Project Implementation Plan SFY23-25

Cottonwood WRAPS

WRAPS Coordinator: Lisa Suderman

Grant Start: July 1, 2022
Grant End: December 31, 2025
Total Allocation: $600,000

This WRAPS Implementation PIP will help accomplish the long-term goals established in Kansas' Nonpoint Source Management Plan Goals including:

1. No lake, river, stream or wetland has a violation of Kansas Surface Water Quality Standards due to nonpoint sources of pollutants and all designated uses are fully supported;
2. Kansas surface and ground water are protected from all nonpoint pollutant sources through the use of recommended water quality best management practices.
3. Reducing the levels of phosphorus, nitrogen, and sediment that adversely affect the water quality of Kansas lakes, rivers, streams and wetlands

	Year 1	Year 2	Year 3
Personnel/Fringe	$52,000	$52,000	$52,000
Admin/Indirect	$15,000	$15,000	$15,000
Travel/Supplies	$2,000	$2,000	$2,000
Strategy Implementation/BMPs	$131,000	$131,000	$131,000
Total:	$200,000	$200,000	$200,000

Estimated Load Reductions	
Phosphorus	17,904 lbs.
Nitrogen	34,014 lbs.
Sediment	7,344 tons

Strategy and Goals	Funding	Load Reductions		
		Phosphorus (lbs/yr)	Nitrogen (lbs/yr)	Sediment (tons/yr)
Implement Cropland soil health and water quality BMPs to address the identified John Redmond Reservoir Watershed/Upper Cottonwood TMDLs of Eutrophication and Siltation. The following BMPs to be completed by December 31, 2025: • Buffers 80 acres • Conservation Crop Rotation 2,121 acres • No-Till with Cover Crops 5,500 acres • Nutrient Management Plans 1,000 acres	$237,900	10,383	19,849	7,344

• Permanent Vegetation 1,000 acres				
Implementation of Livestock BMP's to address the identified John Redmond Watershed/Upper Cottonwood TMDLs of Eutrophication and E. coli. The following BMP's to be completed by December 31, 2025: • Vegetated Filter Strips 4 acres • Relocated Feeding Sites 4 (300 AUs) • Alternative Watering Systems 6 (500 AUs)	$151,100	7,521	14,165	N/A
Implement Livestock BMPs to address the TMDLs for eutrophication and dissolved oxygen in the Marion County Lake Watershed. Livestock BMP goals and funding in Marion County Lake Watershed are included in the overall Livestock Strategy above.	N/A	N/A	N/A	N/A
Information, Education, Outreach, Communication, Social Media: Develop and implement a communication strategy for the Cottonwood WRAPs program	$4,000	N/A	N/A	N/A

Project Information

Project Title

Cottonwood WRAPS Implementation SFY23-25

This WRAPS Implementation PIP will help accomplish the long-term goals established in Kansas' Nonpoint Source Management Plan including:

1. No lake, river, stream or wetland has a violation of Kansas Surface Water Quality Standards due to nonpoint sources of pollutants and all designated uses are fully supported;
2. Kansas surface and ground water are protected from all nonpoint pollutant sources through the use of recommended water quality best management practices;
3. Kansas Water Plan objectives are achieved by:
    a. Reducing the levels of pathogens, biochemical oxygen demand, dissolved solids, metals, nutrients, pesticides and sediment that adversely affect the water quality of Kansas lakes, rivers, streams and wetlands;
    b. Reducing the levels of dissolved solids, metals, nitrates and volatile organic chemicals that adversely affect the quality of Kansas ground water;
    c. Maintaining water quality conditions for unimpaired waters at a level equal to or better than existing conditions

Contact Information

Enter Sponsoring Organization Information

Sponsoring Organization Name

Marion County Conservation District

Street Address

303 Eisenhower Drive

City, State, Zip

Marion, KS, 66861-1326

Sponsor Tax Payer ID (FEIN)

480684434

Signature Authority Name

Greg Bowers

Signature Authority Email

gregb@ghrd.net

Signature Authority Phone Number

620-382-2947

Enter project contact information

Name

Lisa Suderman

Street Address

303 Eisenhower Drive

City, State, Zip

Marion, KS, 66861--1326

Phone Number

620-382-3714 ext. 3062

Email

Lisa.suderman@ks.nacdnet.net

Project Overview

List the HUC12s that are included in this project.

HUC12s 110702020106, 110702020107, 110702020108, 110702020201, 110702020202, 110702020204, and 110702020301, and HUC14 11070202020050

Will a public water supply system be impacted by the project?

☒Yes
☐No

If yes, please enter the impacted public supplies.

Cedar Point, Centre USD 397, Florence, Hillsboro (Peabody Treatment Only), Peabody, Marion County RWD 2, Marion County RWD 4, Marion County Improvement District 2, Marion, Morning Star Ranch

Describe the project history.

Kansas State University initiated the Cottonwood WRAPS program in 2008 and was the sponsoring organization through the development, assessment, and planning phases. The original 9-element watershed plan was approved in 2011. In 2012, an amendment was approved to add a livestock HUC14 (11070202020050) for Marion County Lake. In 2016, the Marion County Conservation District became the sponsoring organization. In 2020 the Cottonwood River 9-Element plan was combined with the Eagle Creek and Neosho Headwaters Watershed 9-Element plans into a new John Redmond Reservoir (JRR) Watershed WRAPS plan. The new JRR plan was split into two sections: Neosho Headwaters, Eagle Creek and Lower Cottonwood and Upper Cottonwood. The previous Cottonwood

River Plan is now the Upper Cottonwood portion of this new plan. The Upper Cottonwood portion of this plan is in year 4 through 6 of implementation.

The first goal of the Cottonwood WRAPS SFY20-22 grant focused on reducing sediment and nutrient loading into John Redmond Reservoir and reducing bacteria and nutrient loading into Marion County Lake. Strategies developed to achieve these goals were to meet with influential operators that have adopted no-till and cover crops and use their knowledge and skills to influence additional producers to adopt these high efficiency BMPs. To use targeted soil health meetings to facilitate peer to peer discussions about BMP adoption, successes and challenges, and meeting with local applicator companies and custom planters in the area to inventory available services and products available to producers for the implementation of the approved practices. Using these new contacts, a goal of an additional 200 acres of new No-Till with Cover Crops was set. The total new acres to date achieved is 2,446 acres of No-Till with Cover Crops. In addition, 306 acres of previously farmed land has been seeded to permanent cover, and 10 acres of grassed waterway have been completed. Relocation of livestock feeding sites and alternative watering systems were additional goals to reduce pollutants reaching the South Cottonwood River and Mud Creek. 3 sites were moved.

A demonstration farm centrally located in the county was planned and the Kansas Department of Wildlife and Parks (KDWP) donated 3 fields near Marion Reservoir. Unfortunately, the fields have been frequently flooded and weed and tree infiltration has been a constant battle. Multispecies cover crops planted immediately after commodity crop harvest were used and soil tests were taken at the beginning of WRAPS involvement with these fields. Soil tests will be taken again spring 2022 and any changes will be documented but the location has not been conducive to either farming or the hoped-for visitation by local producers to observe progress. This strategy will not be continued in this grant.

A continuing partnership with the Kansas Forest Service was adopted during year 1 and 2 of the grant SFY20-22 to plant riparian forest buffers along tier 3 and 4 streams in Marion County. Years 1 and 2 saw the installation of 66 acres of vegetative riparian buffers. This strategy due to the completion of the Kansas Forest Service RCPP program was not continued for year 3 of the grant and will not be included as a strategy in this new grant.

Mud Creek (110702020201 and 0204) has a 303(d) High Priority classification from the EPA for bacteria and special emphasis has been placed on focused interaction with the livestock producers in these two watershed areas. The successful removal of 3 stream adjacent feeding facilities was achieved. These KDHE licensed facilities range in size from 100 to more than 5,000 head of livestock. The WRAPS grant, while not able to fund large scale livestock relocation projects, has been instrumental through its coordinator working with NRCS to assist interested producers with documentation, paperwork, education, outreach and offering cost share on non-NRCS funded supporting practices associated with the relocation. A livestock field day was hosted by WRAPS in February 2022 to tour the completed facilities and provide information and education on site removal in the impaired watershed area. The field day was attended by over 80 producers and was only limited in size by the available meeting space.

The coordinator's attendance at 6 soil health producer meetings offered by soil health organizations, federal agencies, and sister WRAPS programs achieved increased emphasis on information and education in the WRAPS priority areas. Due to global issues and the inability to attend in-person meetings electronic communications were used to keep in touch with the latest information in the nationwide soil health/water quality community. Winter 2021 and 2022 3 soil health learning opportunities were presented by WRAPS with nationally recognized speakers. The meetings were well attended and received and have garnered additional applications for approved soil health practices with the WRAPS program.

Enter the project start date (MM/DD/YYYY)

07/01/2022

Enter the project end date (MM/DD/YYYY)

12/31 2025

Describe your Stakeholder Leadership Team (SLT),

The original SLT was formed out of concern for the Cottonwood River and flooding events that occurred along the river. Due to the size of the watershed, it was decided that two SLTs would serve the WRAPS process better than one. The Cottonwood WRAPS group is from the Upper Cottonwood and meets in Hillsboro and Marion. The Cottonwood SLT has representation from several Watershed Districts within the basin. The primary purpose of these taxing entities is to construct and maintain watershed structure to control flooding. Doyle Creek Watershed is in Cottonwood WRAPS HUC 12 priority area 110702020301. Current SLT members include local government, federal government, members of learning institutes and producers located in the identified priority areas. The SLT has a goal of formal meetings each quarter at a designated local meeting room. Between meetings and in the event that a meeting will not be conducted due to unforeseen circumstances the coordinator is in contact with the SLT by email monthly to provide budget updates, new and completed project updates, information, education opportunities, upcoming meetings and conservation and water quality events and articles.

SLT Members: List the name, role, affiliation, and email for each SLT member.

Dale Ehlers SLT Member WRAPS Technician daleehlers@eaglecom.net; Ed Svitak SLT Member Conservation District Member eddysvitak@yahoo.com; Bruce Schroeder SLT Member Conservation District Member brucejanschroeder@hotmail.com; Kent Becker SLT Member Marion County Commissioner beckerkentd@gmail.com; Bill Drake SLT Member Producer dandhconstruction32@yahoo.com; Andrew Hajek SLT Member Producer andrew.hajek@plantpioneer.com; John Hajek SLT Member Producer jchajek@tctelco.net; Chasen Gann SLT Member Producer chasen.gann@gmail.com; Derek Belton SLT Member Producer dbelton07@gmail.com; Ron Dirksen SLT Member Conservation District Board Member Producer rkdirksen@gmail.com; Dean Suderman SLT Member Producer dsuderman@speednet.com; Diane Novak SLT Member Producer dandknovak@gmail.com; Steve Goertzen SLT Member Producer dandknovak@gmail.com; Greg Bowers SLT Member Conservation District Board Member gregb@fhrd.net; Gordon Unruh SLT Member Producer gordonrsu@yahoo.com; Nick Kraus SLT Member Producer horsetrack03@hotmail.com; Roger Holter SLT Member City Administrator for Marion Kansas roger@marionks.net; Jason Unruh SLT Member Producer unruhjt@gmail.com; Jeff Davidson Watershed Field Coordinator Kansas State University jdavidso@ksu.edu; Joel Suderman SLT Member Producer suderman@netks.net; Kelly Novak SLT Member Producer knovak@tctelco.net; Lewis Unruh SLT Member Producer lewunr@gmail.com; Lynn Kessler SLT Member Producer lynkess.lk@gmail.com; David Mueller Marion County Commissioner muel@tctelco.net; Sharon Olmstead Marion County Health Department somstead@marioncoks.net; Rickey Roberts Kansas State Extension Agent rroberts@ksu.edu; Randy Svitak SLT Member Producer rsvitak@tctelco.net; Scott David SLT Member Producer scottdavid585d@gmail.com; Tony Hein SLT Member Producer

tonyheinfarm@gmail.com; Matt Meyerhoff Supervisory District Conservationist NRCS matt.meyerhoff@usda.gov; Howard Freerksen Forester with the Kansas Forest Service Kansas State University hfreerksen@ksu.edu; Ryan Peters SLT Member Producer lazyjpbar@gmail.com; Sara Morey County Executive Director Farm Services Agency sara.morey@usda.gov; Katie Basiotis Project Officer Kansas Department of Health & Environment Katie.Basiotis@ks.gov; Chris Janssen Kansas Department of Health & Environment chris.janssen@ks.gov;

Project Scope

Describe the TMDLs and/or water quality impairments directly addressed in this project.

The Cottonwood Watershed was allocated 80% of the impairment from the 3 sub watersheds that drain into John Redmond Lake. In the Cottonwood Watershed "Critical Areas" have been identified as areas that need to be protected or restored, such as areas that have TMDLs, emerging pollutant threats, on the 303(d) list or contain a public water supply. In every watershed, there are specific locations that contribute a greater pollutant load due to soil type, proximity to a stream and land use practices. By focusing BMPs in these areas, pollutants and sedimentation reduction can be reduced at a more efficient rate. Cropland areas will be targeted for Eutrophication (phosphorus) and Siltation. Livestock areas will be targeted for nutrients (phosphorus) and E. coli bacteria. Stream bank areas will be targeted for sediment and nutrients. There is significant overlap in these targeted areas which is to the benefit of water quality in that applying BMPS for one pollutant will also positively affect other pollutants. TMDL's addressed by this project include John Redmond Reservoir Eutrophication and Siltation, Mud Creek near Marion E. coli and Marion County Lake dissolved oxygen and eutrophication. South Cottonwood River is listed on the 303(d) impaired waters list for total phosphorus. Because much of the phosphorus entering John Redmond Lake is attached to sediment, the reduction in total suspended solids will lead to total phosphorus reductions. Marion County Lake is classified as fully eutrophic. Analysis of water quality monitoring data from KDHE testing site LM 012101 indicates that water quality conditions have continued to decline in the lake since the TMDLs were first established in 2001.

Please describe how this watershed has been assessed. This will include aerial assessments, soil and water tests, survey data, land use cover, and any other important information.

Kansas State University used a Soil and Water Assessment Tool (SWAT) model to estimate annual average pollutant loadings for each sub-watershed. Based on experience and technical knowledge, the sub-watersheds with the top 20-30% of the highest loads among all areas within the watershed are selected as critical (targeted) areas for cropland and livestock BMP implementation. Kansas State University BAE used the ArcGIS interface of Arc SWAT version 9.2. This version used spatially distributed data on topography, soils, land cover, land management, and weather to predict water, sediment, nutrient, and pesticide yields. After using SWAT to locate initial targeted areas, the area was ground truthed. The SWAT model was revised for each using the ground-truthing information. KDHE analyzed aerial images and determined areas of interest for BMP targeting to include crop fields and livestock areas. The aerial analysis indicated both medium and severe degradation. Priority revisions implemented in 2020 using SWAT and ground-truthing results determined what areas in the watersheds were most susceptible to cropland erosion. There are currently seven water monitoring sites in the Upper Cottonwood Watershed. This includes five active KDHE sites and two lake monitoring sites. Baseline loadings for cropland are calculated using the AnnAGNPS model delineated

to the HUC 12 watershed scale. Baseline nutrient loadings for livestock per animal unit are calculated using the Livestock Waste Facilities Handbook and these three publications: Decreasing Phosphorus and Nitrogen Excretion by Dairy Cattle, Fertilizing Cropland and Beef Manure, and Estimating Manure Nutrient Excretion. According to the 2017 Ag Census, stocking rates in the JRR Watershed rages from 8.0 to 17.1 cattle per 100 acres.

Budget

Personnel			
Budget Line	**Grant Request**	**Match**	**Total**
Year 1	**$52,000.00**	**$17,000.00**	**$69,000.00**
Year 2	**$52,000.00**	**$17,000.00**	**$69,000.00**
Year 3	**$52,000.00**	**$17,000.00**	**$69,000.00**
Total Requested	**$156,000.00**	**$51,000.00**	**$207,000.00**
Description	**Personnel includes only the salary of the 0.6 FTE coordinator. The coordinators responsibilities will include but is not limited to the following. Work with producers and landowners to implement agricultural best management practices (BMPs) to improve water quality in the identified priority areas. Provide technical assistance and expertise needed to install approved BMPs. Provide outreach to local watershed citizens to improve information and education regarding water quality and the WRAPS program locally and statewide. Manage a focused campaign to engage producers and other stakeholders regarding practices that have been proven to improve water quality and soil health. Achieve annual BMP implementation goals as stated in the approved 9 element watershed plan. Create all affidavits, amendments (if needed), status reports and final reports. All reports will be submitted on a timely basis and will contain a clear and accurate accounting of the grant's status. Maintain accurate accounting for all budget items in the grant. Report monthly to the Administrative Agency and the SLT on the financial status of the grant and associated bank account. Match includes the sponsoring organization's staff's time to coordinate WRAPS BMP implementation and maintain separate budget and financial records subject to state and federal taxes separate from other district funds; producer referrals, assistance with workshops, SLT meetings, $30,000.00, SLT members' time and travel expenses to attend meetings and conferences that provide information and education to support the overarching WRAPS goals, $21,000.00.**		

Fringe			
Budget Line	**Grant Request**	**Match**	**Total**
Year 1	**$0.00**	**$0.00**	**$0.00**
Year 2	**$0.00**	**$0.00**	**$0.00**
Year 3	**$0.00**	**$0.00**	**$0.00**
Total Requested	**$0.00**	**$0.00**	**$0.00**
Description	**N/A**		

Travel			
Budget Line	**Grant Request**	**Match**	**Total**
Year 1	**$1,000.00**	**$0.00**	**$1,000.00**
Year 2	**$1,000.00**	**$0.00**	**$1,000.00**
Year 3	**$1,000.00**	**$0.00**	**$1,000.00**
Total Requested	**$3,000.00**	**$0.00**	**$3,000.00**
Description	**Travel expense include miles driven in the watershed to promote and implement BMPs. Registration fees, mileage, lodging and meals to attend multi-day meetings/conferences.**		

Supplies			
Budget Line	**Grant Request**	**Match**	**Total**
Year 1	**$1,000.00**	**$700.00**	**$1,700.00**
Year 2	**$1,000.00**	**$700.00**	**$1,700.00**
Year 3	**$1,000.00**	**$700.00**	**$1,700.00**
Total Requested	**$3,000.00**	**$2,100.00**	**$5,100.00**
Description	**Supply expenses include but are not limited to office supplies, paper/printer/ink, envelopes, postage, pens/pencils, folders, digital copy devices, notebooks, manuals, calendars, maps, outside printing of flyers/brochures, reports, stakeholder leadership team meeting supplies. Match includes speaker fees, meeting rooms, building, park and partner sponsored materials and supplies where the WRAPS program is promoted.**		

BMP/Strategy Funding			
Budget Line	**Grant Request**	**Match**	**Total**
Year 1	**$128,000.00**	**$115,000.00**	**$243,000.00**
Year 2	**$128,000.00**	**$115,000.00**	**$243,000.00**
Year 3	**$128,000.00**	**$115,000.00**	**$243,000.00**
Total Requested	**$384,000.00**	**$345,000.00**	**$729,000.00**
Description	**Recruitment and Installation of Cropland BMP's in targeted cropland areas as identified in the 9-element plan. Recruitment and installation of Livestock BMP's in targeted livestock areas as identified in the 9-element plan. Producer education through, meetings and targeted outreach using physical and electronic delivery methods. Match: Landowner contribution to the successful installation of approved BMP's not covered by WRAPS funding, state entities, local government entities and contractors' portion not covered by WRAPS funding.**		

Contractual Services			
Budget Line	**Grant Request**	**Match**	**Total**
Year 1	**$3,000.00**	**$2,000.00**	**$5,000.00**
Year 2	**$3,000.00**	**$2,000.00**	**$5,000.00**
Year 3	**$3,000.00**	**$2,000.00**	**$5,000.00**
Total Requested	**$9,000.00**	**$6,000.00**	**$15,000.00**
Description	**Dale Ehlers WRAPS Technician 450 hours at $20.00 for conservation planning, engineering and development of approved specifications for WRAPS funded cropland and livestock BMPs and meeting with producers on an as needed basis. Match-State Employees, County Engineer, Contractors and Agronomists' assistance in the planning and installation of BMP's in the WRAPs priority areas.**		

Other			
Budget Line	**Grant Request**	**Match**	**Total**
Year 1	**$0.00**	**$0.00**	**$0.00**
Year 2	**$0.00**	**$0.00**	**$0.00**
Year 3	**$0.00**	**$0.00**	**$0.00**
Total Requested	**$0.00**	**$0.00**	**$0.00**
Description	**N/A**		

Indirect			
Budget Line	**Grant Request**	**Match**	**Total**
Year 1	**$15,000.00**	**$0.00**	**$15,000.00**
Year 2	**$15,000.00**	**$0.00**	**$15,000.00**
Year 3	**$15,000.00**	**$0.00**	**$15,000.00**
Total Requested	**$45,000.00**	**$0.00**	**$45,000.00**
Description	**Sponsoring organization administrative fees associated with staff, accounting audits, office equipment, phones, computers etc.**		

WRAPS Strategic Planning

General Plan Implementation

Implementation of Years 4 through 6 of the approved John Redmond Reservoir Watershed WRAPS Plan 2020. The Upper Cottonwood load reduction goals for these years of the plan are 70,013 pounds of nitrogen, 16,071 pounds of phosphorus, and 10,215 tons of sediment. These goals are outlined in the JRR Watershed Plan. The proposed strategies in this project implementation plan are planned to facilitate achieving 34,014 pounds of nitrogen, 17,904 pounds of phosphorus, and 7,344 tons of sediment load reduction. The strategies outlined in the following document will focus on one or more specific impairments identified in the JRR Watershed Plan. As this grant does not provide enough funding to fully implement the identified best management practices from the plan, the WRAPS coordinator will partner with various other natural resource programs to leverage resources for the implementation of such practices. These programs include but are not limited to county conservation districts state cost share programs, Natural Resources Conservation Service (NRCS) programs, Kansas Water Office, Kansas Dept. of Wildlife and Parks, Farm Service Agency, municipalities, and other nonprofit organizations.

Practices implemented beyond the below strategies will focus on the improvement of soil health, watershed hydrology, and the mitigation of impairments identified in the JRR Watershed Plan. These practices could include Conservation Crop Rotation, No-Till, Vegetative Buffers, Cover Crops, Permanent Vegetation, Perennial Vegetation, Precision Nutrient Management, Vegetative Filter Strips, Relocation of Livestock Feeding Sites, Alternative Livestock Watering System, Stream Crossings, Water Sampling. Some of these will only be funded if they are components of a greater holistic system approach to improve soil health.

What are the resources that you will need for General Plan Implementation?

Mapping, local knowledge, and testing to locate sediment and nutrient loading hot spots. Knowledge of high impact BMPs, new and established, that can be implemented in the WRAPS priority areas to positively impact water quality. Forming partnerships with influential producers and, continuing education on designing precision nutrient management plans. Knowledge of current projects being addressed for water quality in the priority areas. Knowledge of soil testing technologies, Knowledge of cutting-edge vegetative management strategies being utilized in other regions. Targeted livestock outreach in 303(d) stream impairment area. Access to lab facilities for water quality testing to be used only as a tool to gain general information regarding water quality and not as a basis for EPA delisting. Agricultural industry leaders as contacts. Producer meetings to introduce new and established BMP's to new producers or old producers looking for new methods. Increased knowledge of the carbon credit markets and how the carbon sequestering practices can benefit water quality and provide additional monetary avenues to incentivize high impact BMP adoption. Revisit producers that have shown previous interest in the WRAPS program but did not choose to adopt water quality practices in the past. Local news media contacts. Utilize social networks to benefit outreach and education.

Strategy One

Provide a general summary of Strategy One

Implement Cropland soil health and water quality BMPs to address the identified JRR Watershed/Upper Cottonwood TMDLs of Eutrophication and Siltation in 110702020106, 110702020107, 110702020108, 110702020201, 110702020202, 110702020204, 110702020301 with special emphasis on 110702020108 as there is a lower adoption rate in this HUC

What are the goals for this strategy?

The following BMPs to be completed by December 31, 2025:

BMP	Acres	Nitrogen	Phosphorus	Sediment
Buffers	80	2,088 lbs	1,494 lbs	971 Tons
Conservation Crop Rotation	2,121	1,582 lbs	791 lbs	621 Tons
No-Till with Cover Crops	5,500	12,151 lbs	6,082 lbs	4,289 Tons
Nutrient Management Plans	1,000	804 lbs	402 lbs	322 Tons
Permanent Vegetation	1,000	3,224 lbs	1,614 lbs	1,141 Tons

Implementation of these Cropland BMP goals will reduce Nitrogen by 19,849 lbs, Phosphorus by 10,383 lbs, and Sediment by 7,344 tons.

Tactics and action steps

1.Using local knowledge and windshield surveys, note on maps fields and producers currently not implementing soil health or water quality practices.

a. Produce a list of all producers and landowners in 110702020108 during the first six months of the grant and locate current addresses, phone numbers or email addresses for them for focused outreach on soil health and water quality and the opportunities available through WRAPS.

b. Network with 5 producers that have already converted cropland to grass and contact their neighbors.

c. Establish a goal for each of the Cropland BMP's by contacting 5 producers weekly, posting on social media weekly regarding the opportunities for cost share to establish conservation practices and quarterly reset to revisit the goals established and refocus efforts on goals not met.

d. Conduct 2 Soil Health Meetings yearly beginning in the winter of 2022/2023

1. Schedule soil health seminars about innovative practices and results for the winter months
2. Use the Soil Health Alliance and other soil health organizations for speaker recommendations
3. Contact producers actively implementing soil health practices and that regularly attend soil health workshops about speakers and topics they would be like to hear
4. After Scheduling the first of the winter soil health meetings, track attendance compared to previous meetings and ask for input on how they can be improved, increasing the number of previous attendees by 10% each meeting.

2. Continuing education on innovative cover crops and combinations of crops to benefit soil health,

a. Subscribe to online media sources for soil health

b. Subscribe to online media sources for water quality

c. Attend soil health, water quality and carbon meetings available to me locally

3.Nutrient management plans for producers working with the WRAPs program. Nutrient Management is defined as managing the amount, source, placement, form, and timing of the application of nutrients and soil amendments. Nutrient Management plans use intensive soil testing and have nitrogen and phosphorus reduction efficiencies.

a. Contact professionals already working as certified Technical Service Providers (TSPs) for Nutrient Management

b. Locate course work available to complete my certification

c. Using social media ie Facebook and Twitter send out information on the benefits of nutrient management and how production inputs can be decreased.

d. Contact producers that have worked with the WRAPS program previously adopting no-till and cover crops and have a nutrient management meeting with presentations from Technical Service Providers on the step and benefits of developing a nutrient management plan.

4. Perennial PULSE to be included in the Conservation Crop Rotation: Conservation crop rotation is a written plan where producers grow different crops on the same piece of land year after year in a planned, reoccurring sequence. This may include alternating row crop production with a high residue-producing crop as compared to a low residue-producing crop. A pulse is an annual or perennial legume grown for human or animal consumption. Research has shown that including a pulse crop in a dryland rotation can bring significant financial and agronomic benefits. The traditional wheat-corn-beans or wheat-wheat system of crop production common in the watershed lacks diversity, does not efficiently manage precipitation, and leads to declines in soil organic matter (OM) and soil productivity. Growing a pulse crop in rotation with wheat can help bring some balance to soil in terms of health, biological activity, and overall potential productivity. Legumes fix N from the atmosphere through Rhizobia bacteria that grow in association with plant roots. When bacteria invade the roots of legumes, they fix atmospheric N gas (N2). This mutually beneficial, or symbiotic relationship, helps both organisms. The bacteria receive energy from the plant, and in exchange the plant receives 'free' N. Pulse crops are a good choice for diversifying a cropping rotation. These legumes will get their N indirectly from the atmosphere. This reduces overall input and cost of fertilizer. In addition, pulse crop residue breaks down quickly, providing some N credit to a following crop. This credit is approximately 10–20 lb. N/acre depending on yield but can be substantially higher if the pulse crop is managed as a cover crop. Benefits from the inclusion of alfalfa in a rotation have been detected up to 17 years after its removal from the soil. Having perennial forages in the system even 3 out of 10 years is a significant benefit. The addition of a perennial PULSE can also alter weed communities and could reduce the number of broadleaf seeds in the weed seedbank. Surface sediment run-off has been shown to decrease when alfalfa has been added to the cropping rotation due to the complex and deep root structure. Alfalfa carries a sense of marketing risk for some producers due to cost of planting, harvesting, and marketing. We would encourage producers to take a long-term view toward environmental stability when including alfalfa in their rotation.

5. Kernza intermediate wheatgrass is a novel perennial grain and forage crop with the potential to provide multiple ecosystem services. Through its continuous above-ground productivity, i.e., perennially, Kernza reduces annual weed populations, protects soil from erosion, and increases pollinators and insect diversity. Kernza's perennial nature also leads to a reduction in nutrient leaching, an increase in the soil organic carbon pool and other beneficial soil properties, and improvements in biota linked to high soil quality. Therefore, Kernza can recover ecosystem services that usually are lost due to annual grain agriculture. This transition to more sustainable agriculture is usually the main motivation for early-adopter growers. In addition to environmental benefits, growing Kernza as a dual-use perennial crop provides two sources of income to farmers: forage and grain.

Kernza grain is highly valued by the market for making baked goods and beer and demand is growing from environmentally conscious consumers.

a. Research effectiveness in commodity crop rotations

b. Research studies indicating improvement in soil health and plant community resilience

c. Contact "early adopters" on Kernza in the priority areas regarding the benefits they have received by introducing a perennial pulse into their cropping system. Asking them for testimonials and encourage peer to peer meetings with interested producers

d. Provide cost share to incentivize planting of perennials

e. Assist with the writing and planning of conservation plans for conservation crop rotations

Key performance indicators for the tactics

BMP Indicators –

BMP Implementation	Year 1	Year 2	Year 3
Conservation Crop Rotation (Including PULSE planting)	700 acres	714 acres	707 acres
No-Till Cover Crops	1,833 acres	1,833 acres	1,834 acres
Vegetative Buffer	30 acres	30 acres	20 acres
Permanent Vegetation	300 acres	300 acres	400 acres
Nutrient Management	300 acres	400 acres	300 acres

5 producers contacted weekly
2 soil health workshops annually
1 nutrient management meeting annually

What are the resources that you will need and use to get the tactics done?

BMP Implementation	Year 1	Year 2	Year 3
Conservation Crop Rotation	$17,500	$17,850	$17,675
No-Till Cover Crops	$40,326	$40,326	$36,660
Vegetative Buffer	$1,500	$1,500	$1,000
Permanent Vegetation	$15,000	$15,000	$20,000
Nutrient Management	$1,500	$2,000	$1,500

BMP Total $229,337.00.
WRAP Technician technical services $4,500.00.
Soil Health Meetings $3,500.00.
Additional google earth training, Publisher training to produce mailers, postage, cell phone and vehicle for in person producer meetings. Subscribe to online soil health information outlets, continuing education to become a nutrient management technical service provider $563.00.
Total for Cropland BMP Implementation $237,900.00

Strategy Two

Provide a general summary of Strategy Two

Implementation of Livestock BMP's to address the identified JRR Watershed/Upper Cottonwood TMDLs of Eutrophication and E. coli in 11070202020050, 110702020106, 110702020107, 110702020108, 110702020201, 110702020204 with special emphasis on HUC's 110702020108 due to lower adoption rate and 110702020201 and 110702020204 due to EPA 303(d) designation for E. coli.

What are the goals for this strategy?

The following BMP's to be completed by December 31, 2025:

BMP Implementation	Units	Nitrogen	Phosphorus
Vegetated Filter Strips	4 acres	3,863 lbs.	2,051 lbs.
Relocated Feeding Sites	4	3,863 lbs.	2,051 lbs.
Alternative Watering Systems	6	6,439 lbs.	3,419 lbs.

Total Nitrogen for Livestock 14,165 lbs. and total Phosphorus 7,521 lbs.
The following are estimated Animal Units (AUs) using local knowledge of stocking rates due to the fact that the JRR Watershed plan does not address the livestock goals in AUs but in lbs.
Relocation of 4 Feeding Sites, 300 Animal Units (1 AU = 1,000lbs)
6 Alternative Watering systems, 500 Animal Units
Goal from the JRR Watershed Plan Phosphorus 3,786lbs; Nitrogen 7,130lbs
Special emphasis in Mud Creek drainage to remove cattle from the inflow areas of these drainages.

Tactics and action steps

1.Using local knowledge and windshield surveys to note on maps field and producers who currently have livestock directly adjacent to impacted waterbodies and/or physically utilizing impacted waterbodies for water.

a. Produce a list of all producers and landowners in 110702020108, 110702020201 and 110702020204 in the first six months of the grant include addresses, phone numbers or email addresses for them for focused outreach on water quality and livestock BMP's available through WRAPS and partner agencies.

b. Network with 5 producers that have already implemented livestock practices and contact their neighbors.

c. Establish a goal for each of the livestock BMP's by contacting 5 producers weekly, posting on social media weekly regarding the opportunities for cost share to establish conservation practices and quarterly reset to revisit the goals established and refocus efforts on goals not met.

d. Using data from cropland BMP's established in the livestock priority areas contact producers that have established cropland practices that also own livestock to assess any livestock BMP implementation opportunities.

e. Livestock Field Days beginning spring 2023 possibly yearly if there are completed projects. After Scheduling the livestock field day, track attendance compared to previous meetings and ask for input on how it can be improved, increasing the number of previous attendees by 10% each meeting.

2. Continuing training with Google Earth to identify unknown feeding sites and identify the landowner/producer using available computer resources and local know. Establishing a relationship by identifying commonalities with personal and phone contacts.

a. Reach out to people with known Google Earth skills
b. Research Google Earth training opportunities
c. Using established relationships with NRCS to stay abreast of projects and opportunities in the NWQI priority area in the Mud Creek watershed.

3. Attend Livestock Field Days offered in the area to stay attuned to new developments with changes in the handling of livestock and their environments. Use the information garnered at these field days to keep the SLT and targeted livestock producers abreast of local and regional opportunities and learning opportunities
a. Check livestock Publications offered in the Area
b. Check K-State Extension Livestock newsletters.

4. Attend Local Livestock Sales
a. Form partnerships with local Livestock Sales to build a base of contacts "in the know" regarding livestock markets, issues livestock producers are facing, challenges that could affect adoption of livestock BMP's.
b. Establish new contacts with producers in the priority areas and stay abreast of local cattle markets as the variable nature of cattle markets will affect producers' willingness and ability to implement conservation practice.

Key performance indicators for the tactics

BMP Indicators –

BMP Implementation	Year 1	Year 2	Year 3
Vegetated Filter Strips	1 acre	2 acres	1 acre
Relocated Feeding Sites	1	2	1
Alternative Watering Systems	2	2	2

5 producers contacted weekly
1 livestock field day annually

What are the resources that you will need and use to get the tactics done?

BMP Implementation	Year 1	Year 2	Year 3
Vegetated Filter Strips	$3,750	$7,500	$3,750
Relocated Feeding Sites	$12,500	$25,000	$12,500
Alternative Watering Systems	$20,000	$20,000	$20,000

General Livestock Total $125,000.00.
An additional $17,600.00 to be used for livestock specifically in Mud Creek 110702020201 and 110702020204.
WRAPS Technician technical services $4,500.00.
Livestock Field Days $3,500.00.
Additional google earth training, Publisher training to produce mailers, postage $500.00, cell phone and vehicle for phone calls and in person producer meetings.
Total for Livestock BMP Implementation $151,100.00.

Strategy Three

Provide a general summary of Strategy Three

Address the medium priority TMDLs for eutrophication and dissolved oxygen in the Marion County Lake Watershed HUC 14 11070202020050

What are the goals for this strategy?

To implement Livestock BMPs to improve the identified medium priority TMDLs for eutrophication and dissolved oxygen. Livestock BMP goals in Marion County Lake Watershed are included in the overall Livestock Strategy above.

Tactics and action steps

1.Using local knowledge and windshield surveys to note on maps fields and producers who currently have livestock directly adjacent to the unnamed stream that supplies Marion County Lake with its water and the lake itself.

a. Produce a list of all producers and landowners in 11070202020050 in the first six months of the grant including addresses, phone numbers or email addresses for them for focused outreach on water quality and livestock BMP's available through WRAPS and partner agencies.

b. Network with a producer in the area that has already implemented livestock practices and contact his/her neighbors.

c. Posting weekly on social media weekly regarding the opportunities for cost share to establish livestock conservation practices.

d. Using data from cropland BMPs implemented by NRCS and State Cost Share in the Marion County Lake priority area contact producers that have implemented cropland practices that also own livestock to assess any livestock BMP implementation opportunities.

e. Livestock Field Days beginning spring 2023 possibly yearly if there are completed projects. Directly contact Marion Lake Watershed livestock owners personally to invite them to the Livestock Field Days.

2. Continuing training with Google Earth to identify unknown feeding sites and identify the landowner/producer using available computer resources and local knowledge. Establishing a relationship by identifying commonalities with personal and phone contacts.

a. Reach out to people with known Google Earth skills

b. Research Google Earth training opportunities

3. Attend the quarterly Townhall Meetings held by the residents of Marion County Lake to stay attuned to their issues and concerns regarding the ecology of the lake. Provide any needed information at those meetings regarding progress made toward the goals of the approved amendment.

a. Check the Townhall Meeting Schedule with the lake manager

b. Produce an informational handout for the meetings with successes and coordinator's contact information.

4. Continue guidance with the K-State NRES Capstone course - Kansas State University recognizes that Natural resource and environmental issues are extensive and complex. The Natural Resources and

Environmental Sciences (NRES) Secondary Major supplements a primary major by enhancing students' abilities to apply broad scientific knowledge to improve the management, sustainability and quality of soil, air, water, mineral, biological, and energy resources. The Marion County Lake has been chosen as a study site for the last five years.

a. Attend in person the opening class day and give the presentation on the Marion County Lake outlining the challenges and the work achieved by the previous NRES classes and how it has helped the lake.

b. Schedule the site visit for K-State students with the Marion County Lake manager and provide any needed assistance for the students for their research.

c. Attend the final class presentation day in person.

Key performance indicators for the tactics

Marion County Lake Livestock BMP implementation KPIs will be included in the overall livestock strategy; other indicators of success include improved relationships with the residents of the county lake and open communication regarding the ecological issues with the lake and being asked to assist with public area projects directly adjacent to the lake. Active participation by the K-State students in the NRES course and accurate project presentation based on history and previous project date supplied by the project manager.

What are the resources that you will need and use to get the tactics done?

Livestock BMP resources will be used from the Contractual Budget for livestock practices, funds for travel and supplies will be used from the Travel Budget and Supply Budget in the overall grant request.

Strategy Four

Provide a general summary of Strategy One

Information, Education, Outreach, Communication, Social Media

What are the goals for this strategy?

To develop and implement a communication strategy for the Cottonwood WRAPs program

Tactics and action steps

1. Develop a brochure by September 2022
    a. Work to improve skills in Publisher
    b. Fine tune a simple but effective message
    c. Use available artwork to draw attention to the brochure
    d. Distribute 200 brochures to local agricultural "hubs" using local knowledge and work of mouth.
    e. Check the number of brochures at each location monthly and restock as needed.
2. Develop a Facebook page by January 2023
    a. Take an online course on developing an effective Facebook Page
    b. Develop a Cottonwood WRAPS Facebook page
    c. Contact other similar groups about the Facebook page so they will promote it
    d. Post conservation articles and information weekly regarding water quality
    e. Check each available morning for messages, share photos and share posts from similar pages
    f. Use Facebook to engage producers with informational topics and cost share opportunities.
    g. Track the amount of people that follow the Facebook page and respond to inquiries promptly so to improve the exposure of the Upper Cottonwood WRAPS program.
3. Develop a Quarterly newsletter by December 2022
    a. Talk to other organizations that have a newsletter about their experience
    b. Locate the best software for newsletter development
    c. Develop a mailing list using coordinators knowledge and access to producer information online and in print
    d. Work each week toward finding articles and information to the newsletter
    e. Mail the newsletter out to the mailing list 4 times a year (September, December, March and June).
    f. Make newsletter available as a handout
    g. Advertise other programs and opportunities available
    h. Highlight completed projects.
    i. Solicit producers' feedback on interesting topics.

Key performance indicators for the tactics

200 Brochures distributed annually
50 Facebook followers
2 Soil Health Seminars annually
1 Livestock Meeting annually
10% increase in attendees for each meeting
4 newsletters mailed annually
2 newsletter follow up contacts each quarter, receiving producers' feedback on interesting topics and requests for additional information.

What are the resources that you will need and use to get the tactics done?

Printing Supplies or Professional Printing of a Cottonwood WRAPs Brochure $1,000.00;
Newsletter Mailings $3,000.00;
Three-year Total for Information and Outreach $4,000.00