

Project Name: 1113-005 Duck Creek Watershed Project
Project Sponsor: City of Davenport
Length of Project: January 1, 2012 to December 31, 2013

This project consisted of the construction of the Littig Area Regional Detention Basin in the northwest portion of the City of Davenport, Iowa. The WIRB partnered with the City of Davenport to provide twenty-three percent (23%) cost-share funding for construction of the detention structure, seventy-five percent (75%) of costs of riffle structures and fifty percent (50%) of the cost for planting native trees and plants. The bid was awarded to Langman Construction Company from Rock Island, Illinois. The construction contract was signed on November 15, 2012 and the final pay estimate was submitted on November 13, 2013.

The project involved excavation of over 120,000 cubic yards of soil to provide storage space for thirty one acre feet (31 ac/ft.) of water, which is the equivalent of the one hundred year storm event volume for this two hundred and twenty-seven (227) acre watershed. This system was constructed with a twelve inch (12 in.) outlet pipe on the low-flow channel which will reduce flow rates in this stream from the two, five and ten year storm events by an average of eighty-five percent (85%) and reduce flow rates from the twenty-five, fifty, and one hundred year events by an average of fifty percent (50%).

Several goals were set for the construction of this basin and are discussed in later sections of this report. The goals include:

- Incorporate sustainable and environmentally-friendly design concepts including native bottom and upland vegetation and pools and riffles to improve water quality by providing aeration to the low flow stream as well as habitat for macro invertebrates, fish, amphibians, reptiles and a host of other animal species.
- Reduce the frequency and magnitude of flooding events that cause damage to property immediately downstream of the confluence of two unnamed tributaries to Goose Creek.
- Reduce the frequency and magnitude of flooding on Goose and Duck Creeks.
- Provide park-like amenities and access to the stream and aquatic system for educational and recreational purposes for the surrounding neighborhood.
- Serve as a model for construction of future public and private detention facilities using native vegetation and sustainable design practices to provide stormwater storage while enhancing water quality, wildlife habitat, and visual aesthetics.

Financial Accountability**Summary: Watershed Improvement Funds**

Grant Agreement Budget Line Item	Total Funds Approved (\$)	Total Funds Approved— Amended (\$)	Total Funds Expended (\$)	Available Funds (\$)
Detention Structure	176,100	139,347.91	139,347.91	0
Riffle Structure	86,212	86,212	86,212	0
Plants and trees and planting	37,688	37,688	37,688	0

Summary: Total Project Funding

Funding Source	Cash		In-Kind Contributions		Total	
	Approved Application Budget (\$)	Actual (\$)	Approved Application Budget (\$)	Actual (\$)	Approved Application Budget (\$)	Actual (\$)
WIRB	300,000	263,247.91	0	0	300,000	263,247.91
City	1,058,191	711,597.39	0	0	1,058,191	711,597.39
Totals	1,358,191	974,845.30	0	0	1,358,191	974,845.30

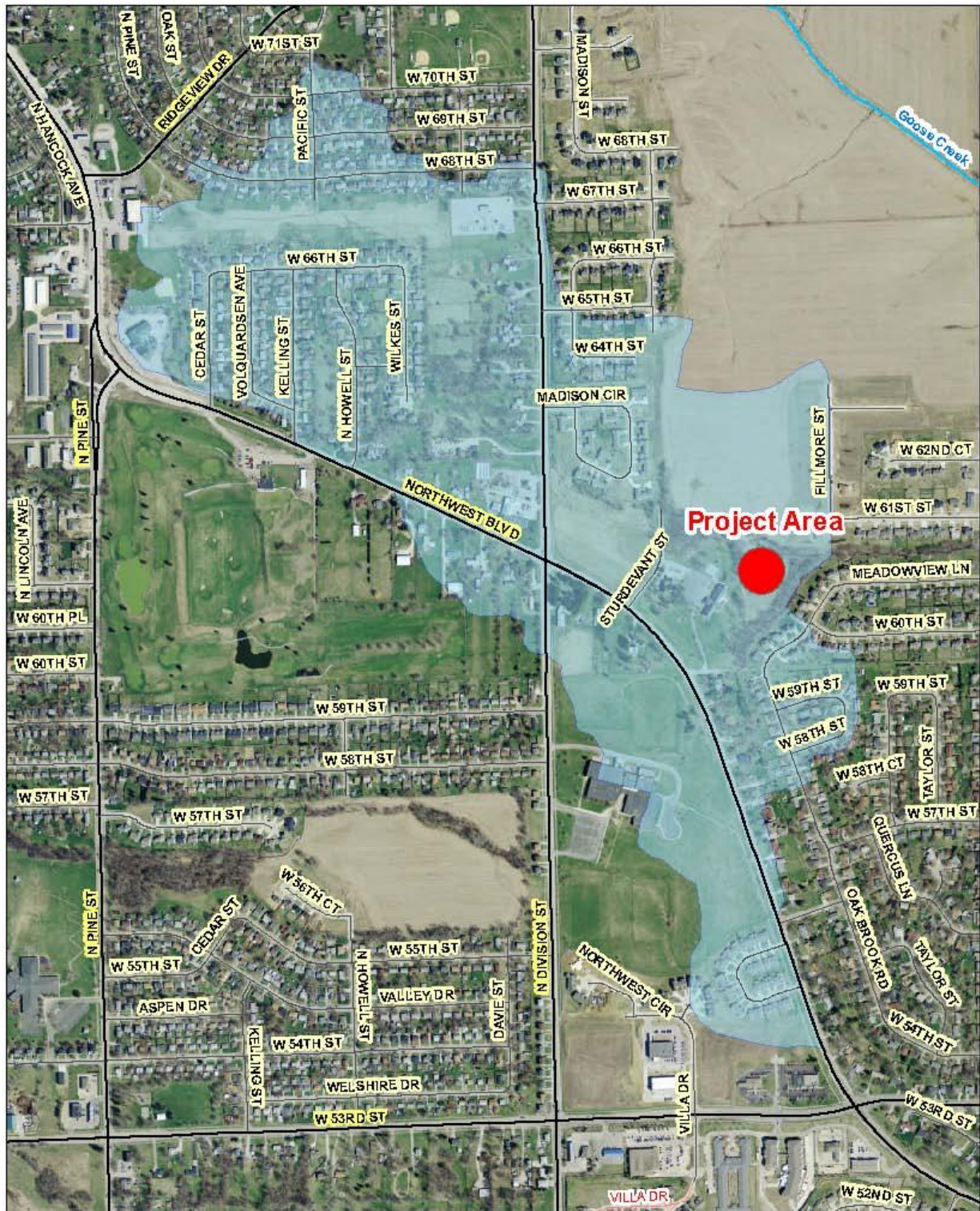
Watershed Improvement Fund contribution: Approved application budget: 22 %
 Actual: 27 %

The difference in the percentage of WIRB funds expended is due to lower than projected bid prices for construction as well as lack of need for temporary stabilization. Due to an accounting error the city was reimbursed \$6,752.34 more than necessary based on agreement percentages. A check for this amount will be submitted to the WIRB. During the course of construction the proposed park amenities were debated and as of this report date have not been decided upon. Funding of the amenities continues to be an issue so at this time they have been left out of the construction process and will be installed at a future date.

Environmental Accountability

The project involved excavation of over 120,000 cubic yards of soil to provide storage space for thirty one acre feet (31 ac/ft.) of water, which is the equivalent of the one hundred year storm event volume for this two hundred and twenty-seven (227) acre watershed. This system was constructed with a twelve inch (12 in.) outlet pipe on the low-flow channel which will reduce flow rates in this stream from the two, five and ten year storm events by an average of eighty-five percent (85%) and reduce flow rates from the twenty-five, fifty, and one hundred year events by an average of fifty percent (50%). In addition, this project incorporated sustainable and environmentally-friendly design concepts including seven and one-half (7.5) acres of native bottom and upland vegetation and three (3) pools and riffles to improve water quality by providing aeration to the low flow stream as well as habitat for macro invertebrates, fish, amphibians, reptiles and a host of other animal species. This project has been estimated to remove 337 tons of sediment and 1,203 pounds of phosphorous per year.

Maps of the areas served and photos of the installation are included in the following pages.



Littig Basin Drainage Area



Construction, Week 1



Excavation of the south side of the basin



Graded basin with pools and riffles



Temporary seeded and mulched finished basin



Interpretive signed installed at the basin



Ribbon cutting and media event with the mayor, alderman and community members

Summary: Practices and Activities

Practice or Activity	Unit	Approved Application Goal	Accomplishments	Percent Completion
Detention Structure	No.	1	1	100
Riffle Structure	No.	3	3	100
Plants and Trees	Acre	7.5	7.5	100

The goals of including native vegetation and pools and riffles have been completed along with providing park-like access to the stream for educational and recreational activities. The reduction in flooding events has been completed with construction of the multi-level outlet system; however, the basin has yet to be tested with any rainfall events over one inch in twenty-four hours. Public concern heard during initial meetings has faded and the adjacent property owners are pleased with the appearance of the basin. Wildlife including hawks, deer, migratory waterfowl, and multiple other species have been observed in the basin.

Program Accountability

Activities that were completed to expand the impact of the project include the purchase and placement of additional wetland seed in the basin. During construction several seep areas were discovered that never completely dried out. The city purchased and installed wetland seeds in these areas to promote growth of native hydric plants to utilize the water that is coming from the ground instead of treating it as a waste product. Many challenges had to be overcome and resolved to allow the project to move forward including issues with the Corps. of Engineers permit and neighbor concerns.

The permit process with the Corps. of Engineers took over nine months as opposed to the standard ninety days. In order to keep as close to the finish schedule date as possible and meet permit requirements the City agreed to conduct an archaeological survey on the proposed basin location and agreed to mitigate the stream section that was enclosed in pipe through the berm structure by installing a 870 foot long by 30 foot wide native buffer strip on the north bank of Duck Creek upstream of the Harrison Street Bridge.

Neighbors were mainly concerned that they would be losing all of the trees near them that provided screening of this area. Plans were revised to slightly shift the basin to the north to avoid as many trees as possible. Contractors were watched closely to ensure that they only removed the trees necessary to complete construction in tree-lined areas. A highly incised and degraded stream channel to the north of many of the neighboring properties was repaired and stabilized as a good-will gesture from the city. Upon completion of the basin all neighbors are satisfied and no complaints have been received.

Lessons learned that may be helpful to other project program managers are to gain public input and consensus early in the design process. Three dimensional renderings would be very helpful. In this situation I think the neighbors had a difficult time envisioning what we were describing and that is where a lot of negative sentiment came from. If we were able to show them our designs in 3D I think it would have made for much easier public meetings.