



HURON-CLINTON
metroparks

Wolcott Mill Metropark Stormwater Management Plan

September 2019



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Wolcott Mill Metropark Stormwater Structure Recommendations

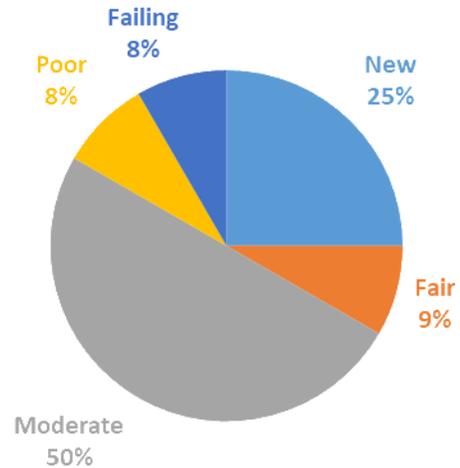
Table 1. Summary of Wolcott Mill Culvert Inspection and Maintenance Needs

Culvert Rating	Number of Culverts	Culverts Needing Immediate Cleanout	Culverts Needing Future Cleanout	Culverts Needing Replacement or Repair
New	3	0	0	0
Fair	3	0	0	0
Moderate	8	3	0	0
Poor	3	0	0	3
Failing	1	1*	0	1
Total:	18	4*	0	4
Repair Cost:		\$724	\$0	\$22,261

*Culvert may be replaced before it needs to be cleaned out.



WOLCOTT MILL CULVERTS



Left: Failing culvert in Wolcott Mill Metropark. Right: Proportion of culverts in each condition category.

Table 2. Individual Culvert Replacement Costs

Culvert ID	Diameter (in)	Length (ft)	Condition	Maintenance Need	Cost Opinion
CUL-WOL-001	24	42	Moderate	Future Cleanout	\$212
CUL-WOL-004	30	30	Poor	Replacement	\$7,458
CUL-WOL-007*	18	18	Poor	Replacement	\$2,745
CUL-WOL-008*	18	12	Failing	Replacement	\$1,858
CUL-WOL-012	36	17	Poor	Replacement	\$10,200
CUL-WOL-014	36	34	Moderate	Future Cleanout	\$253
CUL-WOL-015	36	35	Moderate	Future Cleanout	\$259
Total:					\$22,985

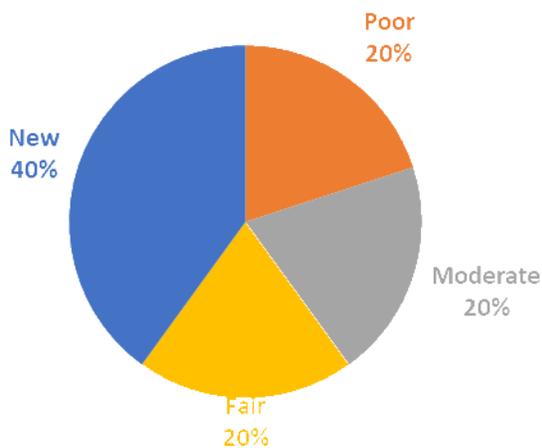
*Culvert may be replaced before it needs to be cleaned out.

Table 3. Summary of Wolcott Mill Outfall Inspection and Maintenance Needs

Outfall Rating	Number of Outfalls	Outfalls Needing Immediate Cleanout	Outfalls Needing Future Cleanout	Outfalls Needing Replacement or Repair
New	2	0	0	0
Fair	1	0	0	0
Good	1	0	0	0
Poor	1	1*	0	1
Failing	0	0	0	0
Total:	5	1*	0	1
Repair Cost:		\$0	\$0	\$5,000

*Outfall may be replaced before it needs to be cleaned out.

WOLCOTT MILL OUTFALLS



Left: Proportion of outfalls in each condition category. Right: Outfall in moderate condition in Wolcott Mill Metropark.

Table 4. Individual Outfall Replacement Costs

Outfall ID	Diameter (in)	Condition	Maintenance Need	Cost Opinion
SDC-WOL-002*	6	Poor	Replacement	\$5,000
Total:				\$5,000

*Outfall may be replaced before it needs to be cleaned out.

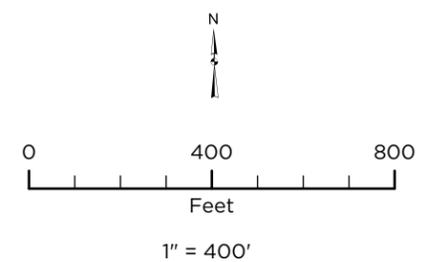
Stormwater Structure Ratings

Wolcott Mill Metropark

Map Sheet: 40 of 48



Outfalls (Field Rating)	Gravity Main (Pipe Rating Index)
Failing	1
Poor	2
Moderate	3
Fair	4
New	5
Culverts (Field Rating)	Gravity Main (Other)
Failing	Culvert (Other)
Poor	Roads
Moderate	Roads
Fair	Park Boundary
New	
(Not Rated)	



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Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl.

Map Published: October 23, 2019



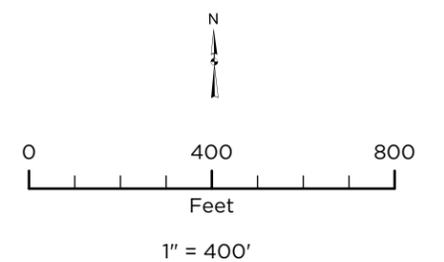
Stormwater Structure Ratings

Wolcott Mill Metropark

Map Sheet: 41 of 48



Outfalls (Field Rating)	Gravity Main (Pipe Rating Index)
<ul style="list-style-type: none"> ■ Failing ■ Poor ■ Moderate ■ Fair ■ New 	<ul style="list-style-type: none"> 1 2 3 4 5
Culverts (Field Rating)	Gravity Main (Other)
<ul style="list-style-type: none"> — Failing — Poor — Moderate — Fair — New — (Not Rated) 	 Culvert (Other)
	Roads
	 Roads
	 Park Boundary



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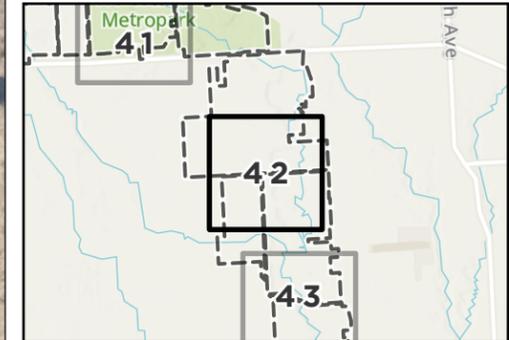
Map Published: October 23, 2019



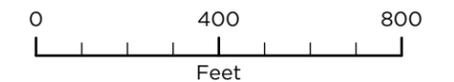
Stormwater Structure Ratings

Wolcott Mill Metropark

Map Sheet: 42 of 48



Outfalls (Field Rating)	Gravity Main (Pipe Rating Index)
Failing	1
Poor	2
Moderate	3
Fair	4
New	5
Culverts (Field Rating)	Gravity Main (Other)
Failing	Culvert (Other)
Poor	Roads
Moderate	Roads
Fair	Park Boundary
New	
(Not Rated)	



1" = 400'

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Map Published: October 23, 2019



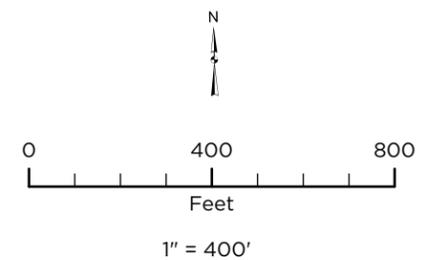
Stormwater Structure Ratings

Wolcott Mill Metropark

Map Sheet: 43 of 48



Outfalls (Field Rating)	Gravity Main (Pipe Rating Index)
<ul style="list-style-type: none"> ■ Failing ■ Poor ■ Moderate ■ Fair ■ New 	<ul style="list-style-type: none"> 1 2 3 4 5
Culverts (Field Rating)	Gravity Main (Other)
<ul style="list-style-type: none"> — Failing — Poor — Moderate — Fair — New — (Not Rated) 	 Culvert (Other)
	Roads
	 Roads
	 Park Boundary



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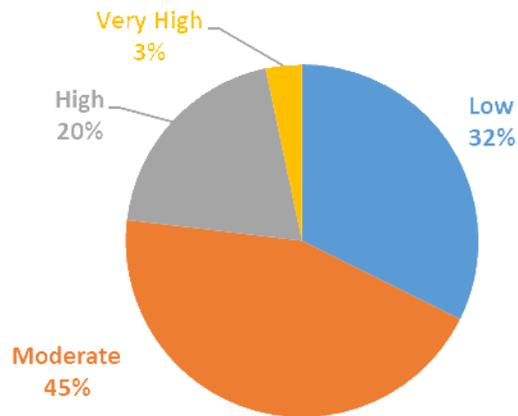


Wolcott Mill Metropark Streambank Summary and Recommendations

Table 5. Wolcott Mill Erosion Severity Summary

Erosion Condition	Feet of Streambank (miles)	Cost of Restoration
Very High	3,115 (0.59)	\$2,111,970
High	18,523 (3.51)	\$11,689,030
Moderate	41,699 (7.90)	
Low	30,269 (5.73)	
Very Low	0 (0.0)	
Total:	93,606 (17.73)	\$13,801,000

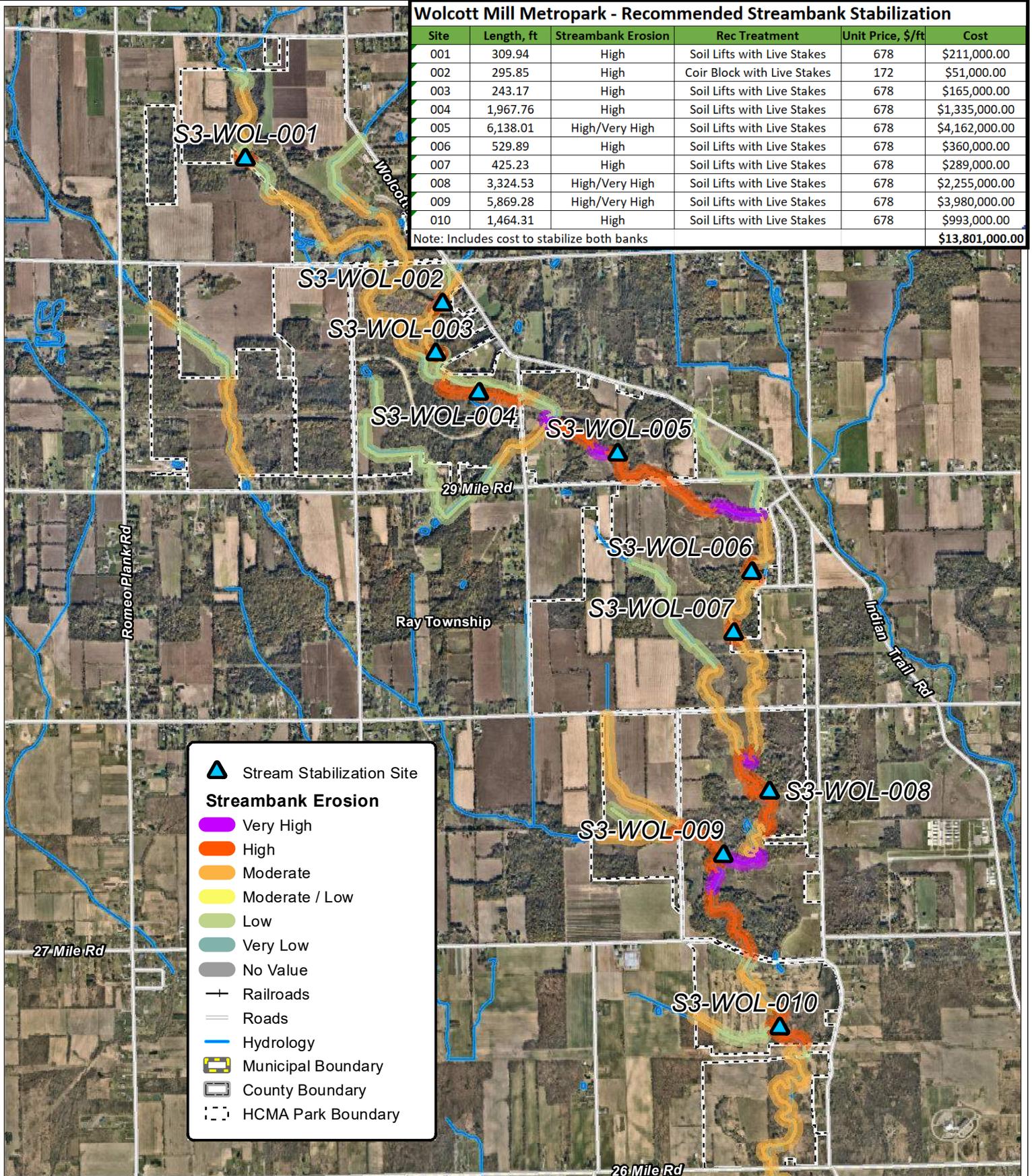
WOLCOTT MILL EROSION SEVERITY



Left: Proportion of stream in each erosion category. Right: High erosion endangering a power pole in Wolcott Mill Metropark.

Wolcott Mill Metropark - Recommended Streambank Stabilization

Site	Length, ft	Streambank Erosion	Rec Treatment	Unit Price, \$/ft	Cost
001	309.94	High	Soil Lifts with Live Stakes	678	\$211,000.00
002	295.85	High	Coir Block with Live Stakes	172	\$51,000.00
003	243.17	High	Soil Lifts with Live Stakes	678	\$165,000.00
004	1,967.76	High	Soil Lifts with Live Stakes	678	\$1,335,000.00
005	6,138.01	High/Very High	Soil Lifts with Live Stakes	678	\$4,162,000.00
006	529.89	High	Soil Lifts with Live Stakes	678	\$360,000.00
007	425.23	High	Soil Lifts with Live Stakes	678	\$289,000.00
008	3,324.53	High/Very High	Soil Lifts with Live Stakes	678	\$2,255,000.00
009	5,869.28	High/Very High	Soil Lifts with Live Stakes	678	\$3,980,000.00
010	1,464.31	High	Soil Lifts with Live Stakes	678	\$993,000.00
Note: Includes cost to stabilize both banks					\$13,801,000.00

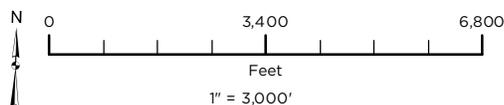


Wolcott Mill Metropark Streambank Stabilization Siting

Source: Data provided by OHM Advisors, Huron Clinton Metroparks and Near Map. OHM Advisors does not warrant the accuracy of the data and/or the map. This document is intended to depict the approximate spatial location of the mapped features within the Community and all use is strictly at the user's own risk.

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl

Map Published: June 13, 2019



S3-WOL-001
 Length: 309.94 ft
 Recommended Treatment: Soil Lifts with Live Stakes
 Construction Cost: \$211,000

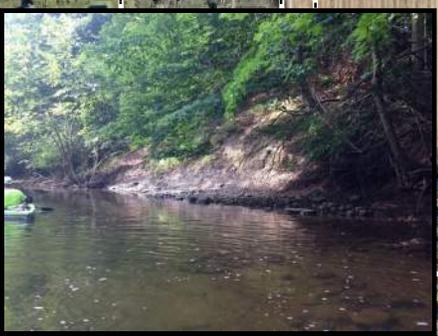
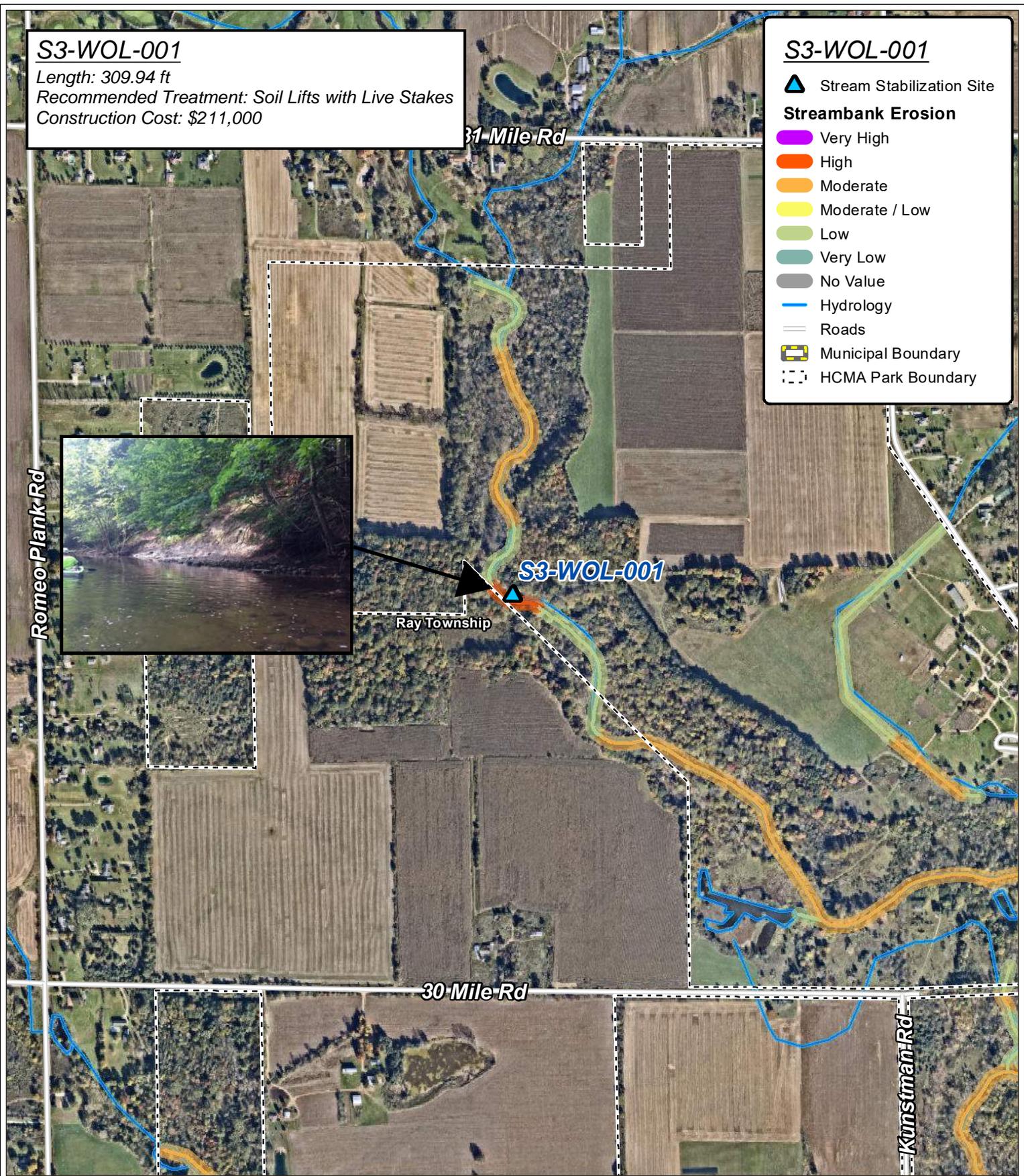
S3-WOL-001

- Stream Stabilization Site

Streambank Erosion

- Very High
- High
- Moderate
- Moderate / Low
- Low
- Very Low
- No Value

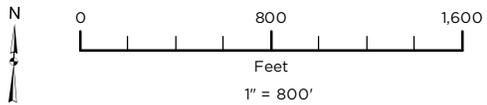
- Hydrology
- Roads
- Municipal Boundary
- HCMA Park Boundary



Wolcott Mill Metropark Streambank Stabilization Siting

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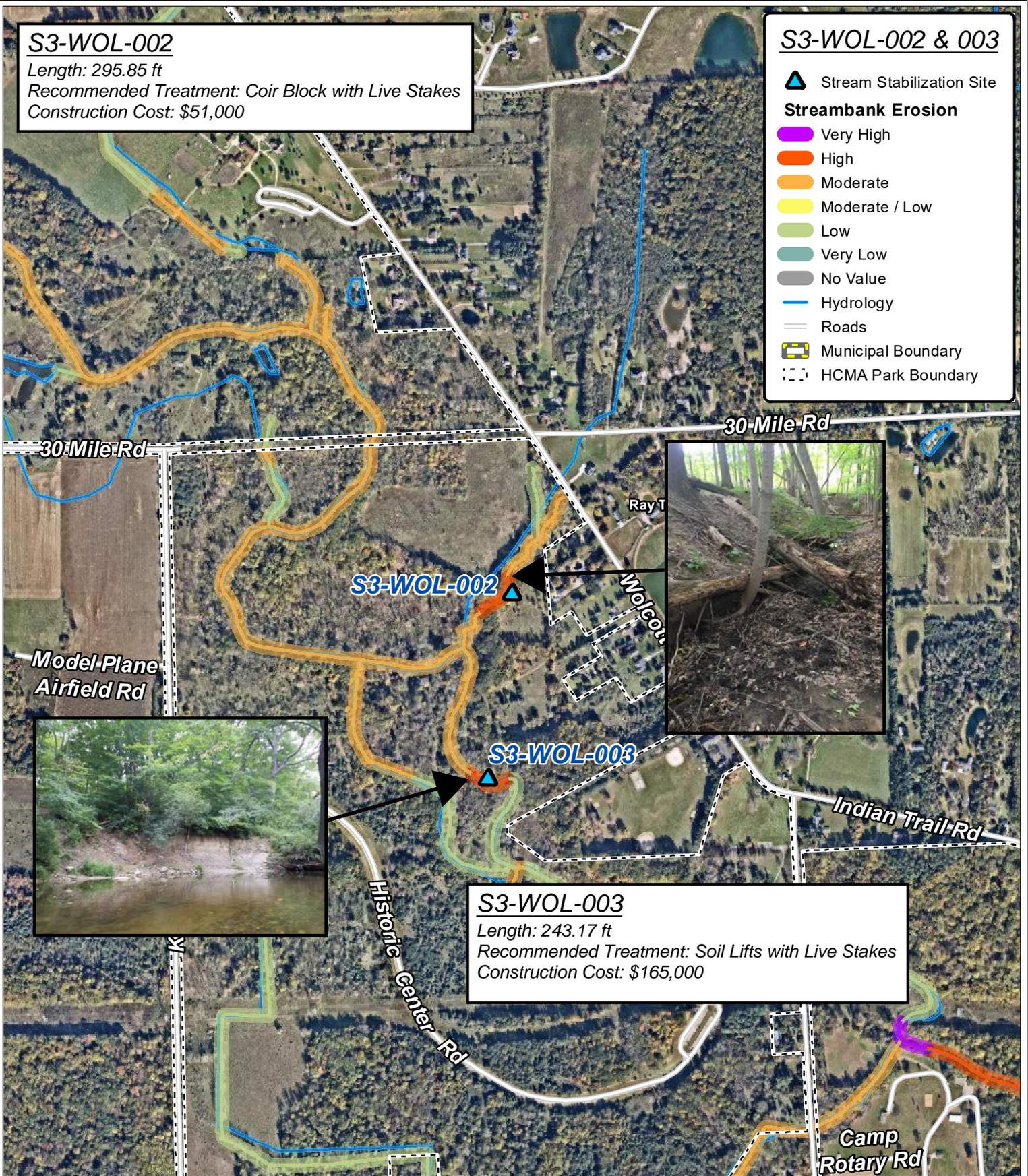


S3-WOL-002

Length: 295.85 ft
Recommended Treatment: Coir Block with Live Stakes
Construction Cost: \$51,000

S3-WOL-002 & 003

-  Stream Stabilization Site
- Streambank Erosion**
-  Very High
-  High
-  Moderate
-  Moderate / Low
-  Low
-  Very Low
-  No Value
-  Hydrology
-  Roads
-  Municipal Boundary
-  HCMA Park Boundary



S3-WOL-002

S3-WOL-003

S3-WOL-003

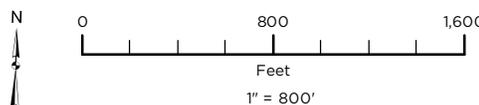
Length: 243.17 ft
Recommended Treatment: Soil Lifts with Live Stakes
Construction Cost: \$165,000

Wolcott Mill Metropark Streambank Stabilization Siting

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Map Published: June 13, 2019

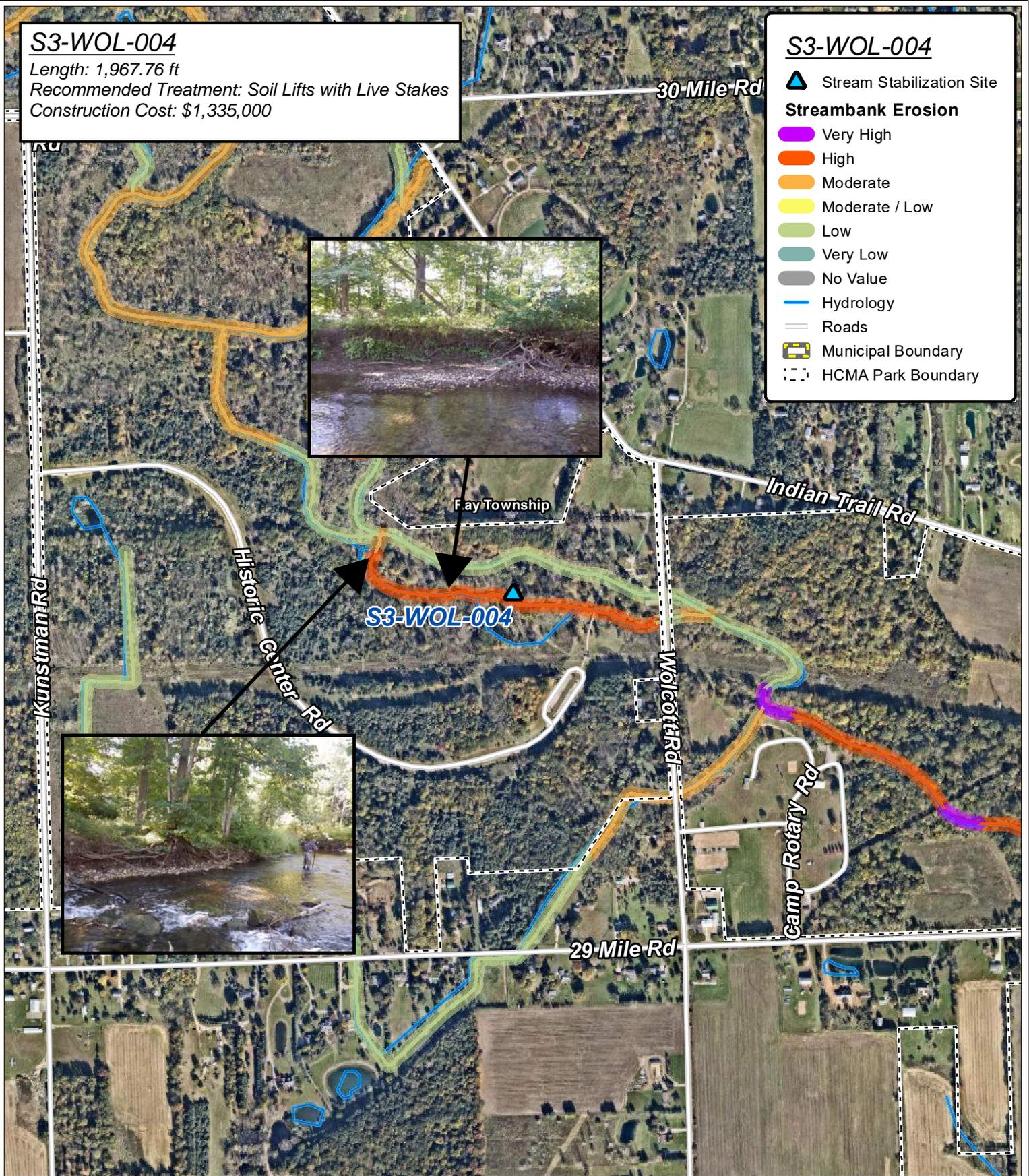


S3-WOL-004

Length: 1,967.76 ft
Recommended Treatment: Soil Lifts with Live Stakes
Construction Cost: \$1,335,000

S3-WOL-004

- ▲ Stream Stabilization Site
- Streambank Erosion**
- Very High
- High
- Moderate
- Moderate / Low
- Low
- Very Low
- No Value
- Hydrology
- Roads
- Municipal Boundary
- HCMA Park Boundary

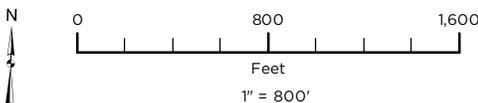


Wolcott Mill Metropark Streambank Stabilization Siting

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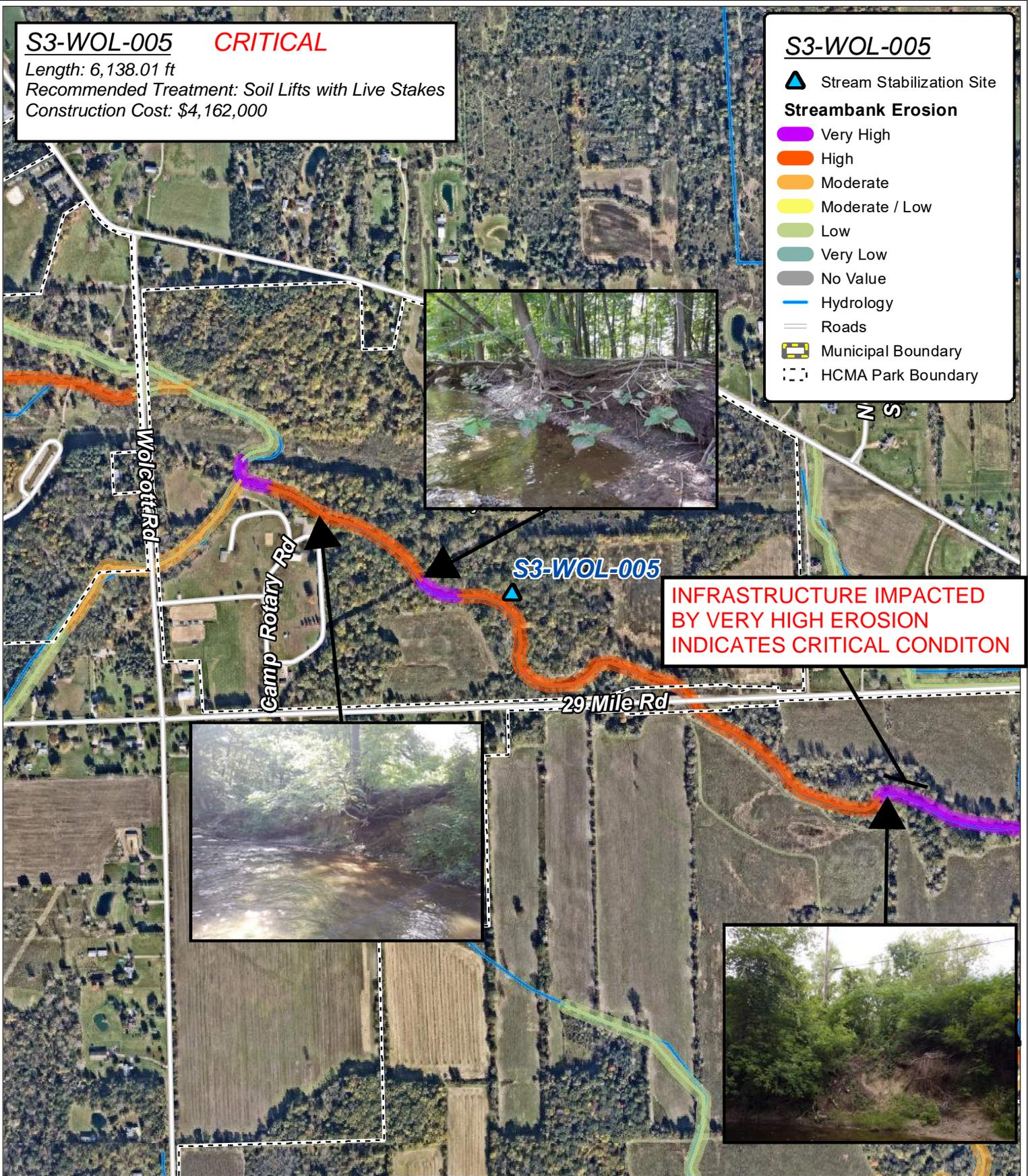


S3-WOL-005 **CRITICAL**

Length: 6,138.01 ft
Recommended Treatment: Soil Lifts with Live Stakes
Construction Cost: \$4,162,000

S3-WOL-005

- ▲ Stream Stabilization Site
- Streambank Erosion**
- Very High
- High
- Moderate
- Moderate / Low
- Low
- Very Low
- No Value
- Hydrology
- Roads
- Municipal Boundary
- HCMA Park Boundary

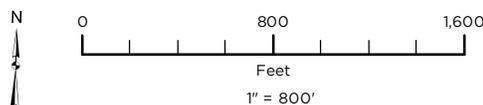


**Wolcott Mill Metropark
Streambank Stabilization Siting**

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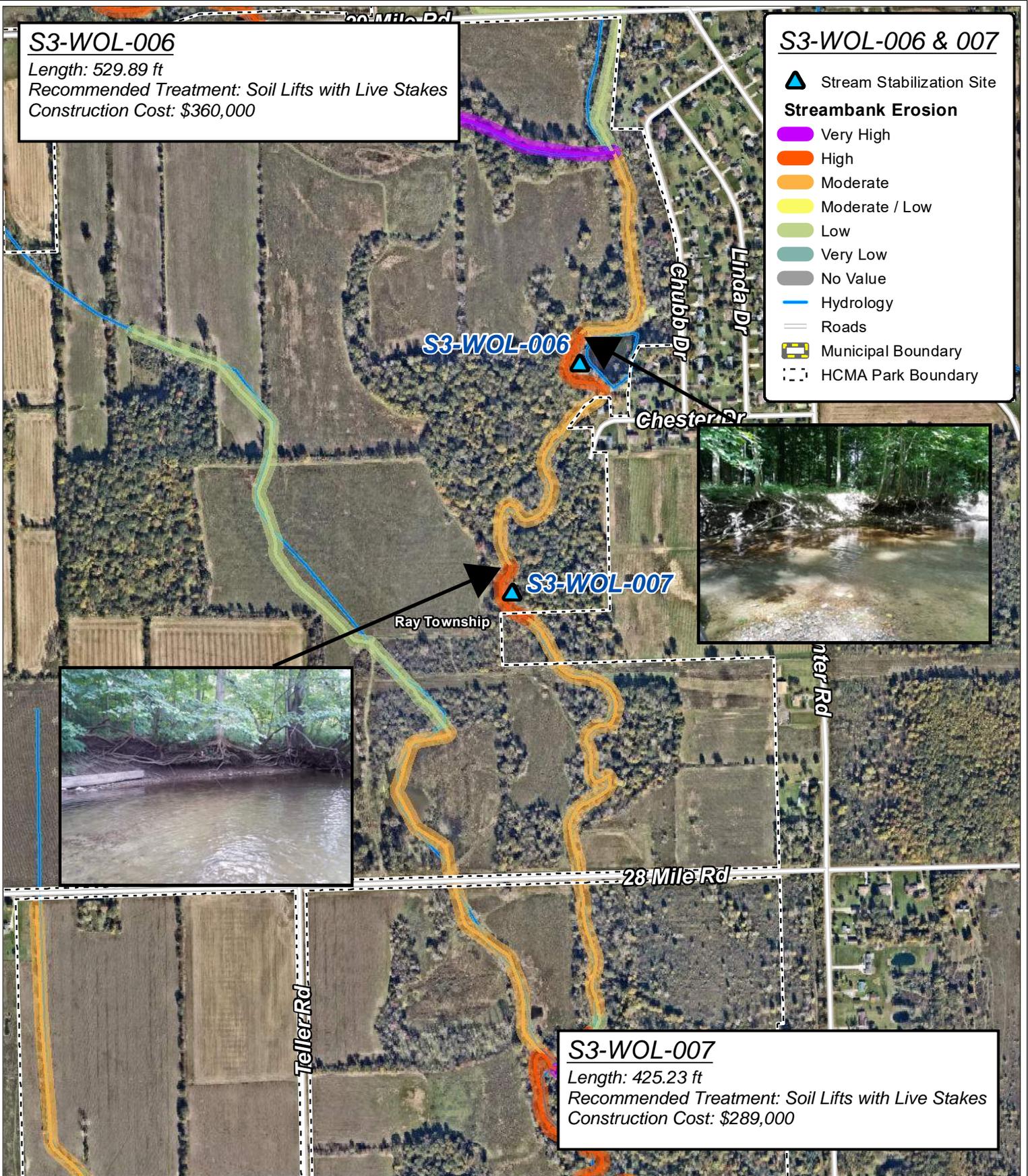


S3-WOL-006

Length: 529.89 ft
Recommended Treatment: Soil Lifts with Live Stakes
Construction Cost: \$360,000

S3-WOL-006 & 007

-  Stream Stabilization Site
- Streambank Erosion**
-  Very High
-  High
-  Moderate
-  Moderate / Low
-  Low
-  Very Low
-  No Value
-  Hydrology
-  Roads
-  Municipal Boundary
-  HCMA Park Boundary



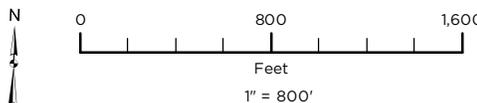
S3-WOL-007
 Length: 425.23 ft
 Recommended Treatment: Soil Lifts with Live Stakes
 Construction Cost: \$289,000

Wolcott Mill Metropark Streambank Stabilization Siting

Source: Data provided by OHM Advisors, Huron Clinton Metroparks and Near Map. OHM Advisors does not warrant the accuracy of the data and/or the map. This document is intended to depict the approximate spatial location of the mapped features within the Community and all use is strictly at the user's own risk.

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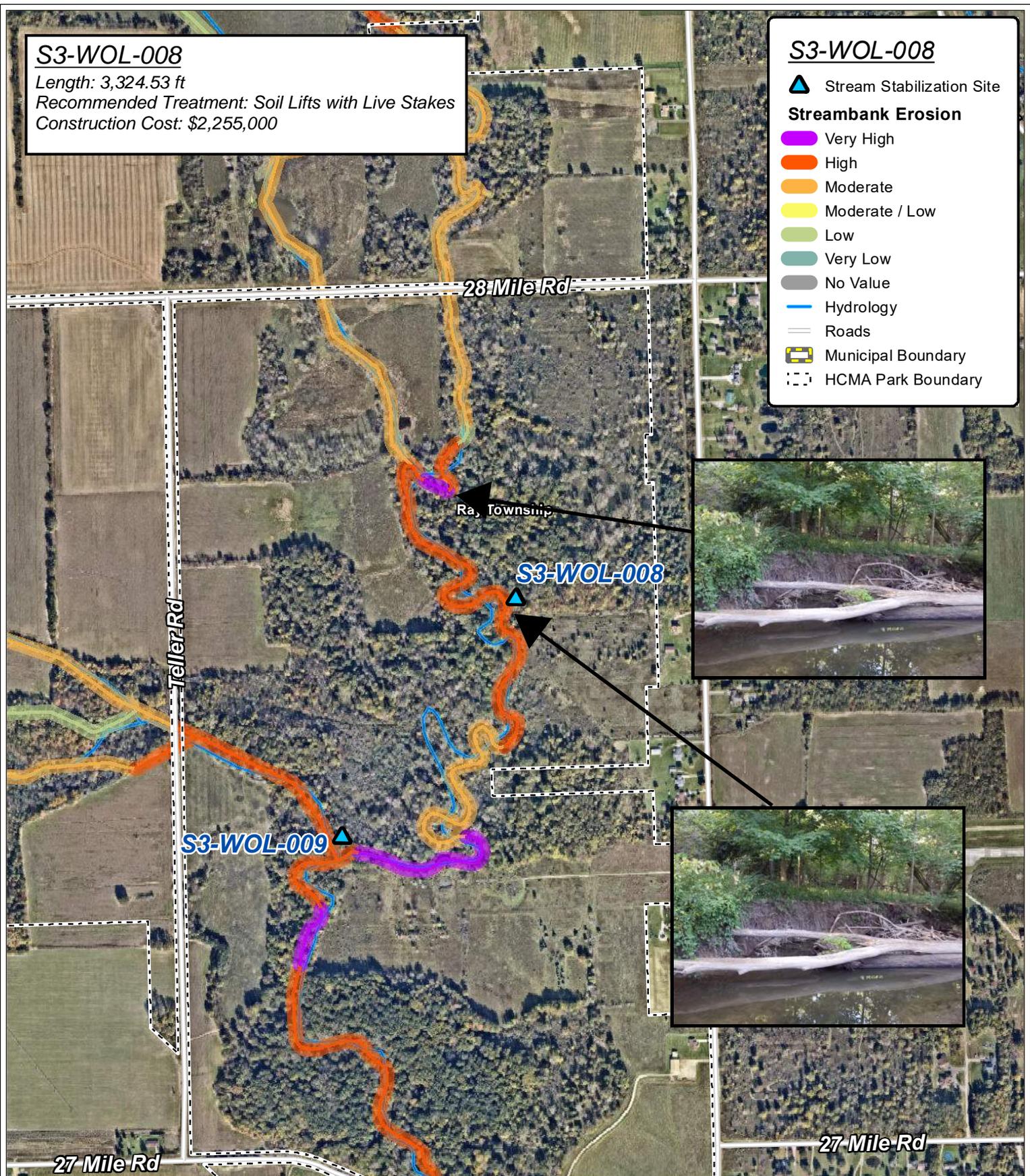


S3-WOL-008

Length: 3,324.53 ft
Recommended Treatment: Soil Lifts with Live Stakes
Construction Cost: \$2,255,000

S3-WOL-008

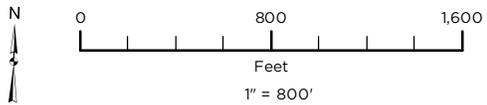
- Stream Stabilization Site
- Streambank Erosion**
- Very High
- High
- Moderate
- Moderate / Low
- Low
- Very Low
- No Value
- Hydrology
- Roads
- Municipal Boundary
- HCMA Park Boundary



Wolcott Mill Metropark Streambank Stabilization Siting

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Map Published: June 13, 2019



S3-WOL-009

Length: 5,869.28 ft

Recommended Treatment: Soil Lifts with Live Stakes

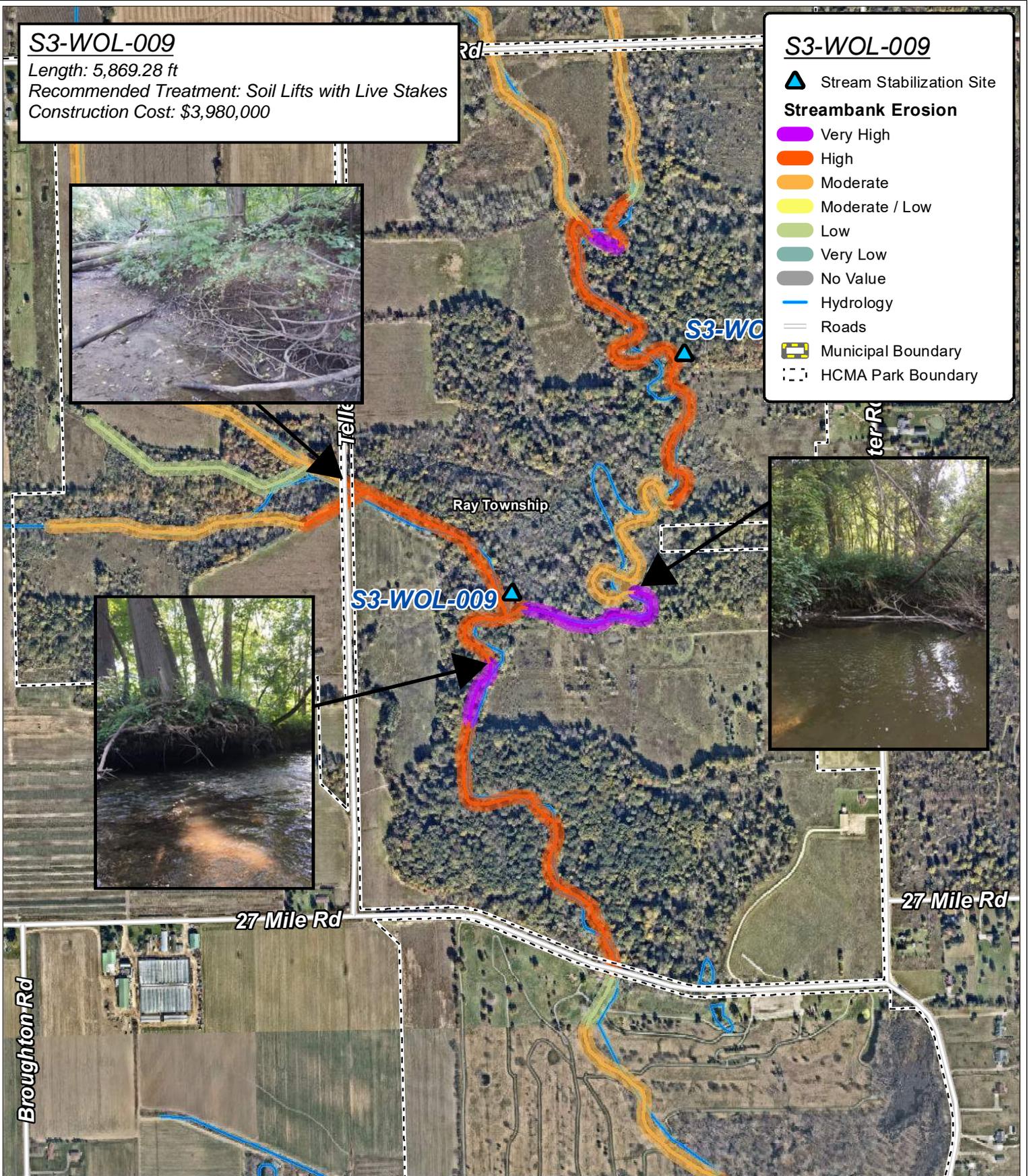
Construction Cost: \$3,980,000

S3-WOL-009

▲ Stream Stabilization Site

Streambank Erosion

- █ Very High
- █ High
- █ Moderate
- █ Moderate / Low
- █ Low
- █ Very Low
- █ No Value
- Hydrology
- Roads
- Municipal Boundary
- HCMA Park Boundary

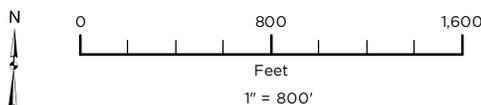


Wolcott Mill Metropark Streambank Stabilization Siting

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Map Published: June 13, 2019



S3-WOL-010

Length: 1,464.31 ft

Recommended Treatment: Soil Lifts with Live Stakes

Construction Cost: \$993,000

S3-WOL-010

 Stream Stabilization Site

Streambank Erosion

 Very High

 High

 Moderate

 Moderate / Low

 Low

 Very Low

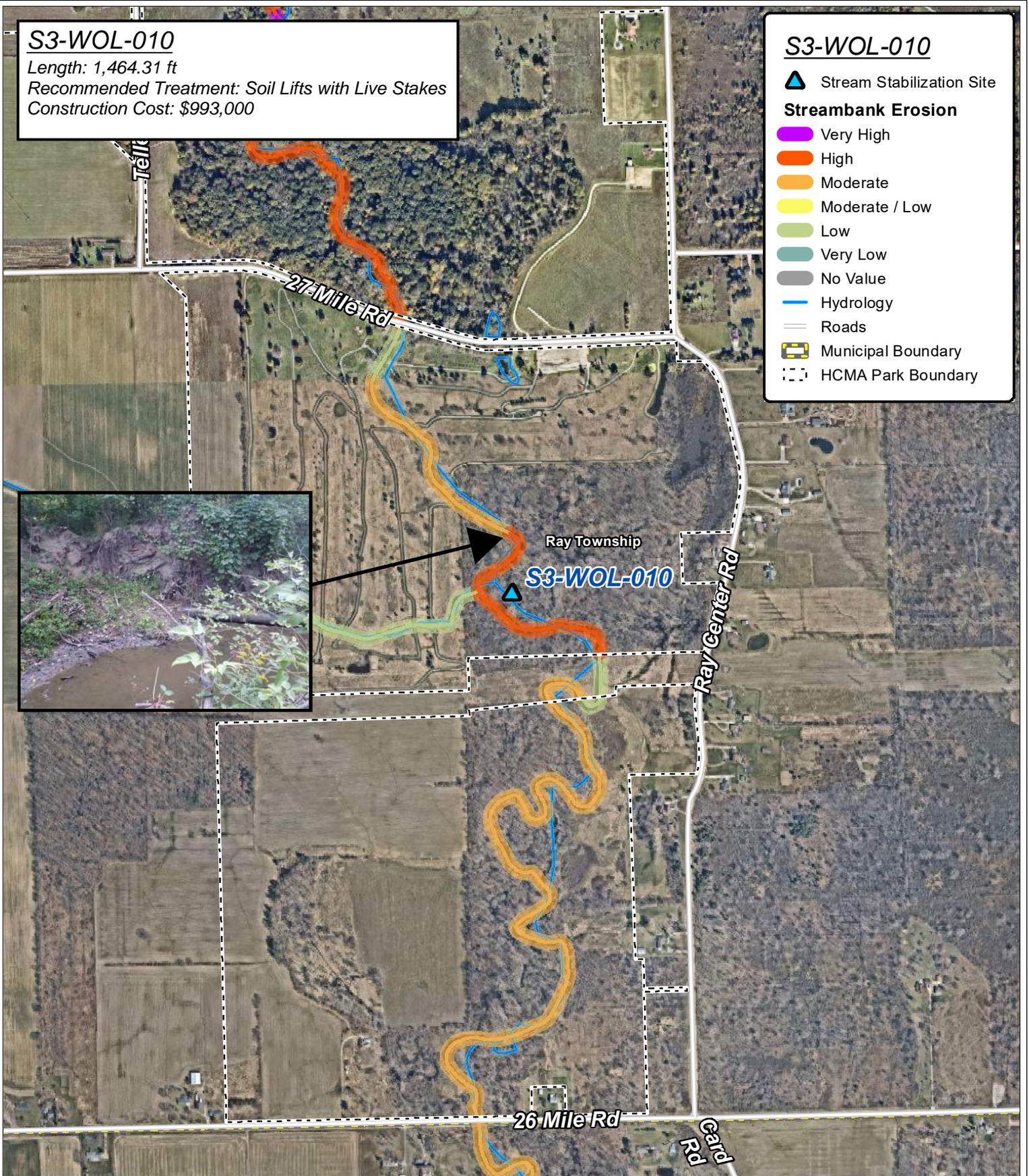
 No Value

 Hydrology

 Roads

 Municipal Boundary

 HCMA Park Boundary

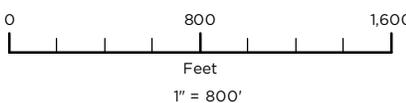


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Streambank Stabilization Siting**

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Map Published: June 13, 2019



Wolcott Mill Metropark Shoreline Summary and Recommendations



Minor slumping in Wolcott Mill Metropark.

Table 6. Shoreline Inspection Summary

Erosion Condition	Length of Shoreline (feet)
Major	0.0
Minor	1,942.59
None	3,026.79
Total:	4,969.38
Restoration Cost:	\$0

All shoreline in Wolcott Mill Metropark consists of small ponds.

All shoreline in Wolcott Mill Metropark consists of vegetated low banks. No shoreline in this park is currently in need of restoration.

Wolcott Mill Metropark Green Infrastructure Recommendations

In Wolcott Mill, the green infrastructure practices listed in Table 1 are recommended to improve water quality and ameliorate flooding issues in the park where feasible. These practices are also outlined on the attached green infrastructure maps.

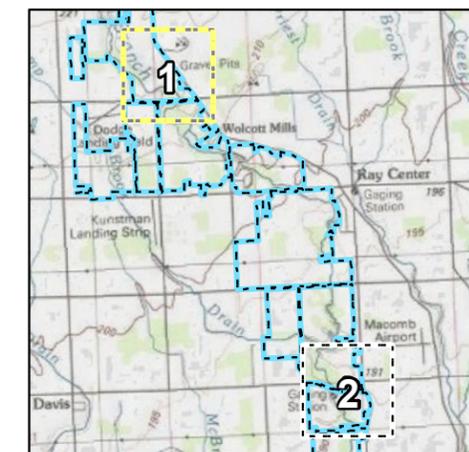
Table 7. Wolcott Mill Green Infrastructure Recommendations

Site ID	Site	Practice Type	Treatment Surface Area (ft ²)	Cost Opinion	Cost per sq ft of Treatment Area (\$/ft ²)
GI-WOL-01	Ditch near Farm Parking	Naturalized Swale	2,495	\$4,242	\$1.70
GI-WOL-02	Golf Course Parking Lot	Pavement Removal	57,450	\$265,547	\$4.62
Total:			59,945	\$269,789	

Wolcott Mill Metropark

Green Infrastructure
Recommendation Areas

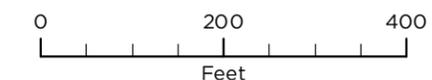
Area: 1 of 2



Recommendation Area

GSI Type

-  Naturalized Swale (1)
-  Stormwater Gravity Main
-  HCMA_swCulvert (6)
-  HCMA Park Boundary
-  Roads



1" = 200'

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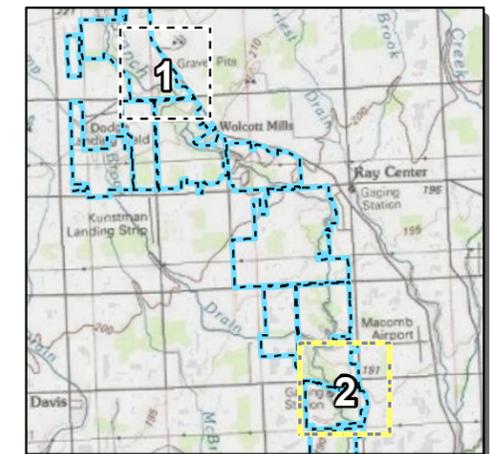
Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 IntlFeet

Map Published: October 1, 2019

Wolcott Mill Metropark

Green Infrastructure Recommendation Areas

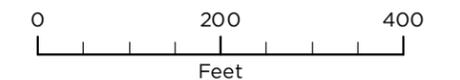
Area: 2 of 2



Recommendation Area

GSI Type

- Pavement Removal (1)
- Stormwater Gravity Main
- HCMA_swCulvert (1)
- HCMA Park Boundary
- Roads



1" = 200'

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Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 IntlFeet

Map Published: October 1, 2019

Wolcott Mill Metropark Recommendation Prioritization

Each table in this section is prioritized, with the most urgent projects listed first. Projects with **red** Site IDs need immediate attention. Projects with **green** Site IDs can be accomplished by HCMA staff. **Bold** projects may be eligible for grant funding. Underlined projects may be good volunteer or education opportunities. All other projects will likely require annual budget allocations to complete.

Table 8. Wolcott Mill Culvert Repair Priorities

Culvert ID	Diameter (in)	Length (ft)	Condition	Maintenance Need	Cost Opinion
CUL-WOL-008	18	12	Failing	Replacement	\$1,858
CUL-WOL-004	30	30	Poor	Replacement	\$7,458
CUL-WOL-012	36	17	Poor	Replacement	\$10,200
CUL-WOL-007	18	18	Poor	Replacement	\$2,745
CUL-WOL-015	36	35	Moderate	Future Cleanout	\$259
CUL-WOL-014	36	34	Moderate	Future Cleanout	\$253
CUL-WOL-001	24	42	Moderate	Future Cleanout	\$212
Total:					\$22,985

Table 9. Wolcott Mill Outfall Repair Priorities

Outfall ID	Diameter (in)	Condition	Maintenance Need	Cost Opinion
SDC-WOL-002	6	Poor	Replacement	\$5,000
Total:				\$5,000

Table 10. Wolcott Mill Green Infrastructure Installation Priorities

Site ID	Site	Practice Type	Treatment Surface Area (ft ²)	Cost Opinion	Cost per sq ft of Treatment Area (\$/ft ²)
GI-WOL-01	Ditch near Farm Parking	Naturalized Swale	2,495	\$4,242	\$1.70
GI-WOL-02	Golf Course Parking Lot	Pavement Removal	57,450	\$265,547	\$4.62
Total:			59,945	\$269,789	

Table 11. Wolcott Mill Stream Stabilization Priorities

Stream Stabilization Site ID	Length (ft)	Erosion Severity	Recommended Treatment	Unit Cost (\$/ft)	Cost Opinion
S3-WOL-002	295.85	High	Coir Block with Live Stakes	\$172	\$51,000
S3-WOL-005	6,138.01	High/Very High	Soil Lift with Live Stakes	\$678	\$4,162,000
S3-WOL-009	5,869.28	High/Very High	Soil Lift with Live Stakes	\$678	\$3,980,00
S3-WOL-008	3,324.53	High/Very High	Soil Lift with Live Stakes	\$678	\$2,255,000
S3-WOL-004	1,967.76	High	Soil Lift with Live Stakes	\$678	\$1,335,000
S3-WOL-010	1,464.31	High	Soil Lift with Live Stakes	\$678	\$993,000
S3-WOL-006	529.89	High	Soil Lift with Live Stakes	\$678	\$360,000
S3-WOL-007	425.23	High	Soil Lift with Live Stakes	\$678	\$289,000
S3-WOL-001	309.94	High	Soil Lift with Live Stakes	\$678	\$211,000
S3-WOL-003	243.17	High	Soil Lift with Live Stakes	\$678	\$165,000
Total:					\$9,824,980