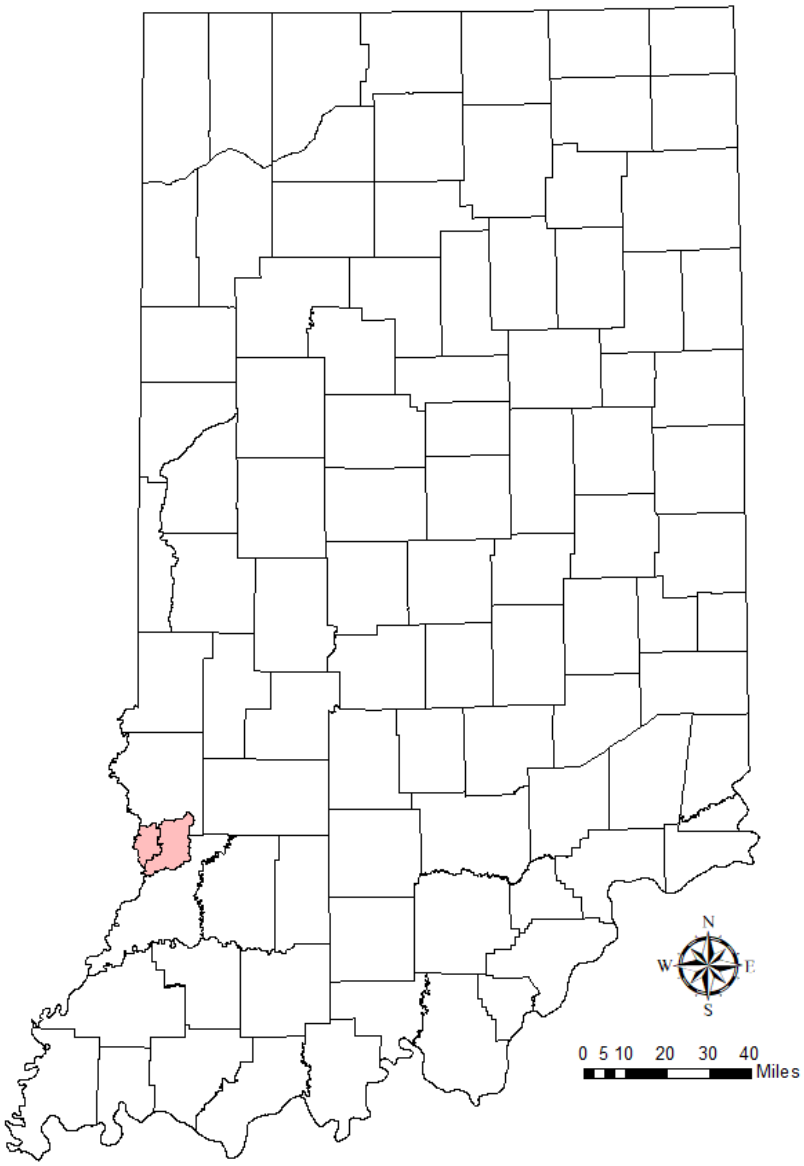
2020-2024

Maria-No Business Creek Watershed

319 Planning and Implementation Project

Final Report



ARN: #47519

Project Sponsor: Sullivan Co. SWCD

Report Period: December 10th, 2020 – December 9th, 2024

Report Completed by:

Laura Demarest, Watershed Coordinator

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INTRODUCTION and OVERVIEW

The MNBC (Maria Creek and No Business Creek watersheds) 319 Planning and Implementation project officially began on December 10th, 2020, and ended on December 9th, 2024. It ran concurrently with the TTK Implementation III grant (#41471) for three years and two months, managed simultaneously by the Sullivan Co. SWCD. The purpose of the MNBC 319 Planning and Implementation project was two-fold: to develop a comprehensive Watershed Management Plan that would include information from the 2021 Maria Creek TMDL study and to implement a variety of conservation BMPs throughout critical areas, resulting in improved regional water quality and management changes at the individual farm level throughout the watershed.

PROJECT GOALS AND OBJECTIVES

The original application for funding included several generalized goals, which were adapted into 'Tasks' for the Grant Agreement and can be found summarized in the next section of this report. In addition to the outlined Task objectives, a goal of implementing over 5,810 acres of BMPs was also declared in the application.

The goals from the MNBC Watershed Management Plan (pg. 118) are more specific, providing load reduction targets both in short, mid, and long-term increments, with several additional habitat/biological and administrative goals.

Short-Term Goals:

1. Reduce Sediment loads by at least 17% within the next 5 years (8,230.65 t/yr)
2. Reduce Nitrogen loads by 17% within the next 5 years (340,620 lbs/yr)
3. Reduce Phosphorus loads by 17% within the next 5 years (12,640 lbs/yr)
4. Reduce E.coli loads by 17% within the next 5 years (4.32E+16 cfu/yr)

Mid-Term Goals:

5. Reduce Sediment loads by 50% within the next 15 years (24,207.81 t/yr)
6. Reduce Nitrogen loads by 50% within the next 15 years (1,001,800 lbs/yr)
7. Reduce Phosphorus loads by 50% within the next 15 years (37,160 lbs/yr)
8. Reduce E.coli loads 50% within the next 15 years (1.24E+17 cfu/year)

Long-Term Goals:

9. Reduce Sediment loads by 100% within the next 30 years (48,415.61 t/yr)
10. Reduce Nitrogen loads by 100% within the next 30 years (2,003,600 lbs/yr)
11. Reduce Phosphorus loads by 100% within the next 30 years (74,300 lbs/yr)
12. Reduce E.coli loads 100% within the next 30 years (2.54E+17 cfu/year)

Habitat/Biological Goals:

13. Document improved QHEI and PTI macroinvertebrate scores on 80% of sites within the next 20 years.
14. Continue to promote programs and conservation practices that establish riparian corridor, wetland habitat, field buffers, and filter strips.

Administrative Goals (Ongoing):

15. Continue to pursue advantageous partnerships and additional funding sources in order to make improvements throughout MNBC and surrounding watersheds in the future.
16. Continue to promote a variety of Best Management Practices (BMPs) that will help bring about long-term behavioral changes, better land management, and continued conservation throughout the region.

The MNBC 319 Planning and Implementation grant (#47519) was primarily managed by Watershed Coordinator, Laura Demarest, with the financial oversight of Sullivan SWCD Coordinator/Educators: Allison McKain (2020-November 2021), Katie Marchino (December 2021-July 2024), and Kennedy Gofourth (August 2024-December 2024). Some slight differences in documentation and signatures may be noted due to personnel changes, though all requirements of the grant were successfully completed by its close in December 2024.

Fulfilling the goals of the MNBC WMP was to be accomplished through a variety of efforts that were organized according to "Tasks". Within the scope of each Task were several objectives to satisfy the overall goals of the MNBC 319 Planning and Implementation project. The completion of these specific tasks will be presented at length in the next section of this report. The requirements of each Task are summarized as follows:

Task A: Produce a Watershed Management Plan

- Develop a Watershed Management Plan that will meet state and federal requirements for approval.
- Form an Advisory Committee and hold quarterly public meetings (16 total).

Task B: Develop and Promote a Cost-Share Program

- Develop a state-approved cost-share program according to *Section 319 Cost-Share Program Development Guidelines.*

Task C: BMP Cost-Share Implementation

- Implement the approved cost-share program described in Task B (after the WMP is approved).
- Ensure that all BMPs conform to NRCS specifications or other applicable, approved specifications.
- Implement BMPs only in critical areas as described in the MNBC WMP.
- Follow cost-share payment and reporting protocol according to IDEM 319 program requirements.
- Tabulate pollutant load reductions for every BMP funded by 319 or utilized for match.
- Create and maintain a geo-referenced database for all BMPs implemented through the 319 project.

Task D: Water Quality Monitoring and Analysis

- Develop a Quality Assurance Project Plan (QAPP) for monitoring activities: submit to the State for approval.
- Monitor at least 5 selected sites in the No Business Creek watershed monthly for one year.
- Lab testing for one year will include: NO_2/NO_3, Total Phosphorus, TSS, and E.coli
- Additional parameters shall include Flow, Temperature, Dissolved O_2, Salinity, Specific Conductance, Total Dissolved Solids, pH, Turbidity, Color, Odor, and photo documentation.
- Complete one QHEI assessment on all sites.
- Conduct one macroinvertebrate assay on all sites.

Task E: Education and Outreach

- Update the website www.watershed-alliance.org and/or social media accounts (Twitter, Facebook, or other applicable forum) monthly for forty-eight (48) months. Updates will provide information regarding conservation BMPs, upcoming meetings and events, Cost-Share Program, and project progress.
- Develop and distribute one (1) Cost-Share Program brochure to inform applicants and promote the implementation of BMPs.
- Submit twelve (12) press releases to local media in order to provide project updates, advertise events, and promote Cost-Share Program.
- Participate in a minimum of ten (10) community events such as fairs, Ag Day, and planter clinics to promote/showcase the project and track attendance.
- Conduct at least three (3) field days or soil health events to showcase conservation through agricultural BMPs. Topics may include (but are not limited to): Maximizing precision ag tools, saturated buffers, prescribed grazing, irrigation management methods, septic maintenance, and optimizing cover crops. Track attendance.
- Host one (1) public meeting per year for a total of four (4) to summarize TMDL findings, inform the public about project milestones, highlight successes, and garner stakeholder interest. Track attendance.
- Provide a total of four (4) updates to governing bodies in person (County Council, County Commissioners, Drainage Boards, Partner SWCDs, etc.).
- Maintain a filterable database of volunteers, partners, and contacts on a quarterly basis; sort into groups pertaining to interest, qualification, or potential donor/partner/stakeholder.
- Develop one (1) promotional 'infographic' flyer to distribute to nonagricultural constituents within the watershed. Topics may include septic maintenance, tips for reducing household fertilizer application, facts about local water quality, proper disposal of hazardous materials, and/or maintaining grassed buffers along streams and ditches.
- Organize one (1) local Hoosier Riverwatch Training event for stakeholders, partners, and other interested parties. Track attendance.

Task F: Reporting

- Prepare and submit a progress report to the State with each invoice package, at least quarterly (15 total).
- Submit two electronic copies of a final report to the State.

EVALUATION OF GOAL ACHIEVEMENT

Overall, the MNBC 319 Planning and Implementation project proved to be a success, which can be validated by assessing the completion of the items listed in each of the previously outlined Tasks. Favorable trends in producer interest and participation in conservation efforts were noted throughout the duration of the project. Implementation across the county line has been a smooth process thanks to a strong partnership with Knox Co. SWCD technical staff, who worked diligently to assist customers and perform BMP checks as necessary. Moreover, many helpful lessons were gleaned during this grant project, which will enable future conservation efforts to benefit considerably.

The MNBC 319 Planning and Implementation project was divided into two main phases: Planning first and then, Implementation. The Planning Phase took longer than expected, at a little over 3 years to complete, with the Watershed Management Plan receiving IDEM and EPA approval in early 2024. The Implementation Phase officially commenced immediately following the approval of the WMP, allowing for many queued projects to be moved forward with haste. In the end, every cent of the MNBC 319 grant funding was utilized, the match goal significantly exceeded, a wealth of water quality data collected, an extensive Watershed Management Plan was completed and approved, and the application goal of implementing over 5,000 acres of BMPs was achieved.

When considering many of the specific goals stated in the Watershed Management Plan, it is premature to gauge completion, as the MNBC initiative will continue in the form of the MNBC 319 Implementation II project, with another 319 grant slated to start in early 2025. At this stage, it is advantageous to review the outlined goals to determine if the overall project is on a successful trajectory for short-term (5 year) goal completion by 2027.

A series of 'Project Outcomes' and 'Measures of Success' was also outlined in the original MNBC 319 Planning and Implementation grant application (presented below). Each 'Measure of Success' will receive a check mark to indicate if it was completed. Additional discussion may be included, as necessary.

Project Outcomes:

1. Complete an approved Watershed Management Plan for the Maria-No Business Creek watershed.
   - ✓ The MNBC WMP was completed and approved in February 2024

2. Develop an approved Cost-Share Implementation program that will be applied to critical areas of the watershed.
   - ✓ IDEM-approved Cost-Share Guidelines
   - ✓ 100% of 319 funding utilized

3. Reductions of 3,117 t/yr of Sediment, 36,458 lbs/yr Nitrogen, and 4,979 lbs/yr Phosphorus and reduction of E.coli entering streams.
   - ✓ Install BMPs affecting at least 5,810 acres
   - ✓ Geolocate all BMPs and calculate load reductions
   - ✓ Achieve Sediment reduction goal
   - ☒ Achieve Nitrogen reduction goal – *the MNBC project was very close to reaching this goal, with 31,444.45 lbs/yr reduced because of implemented BMPs. Indeed, this was an ambitious goal based on the assumption that many producers in the critical areas would be interested in equipment upgrades however the prevalent BMP for this round of funding was cover crops. As program advertising picks up momentum, there is no doubt more reductions in nitrogen will be measured, especially with high interest in precision ag. tools.*
   - ✓ *Achieve Phosphorus reduction goal*
   - ≠ Achieve E.coil reduction goal – *this is difficult to quantify since many of the BMPs installed during implementation don't have a known reduction calculation for E.coli and the tools available for measuring this accurately are currently limited.*

4. Promote successful BMP implementation in the Maria-No Business Creek Watershed through Education & Outreach activities. (Note: these Measures of Success were adapted into Grant Agreement deliverables and will be discussed in further detail later in this report.)

- ✓ Host 3 field days/events
- ✓ Engage in 10 community events
- ✓ Provide updates at public stakeholder meetings (4 total)
- ✓ Convey updates/success to governing organizations (4 times total)
- ✓ 12 press releases
- ✓ Monthly social media updates (48 total)
- ✓ Host a Hoosier Riverwatch event
- ✓ Distribute infographic
- ✓ Track attendance at all events

Watershed Management Plan Goals:

The goals outlined in the new MNBC Watershed Management Plan pertain to load reductions for short-term (5 years), mid-term (15 years), and long-term (30 years) benchmarks. After only a single year of targeted BMP implementation efforts, the 5 years goals for Phosphorus and Sediment were nearly met, though it is obvious that more focus will be needed in order to reach the Nitrogen reduction goal. The table below represents short-term load reduction goals outlined in the WMP alongside recorded load reductions from installed BMPs during the MNBC Planning and Implementation project.

When it comes to sediment and phosphorus, it seems that implementation strategies are on track for meeting load reduction goals within the 5 year period. The Nitrogen goal, however, is extremely high and greater efforts will need to be made to reach this target within the next four years. Promotion of precision agriculture tools that reduce nitrogen will be key in the upcoming years.

	MNBC WMP Reduction Goal (5 yrs)	MNBC Phase I Reductions	% Complete
Nitrogen	340,620 lbs/year	31,444.45 lbs/year	9.2%
Phosphorus	12,640 lbs/year	11,216.5 lbs/year	88%
Sediment	8,230.65 tons/year	7,161.7 tons/year	87%
E.coli	4.32E+16 cfu/year	Cannot be determined	n/a

It should be noted that at the time of this report, there are limited tools available for accurately calculating E.coli load reductions. Most BMPs implemented in this project do not have any measurable effect on E.coli load reduction, though ongoing public awareness education continues.

Habitat/Biological Goals:

- ✓ Continue to promote programs and conservation practices that establish riparian corridor, wetland habitat, field buffers, and filter strips.
  - ➢ *During this period, programs such as CREP, Healthy Rivers Initiative, WRP, CRP, EQIP, and offerings through The Nature Conservancy were made known to MNBC stakeholders where applicable.*

- ✓ Document significant QHEI and macroinvertebrate PTI score improvements on 70% of the 30 monitoring sites within the next 20 years.
  - ➢ *After a single year of implementation, it is much too early to determine if significant improvements have been made, though performance monitoring by IDEM after several rounds of implementation efforts will hopefully document these and other water quality improvements in the future.*

Administrative Goals:

- ✓ Continue to pursue advantageous partnerships and additional funding sources to make improvements throughout MNBC and surrounding watersheds in the future.
  - ➢ *Many beneficial partnerships have been solidified through this grant and continue to offer support through match-funding, Advisory Committee participation, consultation, and outreach. During the time of this grant, an application for additional MNBC 319 Implementation funding was selected for award and will commence in early 2025. The upcoming MNBC Implementation II 319 grant is valued at a total of $600,000 ($360,000 funding, $240,000 match/in-kind) and will last for three years.*

- ✓ Continue to promote a variety of Best Management Practices (BMPs) that will help bring about long-term behavioral changes, better land management, and continued conservation throughout the region.

- *Many of the same programs previously highlighted in the Habitat/Biological goals apply to this parameter as well. In addition, programs offered by private organizations such as The Nature Conservancy are working to target watersheds along the Wabash River and will play a key role in future BMP promotion and installation in this area.*

COMPLETION OF TASKS

One straightforward way to quantify the success of the MNBC Planning and Implementation grant project is to review the completion of the objectives outlined in each Task. More complex topics will be further discussed and analyzed as necessary. Supporting documentation can be found in Appendices on the MNBC Final Report USB.

Task A: Administration, Development, and Promotion of Cost-Share Program

☑ Develop a Watershed Management Plan that will meet state and federal requirements for approval.

The process of drafting the WMP was slower than anticipated but the final draft of the MNBC Watershed Management Plan received IDEM approval in January 2024 and final EPA approval in February 2024. The completed MNBC WMP is available for view in its entirety on the watershed-alliance.org website.

Lessons Learned:
Completing the MNBC WMP took longer than expected mostly because it was not as straightforward as presumed to compare the TMDL data from Maria Creek with the collected data in the adjacent No Business Creek watershed. Originally, the second No Business Creek HUC10 watershed was added so that there would be a larger contiguous working area for future implementation, but the differences in data collection and pollutant load calculations resulted in a case of 'apples and oranges' and required some additional reckoning.

Also, during this time, the primary mapping program used by the Watershed Coordinator (ArcMap Desktop) converted to a fully online service (ArcPro) and significant steps had to be taken to gain competence with the new program, which slowed WMP progress for a time.

In any case, it is always advisable that future projects do not underestimate the amount of time needed to collect information, review many sources of data, and receive feedback from Advisory Committee members, IDEM, and EPA. The final draft of this WMP was submitted to IDEM for review in October 2023 and edited once more before its final approval by EPA in February 2024. There are always unforeseen circumstances and delays so it's best to plan accordingly and make as much progress as possible early in the grant timeline.

☑ Form an Advisory Committee and hold quarterly public meetings.

The MNBC Advisory Committee was formed starting with two public 'kick-off' meetings that were held April 7th (Vincennes, IN) and 14th (Sullivan Co. Fairgrounds), 2021. When the MNBC Advisory Committee was formed, the TTK 319 project was still in session, which allowed for some beneficial cross-promotion, though the project working areas were far enough apart that not many participants had acreage in both watersheds. For the MNBC project, a strong partnership would be formed with the Knox Co. SWCD and NRCS staff since the bulk of the watershed acreage was in Knox County.

The MNBC Advisory Committee was required to meet at least quarterly (a minimum of 16 times) during the time of the MNBC 319 Planning and Implementation grant. Meetings were sometimes more or less frequent than quarterly, depending on the group's needs, which were considerably less during the implementation phase.

Supporting documentation for all meetings can be found in **Appendix E** on the MNBC Final Report USB.

Advisory Committee Meeting Dates: *4/7/21, 4/14/21, 7/27/21, 12/14/21, 3/22/22, 7/27/22, 8/16/22, 9/13/22, 10/26/22, 12/6/22, 1/30/24, 3/4/24 (e-meeting), 7/25/24, 10/8/24 (Zoom), 11/19/24 (Zoom), 12/3/24*

Lessons Learned:
One significant challenge for this project has been finding a suitable location for Advisory Committee meetings. The project area is relatively devoid of climate-controlled public meeting locations that are free of charge other than the Oaktown Community Center. Though there is no cost to use it, the communication to reserve it goes through a single individual who has proven to be extremely unreliable and very hard to contact. The group was double-booked and locked out of the building on multiple occasions. Hosting the meeting in either Sullivan or Vincennes does not provide an in-watershed, 'half-way' location that would best accommodate multiple parties. Zoom meetings were hosted a couple of times with no attendance and little interest. There is currently no ideal solution for this issue.

☑ Geolocate all monitoring sites and BMPs installed.

Pollutant load reduction totals corresponding to each individual project are reported in the Quarterly Progress Reports submitted to IDEM with each Invoice Package. See **Appendix E** to review QPRs and/or **Appendix F** for collected Invoice Package documentation**.** Geodata for the implemented practices can be found in **Appendix B**.

Task B: Cost-Share for BMP Implementation

☑ Develop a state-approved cost-share program according to *Section 319 Cost-Share Program Development Guidelines.*

The MNBC Cost-Share Guidelines were approved by IDEM 3/21/24 and revised in December 2024 to increase the per customer funding cap from $30,000 to $40,000 to accommodate a few final program participants using up leftover available cost-share funding. Both versions can be found in **Appendix B** on the MNBC Final Report USB.

Task C: Cost-Share for BMP Implementation

☑ Implement the approved cost-share program described in Task B (after the WMP is approved).

By the close of the MNBC 319 Planning and Implementation grant, all the cost-share funding had been completely utilized, and more producers were rolled over to the upcoming MNBC Implementation II 319 grant. All BMPs were installed according to NRCS (or other approved) specifications and in accordance with IDEM 319 program guidelines. See the table below for a summary of BMP Implementation projects and **Appendix E** on the MNBC Final Report USB for a complete list of BMP documentation (match and funded by 319 cost-share) in QPRs.

In summary, the MNBC 319 Planning and Implementation grant worked with 10 *unique producers* in less than one year's time to install BMPs on an impressive number of acres throughout the MNBC watershed, including:

- Cover Crops planted = 4,902.03 acres
- Cover Crop seeders = 3,096.79 acres
- Nutrient Management (Precision Ag. upgrades) = 2,460.91 acres

- Residue & Tillage Management (planter upgrades, chopping attachments) = 864.18 acres
- WASCOBs = 3 (2,625' gully erosion treated)

The pollutant load reduction estimates of the BMPs installed as a direct result of the MNBC 319 Planning and Implementation project (Cost-Share and Match projects) are summarized as follows:

- Total Nitrogen Load Reduction = 31,444.45 pounds/year
- Total Phosphorus Load Reduction = 11,216.5 pounds/year
- Total Sediment Load Reduction = 7,161.7 tons/year

Special thanks to technical staff with Knox County SWCD, ISDA, and NRCS for assisting with planning, engineering designs, customer service, as-builts, and field checks.

☑ Ensure that all BMPs conform to NRCS specifications or other applicable, approved specifications.

☑ Implement BMPs only in critical areas as described in the MNBC WMP.

☑ Follow cost-share payment and reporting protocol according to IDEM 319 program requirements.

☑ Tabulate pollutant load reductions for every BMP funded by 319 or utilized for match .

Pollutant load reduction totals can be viewed in the section above and are reported in each Quarterly Progress Reports submitted to IDEM with each Invoice Package (**Appendix E**)

☑ Create and maintain a geo-referenced database for all BMPs implemented through the 319 project.

As stated previously, all installed BMPs (match or otherwise) were documented in ArcGIS Pro. This geodata was provided to IDEM on the MNBC Final Report USB.

Task D: Water Quality Monitoring and Analysis

☑ Develop a Quality Assurance Project Plan (QAPP) for the monitoring activities and submit it to the State for approval.

For the MNBC 319 Planning and Implementation project, a TMDL was conducted for the HUC10 Maria Creek watershed. Monitoring for the adjacent HUC10 No Business Creek area was funded through the 319 grant and conducted by the Watershed Coordinator on a total of 5 sites for one year (June 2021-May 2022). A QAPP was submitted and approved by IDEM on 6/29/21.

☑ Monitor at least 5 selected sites monthly for one year in the No Business Creek watershed. Lab testing for one year will include: NO_2/NO_3, Total Phosphorus, TSS, and E.coli. Additional parameters shall include: Flow, Temperature, Dissolved O_2, Salinity, Specific Conductance, Total Dissolved Solids, pH, Turbidity, Color, Odor, and site photo.

A summary of sampling occurrences is described below. The monthly sample number varies due to the addition of duplicate samples or the inability to sample a site due to access concerns, drought, or unfavorable weather conditions.

All data collected was entered into the specified IDEM ARUT Spreadsheet, which can be found in **Appendix C** on the MNBC Final Report USB. Sampling was generally conducted only by the Watershed Coordinator with occasional assistance from another individual for training purposes or to help with macroinvertebrate collection.

Monitoring Dates: 6/29/21 (5/5 sites), 7/22/22 (5/5 sites), 8/31/22 (5/5 sites), 9/16/22 (4/5 sites – 1 dry due to drought), 10/20/22 (4/5 sites – 1 dry + QHEI and Macros 5/5 sites w/ Alli McKain), 11/30/21 (5/5 sites), 12/20/21 (5/5 sites), 1/26/22 (4/5 sites – 1 frozen w/ C. Nettles), 2/28/22 (3/5 sites monitored – flooding), 3/28/22(5/5 sites), 4/19/22 (5/5 sites w/ Katie Marchino), 5/25/22 (5/5 sites w/ Katie Marchino)

☑ Complete one QHEI assessment on all sites.

☑ Conduct annual macroinvertebrate sampling on all sites.

Task E: Education and Outreach

Conduct an education and outreach program that includes the following efforts:

☑ Update the website (www.watershed-alliance.org) and/or social media accounts (Twitter, Facebook, or other applicable forum) monthly for forty-eight (48) months.

Social media updates were primarily conducted on Twitter, which later became known as "X" during this grant period. The Sullivan Co. SWCD also posted occasional updates about the MNBC 319 project. Between the regular website updates and various social media venues, the requirement of 48 updates was met and exceeded.

☑ Develop and distribute one (1) Cost-Share Program brochure to inform applicants and promote the implementation of BMPs. (see **Appendix B**).

☑ Submit twelve (12) press releases to local media in order to provide project updates, advertise events, and promote the Cost-Share Program.

At the start of the MNBC project, more advertising was conducted through local newspapers though this proved to be quite expensive and was soon discontinued as it seemed to have little effect on getting the attention of target audiences. Henceforth, information has been distributed via targeted email list and in conjunction with field days and/or the Sullivan Co. and Knox Co. SWCD Annual Meetings.

Advertising: Vincennes Sun - April 2020 Kick-off mtgs x 2, SDT - April 2020 Kick-off mtgs x 3, Nov/Dec 2021 CCSI field day x 5, MNBC 319 Annual Report for Sullivan SWCD Annual Mtg advertising 2022, 2023, 2024

☑ Participate in a minimum of ten (10) community events such as fairs, Ag Day, and planter clinics to promote/showcase the project and track attendance.

Despite COVID-19 affecting public gatherings throughout 2021 and down-scaling many regularly scheduled annual events, the MNBC 319 project was still promoted through a wide variety of public events. The events listed below represent those that were counted towards the Task D requirement of 10 events, though more were documented in the QPRs. Attendance for all events was tracked and these details and any related information for each event can be found in the QPRs in **Appendix E**. Care was taken not to count an event for both this MNBC 319 grant and the concurrent TTK 319 grant or duplicate match/in-kind contributions.

Community Events: Operation Medicine Cabinet 10/2021, IMN "Caves & Water Quality" Feb 2022, Operation Medicine Cabinet 4/2022, Sullivan SWCD Tree Giveaway & Conservation booth 4/2022, Sullivan 4-H Fair booth 2022, Sullivan Ag Day 2023, Sullivan SWCD Tree Giveaway event 4/2023, Operation Medicine Cabinet 6/2023, Sullivan 4-H Fair booth 2023, Sullivan 8th Grade Annual Wabash River Raft Trip 2023

☑ Conduct at least three (3) field days or soil health events to showcase conservation through agricultural BMPs. Topics may include (but are not limited to): Maximizing precision ag tools, saturated buffers, prescribed grazing, irrigation management methods, septic maintenance, and optimizing cover crops. Track attendance.

As previously described, COVID-19 significantly curtailed events throughout 2021 and into early 2022. The events listed below represent those that were counted towards the Task D requirement. Attendance was tracked and these details and any related information can be found in the QPRs in **Appendix E** on the MNBC Final Report USB. Care was taken not to count an event for both this MNBC 319 grant and the concurrent TTK 319 grant or duplicate match/in-kind contributions. Planning additional events to satisfy the deliverables of both 319 grants was a challenge during 2021 when COVID protocol still made hosting events difficult and unpopular with attendees.

Field Days: CCSI Farmer Appreciation Breakfast + PARP Dec. 2021, Sullivan SWCD Summer Soil Health Field Day – July 2024, Sullivan 8th Grade Wabash Raft Trip Presentation 2024

☑ Host one (1) public meeting per year for a total of four (4) to summarize TMDL findings, inform the public about project milestones, highlight successes, and garner stakeholder interest. Track attendance.

SWCD Annual Business meetings served this function, where approximately 80-120 stakeholders were in attendance each year. These meetings were held in February or March each year, publicly advertised, and provide an opportunity to share 319 updates along with an annual report.

Public Meetings: Knox Co. SWCD Annual Mtg (2022), Sullivan SWCD Annual Mtgs (2022, 2023, 2024)

☑ Provide a total of four (4) updates to governing bodies in person (County Council, County Commissioners, Drainage Board, Partner SWCDs, etc.)

Critical updates about the MNBC project were provided for local and partner governing bodies as follows:

Governing Body Updates: Jan. 2022 Knox SWCD Board mtg, 2023 July Knox SWCD Board mtg, Aug 2023 Sullivan County Council, Knox SWCD Annual Mtg 2024

☑ Maintain a filterable database of volunteers, partners, and contacts on a quarterly basis; sort into groups pertaining to interest, qualifications, or potential donor/partner/stakeholder.

This task was accomplished on an ongoing basis throughout the project timeline as new contacts were added and categorized. The list is maintained via Google Contacts and easily exported as a .csv file that can be used to share with others or for mass emails. This is free and easy to use for the Watershed Coordinator.

☑ Develop one (1) promotional 'infographic' flyer to distribute to nonagricultural constituents within the watershed. Topics may include septic maintenance, tips for reducing household fertilizer applications, facts about local water quality, proper disposal of hazardous materials and/or maintaining grassed buffers along streams and ditches.

An infographic flyer about the benefits of wetlands was created and made available at SWCD offices (**Appendix D**).

☑ Organize one (1) local Hoosier Riverwatch Training event for stakeholders, partners, and other interested parties. Track attendance.

A basic training course was hosted at the Oaktown Community Center on June 7th, 2023. Though it was widely advertised, attendance was light (3 trainees and 4 staff/helpers from IDEM, Sullivan SWCD). For the field location, a TMDL monitoring site was used (Bruceville Park) and overall, the class was well-received by those who attended.

Task F: Reporting

☑ Prepare and submit a progress report to the State with each invoice package at least quarterly.

In addition to this Final Report, a total of 15 Quarterly Progress Reports were submitted during the MNBC 319 Planning and Implementation project, meeting the Task F requirement. Copies of all Progress Reports can be found in **Appendix E** on the MNBC Final Report USB.

- December 8th, 2020-June 30th, 2021
- July 1st, 2021-November 19th, 2021
- November 20th, 2021-March 3rd, 2022
- March 4th, 2022-April 30th, 2022
- May 1st, 2022-June 30th, 2022
- July 1st, 2022-August 31st, 2022
- September 1st, 2022-October 15th, 2022
- October 16th, 2022-December 8th, 2022
- December 9th, 2022-April 30th, 2023
- May 1st, 2023-July 13th, 2023
- July 14th, 2023-October 31st, 2023
- November 1st, 2023-February 29, 2024
- March 1st, 2024-July 31st, 2024
- August 1st, 2024-October 15th, 2024
- October 16th, 2024-December 9th, 2024
- FINAL REPORT SUBMITTED (Attached)

☑ Submit one (1) electronic copy and one (1) printed copy of the Final Report to the State.

The MNBC 319 Planning and Implementation project Final Report and all supporting documentation was provided to the Watershed Specialist via access to a Google shared drive managed by the Watershed Coordinator. All relevant copies of 319 documentation will be maintained at the Sullivan SWCD for a minimum of three years beyond the closing date of this project.

Discussion of Monitoring Results

The MNBC Watershed project began with the purpose of using data from the Maria Creek TMDL study to create a Watershed Management Plan for BMP implementation in this region in the future. During the initial development of the project, it was decided to include the adjacent HUC10 No Business Creek watershed in the assessment, though it would be necessary to collect water quality data separately from the TMDL to compare water quality in both watersheds for the purpose of critical area prioritization and goal setting. Prior to these studies, there was little to no reliable existing data to be considered for the Watershed Management Plan.

A QAPP was created (approved June 2021) for the No Business Creek watershed to monitor 5 sites monthly for one year. Funding for lab testing (NO_2, NO_3, Total Phosphorus, E.coli, TSS) was available and the remaining parameters were collected using adapted Hoosier Riverwatch methods: pH, Dissolved Oxygen, Flow, TDS (Total Dissolved Solids), Turbidity, Salinity, and Specific Conductivity, color, odor, and photo documentation. A QHEI score was collected for each site and annual macroinvertebrate assays were conducted in the fall.

All collected data can be found in **Appendix C** on the MNBC Final Report USB as well as discussed at length in the MNBC Watershed Management Plan, specifically in the "Important Findings, Relationships, and Trends" section pgs. 106-108 where these results as well as those from the TMDL are compared and conclusions are drawn. The Maria Creek TMDL study added 28 new Cat4 impairments to the IDEM 303(d) list for E.coli and TSS. Water sampling of the No Business Creek watershed showed elevated nitrogen levels specifically in the Lower Shaker Prairie Ditch subwatershed which has a high prevalence of sandy soils. Each watershed's pollutant loads were calculated (as documented in the MNBC WMP) to determine and prioritize critical areas. Data from water monitoring was compared with modeling data from the online Model My Watershed tool and load reduction goals were generated from 'worst-case scenario' numbers which typically came from the MMW tool that is based off 30 years of rainfall data, slopes, soil types, and land use.

Water monitoring provides a great way to 'ground truth' assumptions about water quality but is limited in many ways due to constraints from budget, time, personnel, and weather. Future success monitoring may be conducted in this watershed by IDEM and will hopefully indicate that years of implementation efforts will help improve water quality in the region.

Public Participation and Partnerships

The MNBC 319 Planning Implementation program celebrated a successful outcome chiefly because of the dedication and commitment of those involved, despite some setbacks to event planning posed by the pandemic.

Several key partners were especially involved during this project including the Knox Co. SWCD staff and Board, NRCS, ISDA, the IDEM TMDL team, The Nature Conservancy, Purdue Extension, Peabody Coal, Town of Oaktown, neighboring SWCDs, and several local contractors and farmers. The Knox County SWCD technical staff, Alli McKain with ISDA, NRCS Conservation Implementation Team, and NRCS District Conservationists (Tom Held for Knox Co. and Travis Walters - 2020-2023, Brody Allen - 2023 (partial), Jake Walters - 2023 to present for Sullivan Co.) were instrumental in providing specifications, cost-estimates, and prompt engineering plans for a variety of conservation practices in the 319 program. Many local officials on the County Council and Commissioners are also directly tied to farming and were happy to advocate for the 319 program. Local word-of-mouth has been instrumental to MNBC's success thus far.

One major credit to the MNBC Planning and Implementation program is the fact that the Match requirement was not only fulfilled but exceeded! Indeed, the match requirement was $259,000 and the final total reached $434,791.24 exceeding the goal by $175,791.24 This is a testament to the commitment of local producers and dedicated partners! The total value of this 319 grant from December 2020-2024 equals $823,291.24 (total funding and accrued match/in-kind).

Successes, Challenges, and Lessons Learned

In summary, the MNBC 319 Planning and Implementation project demonstrated many positive efforts, including:

- Exceeded match requirement by $175,791.24
- BMPs installed on thousands of acres
- Large load reductions achieved through Cover Crops

- Five year WMP load reduction goals for Phosphorus and Sediment nearly met
- High level of participation from landowners and producers due to strong word-of-mouth promotion

However, all roads to success often have a few 'bumps' along the way. Below are some challenges the MNBC 319 Planning and Implementation project experienced (and learned from):

- Difficulty in estimating the time needed to collect and review sufficient data (monitoring, mapping, local information) for thorough completion of a Watershed Management Plan and IDEM/EPA approval, leaving a high-pressure time-crunch to complete Implementation tasks in the final year of the grant
- Communication challenges when coordinating with staff in two field offices (shared Google spreadsheet helps)
- Quickly evolving precision agriculture technology can make it challenging to stay informed
- Advertising and meeting in an area that is basically a rural 'desert' is difficult; must think creatively and keep expectations reasonable for attendance, available locations, et.

Future Activity

The Sullivan Co. SWCD and its partners will continue to focus on implementation efforts in the Maria-No Business Creek watershed, which will be receiving an additional 319 implementation grant starting in the spring 2025. Until then, the group will continue to facilitate federal, state, and local conservation programs and pursue various types of conservation grant funding when possible. As always, conservation education, outreach, and program matchmaking will continue as long as there is local need and interest.