

Great Lakes Basin Program GLRI Project

Eighteenmile Creek Streambank Stabilization

Size: watershed
Grant Amount: \$198,904
Year awarded: 2012

Sponsor: Erie County Soil & Water Conservation District
Address: 50 Commerce Way
City: East Aurora
State: New York
Zip: 14052

Contact Information: Project Manager, James Sroka
Work Phone: 716 652 8480 ext 5
Email: james.sroka@ny.nacdnet.net

Submitted Project:

Size: watershed
Budget: \$198,904
Savings: 5,000

Background

Sediment Sources

Sediment pollution from streambank erosion has been identified as being a serious threat to water quality within the Eighteenmile Creek watershed. In 2000, the Erie County Soil & Water Conservation District conducted an extensive erosion inventory of the watershed and recorded over 70 high priority sites totaling 11,545 linear feet of moderate to severely disturbed streambanks. Commencing in 2005, in response to this documented problem, the District has been implementing a streambank stabilization program which by the end of 2012 will have installed 29 projects aimed at reducing sedimentation and improving water quality. Over this time period to the present, the District annually assists local municipalities and private landowners with streambank erosion concerns and has also been involved with multiple County sponsored projects stabilizing severe erosion threats to roads, bridges and infrastructure. The District has identified the 8 proposed Eighteenmile Creek Streambank Stabilization Partnership project sites for priority implementation of best management practices based on the known erosion inventory and potential for landowner cost share participation.

The Eighteenmile Creek Watershed is located south of Buffalo New York and contains 77,040 acres entirely within Erie County. It is the second largest tributary to Lake Erie in the state. The watershed is subdivided by the South and Main stream branches, includes approximately 268 miles of waterways and is an important recreational and fishery resource supporting trout population in the upper watershed and migratory runs of salmon and trout from Lake Erie. The County's Water Quality Strategy designates the watershed with a high priority status and the Local Working Group ranks it as the "No. 1 watershed of concern".

While the NYS Department of Environmental Conservation's Priority Waterbody List (PWL) indicates no known use impacts/pollutants/sources for the Middle and Upper Eighteenmile Creek segments where the majority of

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the proposed project sites are located, the Districts' local knowledge and inventory of existing, widespread erosion hotspots along these creek segments provides direct evidence that sediments from streambank erosion are currently a major pollutant source. The PWL for the lower segment of Eighteenmile Creek does indicate minor impacts to the stream from silt and sediments due to streambank erosion and contrary to the Middle/Upper PWL specifically states that silt and sediments from unstable banks further upstream are a pollutant source. Additionally, extensive on-going District agricultural planning and implementation through Agricultural Environmental Management (AEM) and Comprehensive Nutrient Management Planning (CNMP) also identifies silt and sediments from bank erosion as one of the primary watershed pollutant sources. It appears that many of the current streambank erosion problems in the watershed began as a result of impacts from consecutive severe flooding events in 1998 which were then compounded by more recent heavy storm flows in 2006 and 2009. Reports from these storms detail severe bank erosion and streambed degradation with multiple emergency stream projects being installed after the 1998 and 2009 events. As stream dynamics continue to adjust in response to the past storm effects, the District has improved upon the initial stream project process leading to the development of the current streambank stabilization program which has fostered partnerships with multiple municipalities and landowners and lead to increased awareness of streambank erosion and watershed conservation issues. With the continued need to address critical erosion sites along Eighteenmile Creek, the District is confident that approved funding of the proposed application will have a substantial and positive net impact on water quality in the watershed through the reduction of silt and sediment inputs.

Readiness to Implement Project

The Erie County Soil and Water Conservation District has the ability and staff resources necessary to accomplish the proposed project. Required project design work is completed after grant funding is secured and site surveys performed and is carried out by the project technician and/or engineer. There is an existing agreement with the local Natural Resource Conservation Service (NRCS) for engineering assistance including design review and approval. Permits are typically required for all streambank projects and are applied for and acquired prior to project commencement. Temporary landowner easements are required for project ingress and egress and are acquired prior to the project start.

As streambank erosion remains a primary source of sediment pollution in the Eighteenmile Creek watershed, the District consistently applies for funding to install erosion and sediment control, water quality protection and habitat improvement conservation projects. The successfully implemented past and current projects (within the last 3 years) described below illustrate the Districts' ability to maximize grant funding through a shared cost approach. Where applicable, the District has been able to petition for and utilize private landowner, municipal, state and county dollars as local match to grant funds.

In 2011, the District's *Buffalo River Watershed Erosion and Sediment Control Project* was selected for funding under the Great Lakes Basin Program for Soil Erosion and Sediment Control - Great Lakes Restoration Initiative Watershed Program. This project involves the treatment of 8 sites which will stabilize approximately 1,500 linear feet of severe erosion. To date, one project has been completed with 3-4 projects scheduled for installation in 2012. Total grant funds awarded were \$180,000.

In 2010 the District completed the *Eighteenmile Creek Streambank Stabilization Partnership Phase I*. 19 sites of severe streambank erosion were stabilized with bioengineering and rock riprap techniques totaling approximately 4,260 linear feet of restoration. The District will be completing *Phase II* of this project in 2011 on a total of 10 additional sites. Both Phase I and II of this project are funded through the NYS Department of Environmental Conservation via the state Environmental Protection Fund/Water Quality Improvement Grant. Total grant dollars awarded for Phase I was \$362,706 and \$292,342 for Phase II.

The District also completed the *Eighteenmile Creek Streambank Restoration and Erosion Control Project* in 2010, which was funded through the Great Lakes Commission/United States Department of Agriculture. This

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project, which is a highlighted New York state project on the Great Lakes Basin Program website, reduced sediments by stabilizing 400 linear feet of eroded streambank and improved aquatic habitat by reestablishing the riparian stream buffer. Total grant funds awarded was \$30,000.

In 2009 the District completed project work on the *Buffalo Creek Watershed Riparian Habitat Restoration Project (Partnership Phase II)*. The project was funded through the NYS Department of Environmental Conservation via the state Environmental Protection Fund/Water Quality Improvement Grant. This project reduced sedimentation and improved water quality and aquatic habitat at 10 sites by stabilizing approximately 2,090 linear feet of eroded streambanks utilizing combined methods of rock riprap where necessary and biotechnical and/or natural stream design restoration techniques. Total grant dollars including local match was \$512,826.

There is no state approved watershed plan within the proposed Eighteenmile Creek Partnership project HUCs. Based on the existing large scale of the erosion problems, the District recognizes the importance to continue water quality conservation efforts that address sediment pollution in the watershed. The proposed project will also compliment existing agricultural non-point source pollution programs and sediment reduction best management practices.

The Eighteenmile Creek Streambank Stabilization Partnership will contribute to ongoing regional efforts within the watershed to plan, prioritize and coordinate a comprehensive approach to address water quality impairments and restoration of aquatic habitat. Complementary projects currently being conducted or recently completed within the watershed that are supported by the Erie County Water Quality Committee and outlined in its' Water Quality Strategy are as follows:

Eighteenmile Creek Streambank Stabilization Partnership Phase I and II – ECSWCD, USDA-NRCS, six municipalities and multiple private landowners have partnered to rehabilitate 29 eroding streambanks to reduce sedimentation, protect property, restore critical aquatic habitat and improve water quality throughout the watershed.

Eighteenmile Creek Agricultural Environmental Management (AEM) – ECSWCD, WCSWCD, USDA-NRCS and USDA-FSA have and continue to complete planning within the watershed to identify, evaluate and prioritize environmental and natural resources related concerns on agricultural operations throughout the watershed.

Eighteenmile Creek Environmental Quality Incentives Program (EQIP) – USDA-NRCS, USDA-FSA, ECSWCD and WCSWCD have and continue to implement agricultural best management practices on prioritized agricultural operations to reduce and/or eliminate nonpoint source pollution and improve water quality throughout the watershed.

Comprehensive Nutrient Management Planning (CNMP) Grant – ECSWCD, USDA-NRCS and USDA-FSA have developed advanced management plans to assist agricultural operations in managing nutrients on prioritized agricultural operations to reduce and/or eliminate nonpoint source pollution and improve water quality throughout the watershed.

Eighteenmile Creek Agricultural Implementation Grant – ECSWCD, USDA-NRCS and USDA-FSA are implementing agricultural best management practices on prioritized agricultural operations to reduce and/or eliminate nonpoint source pollution and improve water quality throughout the watershed.

Eighteenmile Creek Water Quality Sampling – WNYLC and USDA-NRCS have conducted water quality sampling throughout the watershed to gather baseline water quality data.

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Community-based Environmental Management (CEM) – ECSWCD, NYSDEC, CCE, ECDEP and USDA-NRCS have worked to develop a tool to assist municipalities in identification, evaluation and prioritization of critical environmental and natural resources related concerns and alternatives to address those identified concerns. The Town of Eden, which is located within the Eighteenmile Creek watershed, has utilized the CEM tool under a pilot project to develop the model.

The Erie County Water Quality Committee (ECWQC) was established in 1992 with a focus of protecting and improving ground and surface waters for their intended uses, primarily through the reduction of nonpoint source pollution. The Eighteenmile Creek watershed has consistently received a ranking of high priority importance in the Committee's Water Quality Strategy. The Erie County Soil & Water Conservation District acts as the lead agency for the ECWQC. Meetings take place every other month.

Efforts are also underway to coordinate a regional watershed effort through the formation of the Lake Erie Watershed Protection Alliance (LEWPA). LEWPA is a coordinated approach to bring together stakeholders and specifically the three water quality committees in Erie, Cattaraugus and Chautauqua Counties to act more regionally to address non point source pollution issues affecting the Eastern Basin of Lake Erie. Partner agencies involved with the Eighteenmile Creek Streambank Stabilization Partnership include but are not limited to the following:

USDA Natural Resources Conservation Service
NYS Department of Environmental Conservation
U.S. Army Corps of Engineers
Town of Boston
Private landowners

Project Work Area

HUC: 041201030501 - Headwaters Eighteenmile Creek, New York

HUC: 041201030502 - Upper Eighteenmile Creek, New York

HUC: 041201030503 - Headwaters South Branch Eighteenmile Creek, New York

Total Area: 48

Agricultural Area: 20

Forest Area: 18

Urban Area: 9

Priority Areas:

The proposed HUC areas are not upstream from a significant dam.

Priority areas of the proposed Eighteenmile Creek Streambank Stabilization Partnership are:

Kaczmarek Site

This project site is located on Eighteenmile Creek at 6477 Kevinton Place in the Town of Boston. The landowner has agreed to sign a temporary easement to allow ingress and egress for project construction and monitoring. Severe erosion is occurring along the right bank of the meander bend with an estimated loss of 50 feet of bank over the last few years. This stream reach has experienced widespread erosion as stabilization projects have been recently installed both up and downstream of the proposed site. The proposed project will include stabilizing approximately 175 linear feet of erosion along the right bank utilizing rock riprap toe protection and/or longitudinal peaked stone along with two rock stream barbs placed up to the bankfull elevation to control/realign the thalweg away from the toe of bank. Biotechnical plantings will also be installed along the entire length of the project above the rock to increase bank stability and improve the riparian vegetation.

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Winter Site

This project site is located on Neuman Creek, a tributary to Eighteenmile Creek, at 5701 Burton Road in the Town of Orchard Park. The landowner has agreed to sign a temporary easement to allow ingress and egress for project construction and monitoring. Severe erosion is occurring along a tight meander bend along the lower slope of an active agricultural field. Additional bank erosion is also contributing sediments into the stream both up and downstream of the meander. The proposed project will include stabilizing approximately 125 linear feet of erosion along the right bank meander utilizing longitudinal peaked stone toe protection and approximately 250 linear feet of channel shaping before and after the meander with biotechnical plantings installed along the entire length of the project to increase bank stability above the rock and improve the riparian corridor.

Pelc Site

This project site is located on an unnamed tributary to Eighteenmile Creek at 9312 Boston State Road in the Town of Boston. There are three properties involved and the landowners have agreed to sign temporary easements to allow ingress and egress for project construction and monitoring. A headcut has moved up the tributary resulting in severe erosion and high sediment inputs along the majority of the stream course with heavy loss of riparian vegetation. The headcut is currently situated downstream of two adjacent houses and Boston State Road and has an approximate drop in elevation of 6-8 feet from the upstream stable section to the downstream damaged reach of the channel. The proposed project will consist of stabilizing approximately 550 linear feet of the eroded tributary through the installation of a series of rock grade control structures with adjacent rock riprap bank stabilization, debris obstruction removal and channel shaping with biotechnical plantings along the affected reach. The headcut will be stabilized by the installation of a rock chute/plunge pool.

Novoa Site

This project site is located on Anthony Gulf, a tributary to Eighteenmile Creek, at 6559 Valley View Lane in the Town of Boston. The landowner has agreed to sign a temporary easement to allow ingress and egress for project construction and monitoring. A previous attempt by the landowner/municipality to stabilize the banks has failed with active severe bank erosion occurring along a tight meander bend on the left bank of the stream as well as additional erosion just downstream on the right bank. The eroded high banks are contributing heavy sediment loads into the stream. The proposed project will include stabilizing approximately 130 linear feet of erosion along the left bank meander and potentially an additional 100 linear feet on the downstream right bank utilizing longitudinal peaked stone toe protection with biotechnical plantings installed along the entire length of the project to increase upper bank stability and improve the riparian corridor.

Terizzi Site

This project site is located on Anthony Gulf, a tributary to Eighteenmile Creek, at 6535 Fairview Lane in the Town of Boston. The landowner has agreed to sign a temporary easement to allow ingress and egress for project construction and monitoring. A previous attempt by the landowner/municipality to stabilize the bank has failed with severe bank erosion occurring along the left bank meander bend and encroaching toward the residence. Bedrock is present and the banks are actively contributing sediments into the stream. The proposed project will include stabilizing approximately 65 linear feet of erosion along the left bank utilizing a large stacked rock technique to maintain adequate channel width and discharge; potential rebar pinning of the stacked rock may be required to counter toe/slope stresses. Biotechnical plantings will be installed behind and above the rock wall to increase bank stability and improve the riparian corridor.

Fisher Site

This project site is located on Eighteenmile Creek at 11628 Boston-Springville Road in the Town of East Concord. The landowner has agreed to sign a temporary easement to allow ingress and egress for project construction and monitoring. This site is located in the upper watershed and is experiencing severe bank erosion along both banks of the stream. This reach was most recently impacted by heavy storms flows in 2009

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with emergency work taking place at the road culverts up and downstream of the site. The proposed project will include stabilizing approximately 150 linear feet of erosion along the right bank utilizing rock riprap toe protection. Biotechnical plantings will also be installed along the entire length of the project above the rock to increase bank stability and improve the riparian vegetation.

Meyer Site

This project site is located on Eighteenmile Creek at 11210 Boston-Springville Road in the Town of East Concord. The landowner has agreed to sign a temporary easement to allow ingress and egress for project construction and monitoring. This site is also located in the upper watershed and was impacted by heavy storms flows in 2009 with emergency work taking place at the road culvert upstream of the site. Erosion along the left bank is contributing sediments into the stream and threatening the stability of the landowners' bridge crossing. The proposed project will include stabilizing approximately 125 linear feet of erosion along the left bank through the installation of two grade control rock riffles with associated rock riprap toe protection between the structures. Biotechnical plantings will also be installed along the entire length of the project above the rock to increase bank stability and improve the riparian vegetation.

Gath Site

This project site is located on the South branch Eighteenmile Creek at 11928 Wyandale Road in the Town of Concord. The landowner has agreed to sign a temporary easement to allow ingress and egress for project construction and monitoring. This site was impacted by heavy storms flows in 2009 as erosion along the left and right banks are contributing sediments into the stream and threatening the stability of the landowners' bridge. The proposed project will include stabilizing approximately 180 linear feet of erosion along both banks through the installation of rock riprap toe and slope protection. Biotechnical plantings will be installed along the entire length of the project above the rock to increase bank stability and improve the riparian vegetation.

Implementation

Implementation Strategy

Streambank stabilization best management practices shall be installed at all sites for the proposed Eighteenmile Creek Streambank Stabilization Partnership project. The Erie County Soil and Water Conservation District performs site surveys and reconnaissance on all project sites. Fluvial geomorphological techniques recognized by the USDA Natural Resources Conservation Service (NRCS) including the Rosgen stream classification system are applied to the site data in developing a project design. The District design procedure follows NRCS Practice Standard 580 for *Streambank and Shoreline Protection* and all designs are approved by the local NRCS or District engineer. Due to the combination of existing severe erosion conditions and the high potential for ice scour in the Eighteenmile Creek watershed, it is typically necessary that a streambank designs incorporate some form of rock armoring to ensure the stability of the treatment over the projected lifespan. This may include longitudinal peaked stone toe protection, grade control weirs and stream barbs/vanes. The District also integrates bioengineering practices into every project site as a soft approach to stabilization and to improve riparian vegetation and habitat. Commonly used techniques include live stakes, pole/whip plantings, wattles/fascines, brush layering and live siltation.

Priority areas are identified through several methods including erosion inventories of the Eighteenmile Creek watershed, technical assistance requests and site visits addressing landowner concerns along riparian properties as well as county and municipal surveys and contacts that identify critical watershed problem areas. Incentive methods shall not be utilized for the proposed project, however the District anticipates an approximate 25% local match to the requested Great Lakes Restoration Initiative grant funds. This local match will be a combination of District personnel services (project survey, design, contracting and construction inspection), municipal cash appropriations, and private landowner cash and/or in-kind labor. The District anticipates the majority of GLRI grant funds will be used for project construction. Potential minor equipment purchases will be limited to items necessary to help improve project efficiency, design, documentation and implementation.

The timeline for implementation is as follows:

Year 1

Survey 10/12 - 11/12

Design 12/12 - 03/13

Site showing/contract letting 05/13 - 08/13

Construction 06/13 - 10/13

Project evaluation 07/13 - 10/13

Year 2

Survey 10/13 - 04/14

Design 12/13 - 04/14

Site showing/contract letting 05/14 - 08/14

Construction 06/14 - 10/14

Project evaluation 07/14 - 10/14

Year 3

Survey 10/14 - 04/15

Design 12/14 - 03/15

Site showing/contract letting 05/15 - 08/15

Construction 06/15 - 10/15

Project evaluation 07/15 - 10/15

Project close/administration 09/15 - 10/15

Technical Assistance

No grant monies will be used to pay for technical assistance.

BMPs

Name: Streambank Stabilization

Type: Engineering Practices

Acres: 8

Cost: 154,575

Description:

All eight project sites will have streambank stabilization bmps installed. Site surveys need to be completed and analyzed for final streambank stabilization design technique selection. All completed designs shall be approved and signed by the local NRCS or District engineer. Single and/or combined techniques will be installed along the eroded areas of the project sites. Techniques utilizing rock riprap shall be used only where necessary and will potentially include toe and slope rock protection, longitudinal peaked stone toe protection, grade control weirs and stream barbs/vanes. Bioengineering techniques like live stakes, pole/whip plantings, wattles/fascines, brush layering and live siltation will also be installed at each project site in combination with any required rock.

Start Date: October 2012

End Date: October 2015

Incentive Method: n/a

Incentive Rates: n/a

Total Soil Savings: 5000

Media Campaign

Kickoff:

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The kickoff event for the Eighteenmile Creek Streambank Stabilization Partnership will involve the Erie County Soil & Water Conservation District partnering with the Town of Boston during the Town's annual Environmental Awareness Day. The District will be on-hand to provide local watershed information and highlight past and future stream restoration projects. The event will take place at the Town Park which is situated along Eighteenmile Creek. Invitations to the event will be extended to the NYS chairperson of the Great Lakes Commission, the local congressional, county legislative and municipal representatives, the local media, Erie County District Board of Directors as well as all partner agencies.

Ongoing:

On-going outreach shall include watershed updates in the District's bi-annual newsletter *Conservation Connections* and through public event displays at various County events held throughout the year.

End:

At the projects' completion, a project summary will be developed and submitted via press release to a local watershed news publication. In addition, project information shall be listed on the District webpage as part of a watershed/stream project listing and update.

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