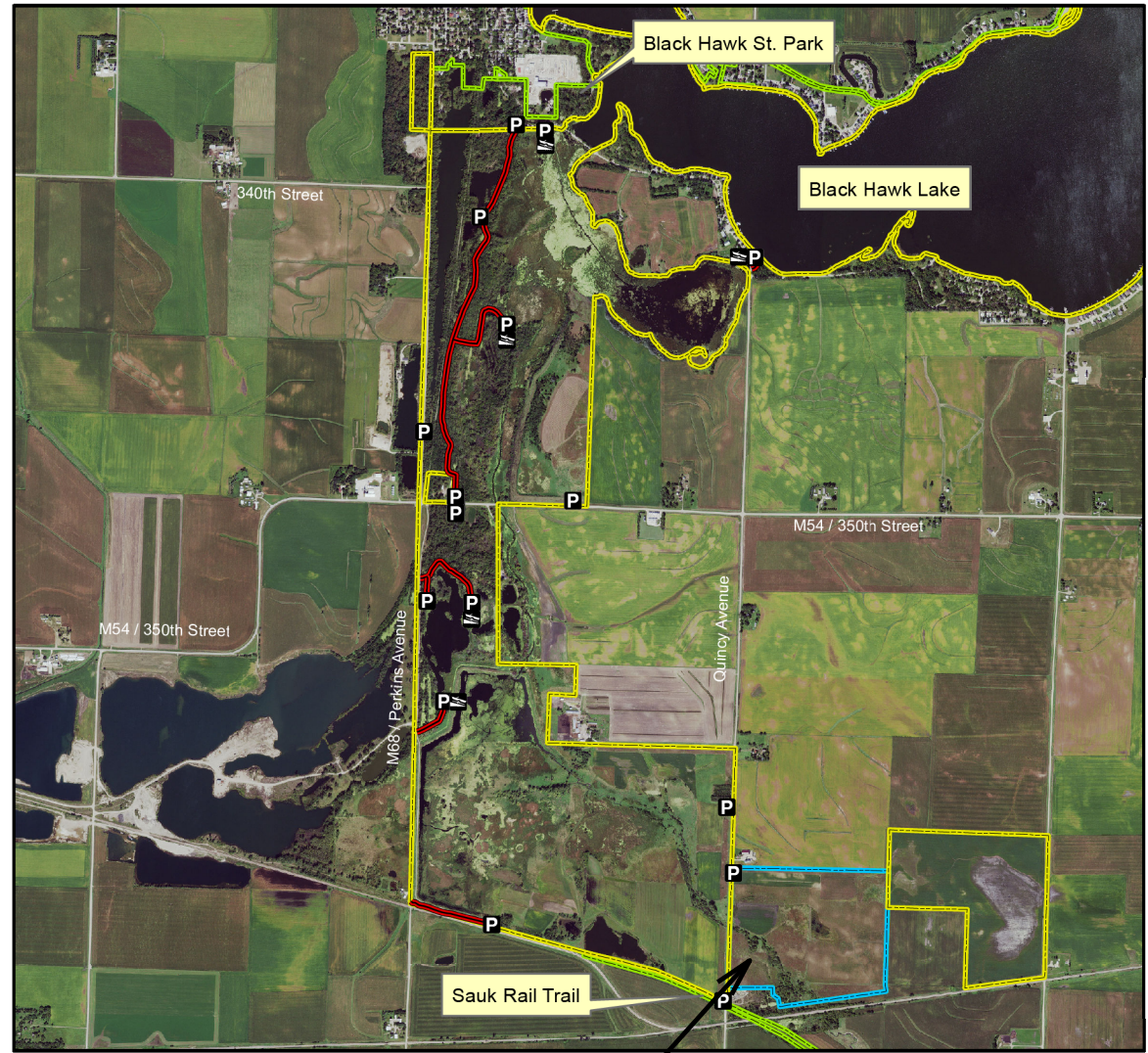


CARROLL CO.

R-36W

PROJECT LOCATION

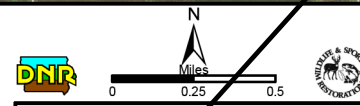
## Black Hawk Marsh Wildlife Management Area



### Legend

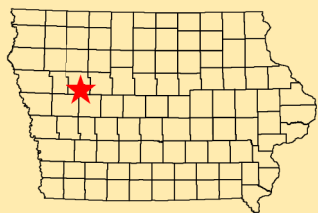
- State Areas open to hunting
- WMA Boundary
- WPA Boundary
- Parking Lot
- Boat Ramp
- Access Road
- Other Public Land
- 2015 Aerial Photography

Map Creation Date: 11/2016



Acres: 2,027  
 Habitat: 1/2 Upland, 1/4 Marsh  
 1/4 Timber  
 Species: Deer, Pheasant, Waterfowl,  
 Dove  
 Contact: Clint Maddix  
 Blackhawk Wildlife Unit  
 712-657-2639  
 Restrictions: Non-Toxic Shot

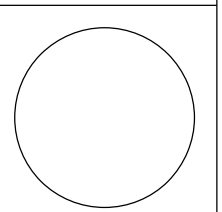
Sac County, Iowa  
 T-86,87N, R-36W,  
 Sections 4,9,15,16,32,33



Directions: 1.5 miles W of Carnarvon  
 on D59, 1 mile N on M68

Every effort has been made to accurately depict the boundaries on this map. However, users should rely on boundary signs actually located in this area to ensure they do not trespass on private property.

CONSULTANT:



**IOWA DEPARTMENT OF  
 NATURAL RESOURCES**

ENGINEERING SERVICES - WALLACE BUILDING  
 502 E. 9TH ST., DES MOINES, IA 50319-0034



**PROJECT LOCATION MAP**

STREAMBANK STABILIZATION FOR:

**BLACK HAWK MARSH WPA**

SAC COUNTY

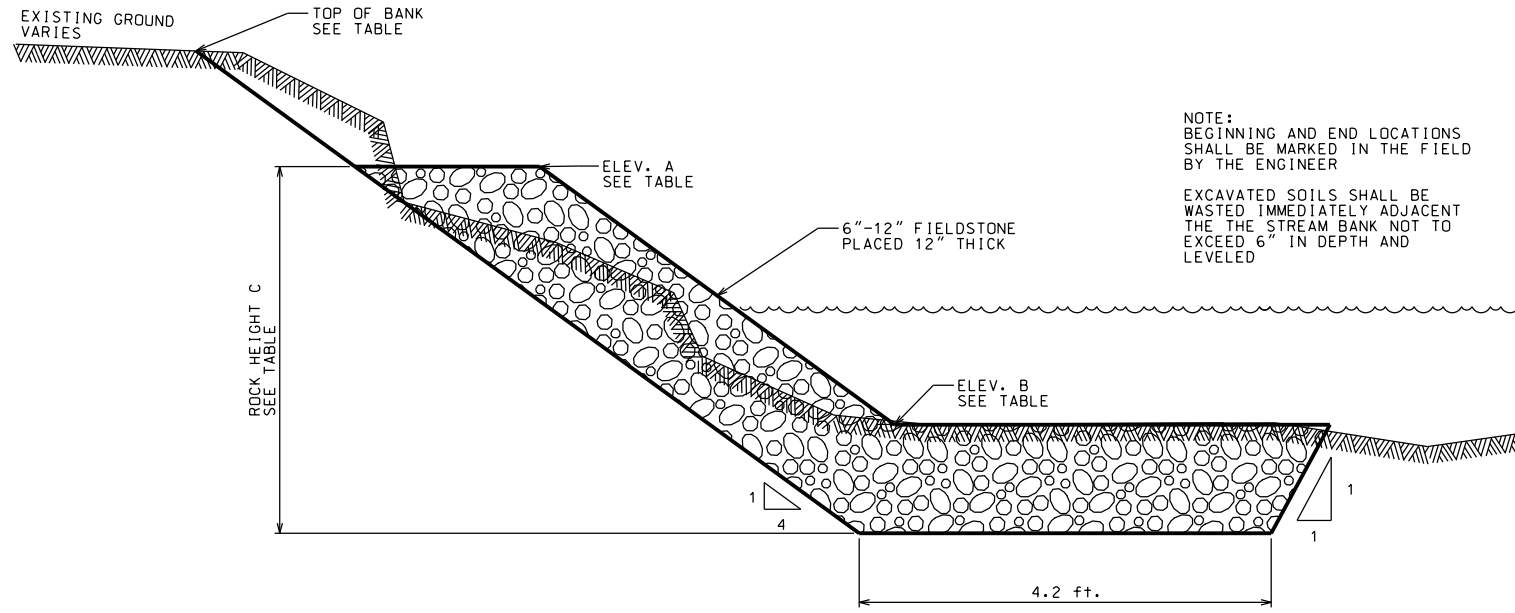
NO.	BY DATE	REVISION

DRAWN BY: PROJECT NUMBER:  
 23-01-81-01

CHK'D BY: DATE:

SHEET NO:

**A.02**



NOTE:  
BEGINNING AND END LOCATIONS SHALL BE MARKED IN THE FIELD BY THE ENGINEER

EXCAVATED SOILS SHALL BE WASTED IMMEDIATELY ADJACENT TO THE STREAM BANK NOT TO EXCEED 6" IN DEPTH AND LEVELED

**STREAMBANK STABILIZATION**

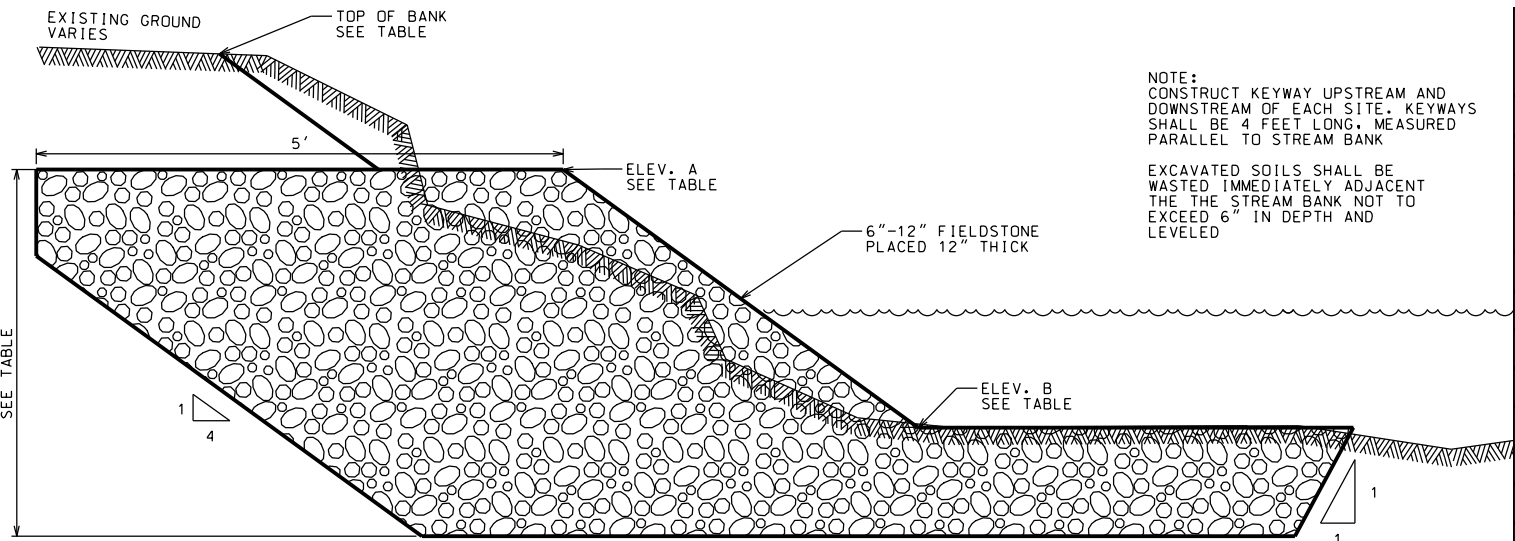
NOT TO SCALE

Site #	Length (ft.)	Rock Quantity (tons)	Upstream Top Of Bank Elev.	A - Top of Rock Elev.		B - Toe of Rock Elev.		C - Rock Height (ft.)
				Upstream	Downstream	Upstream	Downstream	
1	92	94	94.6	92.2	91.7	89.7	89.2	3.5
2	92	82	93.8	89.2	88.7	87.2	86.7	3.0
3	92	82	93.6	90.4	89.9	88.4	87.9	3.0
4	142	127	94.5	90.4	89.7	88.4	87.7	3.0
5	92	82	91.4	90.6	90.1	88.6	88.1	3.0
6	92	82	93.6	90.1	89.6	88.1	87.6	3.0
7	112	100	93.6	92.3	91.7	90.3	89.7	3.0
8	112	100	94.5	91.7	91.1	89.7	89.1	3.0
9	172	154	94.5	91.9	91.0	89.9	89.0	3.0
10	172	154	94.7	92.0	91.1	90.0	89.1	3.0
11	12	11	95.0	92.7	92.6	90.7	90.6	3.0
12	142	127	94.8	91.6	90.9	89.6	88.9	3.0
16	142	127	93.5	91.6	90.9	89.6	88.9	3.0
17	72	64	96.3	92.1	91.7	90.1	89.7	3.0
18	72	64	93.9	92.8	92.4	90.8	90.4	3.0
19	142	127	84.5	91.8	91.1	89.8	89.1	3.0
20	92	82	93.3	89.8	89.3	87.8	87.3	3.0
21	142	127	94.8	91.6	90.9	89.6	88.9	3.0
22	92	82	92.4	91.5	91.0	89.5	89.0	3.0
23	92	82	94.2	91.2	90.7	89.2	88.7	3.0
24	92	94	95.2	93.0	92.5	90.5	90.0	3.5
<b>Totals</b>	<b>2262</b>	<b>2,045</b>						

CONSULTANT:

**IOWA DEPARTMENT OF NATURAL RESOURCES**

ENGINEERING SERVICES - WALLACE BUILDING  
502 E. 9TH ST., DES MOINES, IA 50319-0034



NOTE:  
CONSTRUCT KEYWAY UPSTREAM AND DOWNSTREAM OF EACH SITE. KEYWAYS SHALL BE 4 FEET LONG, MEASURED PARALLEL TO STREAM BANK

EXCAVATED SOILS SHALL BE WASTED IMMEDIATELY ADJACENT TO THE STREAM BANK NOT TO EXCEED 6" IN DEPTH AND LEVELED

**STREAMBANK KEYWAY**

NOT TO SCALE

Site #	Rock Quantity (tons, both keyways)	Upstream Top Of Bank Elev.	A - Top of Rock Elev.		B - Toe of Rock Elev.		C - Rock Height (ft.)
			Upstream	Downstream	Upstream	Downstream	
1	19	94.6	92.2	91.7	89.7	89.2	3.5
2	16	93.8	89.2	88.7	87.2	86.7	3.0
3	16	93.6	90.4	89.9	88.4	87.9	3.0
4	16	94.5	90.4	89.7	88.4	87.7	3.0
5	16	91.4	90.6	90.1	88.6	88.1	3.0
6	16	93.6	90.1	89.6	88.1	87.6	3.0
7	16	93.6	92.3	91.7	90.3	89.7	3.0
8	16	94.5	91.7	91.1	89.7	89.1	3.0
9	16	94.5	91.9	91.0	89.9	89.0	3.0
10	16	94.7	92.0	91.1	90.0	89.1	3.0
11	16	95.0	92.7	92.6	90.7	90.6	3.0
12	16	94.8	91.6	90.9	89.6	88.9	3.0
16	16	93.5	91.6	90.9	89.6	88.9	3.0
17	16	96.3	92.1	91.7	90.1	89.7	3.0
18	16	93.9	92.8	92.4	90.8	90.4	3.0
19	16	84.5	91.8	91.1	89.8	89.1	3.0
20	16	93.3	89.8	89.3	87.8	87.3	3.0
21	16	94.8	91.6	90.9	89.6	88.9	3.0
22	16	92.4	91.5	91.0	89.5	89.0	3.0
23	16	94.2	91.2	90.7	89.2	88.7	3.0
24	19	95.2	93.0	92.5	90.5	90.0	3.5
<b>Totals</b>	<b>339</b>						

TYPICAL CROSS SECTIONS AND DETAILS

STREAMBANK STABILIZATION FOR:

**BLACK HAWK MARSH WPA**

SAC COUNTY

NO.	DATE	BY	REVISION

SHEET NO:

**B.01**

**ESTIMATED PROJECT QUANTITIES**

ITEM NO.	ITEM	UNIT	TOTAL
1	Mobilization	Lump Sum	1
2	6"-12" Fieldstone	Tons	2,384
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

**ESTIMATE REFERENCE INFORMATION**

ITEM NO.	DESCRIPTION										
2	<p>A. This line item includes the supply and installation of native fieldstone material. Material gradation shall generally be in compliance with the following:</p> <table border="0"> <tr> <td>Percent Passing</td> <td>Size</td> </tr> <tr> <td>100</td> <td>12"</td> </tr> <tr> <td>85</td> <td>6" - 11"</td> </tr> <tr> <td>50</td> <td>6" - 9"</td> </tr> <tr> <td>15</td> <td>2" - 3"</td> </tr> </table> <p>Due to the limited availability and gradation of fieldstone, the material does not have to directly meet the size specified. At a minimum, the material shall be well graded between 12" and 6" stones. The engineer shall approve the gradation prior to delivery and placement.</p>	Percent Passing	Size	100	12"	85	6" - 11"	50	6" - 9"	15	2" - 3"
Percent Passing	Size										
100	12"										
85	6" - 11"										
50	6" - 9"										
15	2" - 3"										

**GENERAL NOTES**

Verify actual locations and elevations with DNR Engineer.

All work shall conform to and be performed in accordance with all applicable codes and ordinances.

The contractor shall visit the site and inspect the project area and thoroughly familiarize themselves with the actual job conditions prior to bidding and the start of work. Failure to visit the project site shall not relieve the contractor from performing the work in accordance to the plans, specification, special provisions and contract.

The contractor shall verify, at the site, all dimensions and conditions shown on the plans and shall notify the DNR Engineer of any discrepancies, omissions, and/or conflicts prior to proceeding with the work.

It shall be the contractor's responsibility to provide waste areas or disposal sites for excess material (excavated material or broken concrete) which is not desirable to be incorporated into the work involved on this project. No payment for overhaul will be allowed for material hauled to these sites. No material shall be placed within the right-of-way, unless specifically stated in the plans or approved by the DNR Engineer.

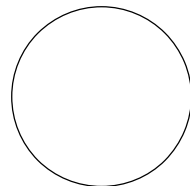
The contractor shall not disturb desirable grass areas and desirable trees outside the construction limits. The contractor will not be permitted to park or service vehicles and equipment or use these areas for storage of materials. Storage, parking and service areas will be subject to the approval of the DNR Engineer.

Where utilities and fixtures are shown as Existing on the plans or encountered within the construction area, it shall be the responsibility of the contractor to notify the DNR Engineer of those utilities prior to the beginning of any construction. The contractor shall be afforded access to these facilities for necessary modification of services. Underground facilities, structures and utilities have been plotted from available surveys and records and therefore their locations must be considered approximate only. It is possible there may be others, the existence of which is presently not known or shown. It is the contractor's responsibility to determine their existence and exact location and to avoid damage thereto. No claims for additional compensation will be allowed to the contractor for any interference or delay caused by such work.

The contractor shall shape graded area to maintain surface drainage. All elevations are to finish grade.

The contractor is expected to have materials, equipment, and labor available on a daily basis to install and maintain erosion control features on the project. This may involve seeding, silt fence, rock ditch checks, silt basins or silt dikes.

CONSULTANT:



**IOWA DEPARTMENT OF  
NATURAL RESOURCES**

ENGINEERING SERVICES - WALLACE BUILDING  
502 E. 9TH ST., DES MOINES, IA 50319-0034



**QUANTITIES AND GENERAL INFORMATION**

STREAMBANK STABILIZATION FOR:

**BLACK HAWK MARSH WPA**

SAC COUNTY

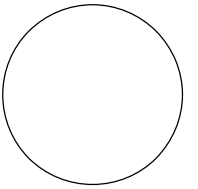
NO.	BY	REVISION
DATE		
DRAWN BY:	PROJECT NUMBER:	
CHK'D BY:	23-01-81-01	
	DATE:	
SHEET No:		

**C.01**



Note:  
 Contractor shall grade all disturbed areas smooth. DNR shall perform final seeding and site stabilization.

CONSULTANT:



**IOWA DEPARTMENT OF NATURAL RESOURCES**

ENGINEERING SERVICES - WALLACE BUILDING  
 502 E. 9TH ST., DES MOINES, IA 50319-0034



**SITE PLAN**

STREAMBANK STABILIZATION FOR:

**BLACK HAWK MARSH WPA**

SAC COUNTY

NO.	DATE	REVISION

DRAWN BY: PROJECT NUMBER:  
 23-01-81-01

CHK'D BY: DATE:

SHEET NO:

**D.01**