assume that cropland acres are distributed equally between corn and soybeans, for a potential average annual increase of \$30,178. If this potential annual return is multiplied over a 20-year period, the benefit equals \$603,560.

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 this project.

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.

When evaluating the cost of providing adequate drainage outlets for residential properties, we find that for new construction, developers or homebuilders spend between \$1,000 and \$3,000 per lot to attain adequate drainage infrastructure within a development. With 8 residential parcels currently in the watershed, the potential average benefit is between \$8,000 and \$24,000 at minimum. Additionally, it would be reasonable to consider the benefit of improved drainage to the commercial and industrial properties in the watershed as well as the road rights-of-way. Approximately 50% of the English #346 watershed is commercial and industrial land and road rights-of-way. The English #346 drainage infrastructure serves as the outlet for all of the stormwater systems benefitting these properties. 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 Sec. 6137., which 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.

Recommendations

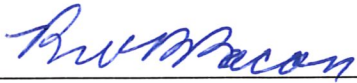
A decision to move forward with the Main and Lateral B can be made independent of any other parts of the project. A decision to approve Lateral A West and Lateral A East is contingent upon approval of the Main. A decision to approve Lateral A East is contingent upon approval of Lateral A West. A decision to deny the Main will necessitate denial of both Lateral A West and Lateral A East. A decision to approve Lateral A East would also include accepting the existing subsurface drain onto Drainage Maintenance in its existing condition.

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 detailing the approved areas of work, confirming the schedule of assessments and ordering the project to be advertised for competitive bid per Ohio Revised Code Sec. 6131, will be necessary. The resolution by the Board of Commissioners shall also determine how long a period of time, in semiannual 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 any 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 \$5,500.

Prepared by:

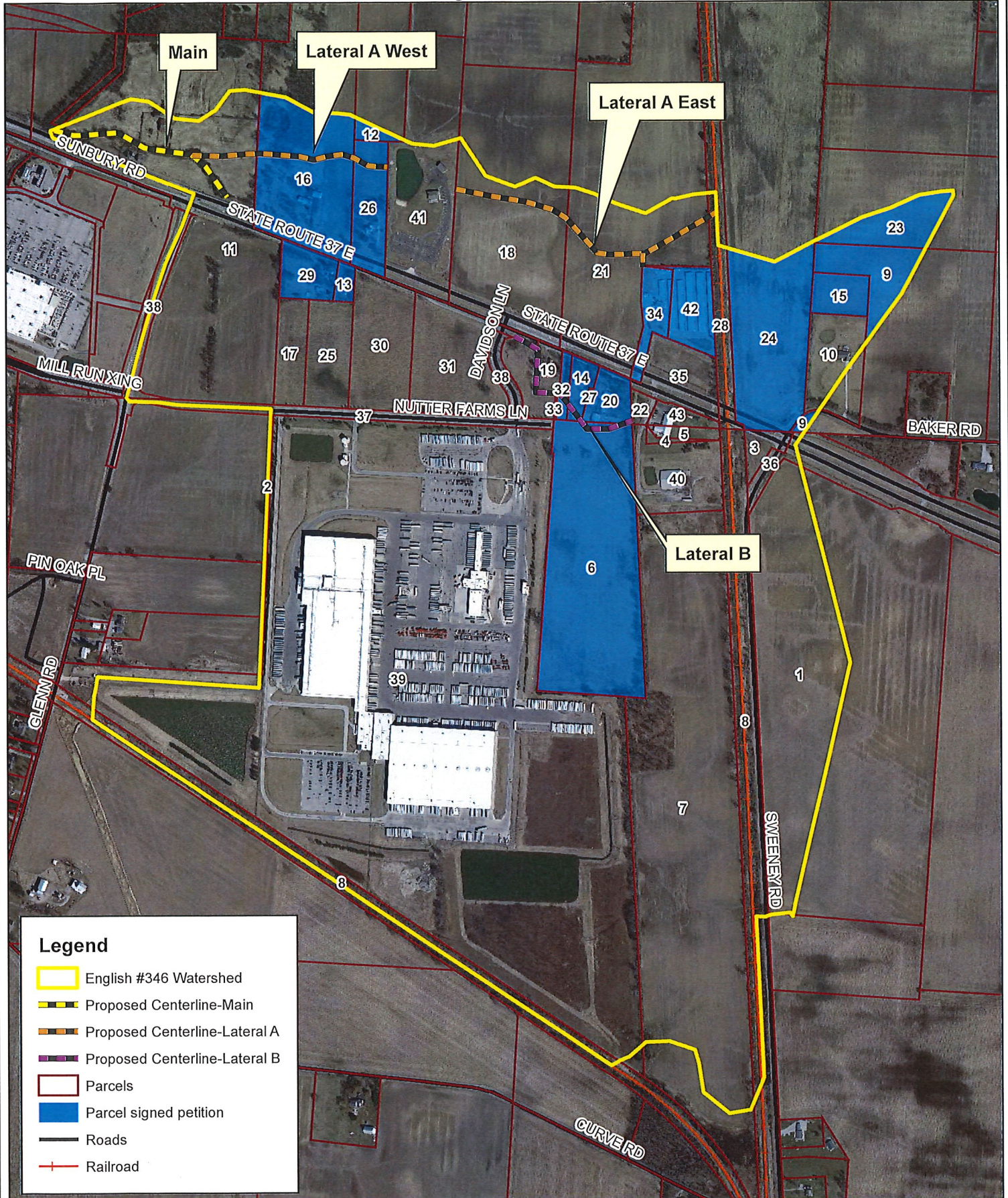


Bret Bacon
Bret Bacon
Resource Conservation Program Coordinator
Delaware Soil and Water Conservation District

Approved by:



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



Legend

- English #346 Watershed
- Proposed Centerline-Main
- Proposed Centerline-Lateral A
- Proposed Centerline-Lateral B
- Parcels
- Parcel signed petition
- Roads
- Railroad



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



0 410 820 Feet

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