

Hawthorn Hollow Tractor Road Storm Water Diversion Project

RM06416

Final Report

Introduction

Hawthorn Hollow Nature Sanctuary and Arboretum is located in the Village of Somers in Kenosha County. The south branch of the Pike River runs through it and has changed significantly since the mid-1930s. The changes include severely eroded streambanks, and the deepening and widening of the river channel. Concerned with the degradation of the south branch of the Pike River, in 2011 the Hyslop Foundation, Inc., (dba Hawthorn Hollow Nature Sanctuary and Arboretum) partnered with Root-Pike Watershed Initiative Network to develop a watershed restoration plan for the Pike River in southeast Wisconsin.

The two-year Pike River watershed planning process included one year of public education that covered topics such as what is a watershed, how did the Pike River watershed function prior to European settlement before the early 1800s, what changes have occurred since European settlement, what classifies a river as impaired, and how can a watershed be restored.

The second year of the planning process involved stakeholders within the watershed to develop a plan that could be used to increase community stewardship of the watershed and would have site specific recommendations to restore the watershed and reduce pollutant loads entering the river.

The Pike River Watershed-based Plan was finalized in August 2013 and became one of the first watershed plans in Wisconsin to be approved by the Environmental Protection Agency as meeting the nine elements of a watershed-based plan. This approval opens federal funding sources for restoration work within the Pike River watershed.

The changes seen in the Pike River that runs through Hawthorn Hollow are due to an increase in the volume and velocity of water traveling through the river. The sources of this water come from the draining of farmland, impervious surfaces such as roads and parking lots that direct storm water to the river, and the loss of wetlands and native vegetation such as prairie forbs and grasses that help to hold and infiltrate storm water.

Hawthorn Hollow's Tractor Road is one of the main trails running through the property. The gravel road runs down into the river floodplain, over the river, and then up and out of the floodplain west of the river. The gravel that makes up the Tractor Road is impervious and carries substantial flows of storm water down into the floodplain. Prior to the installation of this project, as storm water traveled down the road it would increase in volume and velocity, eroding the road and the banks of the river as it spilled in. With the road being a large source of storm water entering the river from Hawthorn Hollow, we thought if we could prevent the storm water from entering the river that this could serve as a demonstration

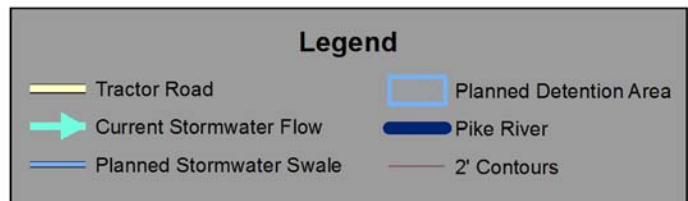
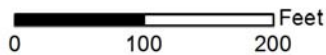
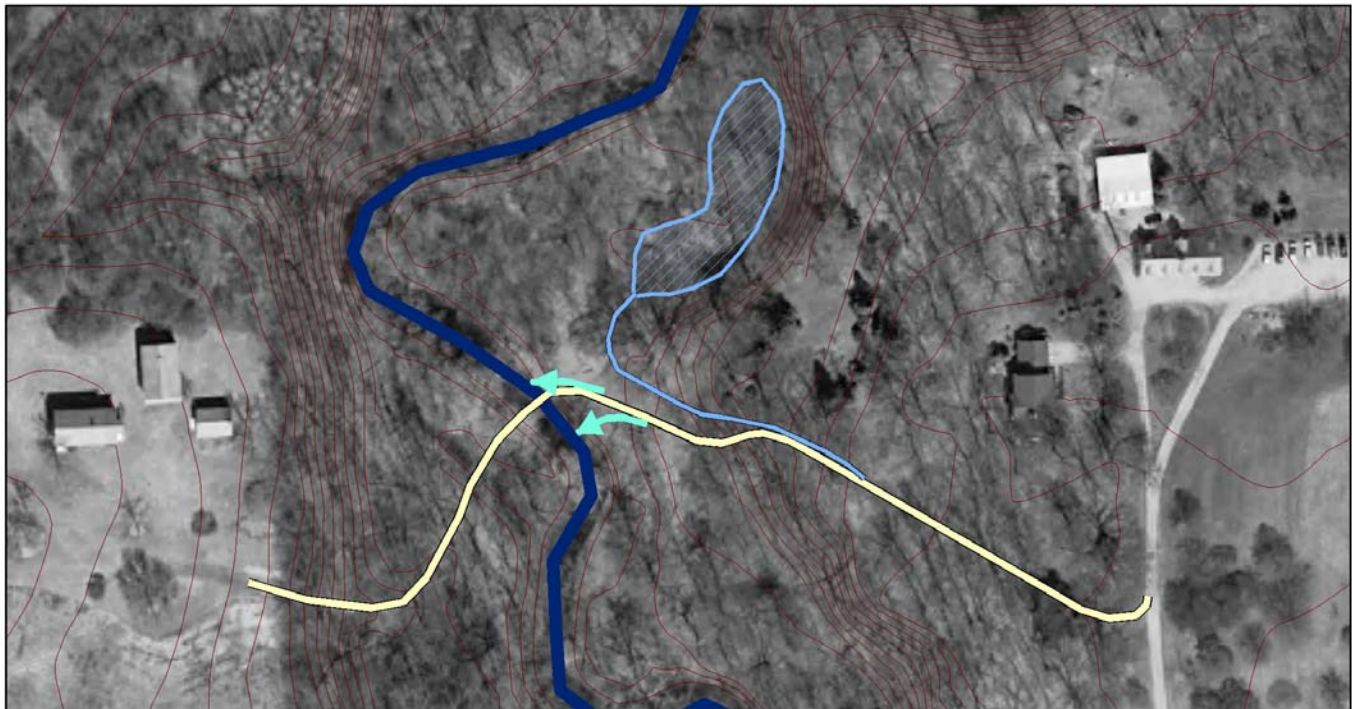
project to educate the public about the impact of storm water on the river and how even small steps can help a watershed. The project could also to help begin river restoration; albeit a small step towards it.

Project Description

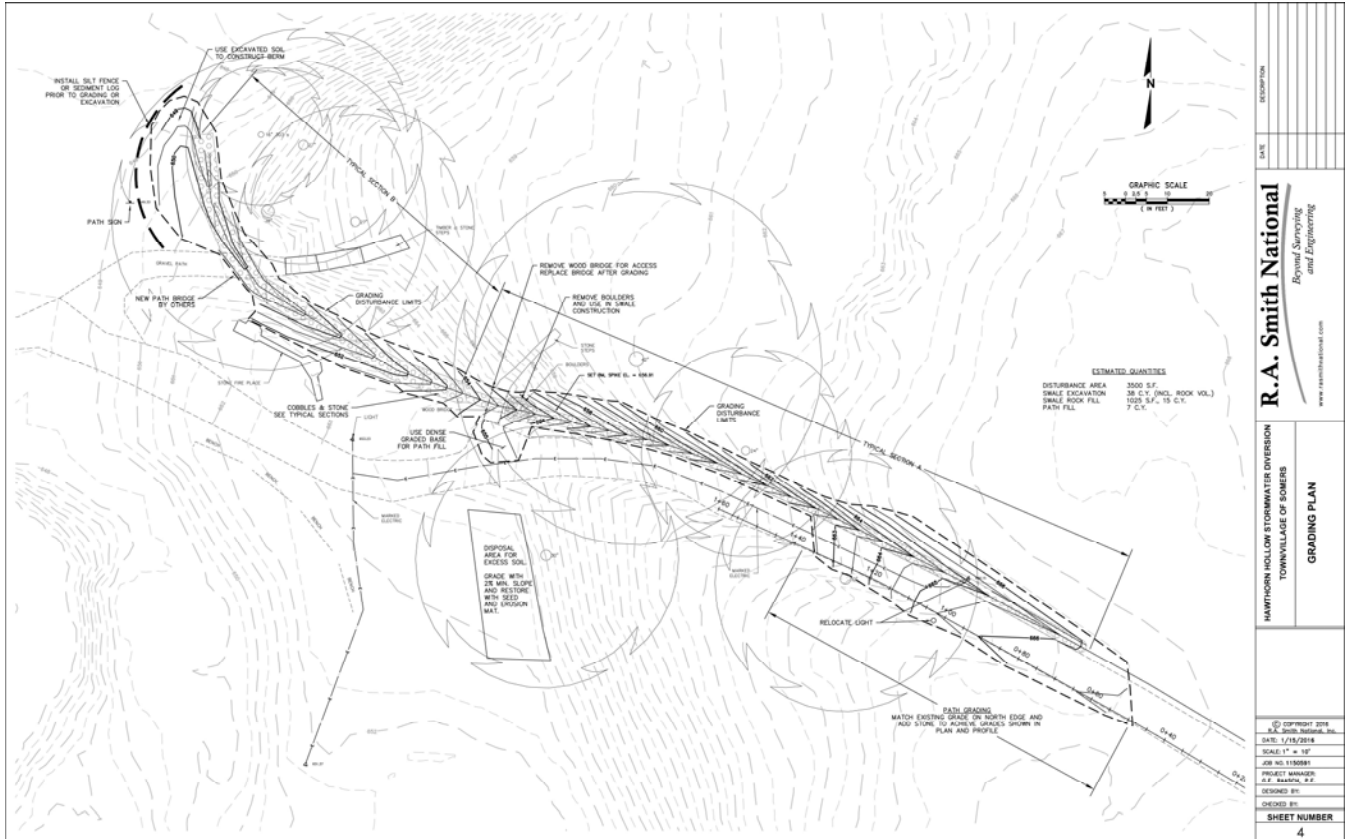
The project began with a \$10,000 grant received in the fall of 2015 from the Fund for Lake Michigan to develop the engineering plan for the Hawthorn Hollow Tractor Road Storm Water Diversion Project. The project would install a swale along the Tractor Road to collect storm water and divert it from the Pike River. The swale would carry the storm water to a low area within the floodplain, isolated from the river, where it could collect and percolate into the ground.

The Hyslop Foundation worked with the engineering firm R.A. Smith, based out of Brookfield, WI, to develop the plan. During the planning process, the engineer determined that over two acres of land drain to that portion of the road, which surprised us, but helped explain why the erosion could be so extensive during severe storm events. The slope of the road and large drainage area influenced the volume and velocity of the storm water as it traveled down the road.

Hawthorn Hollow Tractor Road Stormwater Diversion



The engineering plan was designed using a hypothetical 1-year 24-hour design storm that has a total volume of 2.39 inches of rain. This rainfall would translate to 19,600 cubic feet (146,000 gallons) of total rainwater in the project area, of which 4,500 cubic feet (34,000 gallons) would be runoff and go to the swale and then the detention area rather than the river. The final engineering plan called for the regrading of the road, excavation of the swale, rock lining of the swale, and two foot bridges.



Project Installation (River Management Grant RM6416)

In the spring of 2016 the Hyslop Foundation received a \$19,825 grant from the Wisconsin Department of Natural Resources’ River Management Program to install the project, RM06416. The total project cost was estimated to be about \$32,500.

The Hyslop Foundation contracted with Breezy Hill Nursery to install the project. Breezy Hill Nursery is located in Salem, WI, and offers small to medium sized hardscaping services. Given the tight area where the work needed to be performed and working among large oak trees, Breezy Hill Nursery had small equipment and experienced operators that could accommodate our needs.

Project installation began on Monday July 25, 2016, and was completed on Friday July 29, 2016. After the installation we anxiously waited for the first storm. When that first substantial rain came we did notice some areas of the road that needed minor adjustments to better direct the storm water to the swale. We continued with some minor tweaking throughout the fall of 2016. The road and swale passed

the big test on July 12, 2017, when record rains hit the area with over 7 inches of rain in a 24 hour period. The Tractor Road was virtually free of the erosion that would have occurred prior to the installation of this project.

Video Documentary

Video recordings were made during the entire installation of the swale for the documentary portion the project. Work on the video began that winter. Two major flooding events in 2017 brought the focus of the video to the river. Flooding with large ice jams occurred on January 17, 2017, and record rainfalls in mid-July caused major flooding on July 12, 2017.

The video begins by documenting the changes to the river at Hawthorn Hollow beginning in the mid-1930s until today, showing the degradation of the streambanks over time, and the deepening and widening of the river channel. The video then documents the purpose of the storm water diversion project and the project's installation.

The video was completed in early 2018 and is posted on Hawthorn Hollow's YouTube Station at: <https://youtu.be/8LaSPNH2Dgs>

Public Outreach

The project location is very central at Hawthorn Hollow and is a frequent topic of discussion/education when staff encounter visitors or during field trips and nature walks. The project is also part of our Power Point presentations given to community groups.

The project and grant were publicized in our Spring and Fall 2016 newsletters:

<https://www.hawthornhollow.org/newss/2016-spring-newsletter/>

<https://www.hawthornhollow.org/newss/2016-fall-newsletter/>

These newsletters were mailed, sent to individual emails via Mail Chimp, and were posted on Facebook and our website.

Project Installation



Project In Action



Hawthorn Hollow Tractor Road Storm Water Diversion Project

**Project Costs
Budget vs Actual**

Cost Category	Activity	Budgeted Cash	Budgeted Donation	Actual	Difference
Consulting Services	Engineering Plan Support	\$3,000.00		\$1,784.25	\$1,215.75
Purchased Services	Construction	\$15,000.00		\$15,960.32	-\$960.32
Purchased Services	Hardscaping	\$3,500.00		\$4,083.50	-\$583.50
Purchased Services	Landscaping	\$5,000.00		\$5,972.34	-\$972.34
Administration	Project Management	\$3,000.00		\$2,000.00	\$1,000.00
Salaries	Project Video Documentary		\$3,000.00	\$1,035.60	\$1,964.40
		\$29,500.00	\$3,000.00	\$30,836.01	\$1,663.99
	Total Budgeted Project Cost:	\$32,500.00			
	Actual Project Cost:	\$30,836.01			
	Difference:	\$1,663.99			
	State Share 61%:	\$18,809.97			