

LORAIN COUNTY ENGINEER

KEN CARNEY, P.E., P.S.

December 18, 2023

Lorain County Board of Commissioners
226 Middle Avenue
Elyria, Ohio 44035

Attn: Theresa Upton, Clerk tupton@loraincounty.us, ehawkins@loraincounty.us

Re: Report of Alternates to **Roth Main Ditch & Lateral #1 Restoration**, Columbia Twp.

Board of Commissioners:

Pursuant to your order in Resolution 23-391 to investigate two additional drainage improvement alternates (i.e. "tile and basin") for comparison of various costs, the County Engineer reports:

These two alternates are estimated to cost an **additional \$1,753,025 for the tile**, and **\$5,891,350 for the basin**, respectively. These are in addition to the total base cost of the project as we originally recommended, which was estimated at \$998,500. The schematic map that follows on the next page indicates the locations of both alternates, as well as that of the original improvement. Detailed cost estimates are included at the end of this report.

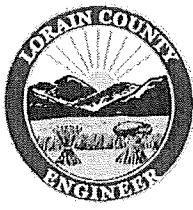
1. Tile Alternate

Instead of improving the existing open ditch across the rear of three wooded parcels of land, the old Roth Tile may be removed and replaced with a larger plastic storm sewer pipe. The three properties are owned by Kevin Kennedy, David Kennedy, and the Kowalskis (the "3K" parcels). The length across the "3K" parcels is about $\frac{1}{4}$ mile.

For comparison purposes, the originally recommended open ditch improvement across only the "3K" parcels was estimated to cost only \$165,000.

2. Basin Alternate

Instead of either the Tile Alternate or the original open ditch improvement, a large "dry" storm water detention basin may be constructed in the rear ten acres of the "3K" parcels. Again, this alternate may be compared to the original partial ditch project cost of \$165,000.



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K

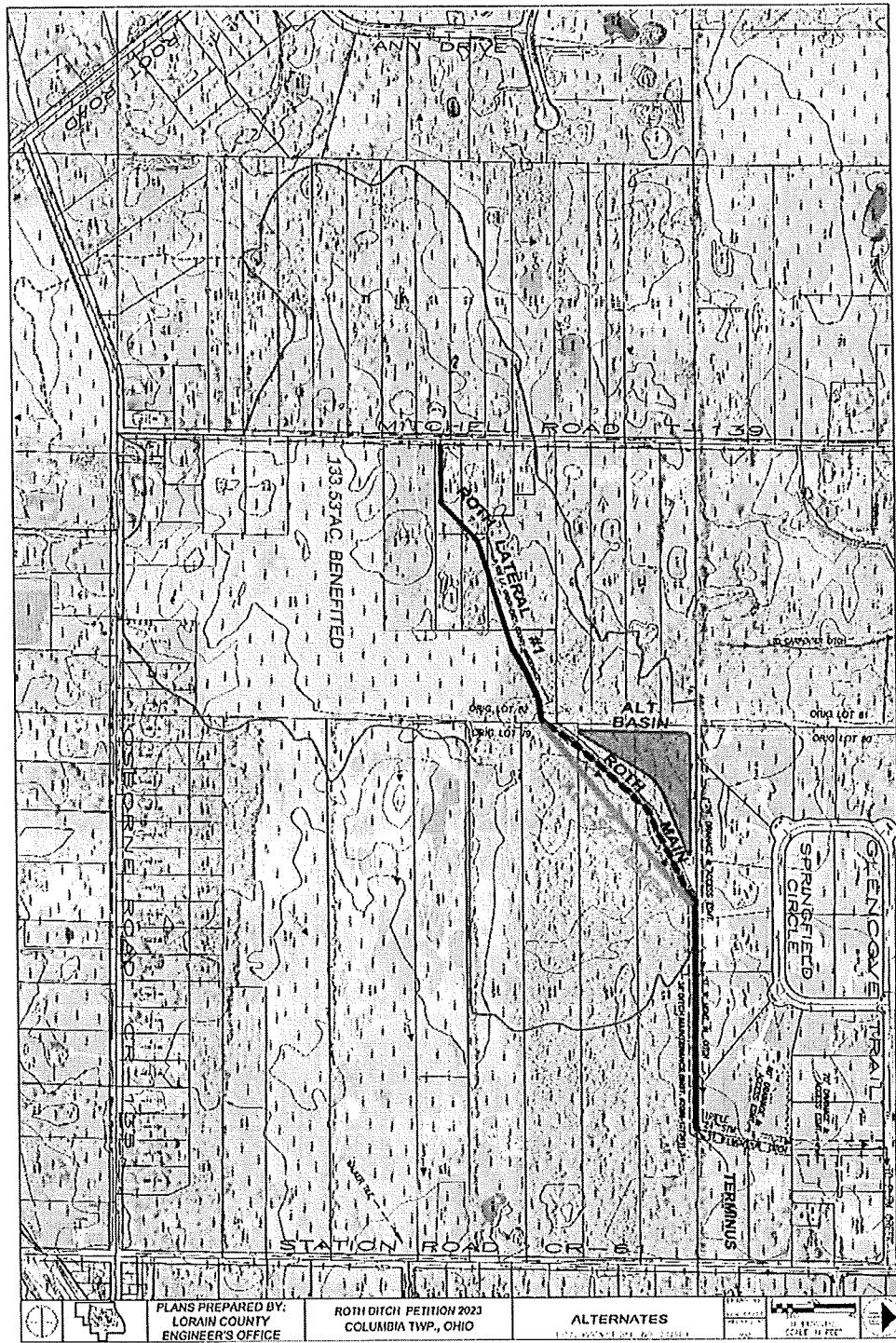
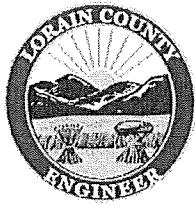


Figure 1. Map indicates two alternates in light blue and red colors; Overall project limits shown in dark blue.



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3. List of Alternate Factors both Favorable and Unfavorable

- A. Either of the two alternates are feasible, and would individually answer the prayer of the petition, but at much different costs.
- B. Either alternate would modify only the portion of the project route across the "3K" parcels. However, the beginning of the project at Mitchell Road, and its downstream terminus would not change from your prior finding as memorialized in Resolution 23-391. Also, the 133 acres of tributary land area that would benefit would not change.
- C. The existing ditch across the three "3K" parcels of land represents a major bottleneck that significantly contributes to the overall drainage problem. It will be necessary to lower the elevation of the hydraulic flow line of any improvement across the "3K" parcels to solve this problem. This will require excavation in some form for any improvement.
- D. The flow line may be lowered across the "3K" parcels in one of three ways: by installing the alternate storm sewer, by constructing the alternate detention basin, or by excavating the open ditch as originally recommended.
- E. Neither alternate could include filling the existing ditch across the "3K" parcels—it will simply remain in its present state, with an alternate constructed on one side or the other. This is because of the cost-prohibitive and extensive environmental permits that would be required from the Ohio EPA and US Army Corps of Engineers. That is, neither alternate would qualify as ditch "maintenance" or ditch cleaning.
- F. The scope of the Tile Alternate would include both removing the old clay tile (which no longer functions), and constructing a new larger size plastic storm sewer along a similar alignment.
- G. Today, both the old tile and the existing ditch across the "3K" parcels are privately owned. Either alternate, or the originally recommended open ditch improvement, would become a public improvement, and would run in a new easement.
- H. The previously designated properties will be encumbered by new easements for construction access, and for ongoing maintenance. Existing access off Glencove Trail and elsewhere will be upgraded within existing County easements.



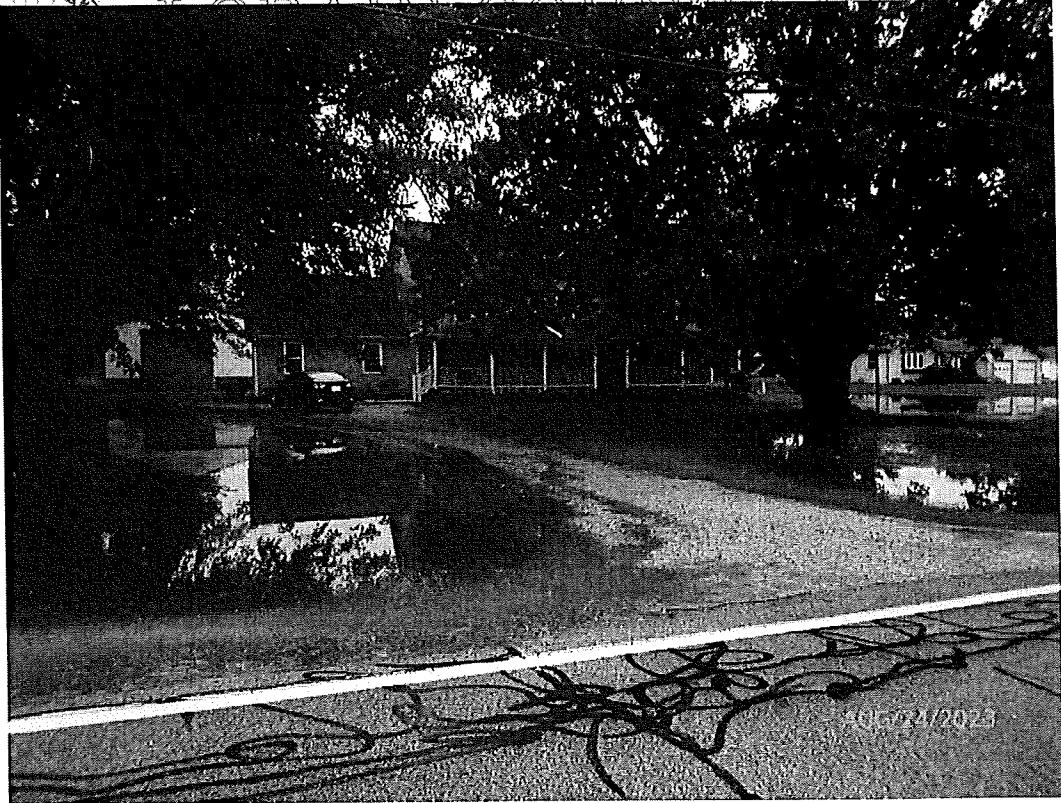
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- I. The scope of the both alternates would include gates and signage to discourage trespassing.
- J. No additional impervious surface area will result from construction of either alternate.
- K. The County Engineer estimates all damages at \$0.
- L. In the County Engineer's opinion:
 - a. The benefits of the Tile Alternate will not exceed its costs.
 - b. The benefits of the Basin Alternate will not exceed its costs.
 - c. The benefits of the original ditch improvement will exceed its costs.
- M. Further analysis of wetlands and environmental constraints may substantially impact the costs estimated in this report. Although the National Wetlands Inventory Map does not indicate significant conflicts, further environmental investigation may be necessary. Additional costs may include the need for consultants, US Army Corps of Engineers or Ohio EPA permits, costs associated with additional construction requirements, mitigation costs, etc.
- N. This report supplements the County Engineer's preliminary report dated May 22, 2023, and is based upon the completion of topographic surveying, meetings with land owners, and additional engineering investigations at the site, all subsequent to the first hearing in May 2023.
- O. Recent photographs that depict current conditions appear on the following pages:



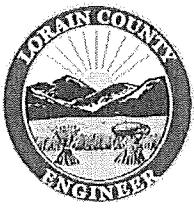
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↑ West side of Mitchell Rd. &

East side of Mitchell Rd. ↓



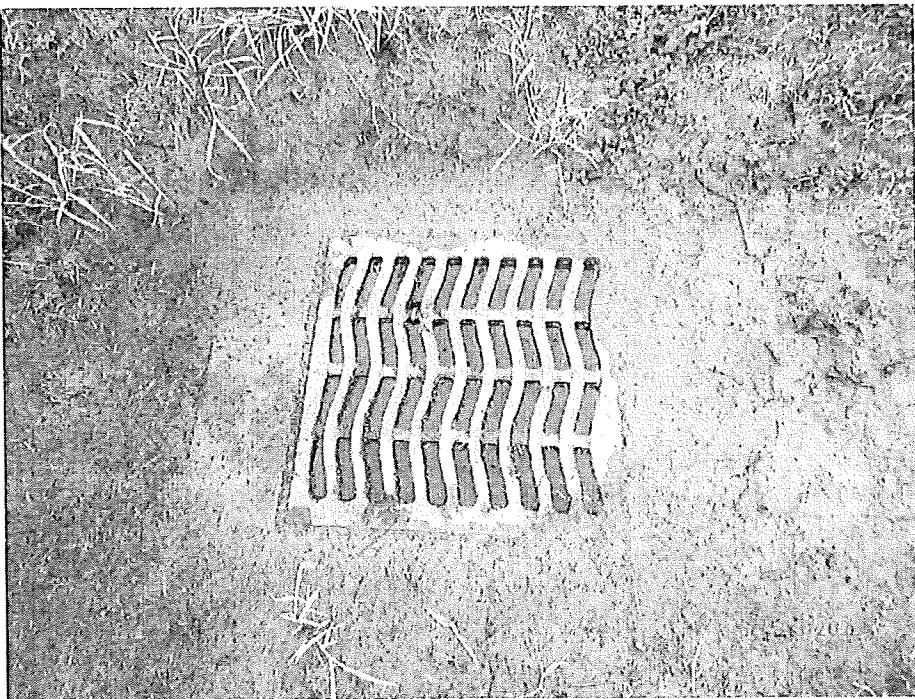


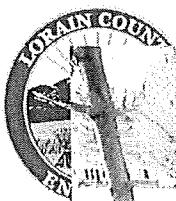
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K



↑ East road side of Mitchell Rd. (catch basin is full of water up to its grate) ↓



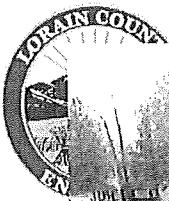


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↑ Excavation by owner to repair tile next to house at #10955 Mitchell Rd. ↓

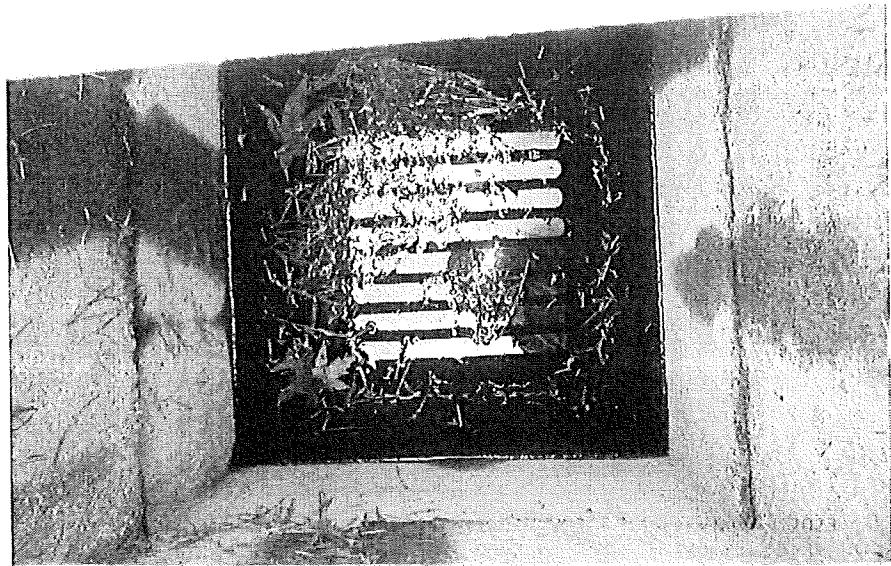




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↑ Catch basin in rear yard of #10955 Mitchell Rd. with standing water; Inlet & outlet pipes are fully submerged, and are not visible in the photo below↓

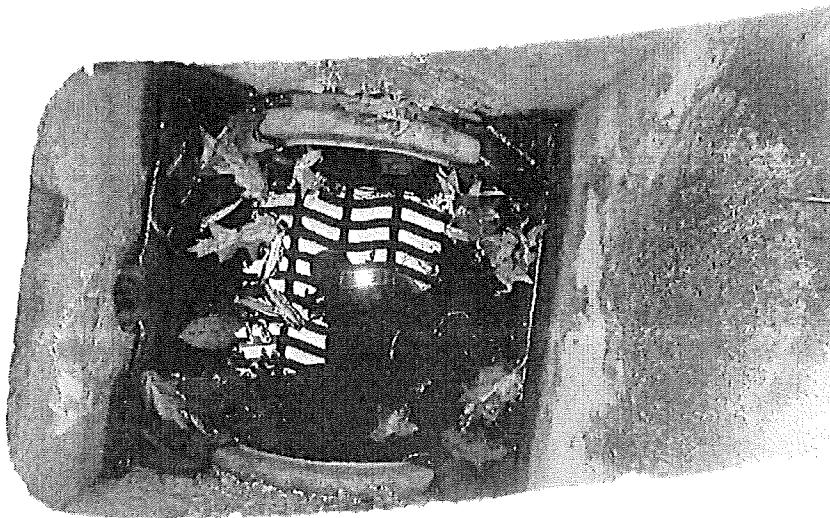




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Standing water in County catch basin in rear yard of #10893 Mitchell Rd. ↓



DEC/ 7/2023



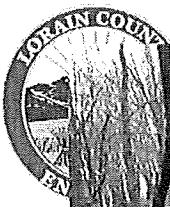
County storm sewer is completely submerged at red arrow at Roth Farm



↑ Stagnant standing water in County ditch at Roth-Kowalski boundary

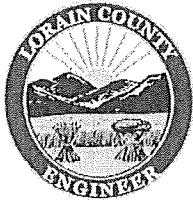


Large woody debris, sediment-laden & standing water across "3K" land ↑



↑ More debris, sediment & standing water in ditch across "3K" land ↓





LOD
KEN C. CARNEY
LORAIN COUNTY ENGINEER



↑ Outfall ditch now under County maintenance in easement

↓ Eastern terminus of same outfall ditch at subdivision off Springfield Circle



Lorain County Engineer's Opinion of Project Cost, Dec. 14, 2023
 Alternate Roth Tile 36" CPP replacement ADDITIONAL COST, Columbia Twp.

<u>Item</u>	<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Amount</u>
103	Bid & contract performance bond additional amount	1	Lump	\$35,000.00	\$35,000
623	Construction layout stakes incl. stake all easements	1	Lump	\$20,000.00	\$20,000
624	Mobilization	1	Lump	\$35,000.00	\$35,000
832	Temporary erosion & sediment control	1	Lump	\$10,000.00	\$10,000
201	Tree clearing, grubbing & grinding stumps	4	Acre	\$5,000.00	\$20,000
202	Removal: old clay pipe (20"-22"), regrade & compact backfill	1200	LF	\$75.00	\$90,000
203	Excavation including haul-away	10000	CY	\$30.00	\$300,000
203	Embankment	1000	CY	\$20.00	\$20,000
209	Ditch cleanout incl. haul away	100	LF	\$25.00	\$2,500
304	Stabilized limestone aggregate driveways with geotextile	500	CY	\$200.00	\$100,000
452	New concrete access apron & sidewalk off Glencove Trail	1	Lump	\$10,000.00	\$10,000
601	ODOT Type C limestone protection with filter fabric incl. excav.	100	CY	\$175.00	\$17,500
601	ODOT Type D limestone protection with filter fabric incl. excav.	50	CY	\$150.00	\$7,500
602	CB 2-4 with compacted bedding	4	Each	\$4,500.00	\$18,000
602	Full headwall for 36" CPP	2	Each	\$7,500.00	\$15,000
602	Concrete masonry bulkhead	2	Each	\$250.00	\$500
611	36" CPP (N-12 or equal) with geotextile anchor	1250	LF	\$400.00	\$500,000
611	Connect 4"-12" drain pipes to new 36" CPP incl. mfg. fittings	1	LS	\$25,000.00	\$25,000
611	Repair/shorten/extend 4"-12" drain outlets incl. mfg. fittings	1	LS	\$5,000.00	\$5,000
630	Sign & support per plan	2	EA	\$500.00	\$1,000
659	Seeding and mulching Class 1	7,500	SY	\$5.00	\$37,500
659	Seeding and mulching Class 2	4	Acre	\$10,000.00	\$40,000
659	Topsoil 4" compacted depth furnished & placed	833	CY	\$50.00	\$41,650
659	Commercial fertilizer 10-20-10	1,350	Ibs.	\$2.50	\$3,375
660	Sodding reinforced on 2:1 slope	200	SY	\$30.00	\$6,000
671	Swale erosion control Type B straw mat & polypropolene netting	5,000	SY	\$7.50	\$37,500
Spec.	Additional timber mat allowance	1,500	LF	\$100.00	\$150,000
Spec.	Rural gate and appurtenances for access driveway	4	EA	\$7,500.00	\$30,000
Spec.	Construction contingency as directed	1	LS	\$250,000.00	\$250,000
- CREDIT for non-performed 1,100 LF ditch restoration/constr.					(\$165,000)
CONSTRUCTION TOTAL					\$1,663,025

Soft costs:

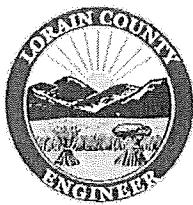
Legal cost estimate	1	Lump	\$10,000.00	\$10,000
Wetlands assessment subconsultant	1	Lump	\$5,000.00	\$5,000
Topographic survey & mapping by subconsultant	1	Lump	\$20,000.00	\$20,000
Misc. administrative costs by Storm Water District	1	Lump	\$5,000.00	\$5,000
Engineering & Inspection by County Engineer	1	Lump	\$50,000.00	\$50,000
Easement acquisition cost estimate	1	Lump	\$0.00	\$0
Damages estimated	1	Lump	\$0.00	\$0
One year additional maintenance cost	1	Lump	\$0.00	\$0
Alternate length = 1,250LF Alternate unit cost \$/LF			\$1,402	PROJECT TOTAL \$1,753,025

Lorain County Engineer's Opinion of Project Cost, Dec. 13, 2023
 Alternate Roth Dry Detention Basin ADDITIONAL COST, Columbia Twp.

<u>Item</u>	<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Amount</u>
103	Bid & contract performance bond additional amount	1	Lump	\$100,000.00	\$100,000
623	Construction layout stakes incl. stake all easements	1	Lump	\$50,000.00	\$50,000
624	Mobilization	1	Lump	\$100,000.00	\$100,000
832	Temporary erosion & sediment control	1	Lump	\$50,000.00	\$50,000
201	Tree clearing, grubbing & grinding perimeter access stumps	10	Acre	\$5,000.00	\$50,000
202	Removals: none	1	Lump	\$0.00	\$0
203	Excavation including haul-away	100000	CY	\$30.00	\$3,000,000
203	Embankment	1000	CY	\$20.00	\$20,000
209	Ditch cleanout incl. haul away	100	LF	\$25.00	\$2,500
304	Stabilized limestone aggregate driveways at inlet & outlet	250	CY	\$200.00	\$50,000
411	Stabilized limestone aggregate driveways at access turns	100	CY	\$200.00	\$20,000
452	New concrete access apron off Glencove Trail for maintenance	1	Lump	\$7,500.00	\$7,500
601	ODOT Type C limestone protection with filter fabric incl. excav.	500	CY	\$175.00	\$87,500
601	ODOT Type D limestone protection with filter fabric incl. excav.	500	CY	\$150.00	\$75,000
602	Outlet control structure with trash rack	1	Each	\$10,000.00	\$10,000
602	Manhole 72" diameter	2	Each	\$4,500.00	\$9,000
602	Full headwall for 48" CPP	2	Each	\$10,000.00	\$20,000
602	Skewed full headwall for 48" CPP	1	Each	\$10,000.00	\$10,000
602	Half-height headwall for 36" CPP	2	Each	\$2,500.00	\$5,000
602	Half-height headwall for 24" CPP	1	Each	\$1,750.00	\$1,750
602	Half-height headwall for 12" CPP	1	Each	\$1,000.00	\$1,000
602	Concrete collar to connect 24" CPP	1	Each	\$250.00	\$250
611	48" CPP HDPE (N-12 or equal)	350	LF	\$500.00	\$175,000
611	36" CPP HDPE (N-12 or equal)	100	LF	\$350.00	\$35,000
611	24" CPP HDPE (N-12 or equal)	20	LF	\$150.00	\$3,000
611	12" CPP HDPE (N-12 or equal)	20	LF	\$75.00	\$1,500
611	Repair/shorten/extend 4"-12" drain outlets incl. fittings	1	LS	\$2,500.00	\$2,500
630	Sign & support per plan	2	EA	\$500.00	\$1,000
659	Seeding and mulching Class 2	10	Acre	\$10,000.00	\$100,000
659	Topsoil 4" compacted depth furnished & placed	5,500	CY	\$50.00	\$275,000
659	Commercial fertilizer 10-20-10	9,000	Ibs.	\$2.50	\$22,500
660	Sodding reinforced on 2:1 slope	1,000	SY	\$30.00	\$30,000
671	Ditch/slope erosion Type B straw mat & polypropolene netting	50,000	SY	\$7.50	\$375,000
Spec.	Additional timber mat allowance	2,750	LF	\$100.00	\$275,000
Spec.	Rural gate and appurtenances for access driveway	4	EA	\$7,500.00	\$30,000
Spec.	Construction contingency as directed	1	LS	\$750,000.00	\$750,000
- CREDIT for 1,100 LF ditch restoration/construction non-performed					(\$165,000)
				CONSTRUCTION TOTAL	\$5,580,000

Soft costs:

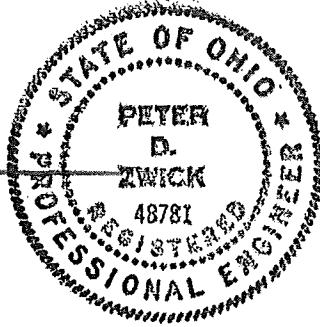
Land purchase cost estimate	10	Acre	\$10,000.00	\$100,000
Legal cost estimate	1	Lump	\$10,000.00	\$10,000
Wetlands assessment subconsultant	1	Lump	\$5,000.00	\$5,000
Wetlands permit/mitigation allowance	1	Lump	\$50,000.00	\$50,000
Topographic survey & mapping by subconsultant	1	Lump	\$16,350.00	\$16,350
Geotechnical investigation by subconsultant	1	Lump	\$25,000.00	\$25,000
Misc. administrative costs by Storm Water District	1	Lump	\$5,000.00	\$5,000
Engineering & Inspection by County Engineer	1	Lump	\$50,000.00	\$50,000
Easement acquisition cost estimate	1	Lump	\$0.00	\$0
Damages estimated	1	Lump	\$0.00	\$0
One year of maintenance cost	1	Lump	\$50,000.00	\$50,000
Alternate detention volume = 9 acre-feet; Alternate unit cost \$/ac.-ft. = \$654,594				PROJECT TOTAL \$5,891,350



LORAIN COUNTY ENGINEER

KEN CARNEY, P.E., P.S.

Peter Zwick PE PS
Chief Deputy Engineer



cc: Ken Carney PE PS, Lorain County Engineer kcarney@loraincountyengineer.com
Don Romancak Lorain County SWMD Coordinator romancakd@loraincounty.us

K:\STORM WATER IMPROVEMENTS geo-referenced\Columbia Twp\Roth Lateral #1 (Petitioned 2023) 10955 Mitchell Rd\Engineering\Final Report

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email: kcarney@loraincountyengineer.com

Theresa Upton

From: Yvonne Shaw
Sent: Monday, December 18, 2023 2:12 PM
To: Theresa Upton
Cc: Ken Carney; Don Romancak; Peter Zwick
Subject: Roth Main Ditch & Lateral
Attachments: Roth Main Ditch & Lateral.pdf

Thank you,

Yvonne Shaw
Lorain County Engineer's
247 Hadaway Street
Elyria, OH 44035
440-329-5586