Halvorson Park J-Hook and Bank Stabilization Project

Prepared for: Fish Habitat Grant
Prepared by: Mitchell County Conservation Board
Date: November 2016

Appendix B

IOWA DEPARTMENT OF NATURAL RESOURCES
Wallace State Office Building
Des Moines, Iowa 50319

FISH HABITAT PROGRAM FORM

1. APPLICANT: ___Mitchell County Conservation Board_____
CONTACT (Name and Title): Andy Taets
Natural Resource Technician_____
ADDRESS (Inc. Zip Code): _1879-3 HWY # 9 Osage, Iowa 50461 _____
Telephone # (641/420/5517): _____

2. PROJECT TITLE: Halvorson Park Bank Stabilizing and J-Hook Project _____

3. PROJECT COST: Total $ _49,835
State $ _44,851.50
Local $ _4,983.50
Source of Local Share $ __in kind____

4. TYPE OF PROJECT:
Acquisition _____ Acres _____
Development ___X__
Combination _____

5. OWNERSHIP OF PROJECT SITE: Fee Title _____X_____ Lease _____*
*If leased, attach copy of the lease document.

6. ESTIMATED PROJECT DATES: Start Oct 2017 Completion Nov 2017

7. Do you wish to have grant for land acquisition paid directly to the seller:
Yes _____* No ____X_____ N/A _____ * Complete Number

8. Justification for direct payment to landowner: Not applicable

9. Complete a Project Narrative following instructions on pages 6-9 of the Fish Habitat Program Grant Application Guidelines and attach to this form.

Purpose

Halvorson Park is the proposed area for development. It is located south of the city of St. Ansgar, on the south side of the Cedar River, with over 1,300 feet of shoreline. The Cedar River is approximately 200 feet wide in this section. The Mitchell County Conservation Board would like to take steps to ensure there is not a continued loss to any of that shoreline. To control this, Mitchell County Conservation Board would like to change 750 feet of the shoreline to a 2:1 slope and when possible, a 3:1 slope, rip-rap with 18-24 inch rock or larger, and place top soil planted with native species plugs. Plugs will be chosen, instead of seed, to withstand the continual flooding. By adding the soil and native species to the top of the riprap, this will keep the river looking natural. The end result will be 3 layers of protection:

1. Slope 2:1 (3:1 when possible)
2. Riprap rock
3. Top soil with native species and root system

To help further protect the erosion of the bank, we will install two J-Hook Weirs at a 30° angle upstream. The exact locations of the J-Hooks will be determined at a later date, determined by help of the DNR Fisheries Biologist. The J-Hook is designed to establish grade control, reduce stream bank erosion, accelerate sediment transport, enhance fish habitat, maintain width/depth ratio, maintain river stability, dissipate excess energy, withstand large floods, maintain channel design and will be visually acceptable and useful to the public.

Benefit

Presently, the bank is losing soil by erosion into the Cedar River. It is saturating the river with sediment and altering the makeup of the river. The benefits of this project on the Cedar River in Halvorson Park include reducing the sediment input into the river by sloping the bank to a 2:1 slope (3:1 when possible), placing riprap rock on the bank to protect from further erosion, and moving the flow out into the channel with two functioning J-Hook structures. These two methods will help provide a more diverse habitat, increase fishing, increase depth in the channel and produce a deep scour hole downstream from the J-Hook structures.

We have seen great results from the last project we did using the same methods. Fishermen have been using the two J-Hooks in the park and seem to really enjoy fishing around them. The J-hooks have also been successful at doing their jobs and keeping the river flow off of the shoreline.

Immediate benefits of this project are:

1) Reduce stream bank erosion
    a) By sloping bank to a 2:1 slope (3:1 when possible) and the placement of riprap rock
2) Accelerate sediment transport

a) J-Hook placements will increase the sediment transport by in increasing flow in channel of river

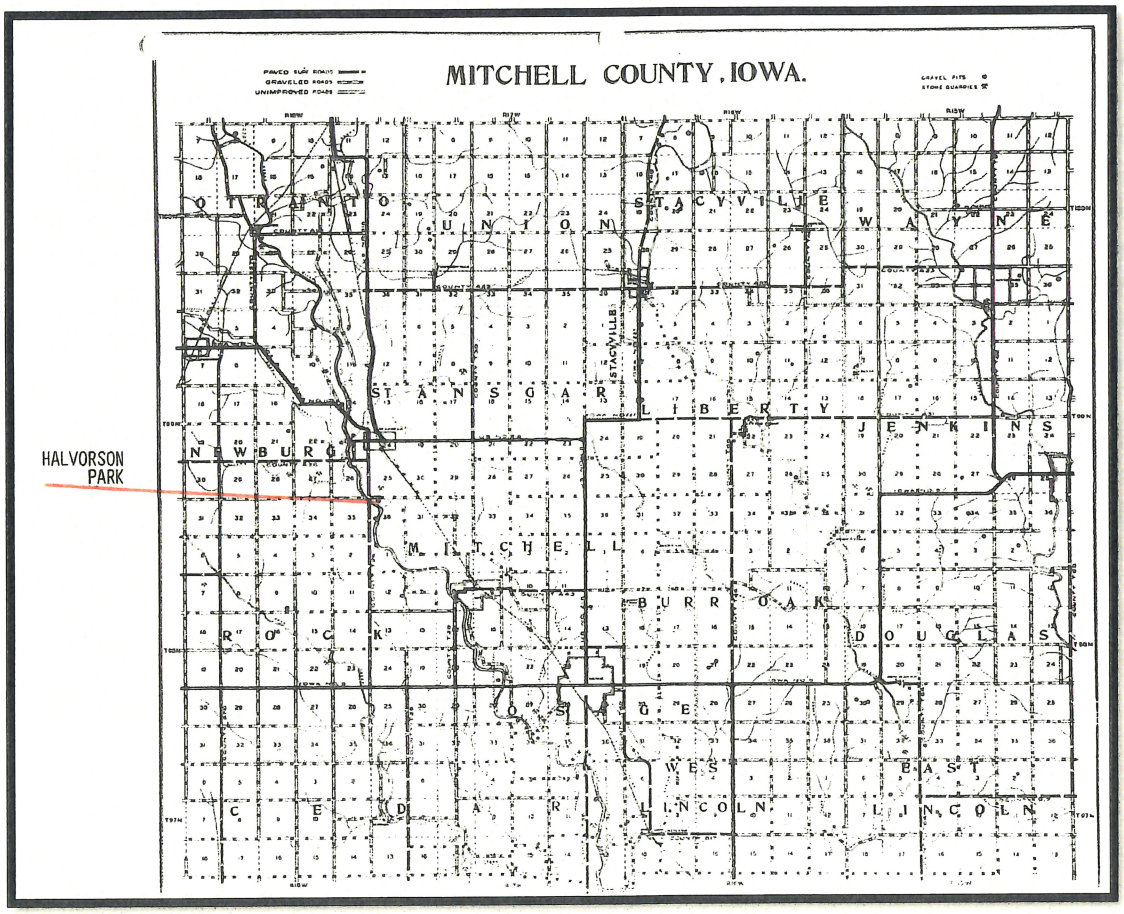
3) Enhance Fish Habitat
   a) Increase in-stream structure and increase depth in channel and downstream from J-Hook
4) Maintain depth and width
   a) Greatly reduced erosion on bank
5) Increase shoreline fishing
   a) The first 10-12 feet of the J-Hooks will be accessible for fishing
6) Control unwanted meander
   a) Bank protection with riprap and also decrease flow on bank for J-Hooks

Permits

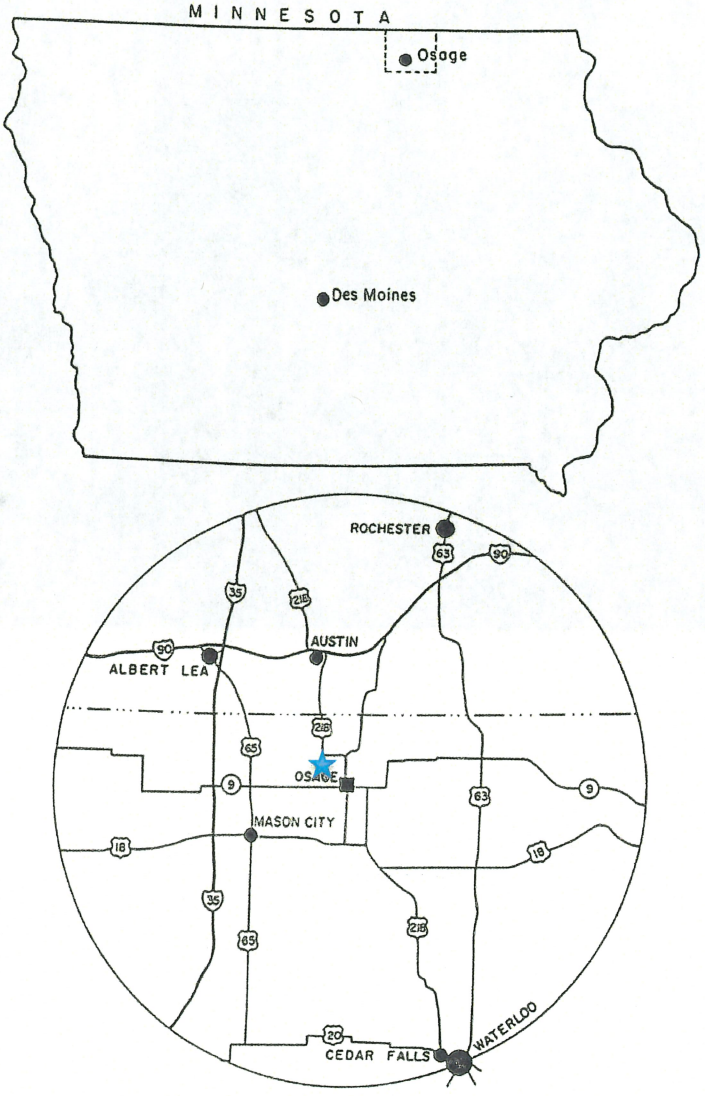
Will be applied for upon received grant.

Site Description and Legal Description

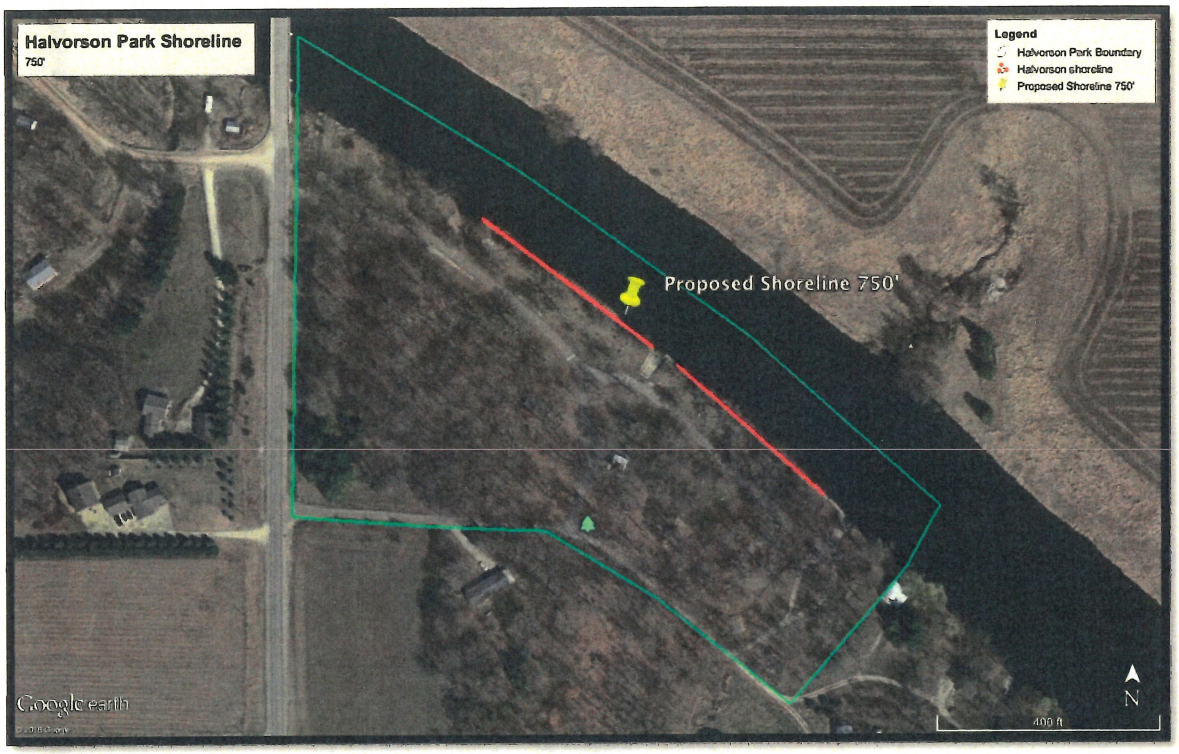
Halvorson Park is located about 1 ½ miles south of St. Ansgar Iowa, with an address of 40801 Foothill Ave, St. Ansgar, Iowa 50472. This is a 9 acre park located on the south banks of the Cedar River. Legal Description: N.W. ¼ of Sec. 36-99-18 of the 5th P.M, Mitchell County, Iowa



LOCATION MAP



Halvorson Park Boundary and Proposed Shoreline



Current Fisheries Status

Catfishes

1. Stonecat
2. Slender Madtom

Minnows

1. Bluntnose minnow
2. Carmine (Rosyface) Shiner
3. Sand Shiner
4. Central Stoneroller
5. Common Carp
6. Emerald Shiner
7. Western Blacknose dace
8. Southern Redbelly Dace
9. Hornyhead Chub
10. Common Shiner
11. Ozark Minnow
12. Gravel Chub
13. Red Shiner
14. Spot fin Shiner

Other notorious fish to be Caught in Cedar River are:

1. Channel Catfish
2. Large Mouth Bass
3. Crappie
4. Bullhead

Perches

1. Fantail Darter
2. Slenderhead Darter
3. Rainbow Darter
4. Walleye
5. Blackside Darter
6. Johnny Darter
7. Banded Darter
8. Northern Logperch

Pikes

1. Northern Pike

Suckers

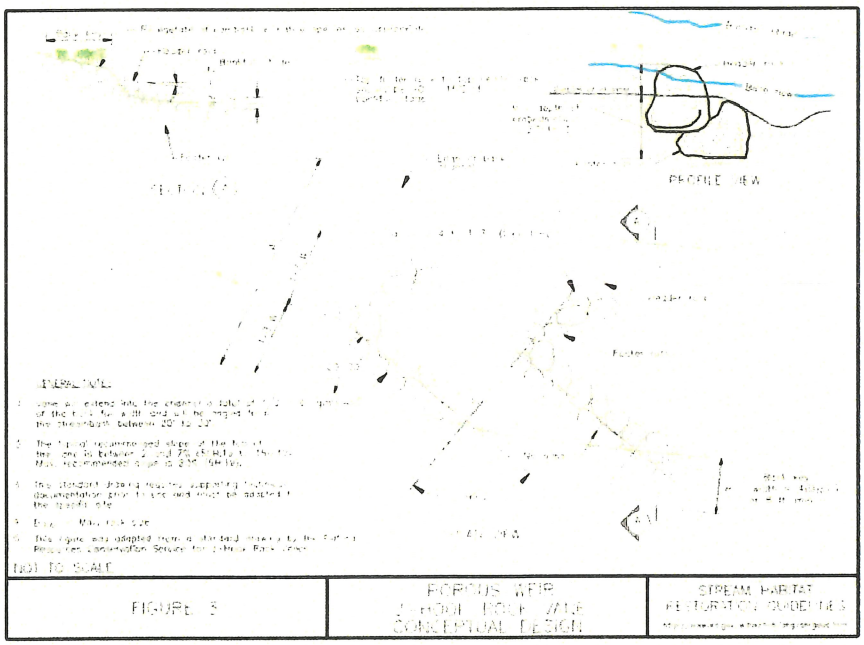
1. Golden Redhorse
2. Quillback Carpsucker
3. River Redhorse
4. White Sucker
5. Shorthead Redhorse
6. Northern Hog Sucker
7. Silver Redhorse
8. Black Redhorse
9. River Carpsucker

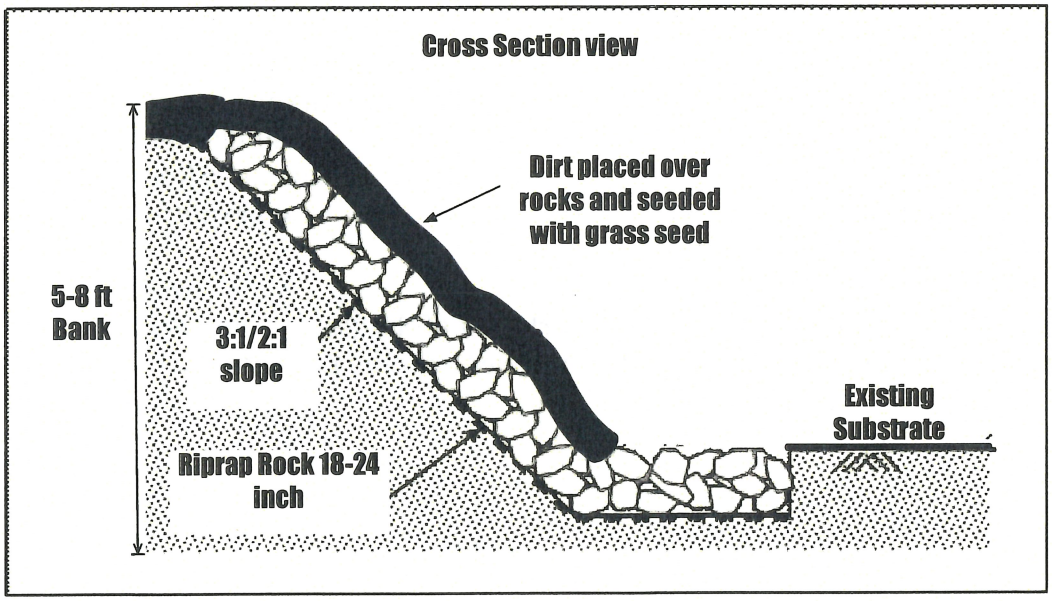
Sunfish

1. Green Sunfish
2. Smallmouth Bass
3. Northern Rock Bass
4. Orangespotted Sunfish

This was the list sampled for the Iowa Department of Natural Resources Bio assessment Sampling Program on the Cedar River near the project site.

Approach: Schematic Design and Ground Picture of the Shoreline
Mitchell County Conservation Board will hire a contractor to slope the banks to a 2:1 slope (3:1 when possible) and place riprap rock. Dirt will then be placed over rock, and planted with native plugs. See drawing below





The J-Hook structure will then be tied into the sloped bank at least 8ft in at a right angle. The J-Hook will then be built from shore out. The J-Hook will be designed to top view and profile views below.

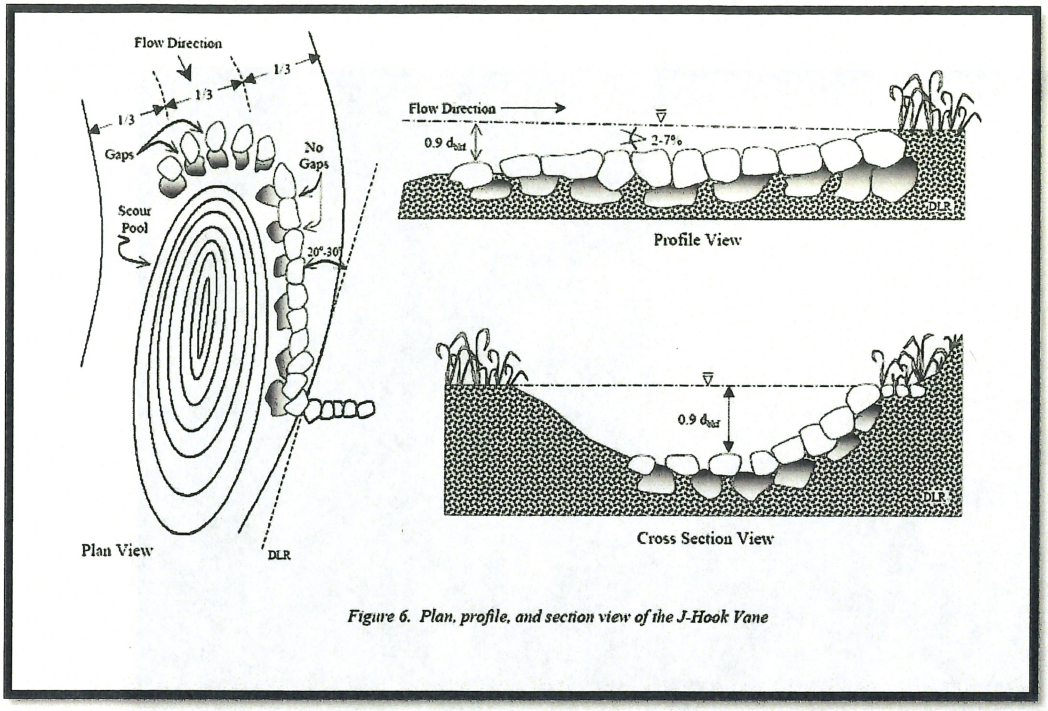


Figure 6. Plan, profile, and section view of the J-Hook Vane

Ground Pictures of the Shoreline

Cost

Items and Quantity	Cost/Item	Total Cost
Leveling and shaping of bank: 750 ft	$4.00/ft	$3,000
Placement of Rock: 1615 ton	$5/ton	$8,075
Cost of Rock: 10 ton (toe J-hooks) 1500 ton (rip-rap) 105 ton (boulder)	 $18/ton $18/ton $18/ton	 $180 $27,000 $1,890
Hauling of Rock: 1615 ton	$6/ton	$9,690
		Total Cost: $49,835