Final Report

Rathbun Lake Special Project: Strategic Placement of BMPs for Water Quality Protection 5031-011

2006 - 2008

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FINANCIAL ACCOUNTABILITY

Description of the expenditure of watershed improvement funds and total project funds.

Iowa Watershed Improvement Review Board (WIRB) financial support enabled the Rathbun Land and Water Alliance to surpass the planned objectives for the *Rathbun Lake Special Project: Strategic Placement of BMPs for Water Quality Protection.* Specifically, this WIRB funding helped the Alliance and its partners, including cooperating landowners, to construct more debris basins and reduce the estimated quantities of sediment and phosphorus carried in runoff to Rathbun Lake annually by greater amounts than originally proposed.

The Alliance expended Watershed Improvement Funds for project activities as planned in the original application submitted to the Iowa WIRB. Please refer to the Summary of Watershed Improvement Funds Approved, Expended, and Balance in Table 1. A complete financial ledger for the term of the grant agreement accompanies this report.

Table 1

Summary of Watershed Improvement Funds Approved, Expended, and Balance

Grant Agreement Budget Line Item	Total Funds Approved ($)	Total Funds Expended ($)	Available Funds ($) [a]
Construction of Impoundments (NRCS Debris Basin Practice)	500,000.00	465,567.20	34,432.80
Totals	500,000.00	465,567.20	34,432.80

[a] The Alliance, its partners, and cooperating landowners did not have sufficient time remaining in the grant agreement period to undertake the construction of any additional debris basins that would have used the balance of available funds.

FINANCIAL ACCOUNTABILITY contd.

Similar to the information above regarding the Iowa WIRB's Watershed Improvement Funds, funds and in-kind contributions provided by partners were essential to the Alliance's success in surpassing the planned objectives for the *Rathbun Lake Special Project: Strategic Placement of BMPs for Water Quality Protection*.

Total project financial and non-financial resources were utilized for project activities as planned in the original application submitted to the Iowa WIRB. Please refer to the Summary of Total Project Funding in Table 2. A complete financial ledger for the term of the grant agreement accompanies this report.

Table 2

Summary of Total Project Funding

Funding Source	Cash		In-Kind Contributions		Total	
	Approved Application Budget ($)	Actual ($)	Approved Application Budget ($)	Actual ($)	Approved Application Budget ($)	Actual ($)
WIRB	500,000.00	465,567.20	0.00	0.00	500,000.00	465,567.20
Landowners	60,000.00	71,312.01	82,500.00	87,830.00	142,500.00	159,142.01
NRCS	0.00	8,570.25	120,000.00	118,834.10	120,000.00	127,404.35
RRWA	40,000.00	36,959.09	12,480.00	6,528.30	52,480.00	43,487.39
Totals	600,000.00	582,408.55	214,980.00	213,192.40	814,980.00	795,600.95

Watershed Improvement Fund contribution: Approved application budget: 61%
Actual: 59%

ENVIRONMENTAL ACCOUNTABILITY

Description of the water quality improvement practices applied and results achieved.

The Alliance and its partners, with the financial support from the Iowa WIRB, assisted landowners to construct twelve debris basins at strategic locations in the Rathbun Lake watershed. The original project objective called for the construction of at least ten basins. The debris basins were constructed at sites below areas in the watershed with high concentrations of priority land on which in-field best management practices (BMPs) will not be applied. The basins were constructed to reduce the amounts of sediment and associated phosphorus that are carried in runoff from priority land and impair water quality in Rathbun Lake and its tributaries. Table 3 presents a summary of the number of debris basins planned and constructed.

Table 3

Summary of Practices Applied

Practice	Unit	Approved Application Goal	Accomplishment	Percent Completion
Debris Basins	No.	10	12	120

The Alliance and partners have determined that the twelve constructed debris basins will control runoff from approximately 2,333 acres. These twelve basins will reduce the delivery of sediment and phosphorus to Rathbun Lake and tributaries in the lake's watershed by an estimated 5,936 tons and 20,674 pounds per year respectively. These water quality related benefits surpass the original project objectives for acres treated with debris basins and the associated reduction in sediment and phosphorus delivery to Rathbun Lake and its tributaries. Table 4 presents a summary of planned and achieved water quality benefits.

Table 4

Summary of Water Quality Benefits

Water Quality Benefit	Unit	Approved Application Goal	Accomplishments	Percent Completion
Acres Treated with Debris Basins	Ac.	2,000	2,333	117
Reduced Sediment Delivery	T.	2,970	5,936	200
Reduced Phosphorus Delivery	Lb.	12,100	20,674	171

ENVIRONMENTAL ACCOUNTABILITY contd.

A set of maps that accompany this report identifies the locations of the twelve debris basins constructed through the project. The debris basins are located in eight of the targeted sub-watersheds of the Rathbun Lake watershed in which the Alliance and partners have been working with landowners to apply BMPs for priority land. The maps also present information that describes the water quality benefits associated with the debris basins, that is, reduced sediment and phosphorus delivery, as well as similar information for other BMPs applied for priority land in the targeted sub-watersheds.

Alliance members' and partners' staff identified, evaluated, and prioritized more than 40 potential sites for the construction of debris basins. This process of selecting the most strategic sites to construct the debris basins contributed significantly to the much greater than anticipated reduction in sediment and phosphorus delivery to Rathbun Lake and the lake's tributaries. In addition, the Alliance and its partners were able to confirm the relative cost effectiveness of constructing debris basins at strategic locations to reduce water quality impairment caused by sediment and associated phosphorus. The estimated average annual cost per ton of reduced sediment delivery for the twelve debris basins was $2.83. This compares with an estimated average annual cost of $16.30 and $12.30 per ton of reduced sediment delivery from installing terraces and water and sediment control basins respectively.

The Alliances' and partners' comprehensive water quality monitoring program activities in Rathbun Lake and its tributaries were carried out during the project period. The program consists of monthly and event sample collection from 20 sites and analyses for sediment, nutrients, bacteria, and pesticides. Monitoring results have been used to help identify water bodies in the Rathbun Lake watershed that are on Iowa's Section 303(d) Lists of Impaired Waters and evaluate water bodies in the watershed as part of Iowa's 2008 305(b) Water Quality Assessment. The water quality monitoring program will continue after project completion. Similarly, the Alliance and partners will continue to use past and future monitoring results to assess water quality conditions in Rathbun Lake and its tributaries as well as to plan and evaluate, to the extent possible, the effectiveness of BMPs to protect and improve water quality.

PROGRAM ACCOUNTABILITY

Description of activities completed to support the application of water quality improvement practices.

Alliance members and partners completed the following activities in support of the construction of twelve debris basins and achievement of associated reductions in sediment and phosphorus delivery to Rathbun Lake and the lake's tributaries:

- Assembled a team of expert advisors and field staff with Alliance member and partner organizations who were responsible for planning, implementing, and assessing the completion and impact of project activities;

- Developed and utilized a geographic information system (GIS) - based methodology to help identify, evaluate, and prioritize more than 40 potential locations in the Rathbun Lake watershed to construct debris basins for water quality protection;

- Assisted twenty-two interested landowners to complete an in-depth evaluation of the possible construction of debris basins at high priority locations in the Rathbun Lake watershed. As a result, eleven landowners worked with the Alliance and partners to complete the engineering designs, develop maintenance plans, and construct debris basins at twelve of these sites;

- Prepared and presented information that described project progress and accomplishments as part of the Alliance's ongoing watershed outreach program activities which included tours of BMP application efforts in the watershed, displays at meetings, workshops, and conferences, and press releases and interviews with print, radio, and television media; and

- Alliance's board of directors, partner representatives, and project team members regularly reviewed progress in the implementation of project activities and accomplishment of project objectives. The Alliance submitted the required project plans of work, narrative reports, and financial ledgers.

Chariton River #7 Sub-Watershed
Reece WIRB Structure + Priority Land Work

Sediment Delivery Reduction – 600 Tons/Yr

Phosphorus Delivery Reduction – 2,640 Lbs./yr

Acres Benefited – 244.4

Legend

- Watershed Boundary
- Project Work Areas
- Status
  - Completed
  - Planned
- Field Boundaries
- No Priority
- Priority
- High Priority
- Highest Priority
- Associate Priority

	Applied SFY09	Applied Cumulative (FFY04-08)
Gross Erosion Before	0.0	4213.5 Tons/yr.
Gross Erosion After	0.0	3459.9 Tons/yr.
Gross Erosion Reduction	0.0	753.6 Tons/yr.
Sediment Delivery Before	0.0	1868.4 Tons/yr.
Sediment Delivery After	0.0	299.1 Tons/yr.
Sediment Delivery Reduction	0.0	1569.3 Tons/yr.
Phosphorus Delivery Before	0.0	9231.7 lbs/year
Phosphorus Delivery After	0.0	1308.5 lbs/year
Phosphorus Delivery Reduction	0.0	6923.2 lbs/year
Total Acres Benefited	0.0	860.6 acres
Priority Acres Benefited	0	425 acres

Watershed Statistics (Completed + Planned)

Size: 6,089 Acres

Priority Acres: 1,509 Acres

Acres Benefiting: 910 Acres

Priority Acres Benefiting: 451 Acres

Approx. Sediment Del. Before Projects (Watershed): 8,525 Tons

Approx. Sediment Del. After Projects (Watershed): 6,843 Tons

Approx. Sediment Del. Reduction (Watershed): 1,682 Tons

Average Sediment Del. Reduction Per Acre: 1.85 T/Acre/Year

Approximate Phosphorus Del. Before Projects (Watershed): 37,772 Lbs.

Approximate Phosphorus Del. After Projects (Watershed): 30,320 Lbs.

Approximate Phosphorus Del. Reduction (Watershed): 7,452 Lbs.

Average Phosphorus Del. Reduction Per Acre: 8.19 Lbs./Acre

0 0.125 0.25 0.5 Miles

N

Source: Rathbun Land and Water Alliance
IDALS DSC
USDA FSA 2008 DOQQ, Lucas County
USDA FSA

Prepared By: Tyler J. Jacobsen, Rathbun Regional Water Association

Brush Creek Sub-Watershed
Sponsler WIRB Structure + Priority Land Work

Sediment Delivery Reduction – 452 Tons/Yr
Phosphorus Delivery Reduction – 1,763 Lbs./yr
Acres Benefited – 188.3

Legend
- Watershed Boundary
- Project Work Areas
- Status
  - Completed
  - Planned
  - Field Boundaries
  - No Priority
  - Priority
  - High Priority
  - Highest Priority
  - Associate Priority

	Applied SFY09	Applied Cumulative (FFY04-08)
Gross Erosion Before	1335.1	5356.7 Tons/yr.
Gross Erosion After	1278.0	4071.5 Tons/yr.
Gross Erosion Reduction	57.1	1287.2 Tons/yr.
Sediment Delivery Before	500.0	2334.7 Tons/yr.
Sediment Delivery After	48.0	203.3 Tons/yr.
Sediment Delivery Reduction	452.0	2131.4 Tons/yr.
Phosphorus Delivery Before	1950.0	9019.7 lbs/year
Phosphorus Delivery After	187.2	816.2 lbs/year
Phosphorus Delivery Reduction	1762.8	8203.5 lbs/year
Total Acres Benefited	188.3	1182.3 acres
Priority Acres Benefited	96.7	684.9 acres

Watershed Statistics (Completed + Planned)

Size: 4,066 Acres

Priority Acres: 1,461 Acres

Acres Benefiting: 1275 Acres

Priority Acres Benefiting: 728 Acres

Approx. Sediment Del. Before Projects (Watershed): 6,384 Tons

Approx. Sediment Del. After Projects (Watershed): 4,123 Tons

Approx. Sediment Del. Reduction (Watershed): 2,261 Tons

Average Sediment Del. Reduction Per Acre: 1.77 T/Acre/Year

Approximate Phosphorus Del. Before Projects (Watershed): 25,278 Lbs.

Approximate Phosphorus Del. After Projects (Watershed): 16,326 Lbs.

Approximate Phosphorus Del. Reduction (Watershed): 8,952 Lbs.

Average Phosphorus Del. Reduction Per Acre: 7.02 Lbs./Acre

0 0.125 0.25 0.5 Miles

Source: Rathbun Land and Water Alliance
IDALS DSC
USDA FSA 2008 DOQQ, Decatur County
USDA FSA

Prepared By: Tyler J. Jacobsen, Rathbun Regional Water Association

Upper Ninemile Sub-Watershed
Cline & Unruh WIRB Structures + Priority Land Work

Sediment Delivery Reduction – 583 Tons/Yr
Phosphorus Delivery Reduction – 2,857 Lbs./yr
Acres Benefited – 252.0

Sediment Delivery Reduction – 409 Tons/Yr
Phosphorus Delivery Reduction – 2,004 Lbs./yr
Acres Benefited – 135.0

Legend

- Watershed Boundary
- **Project Work Areas**
- **Status**
- Completed
- Planned
- Field Boundaries
- No Priority
- Priority
- High Priority
- Highest Priority
- Associate Priority

	Applied SFY09	Applied Cumulative (FFY04-08)
Gross Erosion Before	3270.3	4347.3 Tons/yr.
Gross Erosion After	2862.0	3829.0 Tons/yr.
Gross Erosion Reduction	408.3	518.3 Tons/yr.
Sediment Delivery Before	1229.0	1690.0 Tons/yr.
Sediment Delivery After	106.0	151.0 Tons/yr.
Sediment Delivery Reduction	1123.0	1539.0 Tons/yr.
Phosphorus Delivery Before	6056.1	8330.9 lbs/year
Phosphorus Delivery After	520.3	744.2 lbs/year
Phosphorus Delivery Reduction	5515.8	7586.7 lbs/year
Total Acres Benefited	453.7	674.8 acres
Priority Acres Benefited	242	398 acres

Watershed Statistics (Completed + Planned)

Size: 6,883 Acres

Priority Acres: 2,570 Acres

Acres Benefiting: 874 Acres

Priority Acres Benefiting: 476 Acres

Approx. Sediment Del. Before Projects (Watershed): 7,847 Tons

Approx. Sediment Del. After Projects (Watershed): 6,010 Tons

Approx. Sediment Del. Reduction (Watershed): 1,837 Tons

Average Sediment Del. Reduction Per Acre: 2.10 T/Acre/Year

Approximate Phosphorus Del. Before Projects (Watershed): 39,153 Lbs.

Approximate Phosphorus Del. After Projects (Watershed): 29,987 Lbs.

Approximate Phosphorus Del. Reduction (Watershed): 9,166 Lbs.

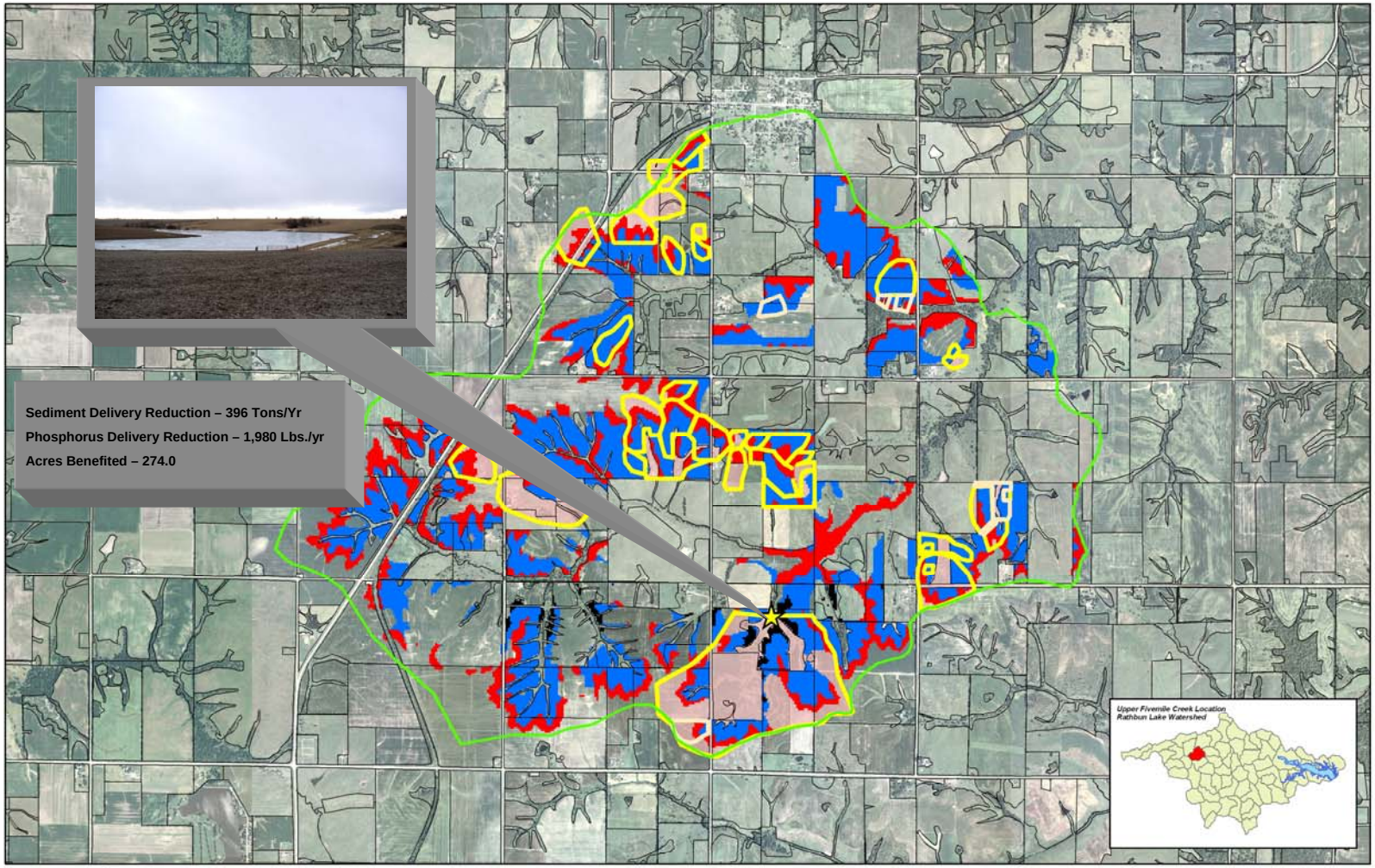
Average Phosphorus Del. Reduction Per Acre: 10.49 Lbs./Acre

0 0.125 0.25 0.5 Miles

Source: Rathbun Land and Water Alliance
IDALS DSC
USDA FSA 2008 DOQQ, Wayne County
USDA FSA

Prepared By: Tyler J. Jacobsen, Rathbun Regional Water Association

Upper Fivemile Sub-Watershed
Jang WIRB Structure + Priority Land Work



Sediment Delivery Reduction – 396 Tons/Yr
Phosphorus Delivery Reduction – 1,980 Lbs./yr
Acres Benefited – 274.0

Legend

- Watershed Boundary
- **Project Work Areas**
- **Status**
- Completed
- Planned
- Field Boundaries
- No Priority
- Priority
- High Priority
- Highest Priority
- Associate Priority

	Applied SFY09	Applied Cumulative (FFY04-08)
Gross Erosion Before	1681.2	2973.3 Tons/yr.
Gross Erosion After	1423.0	2328.8 Tons/yr.
Gross Erosion Reduction	258.2	644.5 Tons/yr.
Sediment Delivery Before	612.0	1182.0 Tons/yr.
Sediment Delivery After	73.0	137.0 Tons/yr.
Sediment Delivery Reduction	539.0	1045.0 Tons/yr.
Phosphorus Delivery Before	3060.0	5917.5 lbs/year
Phosphorus Delivery After	365.0	685.5 lbs/year
Phosphorus Delivery Reduction	2695.0	5232.0 lbs/year
Total Acres Benefited	362.0	669.4 acres
Priority Acres Benefited	162.8	384.1 acres

Watershed Statistics (Completed + Planned)

Size: 4,802 Acres

Priority Acres: 1,432 Acres

Acres Benefiting: 696 Acres

Priority Acres Benefiting: 401 Acres

Approx. Sediment Del. Before Projects (Watershed): 5,283 Tons

Approx. Sediment Del. After Projects (Watershed): 4,196 Tons

Approx. Sediment Del. Reduction (Watershed): 1,087 Tons

Average Sediment Del. Reduction Per Acre: 1.56 T/Acre/Year

Approximate Phosphorus Del. Before Projects (Watershed): 26,646 Lbs.

Approximate Phosphorus Del. After Projects (Watershed): 21,163 Lbs.

Approximate Phosphorus Del. Reduction (Watershed): 5,483 Lbs.

Average Phosphorus Del. Reduction Per Acre: 7.88 Lbs./Acre

0 0.125 0.25 0.5 Miles

Source: Rathbun Land and Water Alliance
IDALS DSI
USDA FSA 2006 DOQQ, Lucas County
USDA FSA

Prepared By: Tyler J. Jacobsen, Rathbun Regional Water Association

Buck Creek Sub-Watershed
Tisue WIRB Structures + Priority Land Work

Sediment Delivery Reduction – 807 Tons/Yr
Phosphorus Delivery Reduction – 1,695 Lbs./yr
Acres Benefited – 217.3

Sediment Delivery Reduction – 676 Tons/Yr
Phosphorus Delivery Reduction – 1,420 Lbs./yr
Acres Benefited – 119.9

Legend

- Watershed Boundary
- Project Work Areas
- Status
  - Completed
  - Planned
- Field Boundaries
- No Priority
- Priority
- High Priority
- Highest Priority
- Associate Priority

	Applied SFY09	Applied Cumulative (FFY04-08)
Gross Erosion Before	4462.8	5568.8 Tons/yr.
Gross Erosion After	4379.0	5226.8 Tons/yr.
Gross Erosion Reduction	83.6	332.0 Tons/yr.
Sediment Delivery Before	1644.0	2148.5 Tons/yr.
Sediment Delivery After	161.0	203.4 Tons/yr.
Sediment Delivery Reduction	1483.0	1945.1 Tons/yr.
Phosphorus Delivery Before	3452.4	4755.7 lbs/year
Phosphorus Delivery After	338.1	448.2 lbs/year
Phosphorus Delivery Reduction	3114.3	4307.5 lbs/year
Total Acres Benefited	337.2	658.0 acres
Priority Acres Benefited	196.6	415.7 acres

Watershed Statistics (Completed + Planned)

Size: 6,502 Acres

Priority Acres: 1,218 Acres

Acres Benefiting: 919 Acres

Priority Acres Benefiting: 488 Acres

Approx. Sediment Del. Before Projects (Watershed): 6,241 Tons

Approx. Sediment Del. After Projects (Watershed): 3,682 Tons

Approx. Sediment Del. Reduction (Watershed): 2,559 Tons

Average Sediment Del. Reduction Per Acre: 2.78 T/Acre/Year

Approximate Phosphorus Del. Before Projects (Watershed): 13,183 Lbs.

Approximate Phosphorus Del. After Projects (Watershed): 7,778 Lbs.

Approximate Phosphorus Del. Reduction (Watershed): 5,405 Lbs.

Average Phosphorus Del. Reduction Per Acre: 5.88 Lbs./Acre

0 0.125 0.25 0.5 Miles

Source: Rathbun Land and Water Alliance
IDALS GIC
USDA FSA 2008 DOQQ, Appanoose County
USDA FSA

Prepared By: Tyler J. Jacobsen, Rathbun Regional Water Association

Wildcat Creek Sub-Watershed
Oen & Goretska WIRB Structures + Priority Land Work

Sediment Delivery Reduction – 64 Tons/Yr
Phosphorus Delivery Reduction – 147 Lbs./yr
Acres Benefited – 63.4

Sediment Delivery Reduction – 768 Tons/Yr
Phosphorus Delivery Reduction – 1,843 Lbs./yr
Acres Benefited – 185.3

Legend

- Watershed Boundary
- Project Work Areas
- Status
  - Completed
  - Planned
- Field Boundaries
- No Priority
- Priority
- High Priority
- Highest Priority
- Associate Priority

	Applied SFY09	Applied Cumulative (FFY04-08)
Gross Erosion Before	2542.8	3907.9 Tons/yr.
Gross Erosion After	2384.0	3329.6 Tons/yr.
Gross Erosion Reduction	158.8	578.3 Tons/yr.
Sediment Delivery Before	942.0	1527.8 Tons/yr.
Sediment Delivery After	88.0	154.3 Tons/yr.
Sediment Delivery Reduction	854.0	1373.3 Tons/yr.
Phosphorus Delivery Before	2283.3	3648.4 lbs/year
Phosphorus Delivery After	210.8	369.4 lbs/year
Phosphorus Delivery Reduction	2042.7	3279.0 lbs/year
Total Acres Benefited	261.1	524.4 acres
Priority Acres Benefited	170.1	295.1 acres

Watershed Statistics (Completed + Planned)

Size: 6,383 Acres

Priority Acres: 830 Acres

Acres Benefiting: 625 Acres

Priority Acres Benefiting: 342 Acres

Approx. Sediment Del. Before Projects (Watershed): 9,701 Tons

Approx. Sediment Del. After Projects (Watershed): 8,205 Tons

Approx. Sediment Del. Reduction (Watershed): 1,496 Tons

Average Sediment Del. Reduction Per Acre: 2.39 T/Acre/Year

Approximate Phosphorus Del. Before Projects (Watershed): 23,109 Lbs.

Approximate Phosphorus Del. After Projects (Watershed): 19,545 Lbs.

Approximate Phosphorus Del. Reduction (Watershed): 3,564 Lbs.

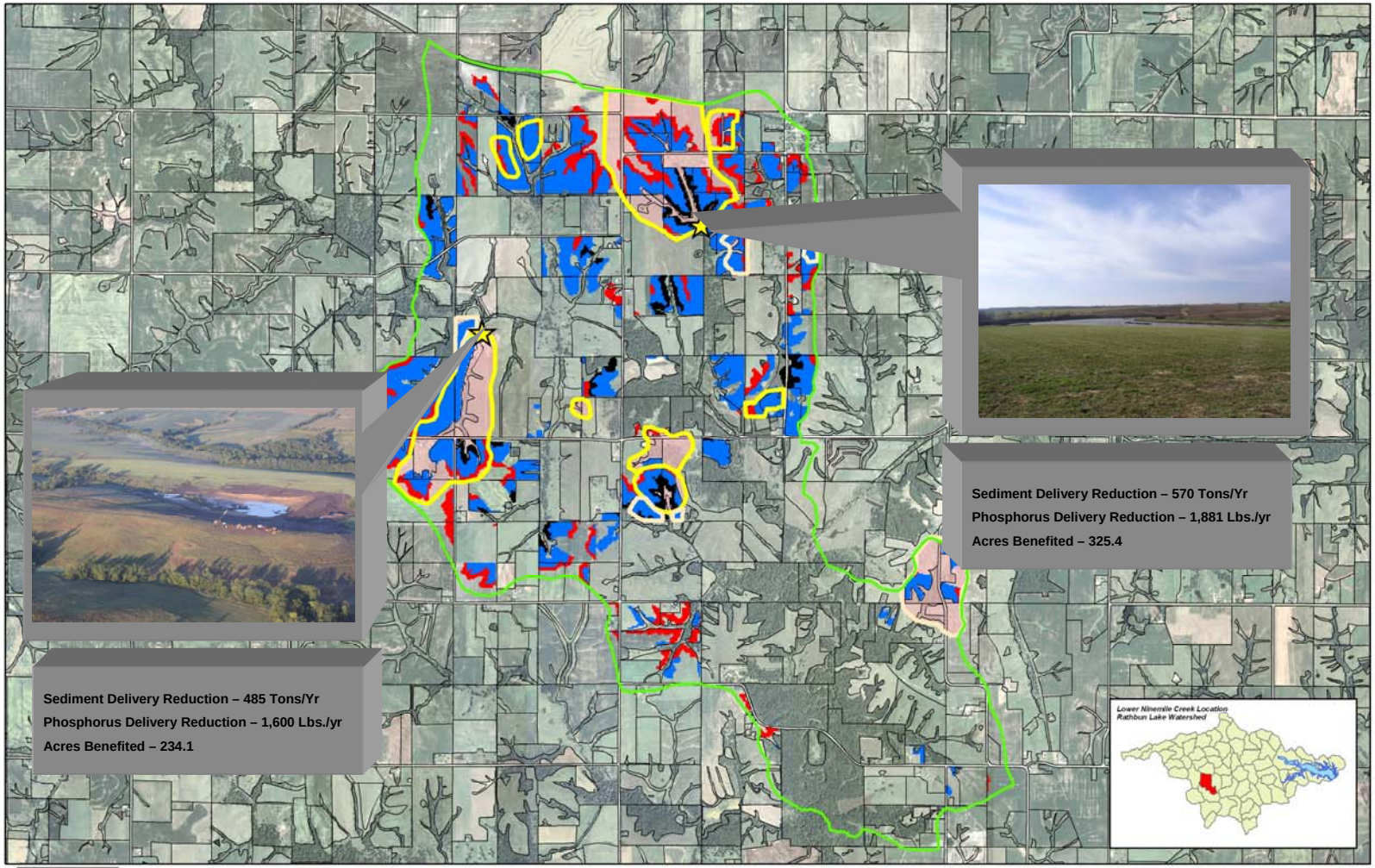
Average Phosphorus Del. Reduction Per Acre: 5.70 Lbs./Acre

0 0.125 0.25 0.5 Miles

Source: Rathbun Land and Water Alliance
IDALS DSC
USDA FSA 2008 DOQQ, Wayne County
USDA FSA

Prepared By: Tyler J. Jacobsen, Rathbun Regional Water Association

Lower Ninemile Creek Sub-Watershed
Allred & Harvey WIRB Structures + Priority Land Work



Legend

- Watershed Boundary
- Project Work Areas
- Status
  - Completed
  - Planned
- Field Boundaries
- No Priority
- Priority
- High Priority
- Highest Priority
- Associate Priority

	Applied SFY09	Applied Cumulative (FFY04-08)
Gross Erosion Before	3406.0	3879.9 Tons/yr.
Gross Erosion After	3298.8	3564.1 Tons/yr.
Gross Erosion Reduction	107.2	315.8 Tons/yr.
Sediment Delivery Before	1226.0	1478.0 Tons/yr.
Sediment Delivery After	118.0	131.0 Tons/yr.
Sediment Delivery Reduction	1108.0	1347.0 Tons/yr.
Phosphorus Delivery Before	4045.8	4877.4 lbs/year
Phosphorus Delivery After	389.4	432.3 lbs/year
Phosphorus Delivery Reduction	3656.4	4445.1 lbs/year
Total Acres Benefited	593.3	715.0 acres
Priority Acres Benefited	281.4	350.7 acres

Watershed Statistics (Completed + Planned)

Size: 6,617 Acres

Priority Acres: 1,291 Acres

Acres Benefiting: 887 Acres

Priority Acres Benefiting: 429 Acres

Approx. Sediment Del. Before Projects (Watershed): 8,536 Tons

Approx. Sediment Del. After Projects (Watershed): 6,931 Tons

Approx. Sediment Del. Reduction (Watershed): 1,605 Tons

Average Sediment Del. Reduction Per Acre: 1.81 T/Acre/Year

Approximate Phosphorus Del. Before Projects (Watershed): 28,527 Lbs.

Approximate Phosphorus Del. After Projects (Watershed): 23,163 Lbs.

Approximate Phosphorus Del. Reduction (Watershed): 5,364 Lbs.

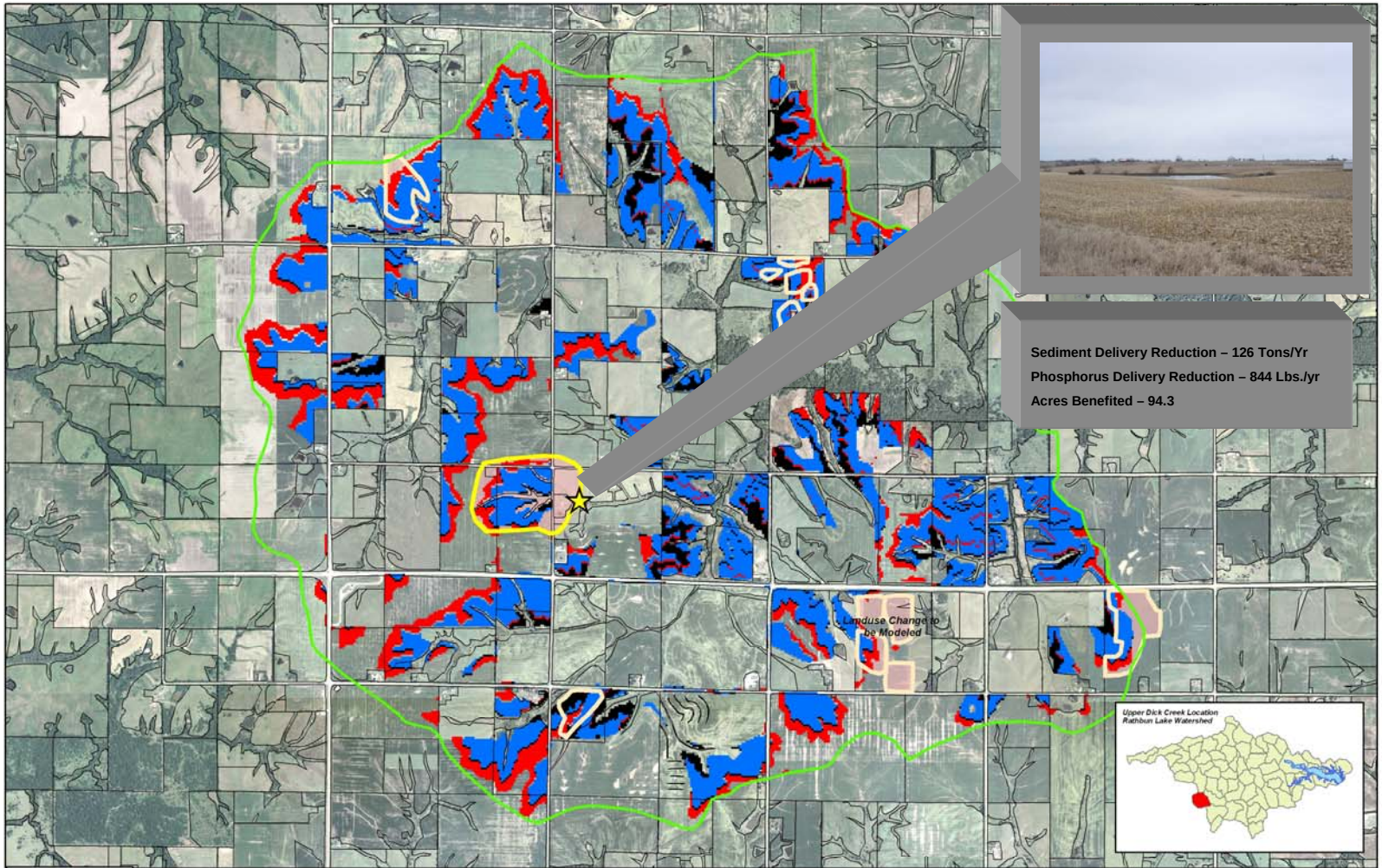
Average Phosphorus Del. Reduction Per Acre: 6.05 Lbs./Acre

0 0.125 0.25 0.5 Miles

Source: Rathbun Land and Water Alliance
IDALS DSC
USDA FSA 2006 DOQQ, Wayne County
USGA FSA

Prepared By: Tyler J. Jacobsen, Rathbun Regional Water Association

Upper Dick Creek Sub-Watershed
Hamilton WIRB Structure + Priority Land Work



Sediment Delivery Reduction – 126 Tons/Yr
Phosphorus Delivery Reduction – 844 Lbs./yr
Acres Benefited – 94.3

Legend
- Watershed Boundary
- Project Work Areas
  - Completed
  - Planned
  - Field Boundaries
- Priority Area Identification
  - No Priority
  - Priority
  - High Priority
  - Highest Priority
  - Associate Priority

	Applied SFY09	Applied Cumulative (FFY04-08)
Gross Erosion Before	332.0	332.0 Tons/yr.
Gross Erosion After	331.0	331.0 Tons/yr.
Gross Erosion Reduction	1.0	1.0 Tons/yr.
Sediment Delivery Before	140.0	140.0 Tons/yr.
Sediment Delivery After	14.0	14.0 Tons/yr.
Sediment Delivery Reduction	126.0	126.0 Tons/yr.
Phosphorus Delivery Before	938.0	938.0 lbs/year
Phosphorus Delivery After	93.8	93.8 lbs/year
Phosphorus Delivery Reduction	844.2	844.2 lbs/year
Total Acres Benefited	94.3	94.3 acres
Priority Acres Benefited	44.5	44.5 acres

Watershed Statistics (Completed + Planned)

Size: 6,500 Acres

Priority Acres: 1,944 Acres

Acres Benefiting: 241 Acres

Priority Acres Benefiting: 122 Acres

Approx. Sediment Del. Before Projects (Watershed): 6,630 Tons

Approx. Sediment Del. After Projects (Watershed): 6,284 Tons

Approx. Sediment Del. Reduction (Watershed): 346 Tons

Average Sediment Del. Reduction Per Acre: 1.44 T/Acre/Year

Approximate Phosphorus Del. Before Projects (Watershed): 44,457 Lbs.

Approximate Phosphorus Del. After Projects (Watershed): 42,137 Lbs.

Approximate Phosphorus Del. Reduction (Watershed): 2,320 Lbs.

Average Phosphorus Del. Reduction Per Acre: 9.63 Lbs./Acre

0 0.125 0.25 0.5 Miles

Source: Rathbun Land and Water Alliance
IDALS DSC
USDA FSA 2008 DOQQ, Wayne County
USDA FSA

Prepared By: Tyler J. Jacobsen, Rathbun Regional Water Association