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# PRELIMINARY REPORT OF THE ENGINEER

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## ZINK-HELDMAN AND GEISER DITCHES PETITION #1047

### **Background**

On March 16, 2020, the Board of Lucas County Commissioners and the Lucas County Engineer have been given notice of the filing a petition by the Board of Springfield Township Trustees for an improvement to Zink-Heldman and Geiser Ditches using a combination of methods provided in the *Ohio Revised Code* Section 6131.01 (C) 1 through 5 necessary for the disposal of surplus water on the course hereinafter set forth:

***Zink-Heldman Ditch:*** Commencing at the westerly line of Plum Grove Subdivision in Springfield Township then conversing in a northwesterly direction ending at Bancroft Street in Springfield Township. A total distance of 8,560 feet.

***Geiser Ditch:*** Commencing at the confluence of Heldman Ditch then conversing westerly to its westerly terminus in Springfield Township. A total distance of 2,260 feet.

In accordance with *Ohio Revised Code* Section 6131.06, as Springfield Township is a township within Lucas County, bond is not required for the payment of costs of notices, plus incidental expenses, except the costs incurred by the Lucas County Engineer in making his preliminary reports, if the prayer of petition is not granted, or if the petition is for any cause dismissed, unless the Board decides to pay the Engineer's costs from the bond in accordance with *Ohio Revised Code* Section 6131.09.

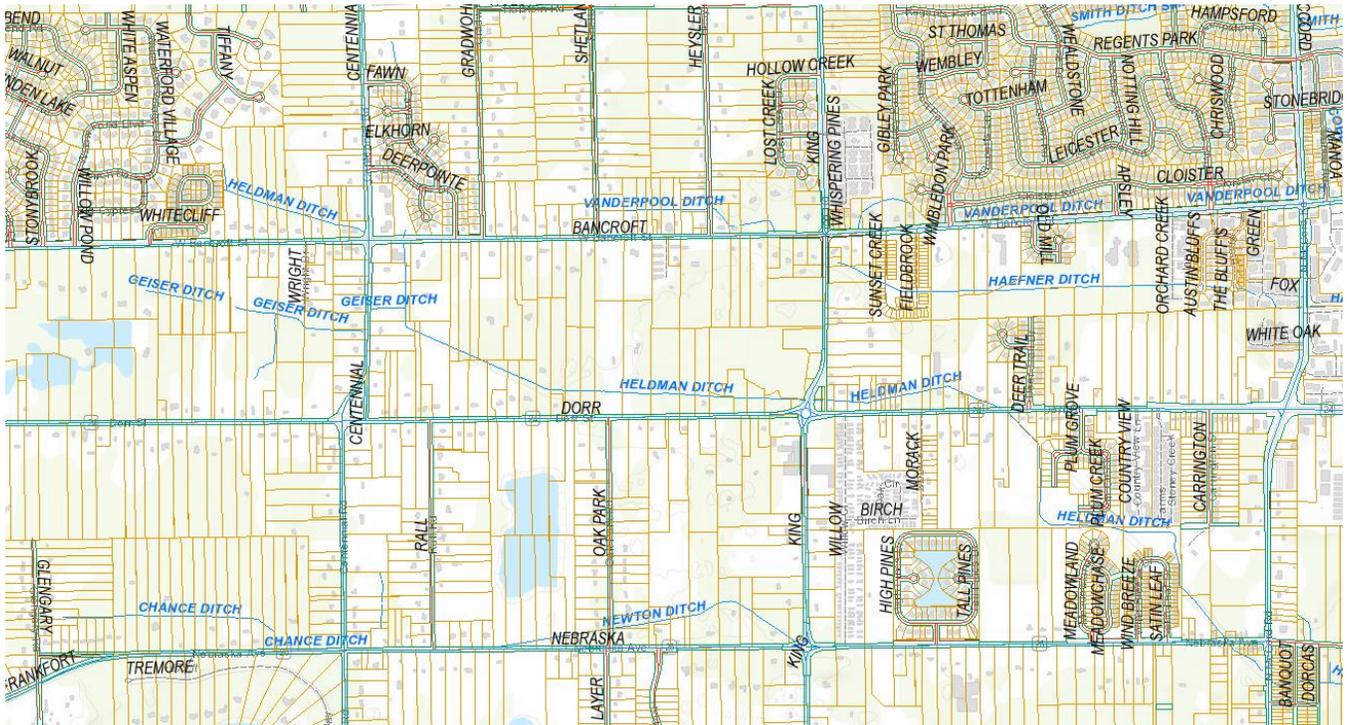


Fig 1: Location Area Map

## **Ditch Report**

### **Zink-Heldman Ditch**

The portion of Zink-Heldman Ditch proposed to be placed under petition is approximately 8,560 feet long and runs from Bancroft Avenue in a westerly direction to the westerly line of Plum Grove Subdivision approximately 2,500 feet east of King Road in Springfield Township, Ohio. This ditch has not been maintained for several decades. In addition, in many locations, houses along the ditch have installed driveway tiles across the ditch and in many location have been either undersized or have been set at an incorrect elevation resulting in additional erosion, siltation, and flooding in areas upstream of the Plum Grove Subdivision. As shown below, there is a significant floodplain area subject to flooding upstream of the Plum Grove Subdivision.

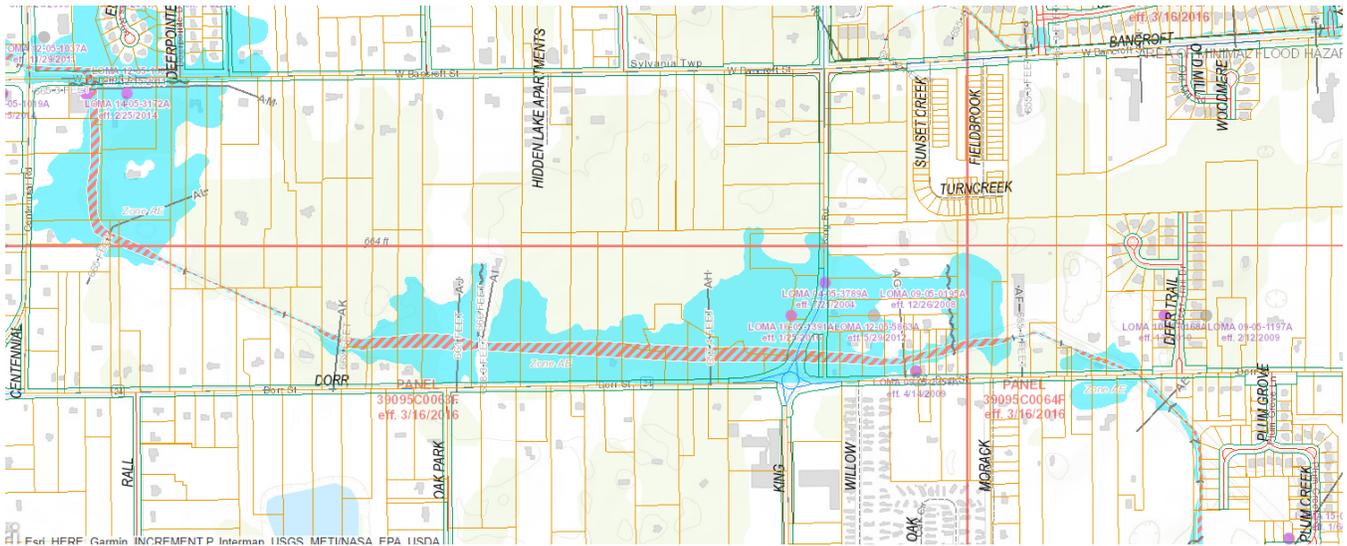


Fig 2: FEMA Floodplain Map for Zink-Heldman Ditch

In most areas, the ditch has silted as much as two feet which inhibits the free flow of water with the channel flooding adjacent properties. The flooding is especially acute during the winter months and early spring when the ground is frozen and/or saturated.

It is the opinion of the Engineer that the existing condition of the channel is not adequate to dispose the surplus water stated in the petition. With the completion of the project, benefits will include an adequately sized channel for runoff and relief of standing water in residential lots, as well as providing an adequate outlet for the watershed upstream of the proposed improvement.

In preparing the preliminary scope of work and cost estimate, alternatives were considered and evaluated to determine the least impactful alternative on the surrounding environment and property owners where in the opinion of the engineer the benefits of the project would outweigh the costs. The alternatives evaluated were as follows:

- 1) Removal of sediment from the bottom of ditch along entire length, reshaping of ditch sides and bottom:

This alternative would excavate and reshape the existing ditch removing sediment to reslope the channel in order to permit the free flow of water with 2:1 side slopes. While a lower cost alternative, the soil conditions at the site is composed of relatively clean sand. Based on our knowledge of the project area, we believe that constructing the ditch per the 1981 drawings would result in sloughing of the side slopes and continued erosion of the channel. In addition, this option would not solve the constriction of flow due to the undersized drive tiles.

The benefits and drawbacks of this alternative is as follows:

Benefits:

Improved Drainage  
Lower Construction Cost

Drawbacks:

Tree Removal  
Frequent Maintenance  
- Adjacent Property Disruption  
- Costs  
Does not address underlying cause of drainage issues  
- Driveway tiles  
- Undersized Channel

- 2) Construct two-stage ditch on portions of ditch upstream of Plum Grove Subdivision along downstream end and removal of sediment from the bottom of ditch along remaining length, reshaping of ditch sides and bottom:

This alternative would construct 800’ feet of two-stage ditch along the length of Zink-Heldman Ditch. Like projects currently completed on Ten Mile Creek and Smith Ditch in Sylvania Township, these ditches add benches which serve as a floodplain within the overall channel. These ditches are more consistent with fluvial form and process, and therefore leads to greater channel stability resulting in lower maintenance costs and a lower probability of flooding adjacent properties. These benches also can serve as wetlands during certain period of the year which reduce ditch nutrient loads and provides for improved water quality. While a higher initial cost alternative, the development of two stage ditches provides a better total cost of the improvement with lower maintenance costs and improved agricultural and residential benefits due to a lower probability of flooding of adjacent properties. It is currently proposed to provide for 10 to 20’ of total bench in the project area with 3:1 side slopes. The project will also include a 10’ grass buffer at the top of the bank. The Lucas County Engineer’s Office has received a grant from the Ohio EPA to implement the two-stage ditch portion of the project. This alternative also proposes to remove 12 to 18 inches of silt along 2,700 feet of ditch, replacement of six undersized driveway culverts and the removal of seven pedestrian bridges along the channel.

The benefits and drawbacks of this alternative is as follows:

Benefits:

Improved Drainage  
Lower Maintenance  
Lower probability of flooding of adjacent properties  
Improved Water Quality

Drawbacks:

Tree Removal  
Larger Construction Costs  
Initial Disruption for Construction  
Larger footprint in areas  
Easement acquisition costs

- 3) No project – leave existing conditions:

This alternative would result in no project being performed and leave existing conditions. If this alternative would be selected, it is the opinion of the engineer that the issues with lack of drainage and standing water would continue and progressively worsen over time as the ditch continues to silt up. This would result in lack of drainage from upstream of the ditch.

Benefits:

Existing Conditions

Drawbacks:

Continued excess water

Risk of complete loss of drainage

Continued risk of flooding of adjacent properties

It is the opinion of the Engineer that Alternative 2 is the best alternative. The estimated construction cost is approximately \$650,000. It should be noted that costs are estimated, and final assessments will be based on actual costs. In addition, the project will be placed on permanent maintenance after completion. Currently, it is proposed that construction assessments for this project will be paid from a grant from the Ohio EPA, and the Lucas County Stormwater Utility. Future maintenance costs will be assessed to benefitting landowners but is subject to possible future payment from the Lucas County Stormwater Utility.

Geiser Ditch

The portion of Geiser Ditch proposed to be placed under petition is approximately 2,260 feet long and runs from its headwaters located approximately 1,500 feet west of Centennial Road south of Bancroft Street to its confluence with Zink-Heldman Ditch southeast of the intersection of Centennial and Bancroft Roads in Springfield Township, Ohio. This ditch has not been maintained for several decades. This ditch has become overgrown with brush to an extent that the ditch has gathered a significant amount of silt and debris to the point that it does not convey surplus water in the watershed.

In most areas, the ditch has silted as much as two feet which inhibits the free flow of water with the channel flooding adjacent properties. The flooding is especially acute during the winter months and early spring when the ground is frozen and/or saturated.

It is the opinion of the Engineer that the existing condition of the channel is not adequate to dispose the surplus water stated in the petition. With the completion of the project, benefits will include an adequately sized channel for runoff and relief of standing water in residential lots, as well as providing an adequate outlet for the watershed upstream of the proposed improvement.

For Geiser Ditch, the project would remove brush from the banks of the channel and establish a 10' grass buffer strip along the top of the banks. The project would excavate and reshape the existing ditch removing sediment to reslope the channel in order to permit the free flow of water with 2:1 side slopes.

The benefits and drawbacks of this alternative is as follows:

Benefits:

Improved Drainage  
Lower Construction Cost  
Brush Removal

Drawbacks:

Brush Removal  
Construction Disturbance

The estimated construction for Geiser Ditch is approximately \$50,000. It should be noted that costs are estimated, and final assessments will be based on actual costs. In addition, the project will be placed on permanent maintenance after completion. Currently, it is proposed that construction assessments for this project will be paid from a grant from the Ohio EPA, and the Lucas County Stormwater Utility. Future maintenance costs will be assessed to benefitting landowners but is subject to possible future payment from the Lucas County Stormwater Utility. The costs for brushing will be assessed to adjacent property owners.

It is the opinion of the Engineer that the proposed projects are feasible, that it is conducive to the public welfare, that there is a sufficient outlet for the improvement, and that the benefits are likely to exceed the cost.

Mike Pniewski, P.E., P.S.  
Lucas County Engineer