Jamestown Reservoir Watershed Project

1.0 PROJECT SUMMARY SHEET

LEAD PROJECT SPONORS/SUBGRANTEES:

Address: Stutsman County Soil Conservation District
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Phone: (701) 252-1920 ext. 3
E-mail: dustin.krueger@nd.nacdnet.net
Web: https://www.stutsmanscd.net/

STATE CONTACT PERSON: Emilee Novak **TITLE:** Program Coordinator
Phone: 701-328-5240

STATE: North Dakota **WATERSHED:** Jamestown Reservoir-James River

HYDROLOGIC UNIT: 1016000106, 101600010605, 101600010608,101600010606, 101600010610

HIGH PRIORITY WATERSHED: Yes

PROJECT TYPE	WATERBODY TYPES	NPS CATEGORY
Staffing & Support	Rivers	Agricultural
Watershed	Streams	
I & E	Reservoir	

PPROJECT LOCATION:LATITUDE 46 **MIN.** 93 **LONGITUDE** -98 **MIN.** 71

Jamestown Reservoir Watershed Project

GOAL FOR THE PROJECT: The goal of the project is to minimize the occurrence of harmful algal blooms (HABs) and improve recreational opportunities in Jamestown Reservoir by reducing the delivery of nutrients (primarily phosphorus) from watersheds immediately adjacent to reservoir. Four priority resource points have been established through the Prioritize, Target, and Measure Application (PTMApp) to identify sources of phosphorus and sediment in the watersheds feeding directly into the reservoir. Stutsman County SCD will be focusing on limiting nutrient loads at the priority resource points by addressing the highest priority catchments within the targeted HUC-12 watersheds. Stutsman County SCD will utilize best management practices (BMPs) such as critical area treatment, nutrient management, cover crops, sediment basins, prescribed grazing, and fencing. BMP promotion and educational efforts will also be used to maximize producer participation.

As a secondary goal, the Stutsman SCD will also restore the recreational uses of the 303(d) listed reach on the James River below Jim Lake (Assessment Unit ND10160001-006-S_00). This will be accomplished through the promotion and implementation of BMP that improve livestock grazing and manure management.

PROJECT DISCRIPTION:
The Jamestown Reservoir Watershed will implement conservation planning, BMP implementation, monitoring/assessment, and information/education programs on the highest priority ranked sub-watershed in terms of phosphorus and sediment contributions to the Jamestown Reservoir and James River.

The main objectives are:

1) Utilize (PTMApp) maps to identify priority areas for BMP implementation. BMPs will focus on phosphorus and sediment loadings originating in these areas.to minimize nutrient loads reaching the Jamestown Reservoir.
2) Monitoring nutrient loads from the HUC-12 watersheds that flow directly into the Jamestown Reservoir.
3) Reduce the E. coli bacteria concentrations in the 303(d) listed reach below Jim Lake (Assessment Unit ND10160001-006-S_00) through the implementation of BMP's
    - Sampling below Jim Lake and at the inlet to the reservoir will be continued to track E. coli bacteria concentrations as well as to determine the sources of the E. coli bacteria. With this data that an alternative plan is scheduled to developed, in cooperation with the NDDEQ TMDL Program, to address the E. coli sources along the stream reach.
4) Inform and educate local producers on land management practices to improve soil conditions and water quality
5) Project administration, management, and support.

FY 2026 **Section 319 Fund Requested** $444,050 **Match** $296,034

Other Federal Funds $750,000 **Total Project Cost** $1,490,084

2.0 Statement of Need

2.1 Project Reference

The Stutsman County Soil Conservation District (SCSCD) has long recognized the natural, economic, and recreational value of the waterbodies in the county, including Jamestown Reservoir. Although most of the reservoir's watershed is outside Stutsman County, the SCD is committed to addressing pollutant sources that originate in the county and contribute to the degradation of the recreational uses of the reservoir. To act on this commitment, the SCD has and will continue to work with state, local and federal partners to provide financial and technical assistance to develop, coordinate, and implement tasks to reduce the cumulative effects of the long-term delivery of excess phosphorus, sediment and E. coli bacteria to the Jamestown Reservoir and its tributaries.

The North Dakota 2018 Integrated Report developed by the North Dakota Department of Environmental Quality (NDDEQ) has listed the recreational uses of Jamestown Reservoir as fully supporting but threatened due to Nutrient/Eutrophication Biological Indicators (i.e., elevated nutrient concentrations). The recreational uses of the James River from Jim Lake downstream to the Jamestown Reservoir is also listed as fully supporting but threatened due to elevated E. coli bacteria concentrations. More recently, in 2023, 2024 and 2025, a recreational use advisory has been posted by the NDDEQ for the Jamestown Reservoir due to harmful algal blooms and associated microcystin concentrations. The NDDEQ posts advisories when microcystin concentrations exceed 10 ug/L. The highest annual microcystin concentrations recorded in the Jamestown Reservoir, to date, are 32,000, 291, and 101.414 ug/L in 2025, 2023 and 2020, respectively.

Stutsman County Soil Conservation District is proposing a Best Management Practice (BMP) Implementation Project to address the recreational use impairments in the Jamestown Reservoir. This will be accomplished by focusing on the implementation of BMP that improve nutrient and grazing management in the priority catchments of the 12-digit hydrologic units (HUs) flowing directly into the reservoir in Stutsman County. Emphasis will be placed on reducing the delivery of phosphorus to the tributaries entering the reservoir and riparian grazing along the river reach below Jim Lake. The

priority catchments in each 12-digit HU have been identified using the Prioritize, Target, and Measure Application (PTMApp) (Appendix C are examples).

2.2 Watershed Description

Jamestown Reservoir is a 2,037-acre flood control reservoir on the James River in Stutsman County, North Dakota. The dam is located on the northeast corner of Jamestown, in south-central North Dakota. The reservoir's watershed encompasses 1,148,900 acres in eight counties (Benson, Burleigh, Eddy, Foster, Kidder, Sheridan, Stutsman, and Wells).

Based on the 2018 section 3030(d) List of Impaired Waters Needing TMDLs (NDDOH,2016), the North Dakota Department of Environmental Quality (NDDEQ) has identified the following impaired waterbodies in the Jamestown Reservoir watershed.

- The Jamestown Reservoir 2073 acres (ND-10160001-002-L_00) is fully supporting but threatened for fish and other aquatic biota due to nutrient/eutrophication biological indicators.

- A 5.18-mile segment (ND-10160001-003-S_00) of the James River from Arrowwood Lake, downstream to Jim Lake, including Mud Lake as fully supporting, but threatened for dissolved oxygen.

- A 7.23-mile segment (ND-10160001-006-S_00) of the James River from Jim Lake, downstream to the Jamestown Reservoir. Recreational uses were assessed as fully supporting but threatened due to E. coli Bacteria and listed as a high priority for TMDL development. The length of this segment may be open for interpretation, depending upon how far the Jamestown Reservoir backs up when at full pool. Given the BMP planned in this proposal, the NDDEQ TMDL Program is also considering the development of an alternative plan for this impaired reach. There are no known point sources in the watershed for this. Waterfowl and livestock grazing in the riparian corridor are the likely source of E. coli bacteria impacting the recreational uses of the reach.

There are two different parts to the E. coli bacteria standard for recreation. The first part of the standard is defined as a geometric mean of 126 colonies per 100 ml for samples; the second part is that less than 10% of samples exceed 409 colonies per 100ml.

2.3 Maps

The attached maps in Appendix A illustrate the Jamestown Reservoir Watershed, projects done and location of monitoring sites (appendix D) to see effects of projects.

PTMApp

The Prioritize, Target and Measure Application (PTMApp) is a web application that can be used to interactively and in real-time, prioritize resources and the issues impacting them, target specific fields to place BMP's and measure water quality improvement by tracking the expected nutrient and sediment load reductions at the catchment level (i.e., field level) or at a designated PTMApp priority resource point.

1) PTMApp will be used to rank 4 subwatersheds (and therefore priority) for BMP placement, based on the amount of sediment and phosphorus delivered to the Priority Resource Point. The top 5 priority catchments in each of the four 12-digit HU have been identified based on the types of BMPs planned. (Maps can be found in appendix C)
2) PTMApp can prioritize where BMPs are feasible, targeting specific areas to refine BMP placement based on the amount of pollutant load within priority and non-priority subwatersheds. Load reduction from each specific area reaching a specific stream, river, or lake is estimated through the application of delivery ratios to the sediment, TP, and TN loads leaving the landscape. The load leaving the landscape reaching the flowline, reaching the catchment outlet, reaching the subwatershed outlet, and reaching the Jamestown Reservoir is quantified by PTMApp.
3) Locate specific BMPs based on actual pollutant delivery to the affected water body.
4) Estimate the cumulative reduction of and the interaction between multiple BMPs within a watershed in reducing downstream loads. The use of these standards/metrics ensures the ability to place BMPs that will maximize load reduction.

See Appendix B for more information on the PTMApp tool.

2.4 General Watershed Information

Jamestown Reservoir Watershed has a flood control reservoir of 2,037 acres and the reservoir's watershed encompasses 1,148,900 acres in eight counties (Benson, Burleigh, Eddy, Foster, Kidder, Sheridan, Stutsman, and Wells). Wells County contains 48% of the acreage in the watershed and the rest is divided between Foster 20%, Stutsman 15%, Eddy 13%, Sheridan 2%, Burleigh 1%, and Kidder 1% (NRCS 2007).

The project will primarily focus on the watersheds of four 12-digit HUs in Stutsman County that flow directly into the Jamestown Reservoir Watershed. Maps of these priority 12-digit HUs can be found in appendix A

The geologic unit for the Jamestown Reservoir watershed is Northern Glaciated Plains. The Northern Glaciated Plains ecoregion is characterized by a flat to gently rolling landscape composed of glacial drift. The subhumid conditions foster a grassland transitional between tall and shortgrass prairie. High concentrations of temporary and seasonal wetlands create favorable conditions for waterfowl nesting and migrations.

Approximately, seventy percent (i.e., 70.3%) of the land in the priority watersheds is cropland. Soybean, corn, wheat, forage, and dry edibles are the primary crops produced. Rangeland/pastureland make up approximately 15.5% of land in the watersheds. The project will focus working with producers to implement a rotational cropping system to be able to focus on cover crops during wheat and other small grain cropping years. Water erosion from the field is a main concern in cropland, we will try to implement many critical area plantings throughout croplands. Many rangeland acres are along riparian areas we want to work with producers to create a rotational grazing system to limit livestock in these areas. If we can limit livestock in the riparian areas this will lead to less nutrients flowing into the water bodies and downstream into the Jamestown Reservoir.

3.0 Project Description

Goals for the Project: The primary goal of the project is to minimize the occurrence of harmful algal blooms (HABs) in the Jamestown Reservoir to improve recreational opportunities. This will be accomplished by reducing the delivery of nutrients (primarily phosphorus) from watersheds immediately adjacent to reservoir. As a secondary goal, the recreational uses of the 303(d) listed reach on the James River below Jim Lake (Assessment Unit ND10160001-006-S_00) will also be restored.

3.1 Objectives & Tasks

Objective 1: Provide local project administration and staffing to cooperate with the other organizations and agencies in providing technical assistance to producers, monitoring water quality, and providing materials to the public.

Task 1: Employ one full-time Watershed Coordinator for 5 years

Product: 100%-time project coordinator to manage office activities, assist landowners/producers, coordinate with other agencies to promote, and install BMPs.

Cost: $278,343 ($167,006 319 funds $111,337 SCD match)

Objective 2: Reduce phosphorus and sediment loads delivered to the reservoir from the top 5 priority catchments in each of the targeted 12-digit HUs. The target is to reduce cumulative sediment and phosphorus loadings from the 4

priority 12-digit Hus, by 187 lbs of TP and 954 tons of sediment, respectively (Appendix C shows some examples how we are getting goals). At the bottom of each scenario builder there is an estimated total for reduction on TP and Sediment. I added all these numbers together for all the practices run in the scenario builder. This objective will focus on reducing nutrient and sediment runoff using reduced tillage, cover crops, riparian buffers, nutrient management, and critical area plantings. The PTMApp prioritization tool will also identify high priority catchments in each 12-digit HU for BMP implementation and provide estimated load reductions associated with each applied BMP.

Task 2: Work with the North Dakota Department of Environmental Quality (NDDEQ) and the International Water Institute to use PTMApp prioritization tool to define priority areas more clearly for targeting BMP implementation.

Product: PTMApp web-based prioritization tool maps. (Project area appendix A)

Cost: $0

Task 3: Using PTMApp prioritization tool, work with area landowners/producers to target high priority catchments for conservation planning aimed to reduce nutrient and sediment loads.

Product: PTMApp maps showing locations of the top 5 priority catchments in each of the 4 priority 12-digit HUs (Appendix C). Producer contact will continue beyond the top 5 priority catchments as the project moves forward. Contact landowners/producers in the high priority catchments for education and promotion of BMPs.

Cost: Section 319 funding for BMP is provided under task 4, 5, 6 and 7.

Task 4: Provide support to producers for installation of 300 acres of cover crops, nutrient management, and other cropland BMPs.

Product: Work with targeted landowners/producers to implement 300 acres of cover crops and other cropland BMPs. Estimated TP reduction of 71 lbs. annually and estimated sediment reduction of 598 tons annually, these estimates are from the PTMApp's cost effectiveness scenario builder, each scenario the BMPs chosen has an estimate of reduction (Example in appendix C). These numbers are a total of all four priority resource points.

Cost: PTMApp cost $61,125 ($36,675 319 funds, $24,450 producer match)

Task 5: Provide support to producers for installation of 175 acres of critical area seeding, grassed waterways or water, sediment control basins (WASCOBs) or field borders.

Product: Work in targeted areas to implement 175 acres of drainage area treated throughout the watershed. Estimated TP reductions of 80 lbs annually and estimated sediment reduction of 356 tons annually, these estimates are from the PTMApp scenario builder, each scenario with the BMPs chosen has an estimate of reduction (Example in appendix C). These numbers are a total of all four priority resource points.

Cost: PTMApp minimum cost for Wascobs $66,500 ($39,900 319 funds, $26,600 producer match)

Task 6: Provide support to producers within the Jamestown Reservoir 10 digit-HU watershed that directly feed to the Reservoir not within the 4 priority resource points. To reduce potential sources of nutrients by surface runoff, infiltration and improve nutrient management. BMPs that may be cost-shared include cover crops, critical area plantings, water and sediment control basins (WASCOB), pasture/hayland plantings, filter strips, etc.

Product: 200 acres of cover crops, 100 acres WASCOB or critical area plantings, filter strips, on land that directly drains into the Jamestown Reservoir. There are no load reductions for these practices at they are outside of the 4 priority resource points and do not have a resource point for individual 12-digit HUs.

Cost: $78,750 ($47,250 319 funds, $31,500 producer match)

Objective 3: Reduce E. coli bacteria levels to meet state standards for recreation uses in the TMDL listed reaches. State standard criteria for E. coli bacteria during the recreational season are a geometric mean of 126 CFU/100ml with less than 10% of samples exceeding 409 CFU/100ml.

Task 7: Minimize the length of time livestock are grazing in riparian areas by assisting producer to implement grazing management systems utilizing fences, water development and intense grazing management.

Product: Work with producers in critical areas on 1000 acres of prescribed grazing with installing fence, and water development at an average cost $50 an acre, actual cost-share will be based on rates in the BMP Cost-share guidelines. Grazing time will be limited in riparian areas for grazing. Will try and use PTMApp herbaceous cover and prescribed grazing to identify targeted areas for sediment and phosphorus loads.

Cost: $50,000 ($30,000 319 funds, $20,000 producer match)

Objective 4: Monitor the effectiveness of BMP implementation in the reach from Jim Lake to the Reservoir through water quality sampling as assigned STORET sites.

Task 8: Collect samples, as outlined in sampling and analysis plan created by ND Department of Environmental Quality (NDDEQ).

Product: Approved Sampling and Analysis Plan. The goal will be to collect 20 samples at each STORET site, annually. Parameters to be monitored will include E. coli, Total Suspended Solids; Total Nitrogen; Total Phosphorus and Anions/Cations. Also see section 5.0, Monitoring and Evaluation (appendix D).

Cost: $0 NDDEQ will provide training, sample analysis, and supplies for the water sampling.

Objective 5: Increase public awareness on NPS pollution issues and promote the use of effective best management practices to improve soil and water quality. When possible, these events will be coordinated with ongoing state and/or federal I/E programs in the area.

Task 9: Conduct annual educational events at various locations throughout the county to allow area producers to see and learn about soil health practices.

Product: 2 Farm tours, 5 Educational workshops. Farm tours will focus on nutrient management targeted towards capturing the nutrients in the catchments and riparian grazing and limiting cattle in these areas. Educational workshops will focus on the soil health. These events will be in cooperation with NRCS and other focus groups towards agriculture.

Cost: $7,000 ($4,200 319 funds, $2,800 SCD match)

Task 10: Prepare newsletters and direct mailings to local land users, general public, and media to promote the project and disseminate information on water quality and NPS pollution control.

Product: 5 years of quarterly newsletters and direct mailings

Cost: $10,000 ($6,000 319 funds, $4,000 SCD match)

Objective 6: Complete necessary project reports

Task 11: Complete annual and final project reports to update the project progress and completion. These will be provided to NDDEQ, EPA and all sponsors and interested parties.

Product: Annual and final project reports

Cost: Included are included in the Task 1 cost

3.2 Project Milestones:

See milestone Table, Appendix B.

3.3 Permits

All necessary permits will be acquired. These may include CWA section 404 permits and NDPDES permits. Project sponsors will work with the NDDEQ to determine if National Pollution Elimination System permits are needed for the proposed livestock systems. The State Historic Preservation Officer will be consulted regarding potential cultural resource affects.

3.4 Lead Project Sponsor

Stutsman County Soil Conservation District (SCSCD) is sponsoring this water quality project. The SCSCD board will oversee the Jamestown Reservoir Watershed Project. The Stutsman County SCD's annual and long-range plans help to prioritize and provide guidance to the field service staff. The SCSCD board has legal authority to employ personnel and receive and expend funds. The SCSCD has credible experience in personnel management and conservation leadership. The SCSCD has sponsored 4 other projects in Stutsman County and two of the projects had a Phase II.

3.5 BMP Operation and Maintenance

Proper operation and maintenance will be assured utilizing the NRCS O&M guidance as listed under the standard and specification for the associated BMP applied or other standards approved by NDDEQ.

4.0 COORDINATION PLAN

4.1 The project sponsor for the Jamestown Reservoir Watershed Project is the Stutsman County Soil Conservation District (SCSCD). Major partners include the Natural Resource Conservation Service (NRCS), Stutsman County Water Resource Board, North Dakota Department of Environmental Quality (NDDEQ), and the North Dakota Game and Fish Department.

1. The lead project sponsor is the Stutsman County SCD. The ND Department of Environmental Quality will hold a contract with the district. BMP implementation, project administration, computer entry, landowner contacts, water sampling and water quality education will be the responsibility of the district.

2. The USDA Natural Resource Conservation Service (NRCS) – the NRCS will provide day to day assistance in conservation planning, plan writing, contract writing, and technical assistance for construction and installation of planned BMP. NRCS personnel will conduct quality review and compliance checks of BMP that are designed by NRCS personnel. Local NRCS personnel will provide approved BMP standards and specifications from the NRCS technical guide. Environmental Quality Incentive programs funds will also be available in limited amounts. NRCS will provide assistance by facilitating local involvement and participating in educational outreach programs during the project period. An annual review will be conducted with ASTC (FO), DC, and the SCD to reconfirm and acknowledge NRCS's ability to commit to the project.

3. North Dakota Department of Environmental Quality (NDDEQ) – the NDDEQ will oversee the 319 funding as well as provide training for proper water quality sample collection, preservation, and transportation to ensure reliable data is obtained. The NDDEQ will also provide analytical support for the water quality samples collected during the project. The NDDEQ will provide the sponsor oversight to ensure proper management and expenditures of Section 319 funds. They will assist NRCS and the Stutsman County SCD personnel in review of O & M requirements for Section 319 funded BMP.

4. The North Dakota Game and Fish Department (NDG&F) – as needed, technical and/or financial assistance will be requested from the Game and Fish Department to assist with riparian management practices and other aspects of the project that involve combining wildlife and water quality.

5. International Water Institute (IWI) – will continue to assist with developing maps through PTMApp to prioritize water quality improvement projects. IWI staff has previously assisted with training the watershed coordinator.

6. Will work with other entities including the Stutsman County Extension, Ducks Unlimited, Dakota Audubon, Pheasants Forever, NRCS, the BMP Team, Industrial Commission and other entities to provide technical and/or financial assistance to the project.

4.2 Local Support

Stutsman County SCD has received request for 8 tanks, pipelines, 2 wells and a partial manure management plan. Producers have been accepting the program in the watershed.

4.3 Coordination with other pertinent programs

1) NRCS Environmental Quality Incentives Program (EQIP) will be used by the NRCS Jamestown Field Office and project staff to plan relevant conservation practices not offered by the project.
2) The North Dakota Game and Fish will be utilized where pertinent to assist in developing conservation practices in the watershed area. The practices may include items such as upland vegetation establishments, riparian zone improvements and grazing management practices. Watershed project staff will work with the Private Lands Biologist located in Jamestown in planning efforts. The Stutsman County SCD and the NDG&F have a history of working cooperatively particularly in riparian zone improvements.

4.4 Similar Watershed Activities

There are currently no other similar non-point source pollution projects being undertaken in the watershed. Past or current projects, most of which are associated with the USDA programs, which have or do occur, are planned as a part of county-wide efforts to address conservation issues in the area.

5.0 Monitoring and Evaluation

NPS Program Project Implementation Plan - Section 5.0 Evaluation and Monitoring Plan

A sampling and analysis plan (SAP) will be developed by the ND Department of Environmental Quality after the project is fully approved. A copy of the SAP will be included the final approved project implementation plan (PIP).

The SAP will describe the monitoring goals, objectives, and tasks to be initiated to evaluate project progress and success. The time frame for the SAP will be consistent with the approved period for the PIP. A report interpreting data collected through the SAP will be included in the final project report submitted to NDDEQ at the end of the 5-

year project period. The water quality report will summarize the data collected and describe the effectiveness of the project in progressing toward water quality targets and/or beneficial use improvement goals. The SAP will identify and describe:

- Water quality and/or beneficial use monitoring goals, objectives, and tasks
- Specific parameters to be monitored to track progress toward quantified PIP objectives and beneficial use restoration goals
- Sample collection locations, frequencies, and schedules
- Standard operating procedures for data collection, preservation, and transportation
- Responsible parties for data collection

In addition to data collection scheduled in the SAP, interim measures will also be used to evaluate short term progress and inform project management decisions. These measures will include BMP tracking and annual load reductions estimates associated with applied BMP. The NPS Program BMP Tracker Database will used to document the type, amount, location, and cost of BMP applied in the watershed. This information will be used as a surrogate measure for evaluating producer interest and effectiveness of the technical and financial assistance delivered by the project. The data for BMP types and amounts will also be used to estimate the annual field-edge nitrogen, phosphorus and sediment load reductions associated with applied BMP. Models that may be used to generate these estimates include STEPL, Animal Feedlot Runoff Risk Index Worksheet (AFRRIW) and the Prioritize, Target and Measure Application (PTMApp). The annual load reduction estimates will provide a quantified value to help gauge potential water quality benefits at the subwatershed and/or full watershed scale. All the annual load reduction data will be provided to the NDDEQ and entered in the EPA Grants Reporting and Tracking System (GRTS).

6.0 BUDGET

6.1 See Appendix E.

7.0 PUBLIC INVOLVEMENT

7.1 The community will be informed of project updates and cost-share opportunities in our quarterly newsletters, website https://www.stutsmanscd.net/, and Facebook page Stutsman County SCD and 319.

Appendix A

Maps

Figures 1-5

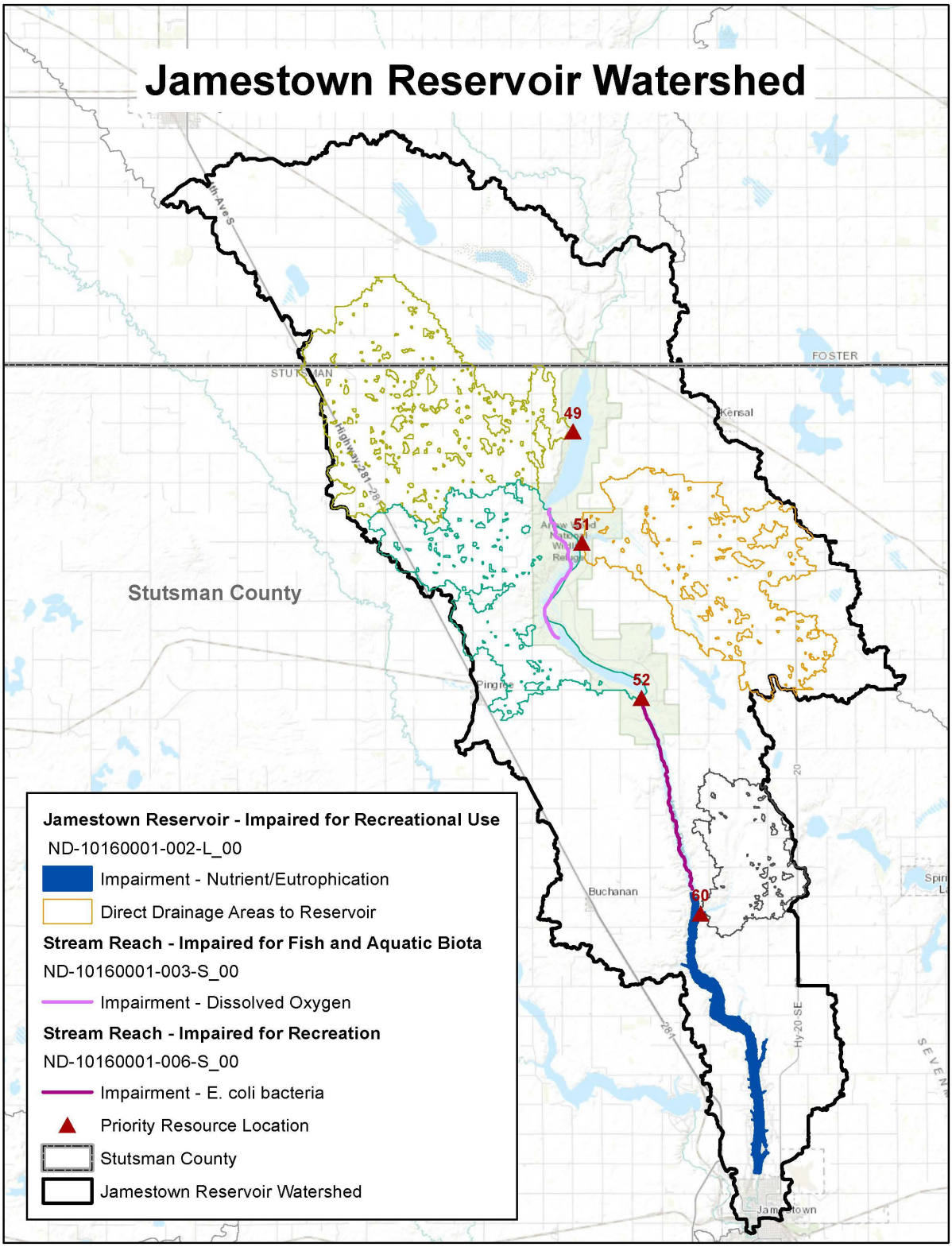

Jamestown Reservoir Watershed
FOSTER
Kensal
49
51
52
60
Stutsman County
Buchanan
Jamestown
Jamestown Reservoir - Impaired for Recreational Use
ND-10160001-002-L_00
Impairment - Nutrient/Eutrophication
Direct Drainage Areas to Reservoir
Stream Reach - Impaired for Fish and Aquatic Biota
ND-10160001-003-S_00
Impairment - Dissolved Oxygen
Stream Reach - Impaired for Recreation
ND-10160001-006-S_00
Impairment - E. coli bacteria
Priority Resource Location
Stutsman County
Jamestown Reservoir Watershed

Figure 1

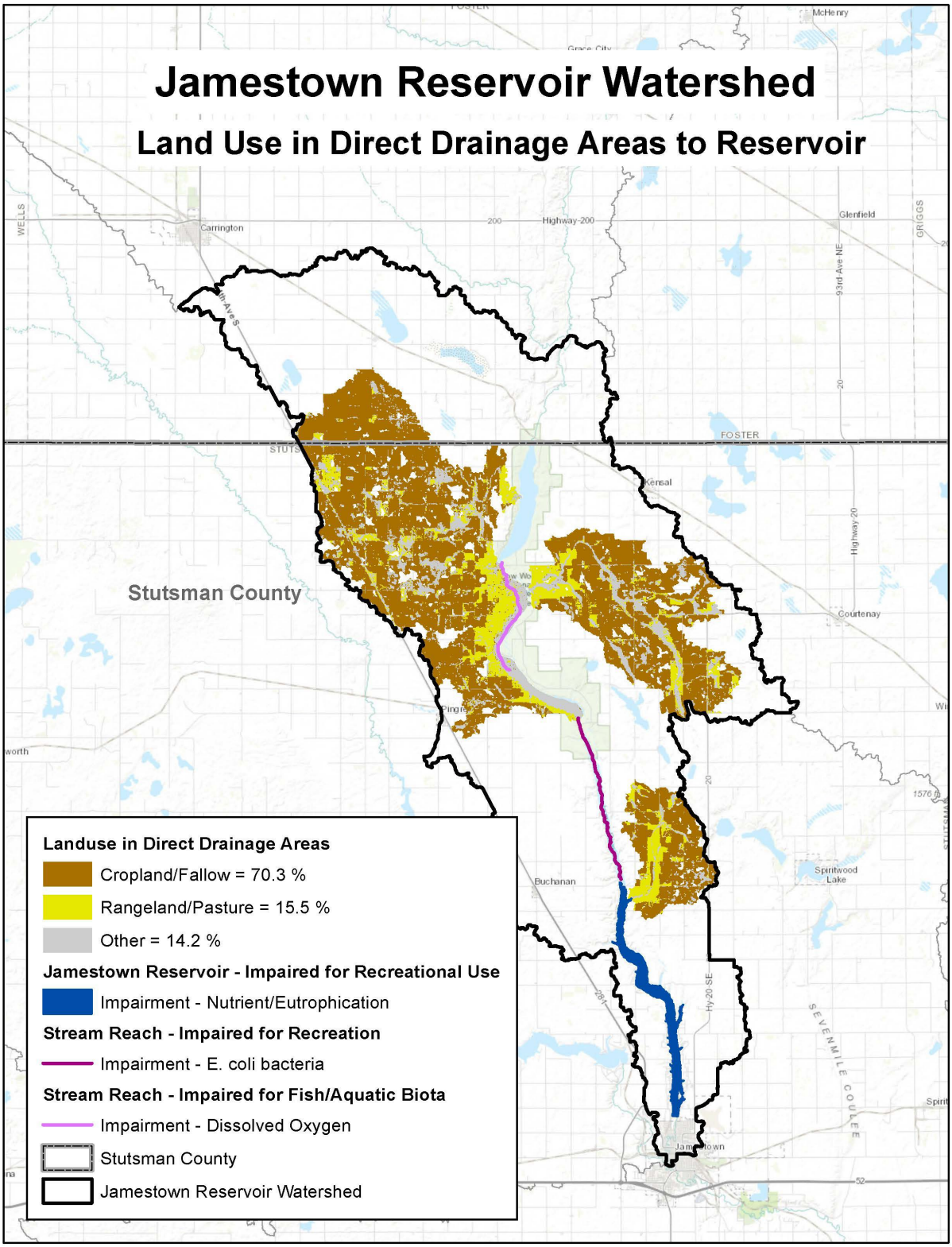

Jamestown Reservoir Watershed
Land Use in Direct Drainage Areas to Reservoir
Stutsman County
Landuse in Direct Drainage Areas
Cropland/Fallow = 70.3 %
Rangeland/Pasture = 15.5 %
Other = 14.2 %
Jamestown Reservoir - Impaired for Recreational Use
Impairment - Nutrient/Eutrophication
Stream Reach - Impaired for Recreation
Impairment - E. coli bacteria
Stream Reach - Impaired for Fish/Aquatic Biota
Impairment - Dissolved Oxygen
Stutsman County
Jamestown Reservoir Watershed
Carrington
Glenfield
FOSTER
Courtenay
Buchanan
Spiritwood Lake
Highway 200
Highway 20
93rd Ave NE
Hy 20 SE
SEVENMILE COULEE
McHenry
WELLS
GRIGGS

Figure 2

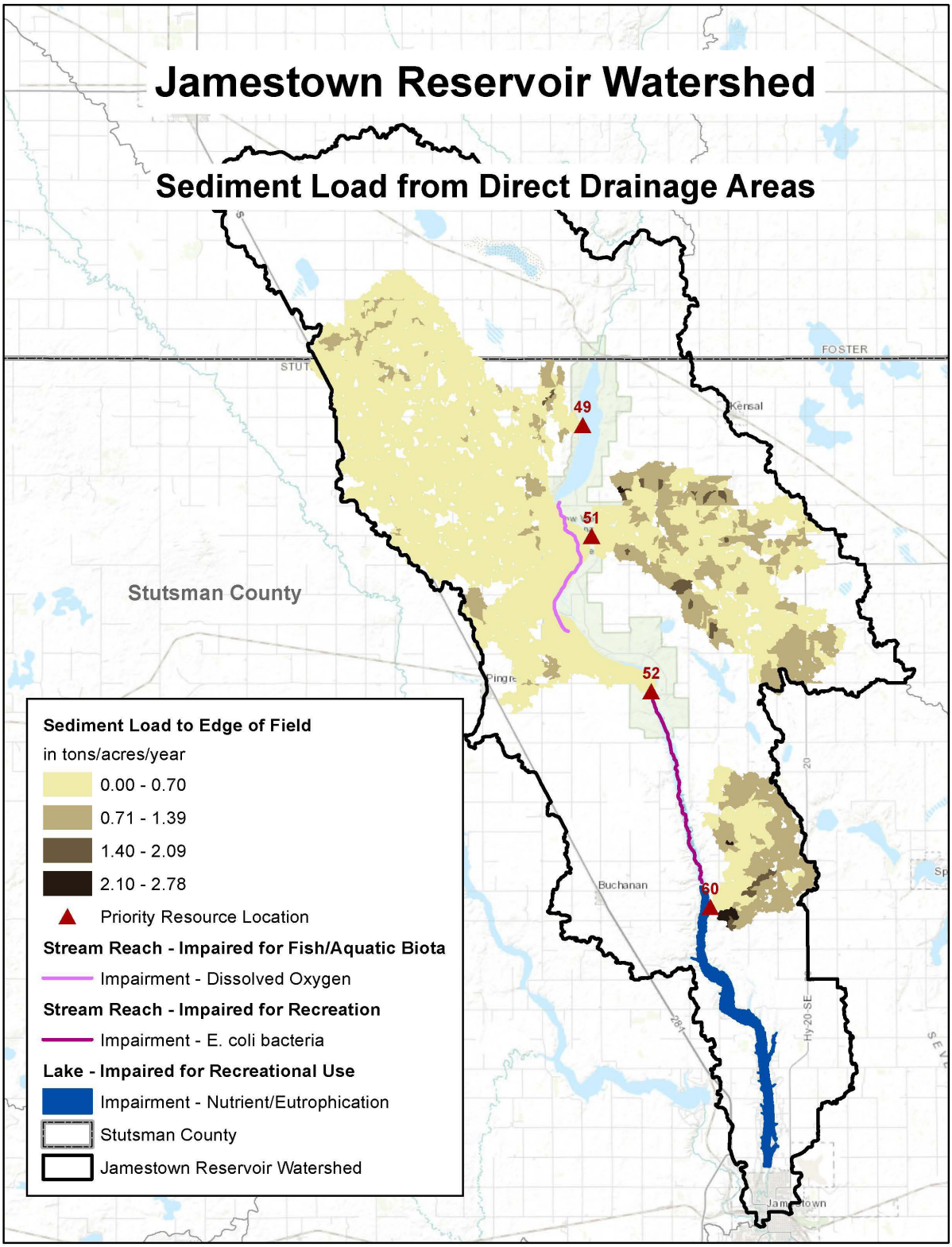

Jamestown Reservoir Watershed
Sediment Load from Direct Drainage Areas
FOSTER
Kensal
49
51
52
60
Stutsman County
Buchanan
Sediment Load to Edge of Field
in tons/acres/year
0.00 - 0.70
0.71 - 1.39
1.40 - 2.09
2.10 - 2.78
Priority Resource Location
Stream Reach - Impaired for Fish/Aquatic Biota
Impairment - Dissolved Oxygen
Stream Reach - Impaired for Recreation
Impairment - E. coli bacteria
Lake - Impaired for Recreational Use
Impairment - Nutrient/Eutrophication
Stutsman County
Jamestown Reservoir Watershed

Figure 3

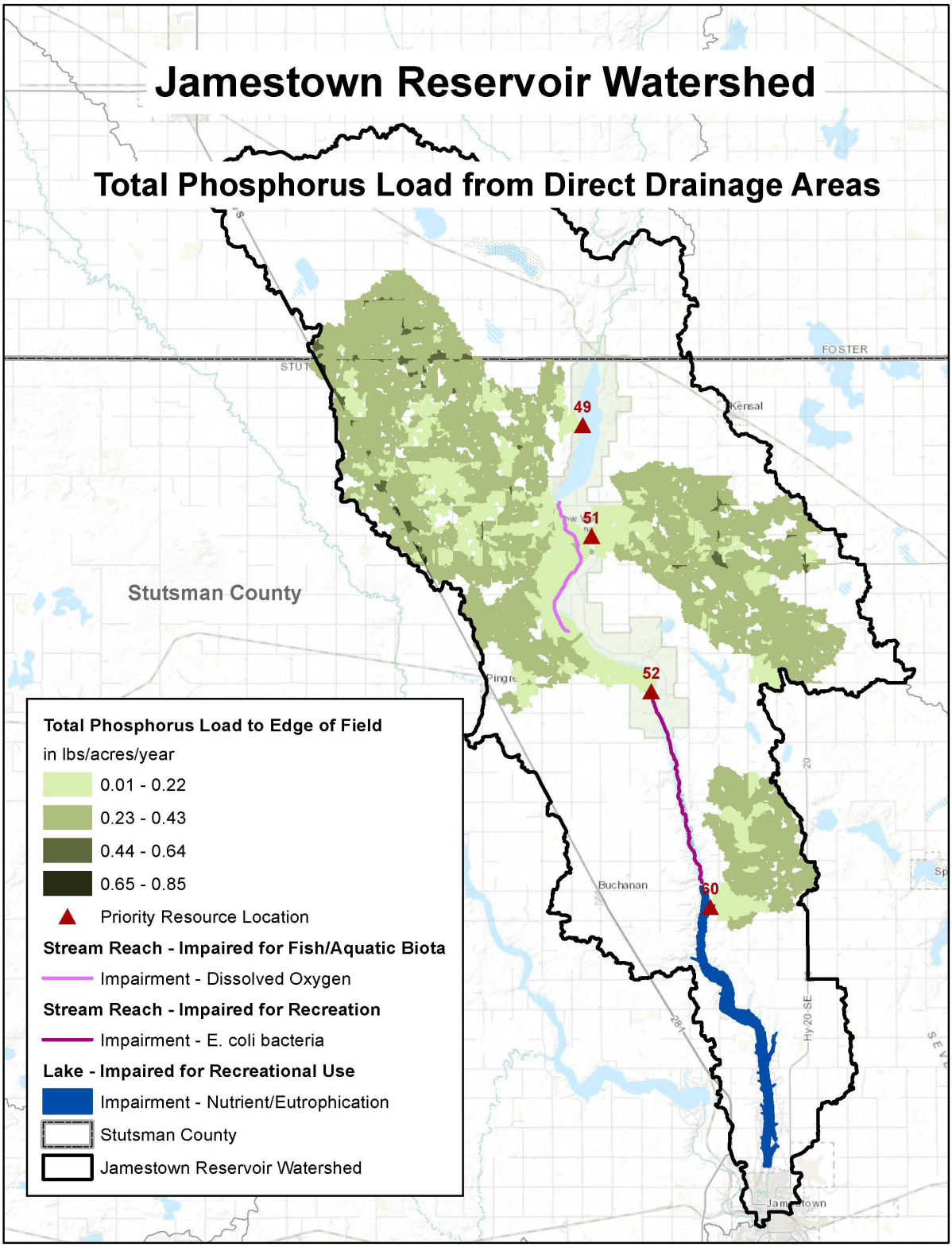

Jamestown Reservoir Watershed
Total Phosphorus Load from Direct Drainage Areas
FOSTER
Kensal
49
51
Stutsman County
52
Buchanan
60
Total Phosphorus Load to Edge of Field
in lbs/acres/year
0.01 - 0.22
0.23 - 0.43
0.44 - 0.64
0.65 - 0.85
Priority Resource Location
Stream Reach - Impaired for Fish/Aquatic Biota
Impairment - Dissolved Oxygen
Stream Reach - Impaired for Recreation
Impairment - E. coli bacteria
Lake - Impaired for Recreational Use
Impairment - Nutrient/Eutrophication
Stutsman County
Jamestown Reservoir Watershed

Figure 4

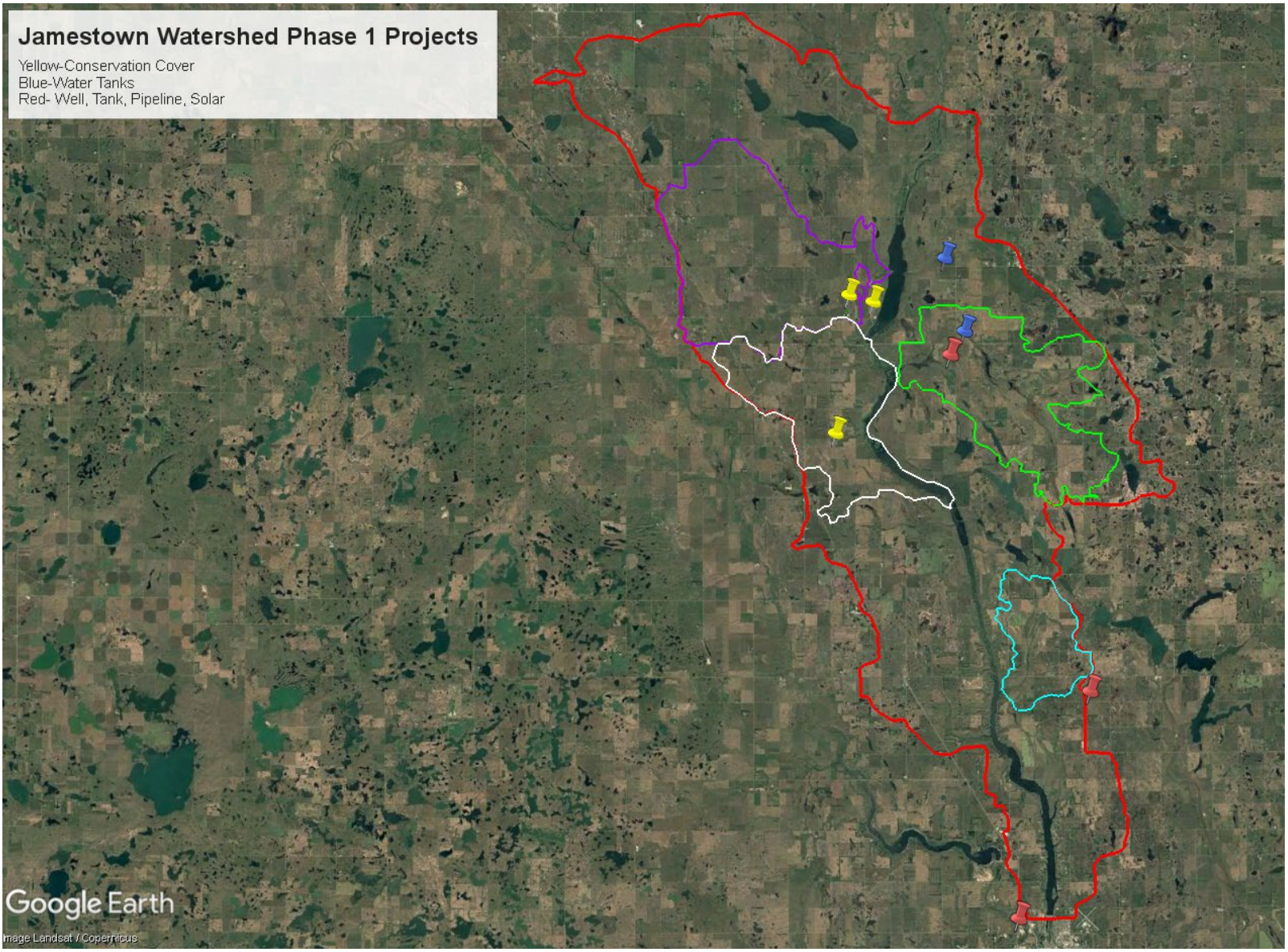

Jamestown Watershed Phase 1 Projects
Yellow-Conservation Cover
Blue-Water Tanks
Red- Well, Tank, Pipeline, Solar
Google Earth
Image Landsat / Copernicus

Figure 5

Appendix B

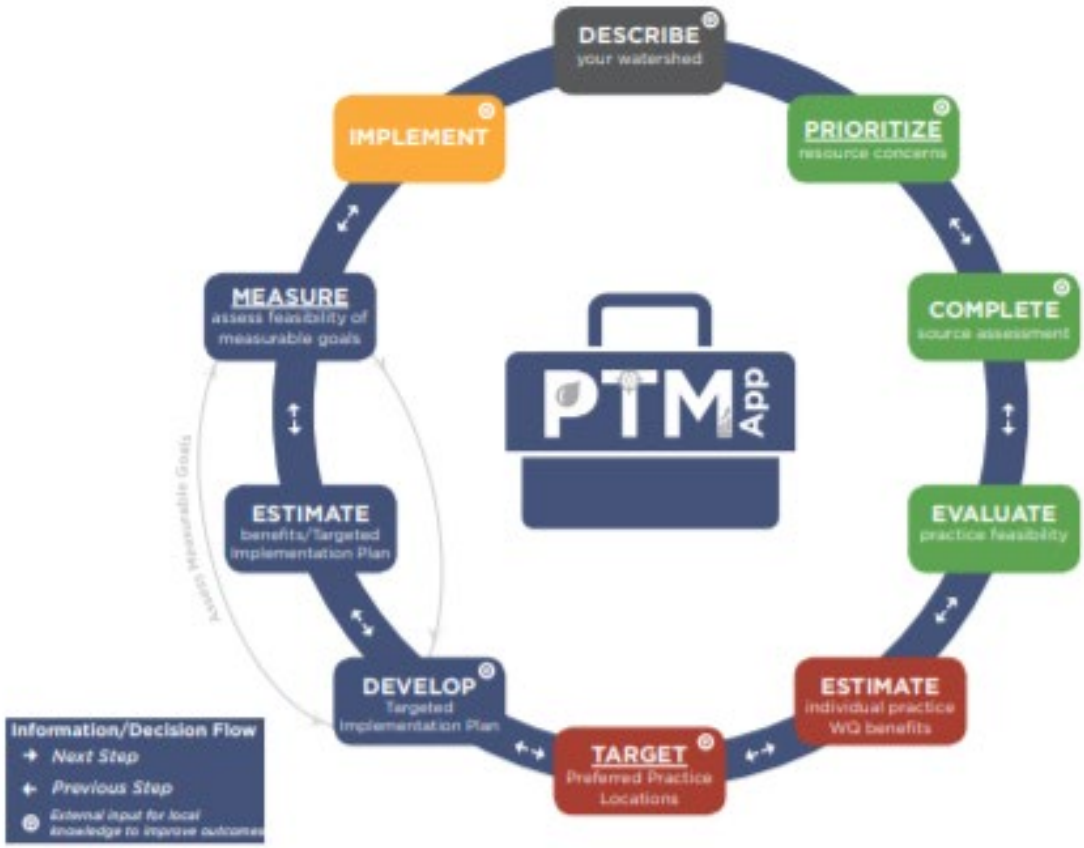
PTMApp

Figures 6-7

PTMApp Products and Business Workflow

The Prioritize, Target, Measure Application (PTMApp) is an innovative new tool that will help users with aspects of surface water quality planning from describing the watershed to developing implementation plans. Learn more about how you can use the application to improve every day decisions for more accurate results.

Available for free download: www.rrbdin.org/prioritize-target-measure-application-ptmapp



The following examples were completed as a pilot case study in the Sauk River Watershed District:

DESCRIBE
your watershed

Identify and describe important resources, features, and factors associated with your watershed. PTMApp contains a pre-packaged publicly available watershed data set to the boundary of your watershed. This simplifies the process of gathering and summarizing GIS and resource data needed for your watershed. Data from PTMApp can help visualize and summarize the number of impaired waters and assessed waters in the study area.

PRIORITIZE
resource concerns

Establish the relative importance of resources within the area you manage. Lakes, streams and wetlands are frequently potential resource concerns included in prioritization processes. Use PTMApp products in conjunction with other models and Zonation to help prioritize resource concerns. PTMApp can help select resources that are a priority and locations where management actions should be taken.

Continued ▶

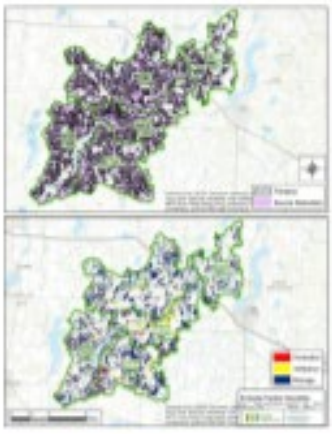
Figure 6

COMPLETE
source assessment

Identify the magnitude and spatial distribution of potential pollution sources across the landscape. Understand how various parts of the watershed contribute sediment, total phosphorus, and total nitrogen loads to downstream locations including impaired waters. Use PTMApp to identify the highest areas of sediment loading and show the best areas for practices.

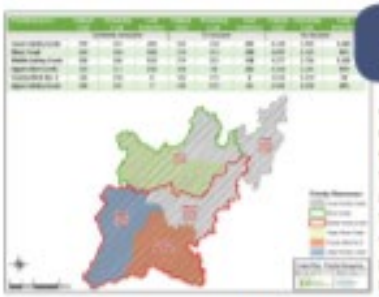
DEVELOP
Targeted Implementation Plan

Specific locations to place practices must also be targeted based on practical and social factors. PTMApp data can incorporate additional information to refine the practices targeted. It is likely that many areas in the watershed may already have numerous Best Management Practices implemented, lack willing landowners, or have benefits beyond water quality that would impact the targeted locations for practices. PTMApp can adjust scenarios to restrict targeting to certain areas.



EVALUATE
practice feasibility

The feasibility of placing best management practices (BMPs) on the landscape depends on several factors: the size of contributing drainage area, land slope, and flow regime. Feasibility is often based on technical factors and excludes societal factors. PTMApp creates products to facilitate these conversations: BMP opportunities can be combined with the source assessment data to estimate the "measurable" water quality benefits for implementing the practices.



ESTIMATE
benefits/Targeted Implementation Plan

Combined benefits can be compared to a measurable goal. PTMApp can use the combined benefits of many practices to assess the effectiveness of the targeted implementation plan. Annual load reduction estimates can be calculated at each priority resource point within a study area and used to assess progress toward a measurable water quality goal. This information can be used directly within a Targeted Implementation Plan.

ESTIMATE
individual practice WQ benefits

Selecting specific practices to implement is based on their probable benefits, ranging from pollutants removed or the related cost. PTMApp can help estimate benefits at the location of the practice or resource. Outputs from PTMApp can show areas that provide the most bang for your buck and can help target practice locations to provide the most cost-effective ways to create measurable progress.

MEASURE
assess feasibility of measurable goals

A measurable goal may be the load reduction needed to restore a lake or river reach, or a maximum load to protect a resource. PTMApp can compare the estimated benefits of the Targeted Implementation Plan to water quality goals. Results of this analysis can show the scenarios that will provide the reductions needed to reach your planning goals.

TARGET
preferred practice locations

Once possible BMP locations are identified for feasibility, potential locations must be evaluated for their combined effectiveness. PTMApp can generate data to provide feasible locations for implementing practices that will provide measurable water quality improvements for priority resources. There are a number of factors that might influence preferred practices, including existing practices in place and landowner participation.

IMPLEMENT

By running various scenarios in PTMApp, managers can identify scenarios to implement the best, targeted solutions. PTMApp can analyze various practices and estimate the largest load reductions for specific areas within the watershed. This information helps users implement the best possible practices in the most effective locations.

For more information, contact: Chuck Fritz, Administrator—International Water Institute, 701.388.0861, charles@iwinst.org

Figure 7

Appendix C

PTMApp Examples

Figures 8-9

PTMApp-Web Scenario Builder Report

Report Details

PTMApp-Web User: Dustin Krueger

Watershed: James (huc10160000)

Priority Resource Location: 49

Report Generation Date: 2025-11-04

Selection Criteria

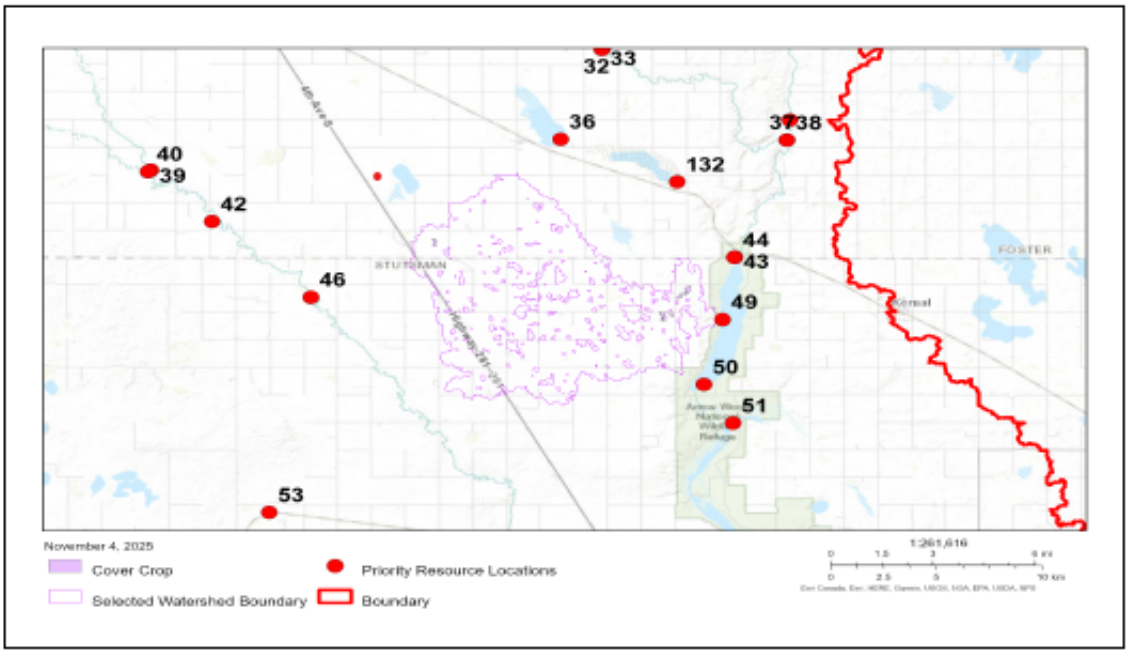
Parameter: Sediment

Practices: Cover Crop

Basis for Practice Selection: Ranked by Cost Effectiveness ($/unit load reduction)

Scale and Storm Event: 2-yr, 24-hr Storm Event

Cost Method Used to Select BMPs: Default Cost



Practice Type	Catch ID	Drainage Area Treated (sq-ft)	Practice Size (acres)	Town	Rang	Sect	Default Cost ($)	Ann. Useful Life Cost ($)	Estimated Annual Sediment Reduction (tons)	Cumulative Annual Sediment Reduction (tons)	Cost Effectiveness to Treat Sediment ($/ton)	Estimated Annual TP Reduction (lbs)	Cumulative Annual TP Reduction (lbs)	Cost Effectiveness to Treat TP ($/lb)	Estimated Annual TN Reduction (lbs)	Cumulative Annual TN Reduction (lbs)	Cost Effectiveness to Treat TN ($/lb)
Cover Crop	126003	1,579,720, 168	34	144	65	12	$1,126.03	$2,956.00	39.10	39.10	$28.80	7.63	7.63	$147.67	154.18	154.18	$7.30
Cover Crop	629533	495,032	10	144	65	14	$335.20	$1,095.00	9.91	49.00	$33.83	2.22	9.85	$150.85	44.93	199.11	$7.46
Cover Crop	129784	516,197,60 5	15	144	65	14	$503.19	$1,534.00	13.51	62.51	$37.25	3.40	13.25	$147.85	68.82	267.93	$7.31
Cover Crop	629878	896,678	11	144	65	14	$360.08	$1,168.00	8.66	71.18	$41.58	2.44	15.69	$147.78	49.27	317.20	$7.31
Cover Crop	121640	10,441,392	15	145	66	36	$505.28	$1,540.00	11.26	82.44	$44.85	3.41	19.10	$148.11	68.98	386.18	$7.32
Grand Total from BMPs in Selection							$2,830.80		82.44			19.099			386.18		

Disclaimer: Practices shown are from raw results created using PTMApp-Desktop and uploaded to the web. Users should review actual locations for practicability to implement. Cost-Effectiveness values may vary slightly from actual calculation based on number of significant digits shown. The number of practices printed is based on selection criteria.

Figure 8

PTMApp-Web Scenario Builder Report

Report Details

PTMApp-Web User: Dustin Krueger

Watershed: James (huc10160000)

Priority Resource Location: 51

Report Generation Date: 2025-11-04

Selection Criteria

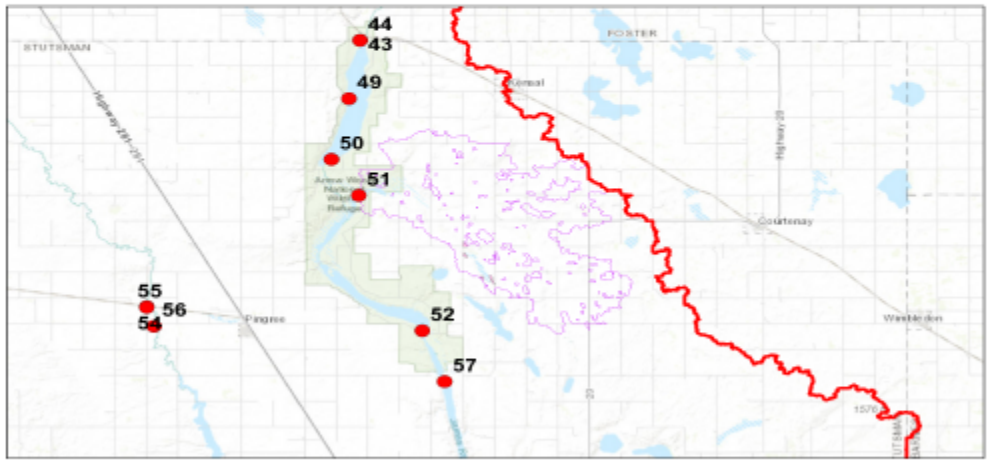
Parameter: Sediment

Practices: Conservation Cover

Basis for Practice Selection: Ranked by Cost Effectiveness ($/unit load reduction)

Scale and Storm Event: 2-yr, 24-hr Storm Event

Cost Method Used to Select BMPs: Default Cost



Practice Type	Catch ID	Drainage Area Treated (sq-ft)	Practice Size (acres)	Town	Rang	Sect	Default Cost ($)	Ann. Useful Life Cost ($)	Estimated Annual Sediment Reduction (tons)	Cumulative Annual Sediment Reduction (tons)	Cost Effectiveness to Treat Sediment ($/ton)	Estimated Annual TP Reduction (lbs)	Cumulative Annual TP Reduction (lbs)	Cost Effectiveness to Treat TP ($/lb)	Estimated Annual TN Reduction (lbs)	Cumulative Annual TN Reduction (lbs)	Cost Effectiveness to Treat TN ($/lb)
Conservation Cover	147064	278,128	6	143	64	23	$2,919.12	$1,904.00	19.62	19.62	$148.75	1.73	1.73	$1,688.96	13.94	13.94	$209.45
Conservation Cover	147779	145,508	7	143	64	23	$3,548.92	$2,252.00	23.55	43.18	$150.67	2.10	3.83	$1,688.89	16.94	30.88	$209.44
Conservation Cover	145119	359,213	9	143	64	14	$4,511.27	$2,798.00	26.87	72.05	$156.25	2.67	6.50	$1,689.22	21.54	52.42	$209.48
Conservation Cover	146925	199,593	6	143	64	23	$2,707.40	$1,785.00	13.96	86.01	$194.00	1.60	8.10	$1,689.77	12.92	65.34	$209.55
Conservation Cover	144576	206,731	12	143	64	11	$5,667.15	$3,368.00	25.86	111.87	$219.16	3.35	11.46	$1,689.70	27.05	92.38	$209.54
Grand Total from BMPs in Selection							$19,354.00		111.87			11.456			92.38		

Disclaimer: Practices shown are from raw results created using PTMApp-Desktop and uploaded to the web. Users should review actual locations for practicability to implement. Cost-Effectiveness values may vary slightly from actual calculation based on number of significant digits shown. The number of practices printed is based on selection criteria.

Figure 9

Estimated Reductions from PTMApp Scenario Builder

Appendix D

Sampling Sites

Figures 10

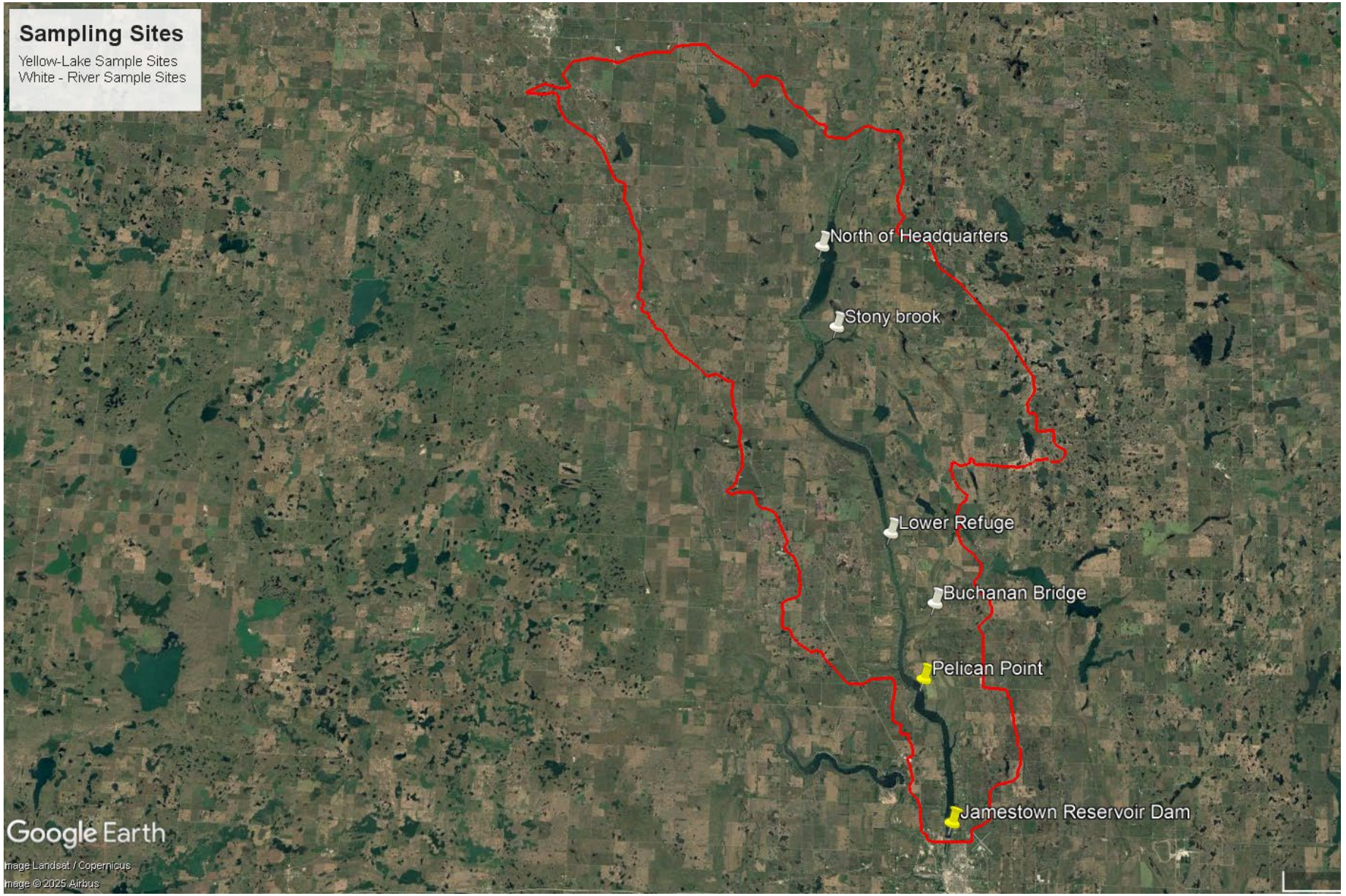

Sampling Sites
Yellow-Lake Sample Sites
White - River Sample Sites
North of Headquarters
Stony brook
Lower Refuge
Buchanan Bridge
Pelican Point
Jamestown Reservoir Dam
Google Earth
Image Landsat / Copernicus
Image © 2025 Airbus

Figure 10

Appendix E

Budget & Milestones

Figure 11-13

Part 1: Funding Sources						
	2026	2027	2028	2029	2030	Total
EPA SECTION 319 FUNDS						
1)FY 2022 Funds (FA)	$40,499	$97,771	$101,384	$111,302	$93,094	$444,050
STATE/LOCAL MATCH						
1) Stutsman County SCD (TA & FA)	$20,574	$42,055	$42,590	$43,952	$44,313	$237,074
2) Landowners (FA)	$6,425	$23,125	$25,000	$30,250	$17,750	$102,550
Subtotals	$26,999	$65,180	$67,590	$74,202	$62,063	$296,034
TOTAL BUDGET						
	$67,498	$162,951	$168,974	$185,504	$155,157	$740,084
OTHER FEDERAL FUNDS						
1) NRCS (TA, EQIP, and other programs)	$150,000	$150,000	$150,000	$150,000	$150,000	$750,000
TOTAL FEDERAL FUNDS						$750,000
TOTAL PROJECT COST						$1,490,084

Figure 11

FA: Financial Assistance
TA: Technical Assistance
SCD: Soil Conservation District
NRCS: Natural Resource Conservation Service
FSA: Farm Service Agency
NDDEQ: North Dakota Department of Environmental Quality

Part 2: Detailed Budget (Section 319/Non-Federal)								
	2026	2027	2028	2029	2030	Total Costs	Cash and In-kind Match	319 Funds
PERSONNEL/SUPPORT/ADMIN								
Salary/Fringe FTE 100%	$46,031	$94,329	$96,664	$99,069	$101,546	$437,639	$175,056	$262,583
Travel, Food & Lodging	$2,250	$4,500	$4,500	$4,500	$4,500	$20,250	$8,100	$12,150
Supplies	$320	$640	$640	$640	$640	$2,880	$1,152	$1,728
Rent/Utilities	$360	$720	$720	$720	$720	$3,240	$1,296	$1,944
Communications (Telephone/Postage)	$300	$600	$600	$600	$600	$2,700	$1,080	$1,620
Subtotals	$49,261	$100,789	$103,124	$105,529	$108,006	$466,709	$186,684	$280,025
Objective 2-3 Implement BMP's								
Implement on cropland (cover crops, nutrient management, and other BMPs)	X	$10,187	$20,375	$20,375	$10,188	$61,125	$24,450	$36,675
Implement critical area seeding, grassed waterways, and water and sediment control basins	$9,500	$9,500	$19,000	$19,000	$9,500	$66,500	$26,600	$39,900
BMP implementation outside of the 4 priority resource points.	$6,562	$13,125	$13,125	$26,250	$19,688	$78,750	$31,500	$47,250
Improve nutrient management on rangeland		$25,000	$10,000	$10,000	$5,000	$50,000	$20,000	$30,000
Subtotals	$16,062	$57,812	$62,500	$75,625	$44,376	$256,375	$102,550	$153,825
Objective 4: Water Sampling								
Conduct water sampling						$0	$0	$0
Subtotals						$0	$0	$0
Objective 5: Public Information Campaign								
Public informational meetings/Tours	$1,000	$2,000	$1,000	$2,000	$1,000	$7,000	$2,800	$4,200
Prepare newsletter and other outreach	$1,175	$2,350	$2,350	$2,350	$1,775	$10,000	$4,000	$6,000
Subtotals	$2,175	$4,350	$3,350	$4,350	$2,775	$17,000	$6,800	$10,200
Objective 7: Project Reporting								
Annual project report						$0	$0	$0
Subtotals	$0	$0	$0	$0	$0	$0	$0	$0
Total for all Objectives/Tasks								
Total 319/Non-federal Budget	$67,498	$162,951	$168,974	$185,504	$155,157	$740,084	$296,034	$444,050

Figure 12

Jamestown Reservoir Watershed Project								
Milestone Table								
Task/Responsible Organizations		Output	Qty.	Year 1 2026	Year 2 2027	Year 3 2028	Year 4 2029	Year 5 2030
Objective 1:								
Task 1: Group 1,5	Hire watershed coordinator 100% FTE	Watershed Coordinator	1	1	1	1	1	1
Objective 2:								
Task 2: Group 1, 2, 3	PTMApp priority areas	Web-based prioritization maps	1	X	X	X	X	X
Task 3: Group 1, 5	Use PTMApp to work with landowners to reduce nutrient and sediment loads.	Maps showing locations of top 5 priority catchments per 12-digit HU.	5	X	X	X	X	X
Task 4: Group 1,2,3	Cover Crops, nutrient management on 300 acres	Cover crops, nutrient management and other BMPs	300 ac	X	50 ac	100 ac	100 ac	50 ac
Task 5: Group 1,2,3	175 acres of Critical Area plantings and WASCOB's	Critical area planting, grass waterways, and WASCOBs	175 ac	25 ac	25 ac	50 ac	50 ac	25 ac
Task 6: Group 1,2,3	Practices for HUC 10 Jamestown Reservoir Watershed that drain directly into the reservoir	Cover crops, nutrient management, WASCOBs and other BMPs	300 ac	25 ac	50 ac	50 ac	100 ac	75 ac
Objective 3:								
Task 7: Group 1,2,3	Minimize gazing along riparian area by implementing grazing plan	Fencing, water, prescribed grazing and other BMPs	1000 ac	X	500 ac	200 ac	200 ac	100 ac
Objective 4:								
Task 8: Group 1	Monitor BMP effectiveness	Concentration data for E. coli bacteria, nutrients, and TSS for 2 Sites	20 samples per site per year	16	36	36	36	36
Objective 5:								
Task 9: Group 1	Informational Events	7-tours/workshops	7	1	2	1	2	1
Task 10: Group 1	Newsletters and other media	Quarterly newsletters, mailing, brochures	17	2	4	4	4	3
Objective 6:								
Task 11: Group 1,5	Complete annual and final project reports	Project reports	5	1	1	1	1	1

Figure 13

Group 1 – Stutsman County SCD - Local project manager and sponsor, including responsibilities for project coordination, reimbursement payments, match tracking, and progress reporting to the NDDEQ. Also provides technical assistance to plan, design, and implement BMPs.
Group 2 - Landowners in the Jamestown Reservoir Watershed - Make land management decisions and provide cash and in-kind match for BMPs.
Group 3 - Natural Resource Conservation Service - Provides technical assistance to plan, design, and implement BMPs. Also provides financial assistance for BMPs to landowners through the EQIP program.
Group 4 - ND Department of Environmental Quality - Statewide section 319 program management including oversight of local 319 planning and expenditures. Also provides technical assistance for water quality analysis and documentation.