

PRELIMINARY REPORT

STEELE DITCH #23-04

Defiance Township
Defiance County

MARCH 2024

PRELIMINARY REPORT
STEELE DITCH #23-04
DEFIANCE TOWNSHIP, SECTION 10 DEFIANCE COUNTY, OHIO

This Preliminary Report on drainage improvements for the **STEELE DITCH #23-04** is submitted for your consideration in accordance with a request received at the *Defiance Soil and Water Conservation District*. The Defiance Soil and Water Conservation District have investigated the area and the problems. This report presents the information and data we have at the present time, together with our recommendations for a solution to the drainage problems. Keep in mind that this is only a Preliminary Report and not a final engineering plan. This report is based on preliminary field surveys and is not meant to be inclusive, but to serve only as a basis for the landowners in the **STEELE DITCH** watershed area to be informed of the project scope and details. The main objective of this project is to provide an adequate and stable outlet for surface and sub-surface drainage from the watershed area of approximately 118 acres.

ENVIRONMENTAL SETTING

Soils and Topography

The soils in the watershed are of a type that requires surface and sub-surface drainage for efficient agricultural production and to help prevent soil erosion in the watershed area as well as help reduce urban flooding of roads and homes. The elevation drop from the top of the watershed to the outlet of the problem area is about 7 feet. Annual rainfall for the area is about 33.5 inches.

Land Use

The watershed is predominantly agriculture with about 60 percent in cultivated crops and 40 percent in woods, house lots, roads, and other uses. Some minor land use changes are possible with the construction of individual homes or farm buildings. This would represent only a small portion of the watershed area. Home construction in the watershed would depend upon individual type sanitary disposal facilities. It is quite important that these facilities not be tied into any subsurface drainage facility unless the County Health Department approves it.

Fish and Wildlife Resources

Wildlife consists of upland game and non-game species. No fish species would be affected by this project.

Recreational Resources

Recreation would be limited to the individual family size holdings.

Wetlands

The watershed contains some wetlands downstream of the project. These wetland areas will not be directly or indirectly affected by the drainage improvement project.

EXISTING CONDITIONS

The proposed ditch starts on the west side of Williams Road and continues to an adequate outlet. This makes the total length of the project approximately 1,800 feet. The ditch bottom has sediment build up and weed growth from field erosion. Some house drain(s) are now at least 1 foot below ditch bottom and causing damage to crawl space and foundation on at least one house.

RECOMMENDATIONS

From Williams Road to the outlet, clean sediment from the bottom and reshape banks as needed to make the ditch stable and allow for better drainage. The reconstructed ditch will have an 8' bottom width and banks will be sloped to a 2:1 side slope. All excavation will be two sided.

Mini rock chutes will be installed to allow surface water to enter the ditch and help prevent future erosion of the ditch banks in places where surface water is entering the ditch. If any tile are found entering the ditch they will be repaired or replaced as needed and riprap placed below all tile 6" diameter and larger.

The trees and brush removed will be piled and it is up to the landowners where the piles are placed to take care of these brush piles. All disturbed areas in yards will be reseeded and fertilized. Outlet pipes, rock riprap and erosion control structures will be installed as needed to help prevent future sedimentation of the ditch.

Once construction is completed, all disturbed ditch banks and berms will be reseeded, fertilized, and mulched. Soil removed from the ditch construction will be spread to a thickness of 8-10 inches in the area directly adjacent to the ditch.

ENVIRONMENTAL IMPACT

Existing vegetation within the ditch will be destroyed during construction but will be replaced by seeding with cool season grasses on the ditch banks. Any existing yards that are disturbed during construction will be reseeded and mulched with a lawn grass seed mixture. Because of

this, there will be no significant environmental impact on the project area once it is completed and new vegetation established.

If this project is approved for funding for the construction of a self-forming ditch, then the future environmental conditions will be greatly enhanced. A self-forming ditch will allow sediments eroded from the watershed to settle out and create natural benches inside of the ditch. These benches provide exceptional biological and ecological benefits as well as improving downstream water quality.

COST ESTIMATE – 1,800 ft. (0.34 miles)

<u>Items</u>	<u>Estimated Cost</u>
Clearing/Grubbing	\$ 11,520.00
Excavation	\$ 36,720.00
Seed/Fertilize/Mulch	\$ 4,860.00
Tile Outlet Pipes/Riprap	\$ 2,347.20
Mini Rock Chutes – 5 Total	\$ 5,760.00
Rock Chute	\$ 4,464.00
Access Drive	\$ 2,880.00
Contingency/ Administrative Cost/ Interest	\$ 21,366.80
Total Ditch Cost Estimate	\$ 89,918.00

LANDOWNERS

PARCEL NUMBER	FIRST NAME	LAST NAME	AC. OWNED	AC. DRAINED
B110010001100	RICHARD F & SUSAN E	SILER	43.593	23.426
B110010001501	MELVIN L	LANGE	17.187	0.195
B110010001400	RICHARD F & SUSAN E	SILER	6.000	6.000
B110011001900	EMILY	WAGNER NICHOLS	5.000	0.290
B110011000600	ROLLAND MILLS	ANDREWS JR TRUSTEE	35.000	22.505
B110010001300	RICHARD F & SUSAN E	SILER	6.000	6.000
B110010001200	MELVIN D & MARY IRENE	RETCHER	8.000	7.963
B110010001103	SCOTT L & PATRICIA J	FISHER	4.399	4.367
B110010001104	LYNDEL W & RUBY J	CARPENTER	2.214	2.213
B110010001102	LYNDEL W & RUBY L	CARPENTER	2.214	2.214
B110010001101	CLARENCE D & IRIS K	STEELE	2.350	2.350
B110015000107	SCOTT L & PATRICIA J	FISHER	4.481	1.675
B110015000104	DENNIS L & NATALIE J	MERRIMAN	9.99	7.229
B110015000103	DAVID C & JEAN A	SWARY	9.402	9.179
B110014000300	RICHARD F & SUSAN E	SILER	27.000	16.292
B110014000302	VERTICAL BRIDGE LANDCO LLC		5.000	4.972
B110014000202	ROWLANDLAND COMPANY LLC		80.00	0.308
B110015000101	BRIAN L & DAWN R	GRANT	19.381	0.178
B110014000301	JOHN & JUDY CASS	ROHLF	3.000	0.460
BOWMAN ROAD	DEFIANCE TOWNSHIP		/	1.303
WILLIAMS ROAD	DEFIANCE COUNTY ENGINEER		/	1.020
NA	DEFIANCE COUNTY COMMISSIONERS		/	/
				=120.139

BOARD OF SUPERVISORS PROJECT REVIEW

Having reviewed/inspected the project at the View conducted on February 11, 2024, in conjunction with the findings contained in this report, the Defiance SWCD Board of Supervisors has provided the following comments in regard to feasibility, favorable and unfavorable factors, and whether benefits exceed the estimated costs for this project.

Feasibility

This project has been deemed feasible. Factors contributing to this decision include:

1. This project is accessible from local roads.

2. Excavation can be performed with standard excavating equipment.
3. Sufficient ditch flow line grades can be excavated to facilitate drainage.

Favorable Factors

Favorable factors of this project include:

1. Improved drainage of ditch and upstream culvert.
2. Uniform method of sharing cost of project.
3. Project will be permanently maintained under the County Maintenance program.

Unfavorable Factors

Unfavorable factors of this project include:

1. Existing vegetation on ditch banks will be destroyed and will require reseeding.
2. Potential damage to lawns.
3. Conversion/Damage to land for construction of the improvement.
4. Maintenance road access needed.

Benefits / Cost

Given the preliminary cost estimates and the calculated benefits within the cost benefit analysis (contained within this preliminary report), the preliminary review shows favorable cost/benefit analysis.

Alternate Proposals

An alternative proposal is to complete the ditch reconstruction with a 3' bottom width and banks sloped to a 2:1 side slope. This proposal will still meet the capacities of the ditch and the standards but will be a more feasible option if grant funding is not available.

ASSESSMENTS

Landowner assessments are figured using a formula which takes into account factors such as: acres drained, land use, soil type, tile drainage, topography, and percent of usage of the ditch. The following is a description of each of these factors:

Acres Drained – Only the physical acreage of each landowner's property within the actual watershed boundary is considered in determining making assessments. This includes farmland, woods, pastures, house lots, parking lots, roads, etc.

Land Use – Each tract of land contributing runoff water to the proposed improvement is assessed according to the amount of water that is actually being generated from that tract of land. High runoff areas such as roads, parking lots, residential areas, etc., are assessed at a higher rate than the lower runoff areas such as farm ground and woodland regions, due to the fact that more runoff water is being produced from those higher runoff areas.

Soil Type – The soil type of your land draining into the project is determined using the Defiance County Soil Survey. Soils having low runoff potential and high infiltration rates even when thoroughly wetted --- such as sands and gravels will have a lower assessment factor than soils having high runoff potential that have very low infiltration rates when thoroughly wetted --- such as clay soils.

Tile Drainage – This takes into account whether the land in the watershed area is tiled and whether or not the tile drains to or away from the open ditch project.

Topography/Remoteness Consideration – The actual distance your runoff water must first travel before even reaching the ditch improvement is a determining factor on how your land is assessed. The longer the distance it takes for your water to reach the ditch improvement, the lower that ground is assessed.

Use of the Ditch Improvement – You only help share the cost of the ditch improvement that your runoff water travels through. You will have no responsibility to help share the cost of construction being done upstream from where your water enters the ditch.

COST / BENEFIT ANALYSIS

The Cost / Benefit Analysis for this project was calculated by looking at the potential increase in property values in the areas that currently are experiencing flooding / saturated conditions due to the restrictions vs. once the reconstruction is completed. It should be noted that the proposed improvement will help to reduce frequency and severity of flooding events but will by no means eliminate these events.

Yield Increase Benefit – It is estimated that there would be at least 74 acres directly affected by decreased yields due to flooding. Crops in the area would be estimated at 40% wheat, 20% corn, and 40% soybeans, with a very conservative yield increase due to improved drainage of 5 bushels per acre for wheat, 10 bushels per acre for corn, and 5 bushels per acre for soybeans. Using these yield increases at current grain prices this would mean an annual increase of **\$3,051.70**. This breaks down as follows:

29.74 acres of Wheat @ 5 bu. /ac. X \$5.23/bu. = \$777.70

14.88 acres of Corn @ 10bu. /ac. X \$3.83/bu. = \$569.90

29.74 acres of Soybeans @ 5bu. /ac. X \$11.46/bu. = \$1,704.10

This annual increase of **\$3,051.70** a projected 10-year lifespan of the project amounts to a total benefit of **\$30,517.00**.

Property Value Benefit – Rural residential and agricultural properties will benefit from improved drainage by increasing or maintaining their property values. According to local real estate sources, as a general rule, properties suffering from standing water over a large area are often judged to be devalued as much as 20% to 30%. Properties with some standing water could be devalued by as much as 10% to 20%. Areas that suffer even the stigma of standing water could be devalued by 5% to 10%. According to information from the County Auditor, the market value of all property within the watershed, both residential and agricultural, is approximately \$842,576.16. Again, using a very conservative value increase, this would mean an immediate potential increase in property values of \$68,189.25.

Benefit Summary – Therefore, a total of \$98,706.25 worth in benefits can be realized over the projected lifespan of the project. This compared to an estimated project cost of \$89,918.00 gives this project a favorable cost / benefit ratio.

There is an opportunity for grant funding to cover the construction expenses. It should be noted that if the grant is not awarded for the project, then the alternate proposal will be selected reducing the size of the ditch and the cost of the project.

COST / BENEFIT CONCLUSIONS

Each property owner in the watershed (agricultural land, urban areas, rural housing, retail business, streets, and roads) has in some way or another increased the natural flow of water to Steele Ditch. While each will see a different need, the fact exists that all in the watershed use the ditch to carry water discharged from their properties, faster than it was 20, 50, or 100 years ago.

Therefore, it is the opinion of the Defiance SWCD Board of Supervisors that this proposal is the best and most cost-effective method to address the demanding drainage needs of this channel and the benefits of this project are likely to exceed the costs of this project as shown above.

DITCH MAINTENANCE

After construction is complete on the project, it will be necessary according to state law to have the project put on the “*County Maintenance Program*”. As prescribed by law, every landowner involved will be subject to permanent maintenance. Maintenance assessments are collected as a special assessment on real estate taxes and will be collected usually at the rate of 10 percent

of a landowner's construction assessment for the first two-years after the project is completed to establish the fund. After the first two-year collections, landowners are only assessed as needed when maintenance work is done. This means that maintenance assessments may or may not be collected each year after the first two-years and the amount collected may vary depending upon the needs of the improvement but will never carry more than 20 percent in the maintenance fund for this project.

CONCLUSION

To continue this process, sufficient interest in constructing the project must be expressed by the landowners involved. If this is done, the *Defiance Soil and Water Conservation District*, shall complete the engineering plans and submit them Ohio Department of Agriculture engineers for approval. The County Engineer, prior to bidding and construction, must approve the plans. *Invitation to Bid* notices will be sent out to contractors and a successful bidder will be hired. The *Soil and Water Conservation District* will supervise construction and certify completion of this project.

Prepared By:

Machin Cury
Signature
District Technician
Title

3/5/24
Date

Approved By:

Justin J. Hur, P.E.
Signature
Engineer for ODA-DSWC
Title

3/5/24
Date