

# Webster-Arnold #355 Drainage Improvement Project

## Requested per ORC 6131

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DELAWARE COUNTY COMMISSIONERS  
DELAWARE COUNTY ENGINEER'S OFFICE  
DELAWARE SOIL & WATER CONSERVATION DISTRICT

### Project Timeline

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- **July 22, 2016:** Petition for drainage improvements filed by Robert A. and Ruth E. Tackett and others

*“In Delaware County, Liberty Township within The Webster-Arnold watershed and generally following, but not limited to the course and termini of the existing improvement.”*

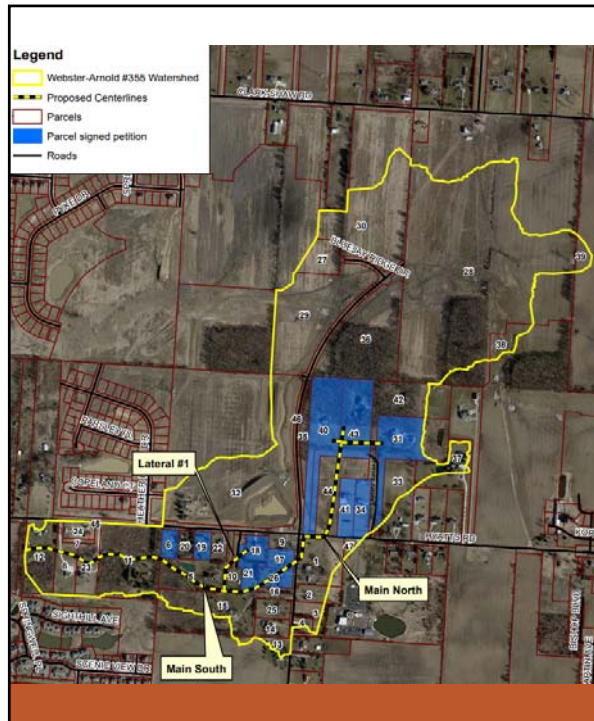
*“To generally improve the drainage, both surface and subsurface, to a good and sufficient outlet, by replacing, repairing or altering the existing improvements as required and/or creating new surface and subsurface drainage mains or laterals as requested, by this petition.”*

-As quoted from the petition

## Project Timeline

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- **July 22, 2016:** Petition for drainage improvements filed by Robert A. and Ruth E. Tackett and others
- **October 3, 2016:** View held
- **December 15, 2016:** 1<sup>st</sup> Hearing



- Watershed is approximately 226 acres
- 1% agricultural, 84% rural residential, 11% woods, and 4% road right-of-way
- Original petition signed or amended by representatives of 11 of the 47 parcels in the Webster-Arnold #355 watershed

## Main South

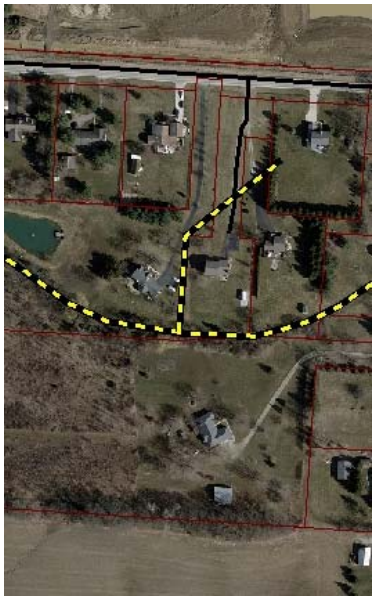


- Open Channel, 2-4' deep
- Subsurface drain tile installation
- Grade stabilization structure
- Blind inlet installation
- Clearing and snagging of brush and debris
- Section of Open Channel to be accepted onto Drainage Maintenance in present condition
- Section of Surface Drain to be accepted onto Drainage Maintenance in present condition



## Main North

- Subsurface drain tile installation



## Lateral #1

- Subsurface drain tile installation



Construction Items – Representative Pictures



OPEN CHANNEL

*Construction Items – Representative Pictures*



RE-SEEDING  
FOLLOWING  
SUBSURFACE DRAIN  
INSTALLATION

*Construction Items – Representative Pictures*



TILE BREATHER  
INSTALLATION

*Construction Items – Representative Pictures*



**BLIND INLET  
INSTALLATION**

*Construction Items – Representative Pictures*



**SURFACE DRAIN  
SWALE**

### Construction Items – Representative Pictures



## GRADE STABILIZATION STRUCTURE

## Project Construction Cost Estimate

Section	Construction	Contingency	1st Year Maintenance	Administration & Inspection	Total
Main South	\$ 50,737.60	\$ 9,133.52	\$ 3,044.51	\$ 11,152.54	\$ 74,068.17
Main North	\$ 47,282.25	\$ 7,467.34	\$ 2,489.11	\$ 2,500.00	\$ 59,738.70
Lateral #1	\$ 5,368.60	\$ 880.29	\$ 293.43	\$ 500.00	\$ 7,042.32
				All Sections Subtotal:	\$ 140,849.19
<b>Excluding direct assessments to road right-of-way authorities</b>					<b>\$ 118,649.19</b>
<b>Estimated Value of Open Channel to be placed on Drainage Maintenance with no construction:</b>					<b>\$ 21,000.00</b>



## Calculation of Assessments

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- ORC instructs the County Engineer to calculate assessments to individual property owners based on the benefits received
- “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.” (ORC 6131.01)*

## Calculation of Assessments

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- Acres Benefited x Landuse Factor x % Use = Parcel Assessment Factor
- Parcel % Share = Parcel Assessment Factor / Sum of Assessment Factors
- Parcel Assessment = % Share x Total Estimated Cost

## Payment Options

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- Pay full assessment upfront within 30 days of the final hearing (by July 27, 2022, also must give Notice of Intent by July 18, 2022)
- Have assessment placed on property tax bill as a Special Assessment
- Having the assessment placed on property taxes will include interest and other fees if the project is bonded and Auditor's/Treasurer's 2% collection fee

### Amortization Example

*\*Assuming no upfront payments & all sections of the project approved*

Total Estimated Construction Cost – Direct Assessments = \$118,649.19

Average (mean) Assessment not including ROW = \$2,472 = 2.1% Share of Project

Debt Issuing Fees (Bond Counsel, Bank) = \$8,000

Bond Interest, 4% (estimate) = \$118,649.19 x 4% = \$4,745.97

Total Estimated Cost = \$131,395.16

2.1% Share of Total Estimated Cost = \$2,759.30

Auditor/Treasurer Fees (2%) = \$55.18

Total Assessment for Average Parcel = \$2,814.48

Amortization Example

Total Assessment = \$2,814.48    Semi-annual payment = \$175.90

8-Year Repayment Schedule

	<u>1<sup>st</sup> Half</u>	<u>2<sup>nd</sup> Half</u>
2024:	\$ 175.90	\$ 175.90
2025:	\$ 175.90	\$ 175.90
2026:	\$ 175.90	\$ 175.90
2027:	\$ 175.90	\$ 175.90
2028:	\$ 175.90	\$ 175.90
2029:	\$ 175.90	\$ 175.90
2030:	\$ 175.90	\$ 175.90
2031:	\$ 175.90	\$ 175.90

Bidding & Construction

- Approved projects are advertised for public bid
- Lowest and best bid to be awarded contract
- Projects are typically not subject to prevailing wage

## Bidding & Construction

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- Bids may not be accepted in excess of Final Hearing Engineer's Estimate (ORC 6131.40)
- Final schedule of assessments is reduced pro rata by the difference between the estimated cost and final cost
- Upfront payments receive a refund

## Drainage Maintenance

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- ORC 6137 requires completed projects to be placed onto Drainage Maintenance
- Purpose of Drainage Maintenance is to keep the project operating at its designed capacity
- Maintenance funds are collected as a Special Assessment
- Common Maintenance activities include inspections, seeding, repairs, and erosion control

## Drainage Maintenance

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- Maintenance assessments are determined based on the Final Schedule of Construction Assessments
- Most projects average 2.5 – 5.0% annual collections
- Collection Percentage can vary depending on the maintenance needs of the project
- Drainage Maintenance is perpetual

### Amortization Example

Construction Assessment = \$ 2,472 x 3% Maintenance Collection + 2% Auditor/Treasurer = \$75.64 - Annual Maintenance Assessment

### 8-Year Repayment Schedule

	<u>1<sup>st</sup> Half</u>	<u>2<sup>nd</sup> Half</u>
2024:	\$ 175.90 (C) + \$ 37.82 (M)	\$ 175.90 (C) + \$ 37.82 (M)
2025:	\$ 175.90 (C) + \$ 37.82 (M)	\$ 175.90 (C) + \$ 37.82 (M)
2026:	\$ 175.90 (C) + \$ 37.82 (M)	\$ 175.90 (C) + \$ 37.82 (M)
2027:	\$ 175.90 (C) + \$ 37.82 (M)	\$ 175.90 (C) + \$ 37.82 (M)
2028:	\$ 175.90 (C) + \$ 37.82 (M)	\$ 175.90 (C) + \$ 37.82 (M)
2029:	\$ 175.90 (C) + \$ 37.82 (M)	\$ 175.90 (C) + \$ 37.82 (M)
2030:	\$ 175.90 (C) + \$ 37.82 (M)	\$ 175.90 (C) + \$ 37.82 (M)
2031:	\$ 175.90 (C) + \$ 37.82 (M)	\$ 175.90 (C) + \$ 37.82 (M)
2032:	\$ 37.82 (M)	\$ 37.82 (M)

## Cost/Benefit Analysis

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- Benefits of drainage improvements exist for both agricultural and residential parcels
- Benefit to agricultural parcels is realized by the increased yield as a result of good drainage
- Minimal agricultural land in the watershed

## Cost/Benefit Analysis

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- Benefits to residential parcels focus on quality of life, neighborhood perception, and homesite sewage treatment systems (HSTS)
- A failed HSTS can cost \$15,000 - \$25,000 to repair or replace
- New developments average \$1,000 - \$3,000 per lot spent on providing adequate drainage outlets
- 30 residential parcels = \$30,000-\$90,000 benefit at minimum

## Project Sections

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- Main South can be completed independently
- Main North and Lateral #1 each require Main South but can be completed independently of each other
- Main South also includes accepting downstream reach onto Drainage Maintenance in existing condition

## Decisions

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<b>Option 1: Approve all</b>	Main South	Main North	Lateral #1
<b>Option 2: Both Mains</b>	Main South	Main North	
<b>Option 3: Main S, Lateral</b>	Main South		Lateral #1
<b>Option 4: Main S</b>	Main South		
<b>Option 5: Deny all</b>			

Approval will require setting repayment period and whether to bond, confirming the schedule of assessments, and ordering the project be advertised for competitive bid

## Decisions

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- If decision is to deny, it is recommended to distribute costs incurred to this point to the landowners in the same ratio as determined by the final schedule of assessments
- Estimated costs to date = \$6,500

## Engineer's Recommendation

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*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.*