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Franklin County Engineer
and Drainage Engineer

ODOT-Argabright Ditch Watershed
Drainage Petition per O.R.C. 6131
First Hearing Report
Pleasant Township
November 21, 2022

This report has been prepared for the First Hearing on a drainage improvement petition filed by Ohio Department of Transportation on July 13, 2022.

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

> *"In Franklin County, Pleasant Township, within the ODOT-Argabright Ditch Watershed and generally following, but not limited to the course and termini of the existing improvements."*

The following is the nature of the work petitioned, as quoted from the petition:

> *"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 ditches, mains, or laterals as requested, by this petition."*

Petition Process

This petition has been submitted according to Section 6131 of the Ohio Revised Code (O.R.C.), which authorizes the Board of 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 and the development of plans, reports and schedules are assessed to the landowners in the watershed according to the benefit received to their watershed acreage. These special assessments will be added to the property taxes for each property and can be spread over a maximum of a 15-year period. Property owners may also choose to pay their assessment in a lump sum payment prior to placement on their property taxes. Additionally, the improvements will be placed on the Franklin County Drainage Maintenance Program in perpetuity, per O.R.C. Section 6137, and the annual maintenance assessment will appear on property tax statements as a special assessment in the same manner as the construction assessments. These annual maintenance assessments are generally in the range of two to three percent of the construction assessment.

It should be noted that property owners are only assessed for the portion of the project that benefits their properties. Properties are not assessed for improvements located upstream because it does not provide direct benefits, such as reduction of flooding or the addition of an outlet. All public corporations owning property within the watershed, including Rights of Way, parks, schools, and other public lands, are also assessed for both construction and maintenance costs. Costs of improvements made inside Rights of Way will be assumed by the responsible entity.

The decision to approve a petition project is a three-step process. First, a viewing of the proposed improvement is conducted for the Commissioners to familiarize themselves with the watershed and general conditions. The Commissioners conducted the viewing for this project on October 12, 2022. Next, a preliminary hearing is held to consider the initial feasibility of the proposal. If this petition is granted today by the Commissioners, a Final Hearing will be conducted to further consider this petition. At that time, final details such as engineering plans and specifications, cost estimates, and a proposed schedule of assessments will be known.

Existing Conditions

The Franklin County Engineer's Office has made the following observations of the watershed using onsite evaluation, and a review of aerial photography, topographic mapping, and soils mapping.

The ODOT-Argabright Ditch Watershed consists of 38 parcels and Ohio Department of Transportation Right of Way and is approximately 270 acres. The predominant land uses within the watershed are agricultural and some rural residential lots. The current drainage system relies on a private agricultural tile installed through parcels north of London-Groveport Road in 1933. It was originally used for field drainage and is now undersized for the development in the area. It varies in size from six inches to twelve inches and does not provide a good and sufficient outlet as requested by this petition.

Figure 1: Drone footage of extensive flooding in the ODOT-Argabright Ditch Watershed, looking west.

The drainage system is not functioning at or near optimum capacity due to a lack of maintenance and its generally deteriorated condition. The original tile, installed over 89 years ago, is made of clay, which has a lifespan of approximately 50 years. There is an absence of uniform surface grading that has resulted in areas of extensive surface ponding. During larger storm events, water floods in the front yards of residential properties, often overtopping driveways as seen in the photographs below. These conditions are indicators of an aged, overburdened, and unmaintained drainage infrastructure. Landowners have attempted to individually improve their drainage infrastructure by replacing field tile and upsizing driveway culverts. However, without a watershed-scale improvement, there is no sufficient outlet.

Figure 2: Ponding in the front yard of 5306 London-Groveport Road.

Figure 3: Flooded water passing over the asphalt driveway at 5550 London-Groveport Road.

Estimate of Cost, Factors Favorable and Unfavorable, Benefit vs Cost

O.R.C. 6131 requires the County Engineer to state, in a report, factors favorable and unfavorable to a proposed project, estimate the cost of the project, and state an opinion as to whether the benefits of the project exceed the cost. The following information is presented for your consideration:

Factors Favorable and Unfavorable

Factors favorable to the improvement:

1. Improved surface and subsurface drainage in the watershed
2. Reduction in the duration of ponded water
3. Improved outlet for subsurface drainage components of household sewage treatment systems and for residential drainage systems, which increases safe health conditions and property value
4. Reduction of future deterioration of surface and subsurface drainage infrastructure
5. Increased crop yield for farm fields within the watershed
6. Upgraded drainage outlet for London-Groveport Road
7. Increased safety for residents and drivers
8. Annual inspections and maintenance of the improvement in perpetuity

Factors unfavorable to the improvement:

1. Temporary land use disruption during construction
2. Cost of construction and maintenance may be a burden to some landowners
3. Removal of existing trees and brush in improvement area

Construction Estimate

The proposed project would include the following basic elements: ground surface shaping and grading, seeding, mulching, & restoration of disturbed areas, subsurface storm tile installation, private drive culvert replacement, and road culvert replacement.

Construction	$ 1,830,984.78
Project Administration, Engineering, and Inspection	$ 240,844.98
Drainage Maintenance (ORC 6137-First Year Start Up)	$ 42,253.49
TOTAL PROJECT ESTIMATE	**$ 2,114,083.25**

Notes:

- It is important to understand that the above estimates are preliminary and made in the absence of a current detailed topographic survey and detailed engineering design of the project area.

- The Ohio Department of Transportation will be directly assessed for improvements constructed within the Right of Way for S.R. 665. This accounts for approximately one-third of the construction cost.

- Should the project fail to be approved at the final hearing, the benefiting landowners, as defined by O.R.C. 6131, may still be responsible for the cost of project administration, survey, and engineering design.

If the project moves forward to the Final Hearing, 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. O.R.C. 6131 states that *"uplands 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."* Benefits are further defined by the O.R.C. as *"elimination or reduction of damage from flooding; removal of water conditions that jeopardize public health, safety, or welfare; and increased value of land resulting from an improvement."* Individual parcel assessments are not calculated for the preliminary hearing and are only calculated if the petition advances.

Benefits versus Cost

Assessments for property within the watershed are calculated based on the benefits derived. 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. Of the 270 acres in the ODOT-Argabright Ditch Watershed, approximately 194 acres are agricultural in nature. A recently completed 25-year study showed that subsurface drainage increased corn yields by 24%-39%, and increased soybean yields by 13%-46%. The same study also analyzed the return on investment for installing subsurface drainage in a field. It found that for corn, $4 is returned for every $1 invested, and for soybeans, $3 is returned for every $1 invested. To state it generally, the benefits of drainage will equal the increased yield multiplied by the market price.

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. When evaluating the cost of providing adequate drainage outlets for residential properties, we find that for new construction, developers or homebuilders spend on average $8,700.00 per lot to attain adequate drainage infrastructure within a development. With 27 residential parcels in the watershed, the potential average benefit is $234,900.00.

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. It would also be reasonable to consider the cost of environmental degradation due to residential sewage treatment systems that may not be functioning properly. Other benefits that are commonly perceived as a result of drainage improvements focus on quality of life and positive neighborhood perception. Communities that have planned and maintained storm water drainage infrastructures generally have higher resale values than communities that are known to have a history of drainage problems or flooding.

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 Franklin County Drainage Maintenance Program in perpetuity per Ohio Revised Code Section 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.

Conclusions

Based on the information gathered and generated for this project, we believe this petition is technically feasible and would adequately serve the project area's drainage needs. However, the testimony brought to the Board 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 petition.

Should the current petition be approved to proceed to a Final Hearing, the petition bond will be returned and detailed plans, specifications, estimated costs, and a schedule of assessments would be prepared. Additionally, a more detailed benefit versus cost analysis will be performed to further determine the feasibility of advancing this proposed project.

Prepared by,

Abigail Obert 11/21/2022

Abigail Obert, E.I.
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Approved by,

Cornell R. Robertson 11/22/2022

Cornell R. Robertson, P.E., P.S.
Franklin County Engineer