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Final Hearing Report
Dever Ditch Watershed Drainage Improvement
Petition per Ohio Revised Code Chapter 6131
Brown Township
June 10, 2024

This report has been prepared for the Final Hearing on a drainage improvement petition filed by Gary Dever, dated October 20, 2020.

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

In Franklin County, Brown Township, within the Dever Ditch Watershed and generally following, but not limited to 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 pursuant to Chapter 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 this project, the costs related to the improvements and the development of plans, reports, schedules, and construction are assessed to the landowners in the watershed according to the benefit received to their watershed acreage. These special construction 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 construction 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. Chapter 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 those improvements that benefit their property. The public agencies that own rights-of-way for public roads and other public lands are also assessed for both construction and maintenance costs in the same manner as private property owners.

The decision to approve a drainage improvement petition project is a 3-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 virtual viewing for this project on November 25, 2020. Then, the first hearing was held on February 9, 2021. At the first hearing, the Commissioners voted to advance the petition. They directed the Franklin County Engineer to proceed with the development of engineering plans and specifications and the schedule of assessments. It is this information that is before the Commissioners for consideration at this second and final hearing.

Existing Conditions

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

The Dever Ditch watershed consists of 30 parcels and approximately 245.5 acres. The watershed can be further broken down into approximately 62% agricultural, 30% rural residential, and 6% wooded land use. The soil is predominately Crosby silt loam and Kokomo silty clay loam, both of which are poorly drained soil types common in Central Ohio. The public roadways within the watershed are Walker Road, maintained by Franklin County, and Carter Road, maintained by Brown Township. This petition was filed by Gary Dever in response to the existing agricultural field northeast of Walker Road - Carter Road intersection being split to sell for large lot residential development. The newly built houses along Walker Road and Carter Road do not currently have an adequate drainage outlet for their drainage systems and household sewage treatment systems.

The existing pipe that is providing drainage for this area is a private agricultural tile that was installed many years ago, and it is now undersized for the new residential homes. It varies in size from 8 inches to 12 inches in diameter and is not sufficient to provide a good and sufficient outlet as requested by this petition. The outlet for this system is Leap Ditch on the south side of Carter Road, which is an open channel ditch for approximately 4,100 feet until ultimately outletting to the Big Darby Creek, a state-recognized Scenic River.



Figure 1: Flooding in the front yard and on the driveway of 4081 Walker Road, built in 2021, facing southwest. This photograph was taken on January 12, 2023 after a 0.88 inch rain event.

There is an absence of uniform surface grading that has resulted in areas of extensive surface ponding in the Dever Ditch watershed. As seen in Figure 2, the subsurface infrastructure is not working properly, causing a backup of surface water in the front yards of properties along Carter Road. These conditions are indicators of aged, overburdened, and deteriorated drainage infrastructure. The conversion of a portion of the watershed to residential use has put further strain on the system.



Figure 2: Evidence of surface flooding at 8604 Carter Road, facing north. This photograph was taken on February 22, 2022, after a 1.2 inch rain event.

Project Scope

The general course of the proposed improvements is shown in the image below. The project begins within the right-of-way of Walker Road and travels southwest, traversing through the front- and back- yards of several residential properties before crossing and ending within the right-of-way on the south side of Carter Road to the existing Leap Ditch.



Figure 3: General Course of Proposed Improvement

The proposed project includes four primary items of work:

- Surface drain shaping and grading;
- Subsurface storm tile installation;
- Road culvert replacement for Walker Road and Carter Road;
- Private drive culvert replacement.

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

Cost Estimate

Construction	\$729,837.00
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Engineering Design	\$64,312.00
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Construction Administration and Inspection	\$72,983.70
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Drainage Maintenance (ORC 6137-First Year Start Up)	\$21,895.11
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TOTAL PROJECT ESTIMATE	\$889,027.81

Of the total estimated cost, \$24,658.00 has been directly assessed to Franklin County for work directly benefitting or within the Walker Road right-of-way. In addition, \$12,300.00 has been directly assessed to Brown Township for work directly benefitting or within the Carter Road right-of-way. Parcels 120-000099 and 120-001284 have been assessed \$12,500.00 and \$16,175.00, respectively, for direct improvements to the properties. The total amount to be assessed to the watershed parcels is \$823,394.81. This total watershed amount is assessed to each parcel within the Dever Ditch watershed, including Franklin County and Brown Township for their respective road rights-of-way. The total assessment value is \$184,218.87 for Franklin County and \$14,022.06 for Brown Township.

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 within the watershed. The Ohio Revised Code further defines benefits as:

Advantages to land and owners, to public corporations as entities, and to the state resulting from drainage, conservation, control and management of water, and environmental, wildlife, and recreational improvements.

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:

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

Explanation of Factors:

- **Acres Benefited**

Total number of acres within a given parcel that contribute drainage to the watershed.

- **Land Use Factor**

The relative benefit to parcels of drainage is based on the amount of increased stormwater runoff resulting from the land use of the parcel.

- **Percent of Improvement Used**

The point at which drainage from a given parcel enters the proposed improvement. Parcels that are further upstream of the improvement are weighted more than parcels downstream because the upstream parcels use more of the improvement.

- **Remote Factor**

The remote factors are based upon a parcel's distance from the improved section of the drainage course and have been established in 0.1-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 benefit of the proposed improvements to the watershed in question. The following analysis examines this factor from the standpoint of the value of drainage to residential parcels, health and safety for residents in the area, and land productivity for the agricultural acres.

The increased value or benefit for residential parcels is typically found in two ways: the increased marketability of the home and the functionality of the home sewage treatment system and associated drainage needs. Approximately 76 acres in the watershed are residential. When evaluating the cost of providing adequate drainage outlets for residential properties, we find that for new construction, developers or homebuilders spend on average \$3,700.00 per lot to attain adequate drainage infrastructure within a development. With 22 residential parcels in the watershed, the potential total benefit is \$81,400.00. While this analysis does not consider many potential variables, it could aid in the decision-making process.

The watershed contains sixteen discharging home sewage treatment systems (HSTS). The flooding of any HSTS system is problematic because it prevents the aerobic processes from taking place and break down the pathogens in the waste. If the system floods, there are significant risks involved with human sewage contaminating the land, groundwater, and surface water. Human sewage contains high levels of bacteria and viruses that when released untreated, pollute nearby watercourses, affect aquatic life, contaminate land used for food production, and risk infection and disease to humans and animals from contact with the sewage. According to a study completed by J. C. Lance and C. P. Gerba in 1983, pathogens can travel much further in saturated soil than in unsaturated soil, allowing more opportunity for the pathogens to reach groundwater.

The aerobic treatment units present require mechanical aeration, which uses an electric-powered motor. When there is flooding near the HSTS, the motor is tripped to run more frequently to process the additional water, causing the motor to run until failure. When it fails and the soil is too saturated, the water levels will continue to rise, possibly leading to the wastewater backflow to the lowest plumbing fixture in the house. Locally, the cost to construct an alternate sewage treatment system, should the existing system fail, is approximately \$30,000 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. Those flows include wastewater from discharging home sewage treatment systems. The improvement would reduce the amount of sediment, nutrients, and bacteria entering the Big Darby Creek resulting from malfunctioning HSTS units and agricultural crop field surface runoff erosion.

The proposed drainage improvement will improve the agricultural drainage, reducing tile blowouts in the field and improving farming conditions. 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 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 then equal this increased yield multiplied by the market price.

Approximately 151.6 acres of the 245.5-acre watershed are used for agricultural purposes. The 2019 through 2022 average market price for corn and soybeans in Ohio, as reported by the USDA National Agricultural Statistics Service is \$5.12 per bushel for corn and \$12.17 per bushel for soybeans. The average estimated yield increases for the soil types present in the watershed, with appropriate drainage improvements 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 (\$5.12 per bushel) X (151.6 acres) = \$35,704.83 increase annually.

Soybeans

(14 Bushel per acre increase in yield) X (\$12.17 per Bushel) X (151.6 acres) = \$25,829.61 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 \$30,767.22. If this potential annual return is multiplied over a 15-year period, the benefit equals \$461,508.29. 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 benefits of 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 fifteen years. Alternatively, assessments can be paid in full within thirty 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 Chapter 6137, which requires maintenance funds to be collected semi-annually or as needed, similar to the construction costs. These maintenance funds are applied to the annual inspection and maintenance of this specific project.

Aside from the monetary costs associated with this project, other costs include temporary land use disruption during construction and vegetation removal in some areas.

If this petition is dismissed at the final hearing and the project is not constructed, the existing agricultural tile used as an outlet will continue to deteriorate and will eventually fail completely. When it fails, the aerobic treatment units will not have an outlet to discharge. In addition, surface flooding on the residential properties will continue to occur.

Conclusions

Based on all of the information gathered and generated for this project, the Franklin County Engineer's Office staff members believe this project is technically feasible and would adequately serve the project area's drainage needs.

On May 15, 2024, the Franklin County Engineer's Office hosted an informational meeting regarding the Dever Petition. During this meeting and through comment forms, it appears that a majority of the residents, including those with the worst drainage issues, do not see a benefit

that outweighs the cost of the project. Therefore, with feedback from residents in the watershed and based on aerial video assessment during and after rainfall events, we do not believe the benefits of this petition project outweigh the costs calculated. Inasmuch as Ohio Revised Code Section 6131.21 states “the board shall set aside the former order and dismiss the petition” if “the cost of the improvement will be equal to or greater than the benefits that will be derived from the improvement if constructed,” we recommend this petition be dismissed by the Board.

If the Board of Commissioners chooses to dismiss the petition, Ohio Revised Code Section 6131.21(D) allows all costs for the proceedings, including the costs incurred by the Board of Commissioners and the Franklin County Engineer’s Office, to be distributed to the benefiting landowners in the same ratio as determined in the final estimated assessments presented at this hearing. Since we are recommending dismissal at this final hearing, the Franklin County Engineer’s Office recommends the costs incurred through this petition thus far not be distributed to the benefiting landowners.

Prepared by,

Approved by,



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